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GROUNDWATER SAMPLING REPORT

PACIFIC OXYGEN COMPANY
2311 Magnolia Street & 2210 Union Street
Oakland, CA

94607

April 13, 1992

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I. INTRODUCTION

The subject site is the historical location of Pacific Oxygen Company at 2311 Magnolia Street, Oakland, California. The location of the site is shown in Figure 1 (site location map).

On June 30 and July 12, 1989, Geo-Environmental Technology removed three underground storage tanks from the subject site: one 8,000-gallon underground Diesel tank, one 1,000-gallon underground Gasoline tank, and one 550-gallon underground Waste Oil tank. The locations of the three underground storage tanks are indicated on Figure 2 (aerial photograph).

Due to the detection of subsurface contamination in the vicinity of the Gasoline and Waste Oil tanks, shallow groundwater monitoring well MW-1 was installed by Geo-Environmental Technology at the previous tank locations. The results of shallow groundwater sampling on October 26, 1990, indicated the presence of Diesel at a concentration of 5,400 $\mu\text{g/L}$, and Benzene, Toluene, Ethylbenzene, and Total Xylenes at concentrations of 1,200 $\mu\text{g/L}$, 18 $\mu\text{g/L}$, 7.1 $\mu\text{g/L}$, and 37 $\mu\text{g/L}$, respectively. As a matter of reference, the report by Geo-Environmental Technology, dated November 20, 1990, is included in Attachment C.

when? Sometime in 1991

Subsequent to the installation and sampling of monitoring well MW-1, two additional shallow groundwater monitoring wells were installed on the subject site (wells MW-2 and MW-3). No data regarding these well installations appear to be available at the present time.

when?

we have one Sbs (Att. C) log

On April 3, 1992, monitoring wells MW-1, MW-2 and MW-3 were



FIGURE 2.

Aerial Photograph, June 12, 1990

Photo AV-3845-7-23

Pacific Aerial Surveys

8,000 Gal Diesel →

1,000 Gal
Gasoline →

550 Gal Waste Oil →

sampled by Hageman-Aguiar, Inc., for the subsequent laboratory analysis for dissolved petroleum constituents. This sampling represents a follow-up "round" of sampling following groundwater sampling conducted by Bernabe and Brinker, Inc., on March 4, 1992. As a matter of reference, the report by Bernabe and Brinker, Inc., dated March 20, 1992, is included in Attachment D.

The locations of the three on-site shallow groundwater monitoring wells are shown in Figure 3 (site map).

indicate ^① locations
of all 3 tanks.
~~②~~ ^③ Magnolia St.

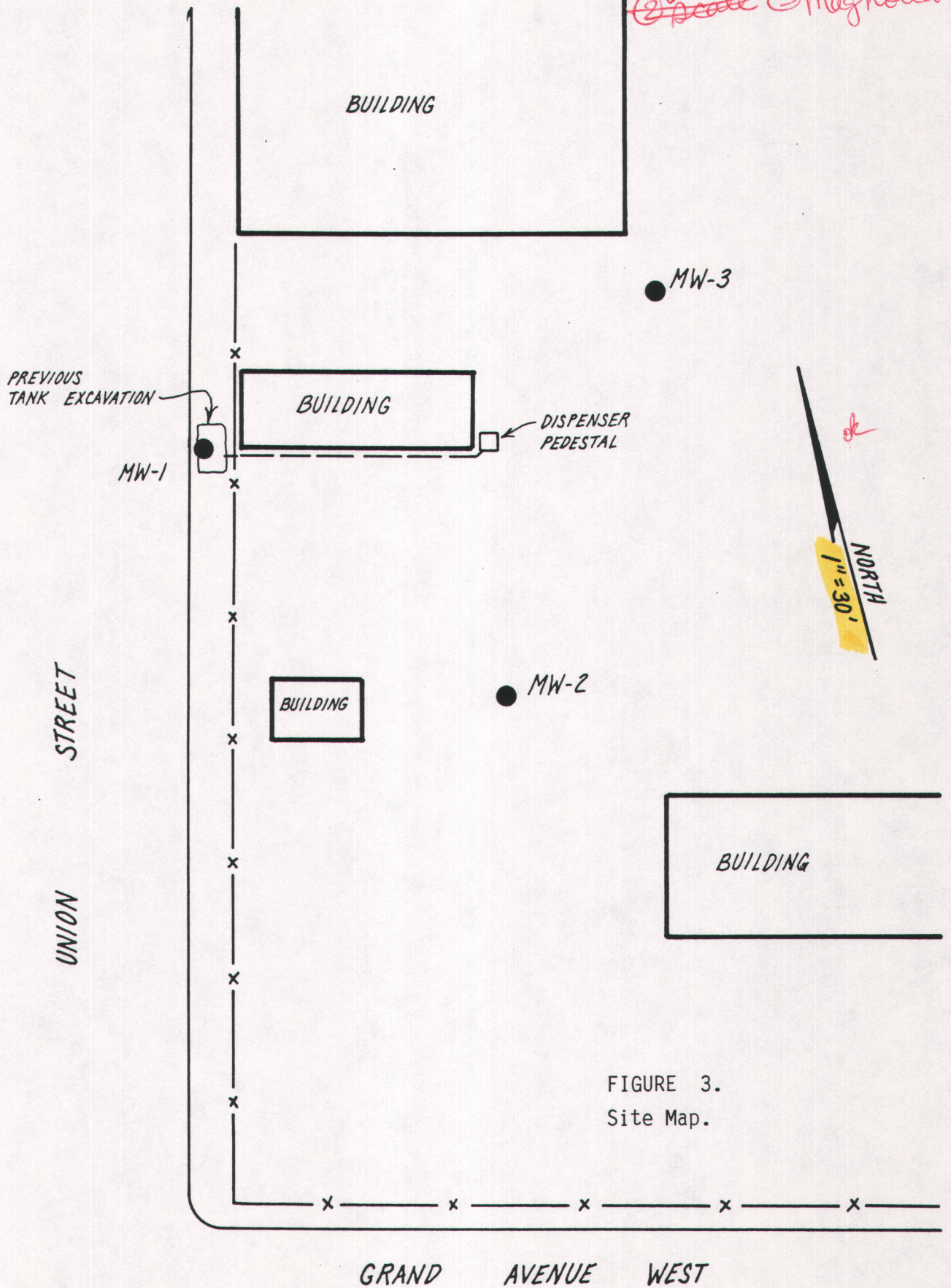


FIGURE 3.
Site Map.

II. FIELD WORK

Monitoring Well Sampling

On April 3, 1992, shallow groundwater monitoring wells MW-1, MW-2 and MW-3 were purged, and groundwater samples were subsequently collected. Prior to groundwater sampling, each well was purged by bailing 2 to 5 casing volumes of water. Field conductivity, temperature, and pH meters were present on-site during the monitoring well sampling. As the purging process proceeded, the three parameters were monitored. Purging continued until readings appeared to have reasonably stabilized. After the water level in the well had risen during a reasonable period of time (each well exhibited a relatively low rate of recharge), a groundwater sample was collected using a clean teflon bailer. Each water sample was placed inside appropriate 40 mL VOA vials and 1 liter amber bottles free of any headspace. The samples were immediately placed on ice, then transported under chain-of-custody to the laboratory at the end of the work day.

At the time each monitoring well was sampled, the following information was recorded in the field: 1) depth-to-water prior to purging, using an electrical well sounding tape, 2) identification of any floating product, sheen, or odor prior to purging, using a clear teflon bailer, 3) sample pH, 4) sample temperature, and 5) specific conductance of the sample. Copies of the well sampling logs are included as Attachment A.

Water Level Measurements.

Shallow water table elevations were measured on April 3, 1992. These measurements are shown in Table 1. The top-of-casing elevations were surveyed by Hageman-Aguilar, Inc., with the top-of-casing elevation of well MW-2 arbitrarily set at 100.00 feet. Figure 4 presents a contour map for the shallow groundwater table beneath the site. As shown in this figure, the data from these monitoring wells indicate that the shallow groundwater table is relatively steep, with the shallow groundwater flow beneath the site calculated as being primarily in a southeasterly direction.

As a matter of reference, Figure 5 presents a contour map for the shallow groundwater table beneath the site, constructed from the water level data collected by Bernabe and Brinker, Inc, on March 4, 1992. As shown in this figure, the data from the monitoring wells indicated that the shallow groundwater table is relatively steep, with the shallow groundwater flow beneath the site calculated also as being primarily in a southeasterly direction. It should be noted that on page 2 of the Bernabe Brinker Report (see Attachment D), the shallow groundwater flow direction is stated as being in a "southward" direction. This conclusion was obviously made without the construction of a groundwater table contour map.

The results of water level measurements indicate that the shallow groundwater table during the most recent round of sampling was, on the average, approximately 0.7 feet lower than during the previous groundwater sampling by Bernabe and Brinker. The shallow groundwater table elevation can be expected to fluctuate in response to seasonal variations, as well as to short-term episodes of shallow groundwater recharge (i.e., storms, sewer leaks, etc.). In addition, significant variations in the shallow groundwater table

TABLE 1.

**Shallow Water Table Elevations
April 3, 1992**

Well	Top of Casing Elevation (feet)	Depth to Water (feet)	Water Table Elevation (feet)
MW-1	99.26	3.68	95.58 ✓
MW-2	100.00	6.75	93.25 ✓
MW-3	100.07	7.55	92.52 ✓

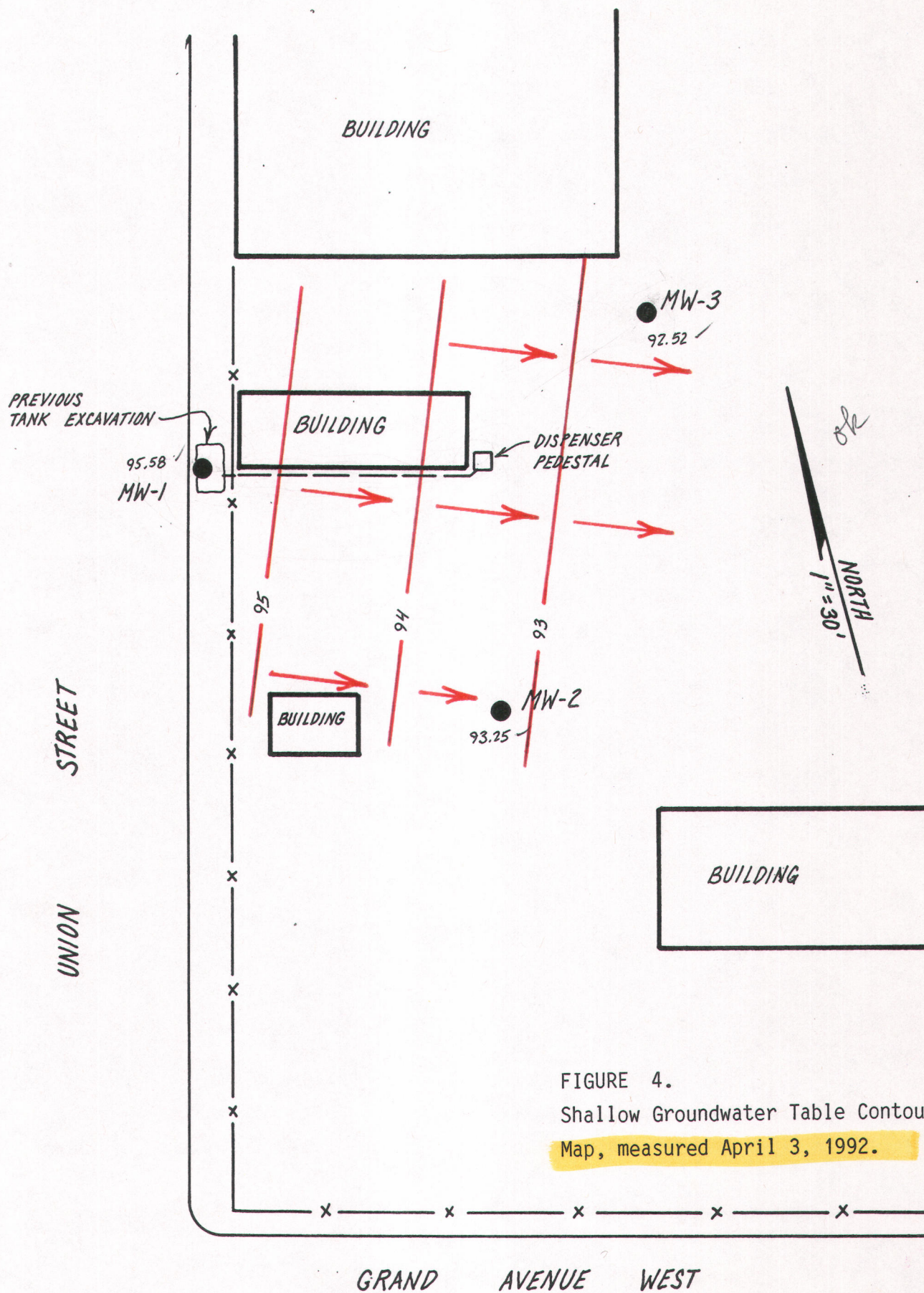
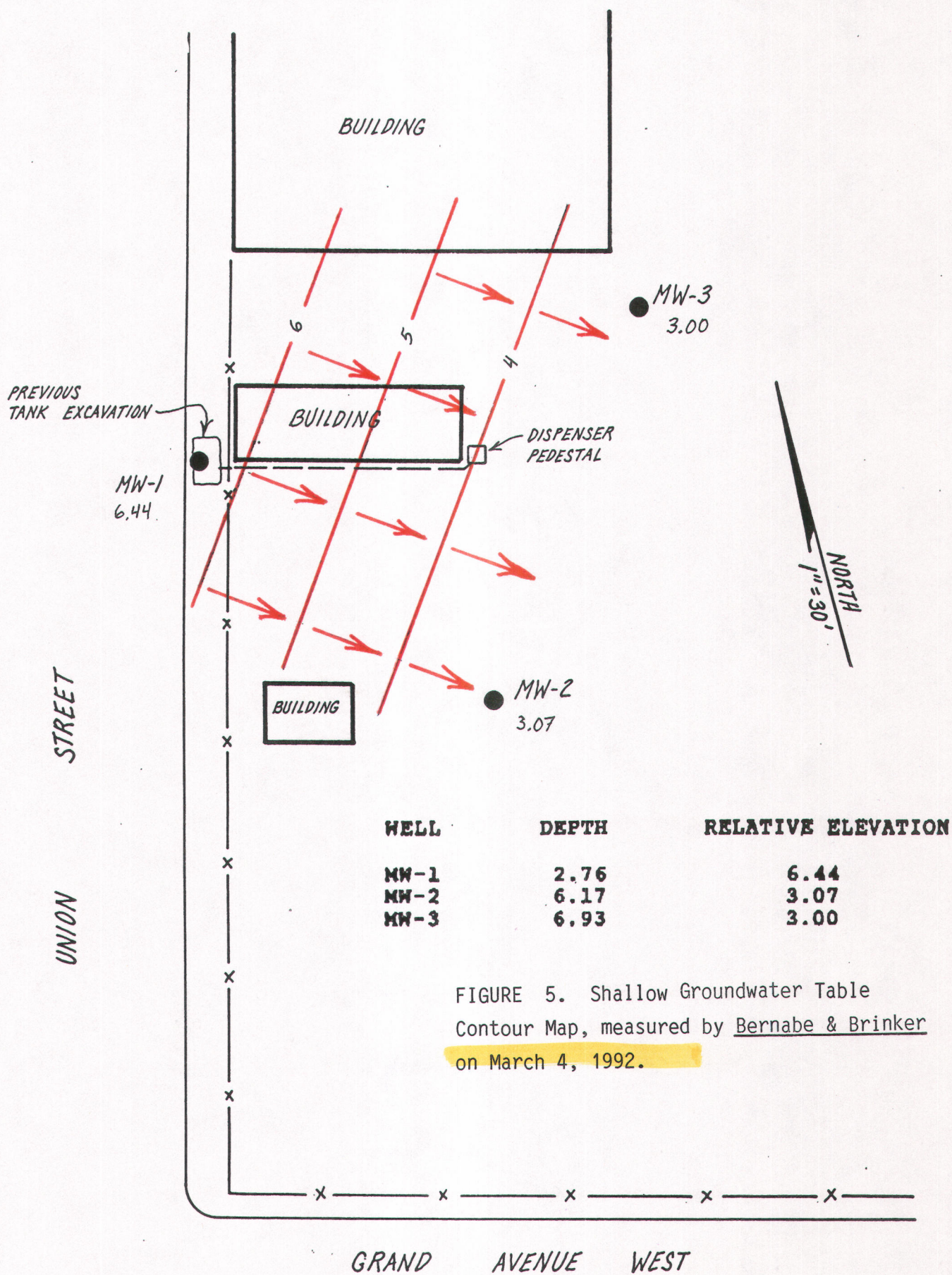


FIGURE 4.
Shallow Groundwater Table Contour
Map, measured April 3, 1992.



elevation may be reflected in differences in the shallow groundwater flow direction beneath the site. That is, at certain times during the year, well MW-3 may actually be located directly down-gradient of the previous underground storage tank location and/or underground piping.

III. LABORATORY RESULTS

Laboratory Analysis

All analyses were conducted by a California State DOHS certified laboratory in accordance with EPA recommended procedures (Geochem, Milpitas, CA). The Groundwater samples were analyzed for 1) Total Petroleum Hydrocarbons as Gasoline (EPA method 8015), 2) Total Extractable Petroleum Hydrocarbons: Kerosene, Diesel, Motor Oil (EPA method 8015), and 3) Benzene, Toluene, Ethylbenzene, and Total Xylenes (EPA method 602). In addition, the sample collected from well MW-1 was analyzed for 4) Halogenated Volatile Organics (EPA method 601). → = O + G?

Results of Groundwater Sampling

Tables 2 and 3 present the results of the laboratory analysis of the groundwater samples collected from monitoring wells MW-1, MW-2 and MW-3. A copy of the laboratory certificates for the water sample analyses is included in Attachment B.

As shown in Table 2, for this round of sampling, Total Petroleum Hydrocarbons as Gasoline were detected in the groundwater samples collected from wells MW-1 and MW-3 at concentrations of 300 µg/L (ppb) and 5,200 µg/L (ppb), respectively. In addition, Benzene was detected in the groundwater samples collected from wells MW-1 and MW-3 at concentrations of 21 µg/L (ppb) and 120 µg/L (ppb), respectively.

TABLE 2.

Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	TPH as Kerosene (ug/L)	TPH as Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Motor Oil (mg/L)
MW-1	10-26-90	---	---	5,400	1,200	18	7.1	37	---
	03-04-92	460	---	590	120	9.0	16	44	---
	04-03-92	300 ✓	ND ✓	ND ✓	21 ✓	6.0 ✓	15 ✓	36 ✓	ND ✓
MW-2	03-04-92	ND	---	ND	ND	ND	ND	ND	---
	04-03-92	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓
MW-3	03-04-92	14,000	---	360	6,200	60	110	740	---
	04-03-92	5,200 ✓	ND ✓	ND ✓	120 ✓	32 ✓	57 ✓	180 ✓	ND ✓
Detection Limit		50	50	50	0.5	0.5	0.5	0.5	0.5

ND = Not Detected

TABLE 3.

Shallow Groundwater Sampling Results

Halogenated Volatile Organics by EPA Method 601

Well	Date	Tetrachloroethene (ug/L)	Other Organics (ug/L)
MW-1	04-03-92	ND ✓	ND ✓
Detection Limit		1.0	1.0

ND = Not Detected

For this round of shallow groundwater sampling, no detectable concentrations of Diesel were found in any of the samples.

It should be noted that the 590 $\mu\text{g/L}$ and 360 $\mu\text{g/L}$ of Diesel reported by Bernabe and Brinker for the previous round of sampling are qualified by McCampbell Analytical, Inc., as containing "oil range compounds together with gasoline range compounds" (see laboratory certificate in Attachment D). These results may reflect a quantification of the higher boiling point components of Gasoline, and may also be indicative of the presence of older, weathered Gasoline. The presence of Diesel in the shallow groundwater should be considered somewhat "doubtful" until the results of one or more future rounds of groundwater sampling can be analyzed.

For this round of shallow groundwater sampling, no detectable concentrations of any Halogenated Volatile Organics were found in the sample collected from well MW-1.

IV. CONCLUSIONS AND RECOMMENDATIONS

All of the data collected to date suggest that the shallow groundwater contamination evident in the on-site monitoring wells represents residual subsurface contamination from the operation of the previous underground Gasoline storage tank.

Although elevated concentrations of Gasoline and associated constituents are apparent (particularly in the vicinity of well MW-3), the concentrations found to date are not indicative of a serious groundwater contamination problem. Immediate remedial action (such as pump-and-treat, etc.) does not appear to be warranted at the present time. It should be noted, however, that the present concentration of Benzene dissolved in the shallow groundwater (120 $\mu\text{g/L}$) significantly exceeds the State of California Maximum Contaminant Level of 1 $\mu\text{g/L}$ for drinking water (Code of California Regulations, Title 22, Division 4, Environmental Health, Chapter 15, Article 5.5, Section 64444.5).

In cases where groundwater contamination is detected beneath a site, further delineation of the lateral extent of shallow groundwater contamination would necessarily be required by the local regulatory agency. In the case of the subject site in Oakland, California, the local regulatory agency with primary oversight in leaking underground fuel tank (LUFT) cases is the Alameda County Environmental Health Department. Guidelines for enforcement are provided to the County by the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. In order to further delineate the lateral extent of shallow groundwater contamination in the vicinity of the previous underground fuel tank locations and associated underground piping, one or more additional shallow groundwater monitoring wells would have to be installed at

the site.

In the case of the subject property, however, it would be more prudent at this time to uncover and remove the existing underground piping located between the remote dispenser island and the previous underground storage tank locations. In addition to the underground piping, any contaminated soil should also be removed. The presence of subsurface contamination along the existing underground piping runs should be considered a highly possible cause for the residual Gasoline concentrations found in the shallow groundwater in the vicinity of well MW-3. As long as such contamination is still present in the soil, the present Gasoline concentrations in the shallow groundwater can be expected to persist far into the future.

If significant subsurface contamination is discovered and removed, it may be possible to simply monitor the existing on-site monitoring wells to ensure a downward trend in dissolved Gasoline and Benzene concentrations.

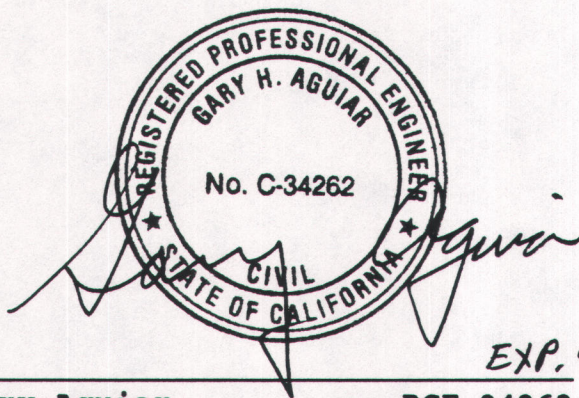
As a final note, in accordance with California Regional Water Quality Control Board (RWQCB) guidelines, it is necessary to continue groundwater sampling on a quarterly basis for at least one year. If contamination levels remain stable or decline, as would be expected due to the removal of the contamination source (underground tanks and associated piping), a request could then be made to the appropriate regulatory agencies for permission to either reduce the frequency of monitoring or else discontinue monitoring and properly abandon the existing monitoring wells, in the case that concentrations become non-detectable.

Typically, as long as any dissolved petroleum constituents are found to be present in the shallow groundwater beneath a particular site, some form of periodic sampling and

laboratory analysis will be required until concentrations are found to attenuate to "non-detectable" levels. Such attenuation of dissolved petroleum constituents in the shallow groundwater would necessarily be accelerated by excavation and removal of any subsurface contamination that is suspected to be present beneath the site (such as along the underground piping run).

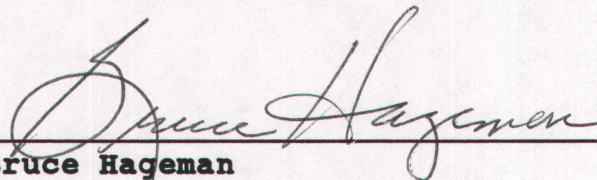
GROUNDWATER SAMPLING REPORT
PACIFIC OXYGEN COMPANY
2311 Magnolia Street, Oakland, CA

April 13, 1992



Gary Aguiar

RCE 34262


Bruce Hageman

ATTACHMENT A

WELL SAMPLING LOGS

WELL SAMPLING LOG

Project/No. PACIFIC OXYGEN

Page 1 of 3

Site Location OAKLAND

Date 4/3/92

Well No. MW 1

Time Began 1250

Weather CLEAR, 70°F

Completed 1340

EVACUATION DATA

Description of Measuring Point (MP) TOP OF CASING

Total Sounded Depth of Well Below MP 18.82

- Depth to Water Below MP 3.68

Diameter of Casing 2"

= Water Column in Well 15.14

Gallons in Casing 2.4 + Annular Space 9.3 = Total Gallons 11.7
(30% porosity)

Gallons Pumped Prior to Sampling 40

Evacuation Method 2" TEFLON HAND BAILER

SAMPLING DATA / FIELD PARAMETERS

Color CLR/GRY/GRY Odor HC

Appearance NO FREE PRODUCT Temperature 20.5 °F 6 °C

Specific Conductance
umhos/cm 850 pH 7.0

FIELD ANALYSES:	Start	Mid	End	
<u>GALS</u>	<u>0</u>	<u>15</u>	<u>30</u>	<u>40</u>
Time	<u>1250</u>	<u>1303</u>	<u>1320</u>	<u>1336</u>
Temperature °C	<u>20.5</u>	<u>21.5</u>	<u>21.0</u>	<u>20.5</u>
Conductivity	<u>800</u>	<u>850</u>	<u>850</u>	<u>850</u>
pH	<u>5.8</u>	<u>5.7</u>	<u>6.5</u>	<u>7.0</u>

* RECHARGE RATE: 1/12 mins

Sampling Personnel JR

WELL SAMPLING LOG

Project/No. PACIFIC OXYGEN

Page 2 of 3

Site Location OAKLAND

Date 4/3/92

Well No. MW 2

Time Began 1435
Completed 1505

Weather CLEAR, 70°F

EVACUATION DATA

Description of Measuring Point (MP) TOP OF CASING

Total Sounded Depth of Well Below MP 22.00

- Depth to Water Below MP 6.75

Diameter
of Casing 2"

= Water Column in Well 15.25

Gallons in Casing 2.4 + Annular Space 9.3 = Total Gallons 11.7
(30% porosity)

Gallons Pumped Prior to Sampling 10

Evacuation Method 2" TEFロン HAND BAILER

SAMPLING DATA / FIELD PARAMETERS

Color CLR/BRN/BRN Odor NONE

Appearance HIGH TURBIDITY AT BOTTOM Temperature 21.5 °F (°C)

Specific Conductance
umhos/cm 1200 pH 8.3

FIELD ANALYSES:

	Start	Mid	End
GAL	0	5	10
Time	<u>1435</u>	<u>1445</u>	<u>1455</u>
Temperature °C	<u>21.5</u>	<u>22.0</u>	<u>21.5</u>
Conductivity	<u>1100</u>	<u>1200</u>	<u>1200</u>
pH	<u>9.4</u>	<u>9.2</u>	<u>8.3</u>

RECHARGE RATE 1' / 0:50 MINS, VERY SOFT BOTTOM
Sampling Personnel JR

WELL SAMPLING LOG

Project/No. PACIFIC OXYGEN

Page 3 of 3

Site Location OAKLAND

Date 4/3/92

Well No. MW 3

Time Began 1425

Weather CLEAR, 70°F

Completed 1530

EVACUATION DATA

Description of Measuring Point (MP) TOP OF CASING

Total Sounded Depth of Well Below MP 21.70

- Depth to Water Below MP 7.55

Diameter
of Casing 2"

= Water Column in Well 13.15

Gallons in Casing 2.1 + Annular Space 8.1 = Total Gallons 10.2
(30% porosity)

Gallons Pumped Prior to Sampling 4

Evacuation Method 2" TEFLON HAND BAILER

SAMPLING DATA / FIELD PARAMETERS

Color CLR/BRN/BRN Odor HC

Appearance HIGH TURBIDITY AT BOTTOM Temperature 21.0°F 10°

Specific Conductance
umhos/cm 1200 pH 8.1

FIELD ANALYSES:	Start	* Mid	* End
<u>GAL</u>	<u>0</u>	<u>2</u>	<u>4</u>
Time	<u>1425</u>	<u>1430</u>	<u>1530</u>
Temperature °C	<u>20.0</u>	<u>20.5</u>	<u>21.0</u>
Conductivity	<u>1000</u>	<u>1200</u>	<u>1200</u>
pH	<u>7.7</u>	<u>8.2</u>	<u>8.1</u>

* DEWATERED @ 1 CASING VOL., RECHARGE RATE 0.1' / 1:23 MIN.
VERY SOFT BOTTOM.

Sampling Personnel JR

ATTACHMENT B

ANALYTICAL RESULTS: GROUNDWATER



GEOCHEM LABS

Precision Environmental Analytical Laboratory

GCL # 0492015

Date: Apr. 07, 1992

HAGEMAN - AGUIAR

Attn: Gary Aguiar

Re: Three water samples for Gasoline/BTEX and TEPH analyses.

Project name: Pacific Oxygen

Project location: 2210 Union St. -Oakland, CA

Date sampled: Apr. 03, 1992

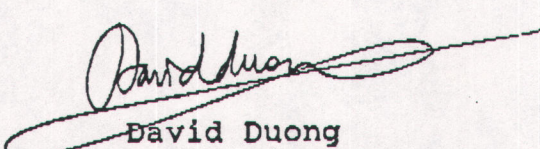
Date submitted: Apr. 06, 1992

Date extracted: Apr. 06-07, 1992

Date analyzed: Apr. 06-07, 1992

RESULTS:

SAMPLE I.D.	Kerosene (ug/L)	Gasoline (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)	Motor Oil (mg/L)
MW1	N.D.	300	N.D.	21	6.0	15	36	N.D.
MW2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
MW3	N.D.	5200	N.D.	120	32	57	180	N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	----
Spiked								
Recovery	---	94.3%	99.2%	95.5%	87.8%	108.1%	86.0%	----
Duplicate Spiked								
Recovery	---	97.4%	100.4%	91.2%	96.5%	95.1%	95.9%	----
Detection limit	50	50	50	0.5	0.5	0.5	0.5	0.5
Method of Analysis	3510 / 8015	5030 / 8015	3510 / 8015	602	602	602	602	3510 / 8015


David Duong
Laboratory Director



GEOCHEM LABS

Precision Environmental Analytical Laboratory

Date: Apr. 08, 1992
GCL #: 0492015

HAGEMAN-AGUIAR

Attn: Gary Aguiar

Project name: Pacific Oxygen
Project location: 2210 Union St. -Oakland, CA.

Sample I.D.: MW-1
Date Sampled: Apr. 03, 1992
Date Analyzed: Apr. 07, 1992
Method of Analysis: EPA 601

Date Submitted: Apr. 06, 1992

Detection limit: 1.0 ug/L

COMPOUND NAME	CONCENTRATION (ug/L)	SPIKE RECOVERY (%)
Chloromethane	N.D.	-----
Vinyl Chloride	N.D.	91.3
Bromomethane	N.D.	-----
Chloroethane	N.D.	-----
Trichlorofluoromethane	N.D.	-----
1,1-Dichloroethene	N.D.	97.4
Methylene Chloride	N.D.	-----
1,2-Dichloroethene (TOTAL)	N.D.	-----
1,1-Dichloroethane	N.D.	-----
Chloroform	N.D.	100.8
1,1,1-Trichloroethane	N.D.	-----
Carbon Tetrachloride	N.D.	-----
1,2-Dichloroethane	N.D.	-----
Trichloroethene	N.D.	95.2
1,2-Dichloropropane	N.D.	-----
Bromodichloromethane	N.D.	-----
2-Chloroethylvinylether	N.D.	-----
Trans-1,3-Dichloropropene	N.D.	-----
Cis-1,3-Dichloropropene	N.D.	-----
1,1,2-Trichloroethane	N.D.	-----
<u>Tetrachloroethene = PCE</u>	N.D.	102.9
Dibromochloromethane	N.D.	-----
Chlorobenzene	N.D.	-----
Bromoform	N.D.	-----
1,1,2,2-Tetrachloroethane	N.D.	-----
1,3-Dichlorobenzene	N.D.	-----
1,4-Dichlorobenzene	N.D.	-----
1,2-Dichlorobenzene	N.D.	-----

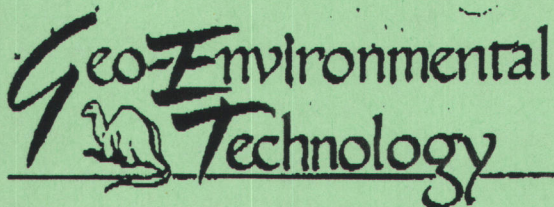
David Duong
Laboratory Director

INV #

ANALYSIS
REQUESTED[illegible]

ATTACHMENT C

REPORT BY GEO-ENVIRONMENTAL TECHNOLOGY



260 Cristich Lane
Campbell, CA 95008

(408)559-1220

November 20, 1990
Project No. 9070

Mr. Aldo Guidotti - Trustee
P.O. Box 778
Orinda, CA. 94563

PROGRESSIVE REPORT
Groundwater Investigation
2311 Magnolia & 2210 Union St.
Oakland, CA. 94609

Introduction

This letter presents the findings of the investigation of subsurface conditions conducted by Geo-Environmental Technology (GET), at the above-referenced site. This investigation has been performed in accordance with the guidelines of the Alameda County Flood and Water Conservation District, Alameda County Health Care Services, Department of Environmental Health and the Regional Water Quality Control Board. The purpose of this work was to investigate the extent of any groundwater contamination beneath the subject property. The completed work includes:

1. The drilling of one monitoring well and the collection of soil samples from the borings.
2. The proper development and sampling of groundwater from these wells. *plural?*
3. Providing for the laboratory analysis of the soil and water samples from the soil borings and groundwater monitoring wells.
4. This report of findings.

Site Location

The site is located at 2311 Magnolia St and 2210 Union St. in Oakland, California. The site location is shown on Figure 1.

Project No. 9070

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Background

The subject site, previously owned by Mr. Bill Josephian, was the location for Pacific Oxygen Company from approximately 1940 to 1984. The property is currently owned by the estate of Josephian. Portions of the property are being used for oxygen tank repair and storage, whereas the original plant has not been operated for 8 years.

On June 30, and July 12, 1989, Geo-Environmental Technology removed three underground storage tanks from the subject site. An 8000 gallon steel underground storage tank containing diesel fuel was removed on June 30, 1989, and both a 1000 gallon steel underground storage tank containing gasoline and a 550 gallon steel underground storage tank containing waste oil were removed on July 12, 1989. Three soil samples entitled GS-1, GS-2, and GS-3 were taken from beneath the middle, north and south ends respectively of the 8000 gallon tank, two soils samples entitled GG-1 and GTP-3 were taken from beneath north and south ends respectively of the 1000 gallon tank, and one soil sample entitled GWO-1 was taken from beneath the waste oil tank. All samples were taken at depths of approximately 1.5 to 2.0 feet below the bottom of the tanks at the native soil interface.

There was no groundwater encountered during the excavation of tanks #2 and #3. Groundwater was encountered at the bottom 6 inches of tank pit #1. This water was reported to appear slightly contaminated and had a slight odor. As a result, one ground water sample was taken from the tank pit of the 8000 gallon tank.

Samples GS-1, GS-2 and GS-3 were analyzed for TPHD calculated as diesel, and for BTXE. Sample GG-1 was analyzed for TPHG calculated as gasoline, and for BTXE. (benzene, toluene, ethyl benzene, & xylenes) Sample GTP-3 was analyzed for TPHG calculated as gasoline, BTXE, and total oil and grease. Sample GWO-1 was analyzed for TPHG calculated as gasoline, TPHD calculated as diesel, total oil and grease, and EPA method 8270. Sample GWS-1 (groundwater) was analyzed for TPHD calculated as diesel, and BTXE. Chains of custody and sample results are included in Appendix B. Of the six soil samples, only the one (GWO-1) taken from below the waste oil tank revealed levels of TPH and some volatile organic compounds considered actionable under RWQCB standards. This sample contained TPHD concentrations of 270 parts per million (ppm), Toluene of 750 parts per billion, Xylenes of 1,400 parts per billion, and Xylenes of 430 parts per billion. The water sample taken from below the 8000 gallon tank in pit #1 showed no trace of contamination.

Project No. 9070

Page 3 of 6

Site Description

A site map showing the current layout of the site is presented in Figure 2. This figure shows the locations of existing structures and the former underground storage tanks, as well as adjacent streets. Site sketch maps showing the sources of the samples are shown in figures 3 and 4

Well Installation

In order to determine if site operations have impacted groundwater, GET installed one groundwater monitoring well within the tank pit excavation area. The well is within five feet of the former waste oil storage tank location in the estimated downgradient direction. The well location is shown on Figure 2 entitled Site Map and Soil Sample Plot Plan and on Figure 3 entitled Boring Log MW-1.

The soils boring was drilled using an 8-inch diameter continuous-flight hollow-stem B-57 mobile drill augur. The boring was logged by a Professional Engineer using the Unified Soil Classification System and standard geologic techniques. (See Appendix A) Soil samples for logging and chemical analysis were collected at 9', 14', and 20' depths and were entitled SB-1, SB-2 and SB-3 respectively. These samples were collected by advancing a California-modified split-spoon sampler with brass liners into undisturbed soil beyond the tip of the augur. The sampler was driven 18 inches, using a 140-pound hammer with a 30" drop. Soil samples above groundwater were retained in brass liners, capped with aluminum foil and plastic end caps, and sealed in clean glass containers for possible chemical analysis. The samples were placed on ice and transported to the laboratory accompanied by the appropriate chain-of-custody documentation. All drilling and sampling equipment was thoroughly steam-cleaned prior to utilization.

The boring for the monitoring well (appendix A) penetrated 14.5 feet through the water bearing zone to a depth of 21 feet. Permeable sand and gravel was encountered at 19.5 feet. As a result, the boring was stopped and bentonite used to seal the well between 19.5 and 21 feet. The boring was then converted to a groundwater monitoring well with the installation of a 2-inch diameter, flush-threaded Schedule 40 PVC casing and 0.020-inch factory slotted Triloc screen. 13 feet of screen was placed through the entire saturated section extending to two feet above the static water level in order to account for fluctuations in groundwater elevation. A 2 X 12 graded #3 RMC Lone Star Lapis Lustre sand pack was placed in the annular space across the

Project No. 9070

Page 4 of 6

screened interval, and extended to approximately 1 foot above the screen. A bentonite and concrete seal was placed from the top of the sand pack to the ground surface. A locking cap and protective traffic-rated vault box was installed on the top of the well.

Potentially contaminated soil cuttings and samples not retained for chemical analysis were contained in secured 55 gallon storage on-site. The storage drums were properly sealed and labeled. All drilling and sampling equipment was steam-cleaned upon completion of well installation.

Groundwater Sampling Procedure

Groundwater sampling was performed by GET using techniques approved by the Environmental Protection Agency (EPA), and the California Regional Water Quality Control Board, (RWQCB). These techniques require that:

1. Wells will be developed until the water is free of fine-grained sediments and/or until field measurements of pH, electrical conductivity, and temperature stabilize. Approximately four to ten well volumes of water will be removed during development of the well.
2. Equipment inserted into the well during development will be decontaminated by washing or steam cleaning prior to and after its use.

GET's sampling procedure consisted of first measuring the water level in the well and then checking for the presence of floating petroleum product using a clear teflon bailer. Because no free product was detected, the well was purged of four casing volumes of water. In order to ensure that a representative sample was obtained, the pH, electrical conductivity and temperature were monitored and documented on a well sampling field sheet. (See Figure 4). Using a teflon bailer, two samples entitled 9070-1 and 9070-2 were collected on 10/26/90 at 1:30 pm. They had a pH of 7.4, an electrical conductivity of .01, and a temperature of 65 degrees. Samples were placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported to the laboratory. All sampling equipment was properly decontaminated with a trisodiumphosphate, (TSP), solution followed with a tap water rinse. A field blank sample (9070-2) was prepared for quality control purposes prior to collection of groundwater samples. Potentially contaminated purge water and decontaminant rinsate was contained in secured 55-gallon storage drums on-site. The drums were properly sealed and labeled.

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Laboratory Analysis and Results

Groundwater samples and selected soils samples were analyzed by Chromalab, Inc., a state certified laboratory (E 694), for the presence of TPHD (Total Petroleum Hydrocarbons as Diesel) and BTEX (Benzene, Toluene, Ethyl Benzene, and Xylenes). This analysis was requested in order to remain consistent with previous contaminants found in the soil sampling performed beneath the waste oil tank (see page 2 paragraph 4 of this report).

The analytical results of the soil samples (SB-1, SB-2, and SB-3) revealed no detectable amounts of either TPHD or BTEX (See Appendix A). The analytical results of the groundwater sample (9070-1), reported 5400 parts per billion of TPHD, 1200 parts per billion of benzene, 18 parts per billion of toluene, 7.1 parts per billion of ethyl benzene, and 37 parts per billion of total xylenes. (See appendix B).

Conclusions

The results of the analysis of the water sample (9070-1) revealed TPHD and BTEX in excess of actionable limits set by the RWQCB. Under the guidelines as established by the California Regional Water Quality Control Board and the Alameda County Department of Environmental Health, further action will be required. This will require establishing an accurate groundwater gradient (direction of the water flow), determining the extent (dimensions) of the contamination plume, and recommending and implementing a course of action for effective remediation of the groundwater contamination.

RECOMMENDATIONS

The guidelines will require that two additional water wells be installed in order to establish the gradient. Once this is accomplished, it may then be necessary to add at least one to two wells to determine the limits of the plume of contamination.

Upon completion of these stages, an interim report concerning these findings and a work plan addressing the recommended course of action consistent with remediating the contaminated groundwater will be written and filed with the responsible agencies.

Project No. 9070

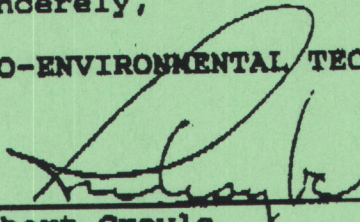
Page 6 of 6

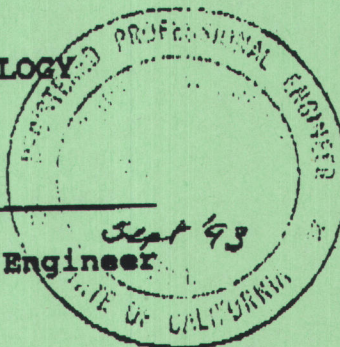
The field work for this project is scheduled to be performed during December of 1990 and January of 1991, pending obtaining the required permits and access to the site.

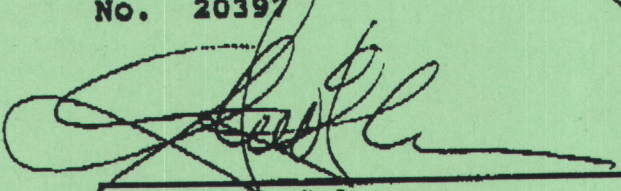
If you have any questions regarding the contents of this report, please do not hesitate to call us at (408) 559-1220.

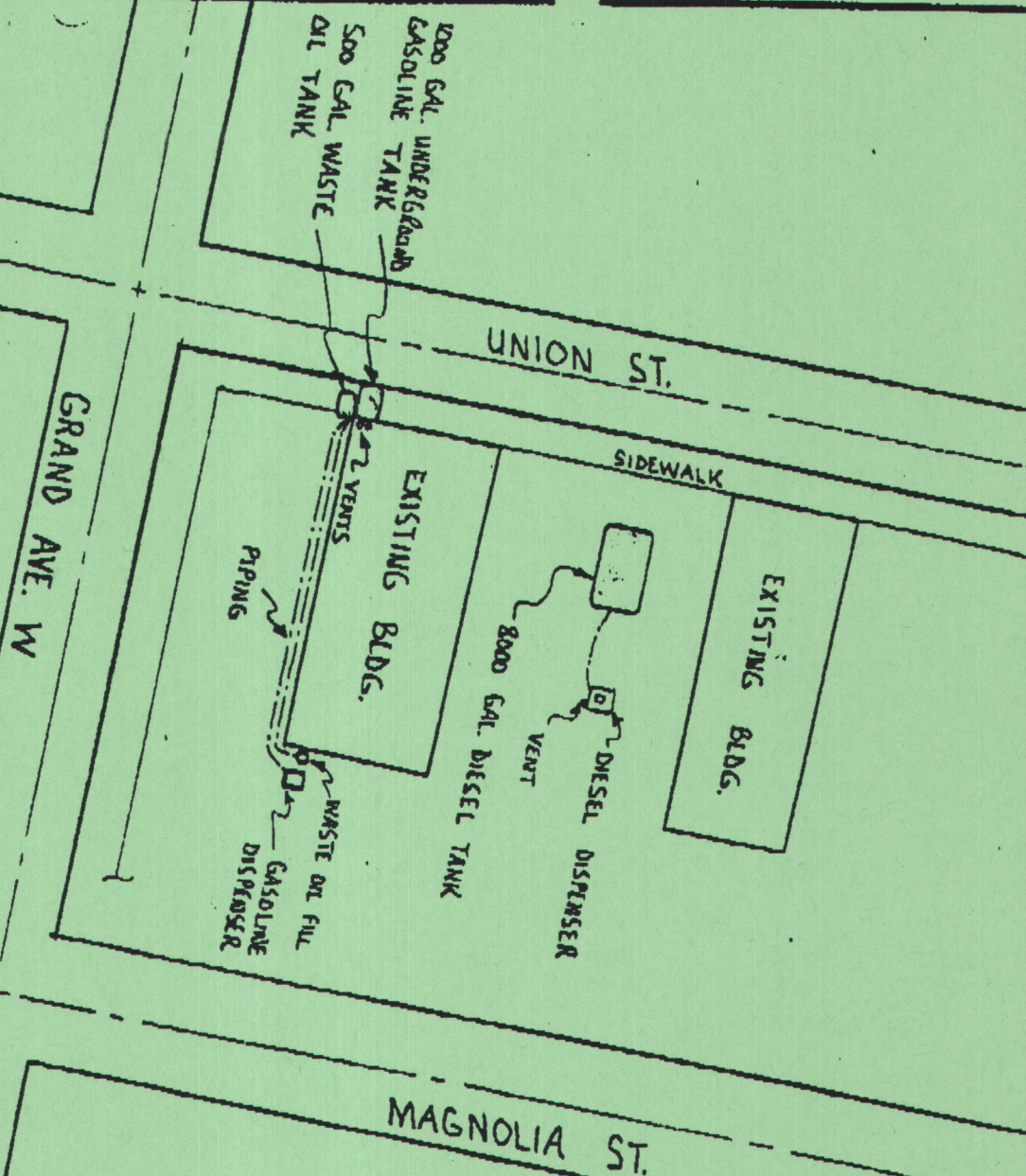
Sincerely,

GEO-ENVIRONMENTAL TECHNOLOGY


Robert Croyle
Registered Professional Engineer
No. 20397




Stuart G. Solomon
President



SCALE: NONE
DATE: 14 JUNE 89

PLDT PLAN FOR:
ALDO GUIDOTTI

DRAWN BY: *TM*
REVISED

2311 MAGNOLIA ST.
OAKLAND, CA 94607

250 Cristich Lane
Campbell, CA 95008 (408) 559-1220

PLATE 1

*Geo-Environmental
Technology*

APPENDIX A

Client Guidotti				Date 9.27.90			
Location 2210 Union St				Site Map			
Oakland Ca							
Driller Aqua Science #487000							
Method 8" Hollow Stem Auger Mobile Drill B57							
Sampler Calif. 2" 140# w/ 30" Fall							
Logger B. Halsted				Inspector			

Sample Number	Depth	Blows/ft	Moisture	USCS	Description of Subsurface Materials	Completion Data
					Concrete	
					Backfill; Import soil	
	5			OH	--- BAY MUD No Odor	
	6.5				WATER LEVEL	
SB-1	8 1/2-10	MAST DOWN DROVE SAMPLER	WET	10 OH	BAY MUD No Odor	PORTLAND CEMENT 2" SANITARY SEAL 3 1/2' BENTONITE
SB-2	13 1/2-15	DRILLED w/ HAMMER,	WET	15 OH		#3 AMIC HONG STAR LAPIS LUSTRE SAND PAIL
SB-3	19 1/2-21	ELECTRIC LINE, SAMPLER w/	WET	20 OH	GRAVEL/SAND/MUD	TRIMUL 2" 1/20 SCHED. PVC 15'
		HEAD			BOH @ 21'	3 1/2" LAP 1 1/2' Bentonite
		UNABLE TO DRIVE				
		DUE TO				

Total Depth	19.5'	Water Level	6.5'	Sanitary Seal	3.5'
Permit #	90577	Agency	Alameda Co. Flood Control WATER CONSERVATION DIST.		

APPENDIX B

CHAIN OF CUSTODY RECORD

Rev: 12-88

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E094)
- Drinking Water (#955)
- Waste Water
- Consultation

October 8, 1990

Chromalab File No.: 1090001

GEO-ENVIRONMENTAL TECHNOLOGY, INC.

Attn: Stuart Solomon

RE: Three soil samples for BTEX and Diesel analyses

Project Name: GUIDOTTI

Project Number: 9080

Date Sampled: Sept. 27, 1990

Date Submitted: Oct. 1, 1990

Date Extracted: Oct. 2-6, 1990

Date Analyzed: Oct. 2-6, 1990

RESULTS:

Sample No.	Diesel (mg/Kg)	Benzene (ug/Kg)	Toluene (ug/Kg)	Ethyl Benzene (ug/Kg)	Total Xylenes (ug/Kg)
SB-1	N.D.	N.D.	N.D.	N.D.	N.D.
SB-2	N.D.	N.D.	N.D.	N.D.	N.D.
SB-3	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	97.8%	98.6%	99.1%	103.5%	105.6%
DUP SPIKED RECOVERY	106.2%	89.3%	89.7%	90.0%	107.6%
DETECTION LIMIT	5	5	5	5	5
METHOD OF ANALYSIS	3550/ 8015	8020	8020	8020	8020

CHROMALAB, INC.

David Duong
David Duong
Senior Chemist

Eric Tam (by PD)
Eric Tam
Laboratory Director

CHROMALAB, INC.

Analytical Laboratory
Specializing in GC-GC/MS

- Environmental Analysis
- Hazardous Waste (#E094)
- Drinking Water (#955)
- Waste Water
- Consultation

November 5, 1990

ChromaLab File No.: 1090188

GEO-ENVIRONMENTAL TECHNOLOGY, INC.

Attn: Stuart Solomon

RE: Two water samples for BTEX and Diesel analyses

Project Name: GUIDOTTI

Project Number: 9070

Date Sampled: Oct. 26, 1990

Date Submitted: Oct. 29, 1990

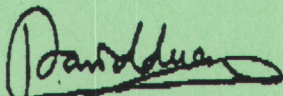
Date Extracted: 10/31-11/2/90

Date Analyzed: 10/31-11/2/90

RESULTS:

Sample No.	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
9070-1	5400	1200	18	7.1	37
9070-2	N.D.	N.D.	N.D.	N.D.	N.D.
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKED RECOVERY	95.7%	105.5%	98.6%	91.0%	93.0%
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	3810/ 8015	602	602	602	602

CHROMALAB, INC.



David Duong
Senior Chemist



Eric Tam
Laboratory Director

CHAIN OF CUSTODY RECORD

[illegible]

ATTACHMENT D

REPORT BY BERNABE AND BRINKER, INC.



BERNABE AND BRINKER INC.

General Engineering Contractor • Hazardous Substances Removal • License #610617

1281 - 30th Street
Oakland, California 94608

TEL: 510 • 451 • 3482
FAX: 510 • 836 • 2635

March 20, 1992

Mr. Aldo P. Guidotti
One Bates Blvd.,
P.O. Box 778
Orinda, CA 94563

Subject: Results of Groundwater Sampling and Analyses,
for site located between 2311 Magnolia Street
and 2210 Union Street, Oakland.

Dear Mr. Guidotti,

As per our agreement, the following tasks were carried
out at the subject site in March of this year:

- 1) Establish groundwater levels and elevations at the
three existing wells on the site as generally required as
part of the overall site monitoring;
- 2) Sampling and analyses of the groundwater from the
three wells on site. The water sample from each well
were tested for TPH as gasoline with BTEX and TPH as
diesel fuel;
- 3) Interpretation of the analytical data and preparation
of a letter report.

GROUNDWATER GRADIENT

The groundwater levels measured for the three wells are
listed below:

WELL	DEPTH	RELATIVE ELEVATION (msl)
MW-1	2.76	6.44
MW-2	6.17	3.07
MW-3	6.93	3.00

Handwritten notes: "to gw (bgs)?" with an arrow pointing to the DEPTH column, and a circle around the RELATIVE ELEVATION column.

The depth to groundwater was measured in each well using
an electronic probe. The measurement was to a mark on
the north side of the top of the casing and was measured
to a hundredth of a foot. The relative elevation for the
top of the casing was established for each well by
surveying. The elevation are not related to any other
datum.

BERNABE AND BRINKER INC.

March 20, 1992

Re: 2311 Magnolia St. Oakland, California

Attn: Mr. Aldo Guidotti

The data indicate a steep southward gradient that is a typical of the natural gradient in the site area. This may be the results of a continuing source of shallow water in the area of MW-1 such as a leaking pipe or may be the result of a perched condition.

RESULTS OF GROUNDWATER ANALYSES

A water sample was collected from each of the three wells, MW-2 and MW-3 had to be cleaned of bentonite and other debris before they could be sampled. Each well was purged of five to ten gallons of water before the sample was collected. The samples were collected by bailer and put into bottles and vials. The samples were kept in a cooled ice chest and transported to a State Certified Laboratory under chain of custody control.

why? what was the debris? why was bentonite in well?

The certified results are presented in Appendix A of this report. They indicate that both MW-1 and MW-3 contain elevated levels of diesel, gasoline and BTEX which exceed the action levels generally enforced by both the County Department of Environmental Health and the State RWQCB. The sample from MW-2 was nondetected for the analyses that were done.

- MW-2 + -3 had silt after purging. Invalid results?

Locks were placed on each well after the sampling was completed. It was noted that wells MW-2 and MW-3 are not set in surface boxes and surface water was flowing into the space around the casing of MW-3.

what's going on?

CONCLUSIONS AND RECOMMENDATIONS

A site plan was not available for plotting the three existing wells. We do not have any data regarding the installation of MW-2 (western) and MW-3 (eastern) which are the two wells on the property. MW-1 is the sidewalk on Union Street.

The next step in these types of situation is generally to better characterize the extent of the groundwater contamination on the site and to assess whether or not there are any remaining sources of contamination still present. It is recommended that a work plan be prepared to address the work needed to characterize the site. I would be happy to discuss this with you in more detail.

BERNABE AND BRINKER INC.

March 20, 1992

Re: 2311 Magnolia St., Oakland, California
Attn: Mr. Aldo P. Guidotti

The above report was prepared and submitted to our company by our Registered Geologist, Mr. John Alt of Epigene International and Campbell Analytical, Inc.

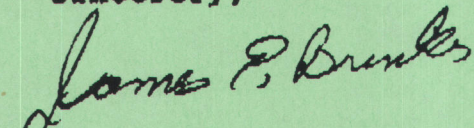
not signed or sealed by him!

Enclosed are the following:

1. The results of 3 samples from your 90-021; Magnolia Street project.
2. A QC report for the samples.
3. A copy of the chain of custody

Thank you for your business and I look forward to working with you again.

Sincerely,


James E. Brinker
National Sales Manager

not an accepted professional

JEB/gfb

<div>Client Project ID: 90-021; 2311 Magnolia St</div>	Date Sampled: 03/04/92
	Date Received: 03/04/92
	Date Extracted:
	Date Analyzed: 03/06/92

Low Boiling Point TPH* (as Gasoline) and BTEX*

POHS LUFT procedure: EPA method 333, modified 5027 & 502

DOHS LUFT procedure: EPA method 8030, modified 8037 & 803								
Lab ID	Client ID	Matrix	TPH(O) ⁺	Benzene	Toluene	Ethyl Benzene	Xylenes	% Rec. Surrogate
12121	MW 1	W	460,a	120	9.0	16	44	96
12122	MW 2	W	ND	ND	ND	ND	ND	98
12123	MW 3	W	14,000,a ppb	6200	60	110	740	97
Detection Limit unless otherwise stated; ND means Not Detected		W	50 ug/L	0.3	0.3	0.3	0.3	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

*water samples are reported in ug/L and soils in mg/kg

*cluttered chromatogram; sample peak co-elutes with surrogate peak

* The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) predominately unmodified or weakly modified gasoline; b) heavier gasoline range compounds predominate (aged gasoline?); c) lighter gasoline range compounds predominate (the most mobile gas compounds); d) heavy and light gasoline range compounds predominate (aged gasoline together with introduced light compounds?); e) one to a few isolated peaks predominate; f) gasoline range compounds together with higher boiling point (diesel range) compounds; g) diesel range compounds predominate.

Edward Hamilton, Lab Director

ANALYTICAL INC.

110 2nd Avenue South, #127, Pacheco, CA 94553
 Tele: 510-798-1620 Fax: 510-798-1622

Client Project ID: 90-021; 2311 Magnolia St

Date Sampled: 03/04/92

Date Received: 03/04/92

Date Extracted: 03/07/92

Date Analyzed: 03/07/92

Medium Boiling Point TPH (as Diesel) *

DOHS LIFT ~~every~~ with modified RFA method 3520 or 3510

Lab ID	Client ID	Matrix	TPH(D) ⁺
12121	MW 1	W	590,c
12122	MW 2	W	ND
12123	MW 3	W	360,c
Detection Limit unless otherwise stated; ND means Not Detected	W		50 ug/L
	S		10 mg/kg

*water samples are reported in ug/L and soils in mg/kg

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) predominately diesel compounds; b) diesel range compounds together with gasoline range compounds; c). oil /range compounds together with gasoline range compounds; d) gasoline range compounds predominate; e) medium boiling point pattern that does not match diesel; f) peaks elute in the diesel range but no pattern is present; g) one to a few isolated peaks predominate.

24

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tel: 510-798-1620 Fax: 510-798-1622

QC REPORT

Date: 03/06-03/09/92

Matrix: water

Analyte	Concentration (ug/L)			Amount Spiked (ug/L)	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
TPH (gas)	0.0	103.2	100.2	102	101	98	3.0
Benzene	0.0	11.4	11.3	10	114	113	0.9
Toluene	0.0	10.7	10.5	10	107	105	1.9
Ethyl Benzene	0.0	10.9	10.7	10	109	107	1.9
Xylenes	0.0	32.5	32.0	30	108	107	1.6
TPH (diesel)	0	436	435	600	73	72	0.3
TPH (oil & grease)	N/A	N/A	N/A	1000	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

DATE 5/9/92

PROJECT NO.: 90-021

preservation, and
no loss of
no loss of