

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY

DAVID J. KEARS, Agency Director



RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

January 21, 1993

STID 3615

Mark Miller
Chevron USA Inc.
PO Box 5004
San Ramon CA 94583-0804

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
80 Swan Way, Rm 200
Oakland, CA 94621
(510) 271-4530

RE: Former Service Station
460 Grand Ave.
Oakland CA 94607

Dear Mr. Miller,

We are in receipt of the following hard copy documents:

- 1) Letter from yourself to myself, dated 1/15/93
- 2) Letter from yourself to myself, dated 12/16/92
- 3) Letter report from Touchstone Developments to yourself, dated 1/12/93
- 4) Letter report from Pacific Environmental Group, Inc. to yourself, dated 1/15/93

Regarding item #1, please note that there is a typographical error on the first page, third paragraph. The last sentence should read 170 ppb TPH-d instead of 0.170 ppb TPH-d.

(1-15)
This letter also presents a comprehensive outline for corrective action. A timeline of thirty days (or by February 15, 1993) was given for the submittal of a work plan for an additional downgradient well. However, there was no timeline given for the other tasks. Therefore, we are requesting that the following field activities (quoted from this letter) commence within 30 days or by February 21, 1993:

- a) "The fuel tank pit will be drained of water and backfilled with the stockpiled soils from the fuel tank excavation. Additional fill will be brought in to completely fill the former fuel tank pit . . . to grade level."
- b) "Stockpiled soils from the waste oil tank pit excavation will be hauled off in conjunction with overexcavation activities . . . in the former waste oil tank pit area."

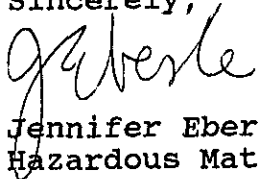
Mark Miller
STID 3615
January 21, 1993
page 2 of 2

Regarding the remedial plan for the soils in the vicinity of the former product islands, the oil-water separator, and hydraulic hoists, our concern is that "some future date" may become a perpetual delay in the distant future. To alleviate this concern, we request that you project a timeline or a specific date for submittal of this remedial plan.


Lastly, we request that documentation be submitted **within 15 days or by February 5, 1993** regarding the disposition of the 55-gallon drum by a contractor for John Gibson and/or the Falaschi brothers.

If you have any questions, please contact me at 510-271-4530.

Sincerely,



Jennifer Eberle
Hazardous Materials Specialist

cc: Mark Thomson, Alameda County District Attorney Office
Jon N. Robbins, Esq., Chevron U.S.A. Inc., 6001 Bollinger
Canyon Road, San Ramon, CA 94583-0944
John C. Gibson, Esq., Adams, Gibson and MacPhee, 100 Pine
Street, 21st Floor, San Francisco, CA 94111
Peter Brewer, Esq., 1960 The Alameda, San Jose, CA 95126
Rich Hiett, RWQCB
Ed Howell/File 

je



Chevron U.S.A. Products Company

2410 Camino Ramon, San Ramon, California • Phone (510) 842-9500
Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

53 JAN 19 1993

Operations

January 15, 1993

3615

Ms. Jennifer Eberle
Alameda County Health Care Services
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

**Re: Former Gulf Service Station #0006
460 Grand Avenue, Oakland, CA**

Dear Ms. Eberle:

Enclosed we are forwarding the Site Assessment Report dated January 15, 1993 prepared by our consultant Pacific Environmental Group (PEG) for the above referenced site. Also enclosed is the field sampling activities report dated January 12, 1993, prepared by our consultant Touchstone Developments (Touchstone). The former documents the installation of three monitor wells, one soil boring, and corresponding analytical results, while the latter records analytical results on stockpiled soils at the site and standing water in the former fuel and waste oil tank pits. ✓

As indicated in the report PEG report, three (3) borings were advanced and completed into ground water monitor wells designated C-1 through C-3. One soil boring designated EB-1 was advanced. ✓ This work was performed to assess whether the soil and/or ground water beneath the site had been impacted by hydrocarbons. Soil samples collected from the drill cuttings were analyzed for total petroleum hydrocarbons as gasoline (TPH-g) and BTEX. Results of soil analyses are summarized in Table 2. The highest concentrations of hydrocarbons were found in boring C-2 at a depth of 5 to 6.5 feet with concentrations of TPH-g at 2,300 ppm and concentrations of benzene at 13 ppm. ✓ All other soil samples reported low to non-detectable concentrations of these constituents. Groundwater samples were also collected at this time. TPH-g and benzene were detected in monitor well C-2 only at concentrations of 640 ppb and 63 ppb. ✓ 1,2 Dichloroethane was detected in monitor well C-2 only at a concentration of 3.5 ppb. ✓ Depth to groundwater was located at approximately 5.0 ft. to 7.5 feet below grade with a gradient to the south-southwest of approximately 0.08 ft./ft. to 0.10 ft./ft. ✓

As indicated in the Touchstone report, soil samples from the fuel tank excavation stockpile reported non-detectable concentrations of TPH-g and BTEX. Soil samples from the waste oil tank excavation stockpile reported TPH-diesel (TPH-d) and oil & grease concentrations of 190 ppm and 8,400 ppm, respectively. Analyses on water samples from the fuel tank pit and waste oil tank pit reported non-detectable concentrations of hydrocarbons with the exception of 0.170 ppb TPH-d found in the water in the waste oil tank pit. ✓ 170 ppb

This letter is also intended to present a plan of corrective action which will be pursued to bring the above referenced site into compliance with Alameda County requirements. This letter updates the brief outline presented in my letter to you dated December 16, 1992 (attached). The activities to occur at the site are summarized below.

Analytical results of water samples taken from the former fuel tank pit indicate non-detectable concentrations of dissolved hydrocarbons except for a low concentration of TPH-d in the waste oil tank pit as previously mentioned. *when?* The fuel tank pit will be drained of water and backfilled with the stockpiled soils from the fuel tank excavation. These soils have previously been characterized and analyses indicated non-detectable concentrations of hydrocarbon constituents. Additional fill will be brought in to completely fill the former fuel tank pit and former waste oil tank pit to grade level. Due to wet weather conditions, these soils will not be compacted at this time. Once better weather prevails in the coming months, these soils will be reexcavated, dried, and backfilled and properly compacted. Stockpiled soils from the waste oil tank pit excavation will be hauled off in conjunction with *when?* overexcavation activities which will be required in the former waste oil tank pit area at that time. This procedure will be done to alleviate the immediate safety hazards and associated negative visual impacts. *overex & resample before backfilling?*

Based on preliminary analytical data, low levels of hydrocarbon constituents have been found in ground water in the vicinity of the former product islands only. An additional downgradient well located in Grand Avenue will be proposed to further define the extent of dissolved constituents in the ground water. A work plan to perform this work will be prepared and submitted to your office within the next thirty days.

The soils in the *original sample had 1700ppm TPH-g* area of the former product islands have been impacted by low levels of hydrocarbons. While it is clear that these soils will require remediation, it is currently unclear as to which remedial option would be most appropriate. The most appropriate approach must consider future uses of the property and improvements. If it is determined that the improvements will be removed, then excavation, on-site aeration, and backfilling would be the remedial method of choice. If the determination is made that the improvements will be used in the future, then alternative remedial methods would become appropriate. Currently Chevron is awaiting a decision from the property owner on whether or not the improvements will be utilized at some future date. *when?* Once this has been determined, a remedial plan for these soils will be finalized and forwarded for your review. Additional consideration must also be given to the future use of the property and facilities in regards determining the most appropriate course of action for investigating soil around the "oil-water" separator and hydraulic hoists.

Following my correspondence of December 16, 1992, there remained the unanswered question of the status of a 55-gallon drum which was present at the site at one time. In conversations with the property owners' representative, Mr. John Gibson, I have recently been made aware that the drum was removed by one of their contractors.

We trust this letter meets the requirements set forth by Alameda County at this time and presents an acceptable course of remedial action. If you have any questions or comments, please do not hesitate to contact me at (510) 842-8134.

~~waste oil pit overex?~~

Very truly yours,
CHEVRON U.S.A. PRODUCTS COMPANY



Mark A. Miller
Site Assessment and Remediation Engineer

Page 3
January 15, 1993
Former Gulf #0006

Enclosures

cc: Mr. Rich Hiett, RWQCB - Bay Area
Jon Robbins - CHVPKV/V1156

Mr. Mark Thomson
Deputy District Attorney
Alameda County District Attorney's Office
Consumer & Environmental Protection Division
Oakland Executive Center
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Oakland, CA 94621

Mr. John C. Gibson
Adams, Gibson & MacPhee
100 Pine Street, 21st Floor
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Treadwell & Rollo, Inc.
353 Sacramento Street, Suite 800
San Francisco, CA 94111

File (GULF6 SA1)



PACIFIC
ENVIRONMENTAL
GROUP, INC.

January 15, 1993
Project 325-31.01

Mr. Mark Miller
Chevron U.S.A. Products Company
P.O. Box 5004
San Ramon, California 94583

Re: Former Gulf Service Station 0006
460 Grand Avenue
Oakland, California

Dear Mr. Miller:

This report presents the results of a recent soil and groundwater investigation performed by Pacific Environmental Group, Inc. (PACIFIC) at the site referenced above. This investigation was initiated in response to the Alameda County Health Care Services (ACHCS) letter dated February 25, 1991. This investigation was performed in accordance with a Treadwell and Rollo, Inc. work plan dated April 30, 1991.

This report includes a discussion of site background, hydrogeologic setting, scope of work, and findings. Investigative procedures, boring logs and well completion data, field data sheets, and certified analytical reports are presented in Attachments A, B, and C, respectively.

BACKGROUND

The site is a former Gulf Oil Service Station and is located at the northeast corner of the intersection of Grand Avenue and Bellevue Avenue in Oakland, California

(Figure 1). The site lies within a residential and light commercial area. A small business and apartment building are located across Bellevue Avenue to the northwest, an apartment building lies adjacent to the site to the east, and Lake Merritt lies approximately 250 feet south and downgradient of the site. Grand Avenue is a major street comprised of four to six lanes.

The station was initially built in the late 1940s. In 1961, the site was purchased and remodeled by Gulf Oil Corporation (Gulf) who subsequently replaced the existing fuel storage tanks with three new underground fuel storage tanks. The property was then purchased from Gulf by Falaschi Brothers in August 1978, the fuel storage tanks were emptied of product, and the fuel dispensers were removed. Since 1978, the Falaschi Brothers have operated the property as a parking facility. Fuel products and oils have not been stored or sold at the facility since their ownership.

In November and December 1990, in response to a letter from ACHCS, the Falaschi Brothers had the three fuel storage tanks and one waste oil tank removed as documented in *Removal of Inactive Underground Storage Tanks* report by Treadwell and Rollo, Inc., dated January 29, 1991. The three former underground fuel storage tanks were of 10,000-gallon volume, and the waste oil storage tank located behind the station building was 280-gallons in volume (Figure 2).

type?

HYDROGEOLOGIC SETTING

Regional Setting

The site is located in the northwestern portion of Alameda County lying between the Oakland Hills and the San Francisco Bay. Topography in the area of the site is relatively flat, with a gentle slope to the northeast. East of the site, the regional topography rises relatively steeply to the Oakland Hills. In the site area, the topography slopes gently toward Lake Merritt, the nearest drainage, located approximately 250 feet south of the site. Site elevation is approximately 20 feet above mean sea level (MSL).

The site area is underlain by poorly sorted gravels, sands, silts, and clays of the Upper member of the San Antonio Formation which were deposited in alluvial fan, flood plain, and bay swamp depositional environments. These sediments are the main source of groundwater in the region. The Upper member of the San Antonio Formation has been deposited principally by coalescing alluvial fans adjacent to mountain highlands and by meandering streams in the gently sloping western portion of the east bay (USGS, 1969).

Regional groundwater flows from east-northeast to west-southwest, toward the San Francisco Bay.

SCOPE OF WORK

The scope of work of this investigation was performed in response to a letter from ACHCS dated February 25, 1991, and a faxed addendum from ACHCS regarding a Treadwell and Rollo, Inc., work plan dated April 30, 1991. The ACHCS requested the installation of three groundwater monitoring wells and two exploratory soil borings. The purpose of the investigation was to determine the vertical and lateral extent of hydrocarbon-affected soils underneath the site and to determine if groundwater has been impacted.

The specific scope of work performed is listed below.

- o **Groundwater Monitoring Well Installation.** Three groundwater monitoring wells designated C-1, C-2, and C-3 were installed on-site (Figure 2). These wells were screened from a depth of 5 to 15 feet below grade. After a minimum 24-hour waiting period, the groundwater monitoring wells were developed, depth to groundwater measurements were taken, and groundwater samples were collected for laboratory analysis.

- o **Soil Boring:** Soil boring EB-1 was drilled with a hand auger between the fuel dispenser islands to a depth of approximately 7 feet (Figure 2). Groundwater was not encountered in this boring. This boring was drilled to sample the native soils of the capillary fringe. The second exploratory soil boring requested by ACHCS was to be drilled adjacent to the former waste oil storage tank. After discussion with an ACHCS representative in the field, it was concluded that this boring was unnecessary and soil and groundwater samples will be collected during overexcavation of the former waste oil tank.

- o **Soil Analysis.** Soils were sampled from Boring EB-1 at the depth of 6-1/2 to 7 feet below ground surface. Soil samples were collected at the 5- to 6-1/2-, and 8-1/2- to 10-foot depth intervals from the borings of Wells C-1 through C-3. The soil samples were analyzed for total petroleum hydrocarbons calculated as gasoline (TPH-g) and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds).

- o **Groundwater Analysis.** Groundwater samples were collected from site Wells C-1 through C-3. These samples were analyzed for TPH-g, total semi- and non-volatile hydrocarbons calculated as diesel (TPH-d) and motor oil (TPH-mo), BTEX compounds, halogenated volatile organics (EPA Method 8010), and cadmium, chromium, lead, nickel, and zinc (ICAP Metals).

→ results?

FINDINGS

The following sections summarize the results of PACIFIC's limited soil and groundwater investigation.

Subsurface Conditions

Borings encountered a primarily silty/clay profile to their depths of 7 to 20 feet. Sand was found as (1) a surficial lense of apparently limited extent in the area of Well C-3 and (2) across the area explored as a thin layer below a depth of approximately 10 feet (Figures 3 and 4).

Groundwater was first encountered in the borings for Wells C-1 and C-3 at an approximate depth of 7-1/2 feet below grade on December 14 and 15, 1992. Groundwater was first encountered at 10-1/2 feet below grade in Well C-2 on December 15, 1992. On December 16, 1992, static groundwater in site wells stabilized at approximately 5-1/2 feet for Wells C-1 and C-3, and at 7-1/2 feet below grade for Well C-2. Groundwater flow direction on December 16, 1992, was south-southwest with a gradient ranging from 0.08 to 0.10. Groundwater elevation data are presented in Table 1. Groundwater contours are presented on Figure 5.

Soils Analysis

Soil samples collected on December 14 and 15, 1992 were analyzed for TPH-g and BTEX compounds. Detectable concentrations of petroleum hydrocarbons were detected only in the shallowest soil samples collected from Boring EB-1 and the borings for Wells C-1 through C-3. TPH-g was detected at 3.3 parts per million (ppm) in the soil sample collected from Boring EB-1 at the 6-1/2- to 7-foot depth interval. TPH-g ranged in concentration from 0.6 to 8.6 ppm in samples collected from Wells C-1 and C-3 at the 5- to 6-1/2-foot depth. No detectable concentrations of petroleum hydrocarbons were encountered at the 8-1/2- to 10-foot depth interval in samples collected from Wells C-1 and C-3. TPH-g and benzene were detected in samples collected from Well C-2 at the 5- to 6-1/2-foot depth interval

at concentrations of 2,300 and 13 ppm, respectively. BTEX compounds were detected in all borings and the analytical results are presented in Table 2.

Groundwater Analysis

Groundwater samples collected from site wells were analyzed for TPH-g, TPH-d, TPH-mo, halogenated volatile organics, and ICAP Metals. Groundwater samples were collected from site wells on December 16, 1992; sample collection procedures are presented in Attachment A. Groundwater samples collected from Wells C-1 and C-3 did not contain detectable concentrations of TPH-g, TPH-d, TPH-mo, or BTEX compounds. The groundwater sample from Well C-2 contained TPH-g at a concentration of 640 parts per billion (ppb) and benzene at 63 ppb. TPH-g and benzene concentrations are presented on Figure 6. The groundwater sample from Well C-2 contained the only detection of halogenated volatile organics at 3.5 ppb 1,2-dichloroethane. Groundwater samples from Wells C-2 and C-3 contained chromium ranging from 0.05 to 0.19 ppm, nickel ranging from 0.08 to 0.36, and zinc ranging from 0.08 to 0.38. Groundwater collected from Well C-3 contained lead at a concentration of 0.07 ppm. Results of the ICAP Metals analysis are presented in Table 3.

If there are any questions regarding the contents of this report, please do not hesitate to call at (510) 825-0855.

Sincerely,

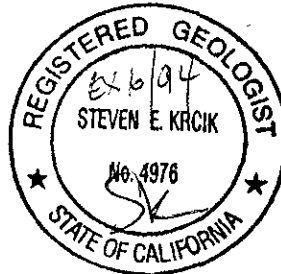
Pacific Environmental Group, Inc.



Daniel Madsen
Staff Geologist



Steven E. Krcik
Senior Geologist
RG 4976



- Attachments:
- Table 1 - Groundwater Elevation Data
 - Table 2 - Summary of Soil Analytical Results
 - Table 3 - Summary of Groundwater Analytical Results
 - Figure 1 - Site Location Map
 - Figure 2 - Site Map
 - Figure 3 - Geologic Cross-Section A-A'
 - Figure 4 - Geologic Cross-Section B-B'
 - Figure 5 - Groundwater Elevation Contour Map
 - Figure 6 - Dissolved Hydrocarbon Concentration Map
 - Attachment A - Field and Analytical Procedures
 - Attachment B - Boring Logs
 - Attachment C - Field Data Sheets, Certified Analytical Reports, and Chain-of-Custody Documentation

Table 1
Groundwater Elevation Data

Former Gulf Service Station 0006
460 Grand Avenue
Oakland, California

Well Number	Sample Date	Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)
C-1	12/16/92	22.48	5.68	16.80
C-2	12/16/92	20.49	7.49	13.00
C-3	12/16/92	22.51	5.17	17.34

TOB = Top of box
MSL = USGS mean sea level datum

Table 2
Summary of Soil Analytical Results
 Total Petroleum Hydrocarbons
 (TPH as Gasoline and BTEX Compounds)

Former Gulf Service Station 0006
 460 Grand Avenue
 Oakland, California

Boring Number	Sample Date	Sample Depth (feet)	TPH as Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)
C-1	12/14/92	5 - 6-1/2	8.6*	ND	ND	0.024	0.012
		8-1/2 - 10	ND	ND	ND	ND	ND
C-2	12/14/92	5 - 6-1/2	2,300	13	80	83	440
		8-1/2 - 10	ND	ND	0.006	ND	0.017
C-3	12/15/92	5 - 6-1/2	0.6	0.008	ND	0.012	ND
		8-1/2 - 10	ND	ND	ND	ND	ND
EB-1	12/15/92	6-1/2 - 7	3.3	0.094	0.30	0.16	0.73
Detection Limits:			0.3	0.005	0.005	0.005	0.005
TPH = Total petroleum hydrocarbons ppm = Parts per million ND = Not detected * A typical chromatograph pattern; see certified analytical reports.							

data

Table 3
Summary of Groundwater Analytical Results
 Total Petroleum Hydrocarbons
 (TPH as Gasoline and BTEX Compounds)

Former Gulf Service Station 0006
 460 Grand Avenue
 Oakland, California

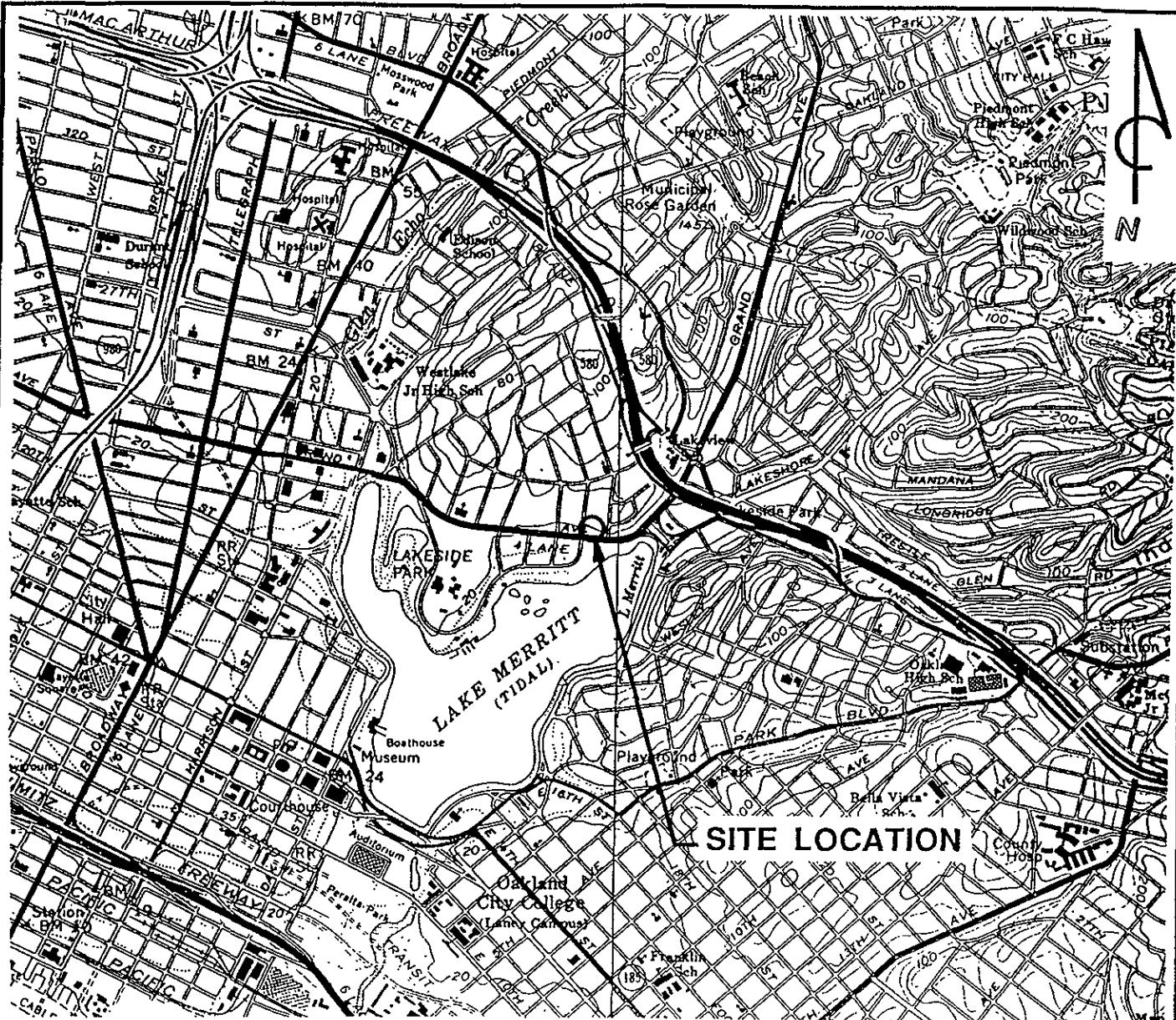
Well Number	Sample Date	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)
C-1	12/16/92	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓
C-2	12/16/92	640 ✓	63 ✓	83 ✓	37 ✓	90 ✓
C-3	12/16/92	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓
Detection Limits:		50	0.4	0.3	0.3	0.4
ppb = Parts per billion ND = Not detected						

Table 3 (continued)
Summary of Groundwater Analytical Results

Former Gulf Service Station 0006
 460 Grand Avenue
 Oakland, California

Well Number	Sample Date	8015 TPH as Diesel (ppb)	8015 TPH as Oil (ppb)	ICAP Metals				
				Cadmium (ppm)	Chromium (ppm)	Lead (ppm)	Nickel (ppm)	Zinc (ppm)
C-1	12/16/92	ND ✓	ND ✓	<0.005 ✓	<0.01 ✓	<0.05 ✓	<0.02 ✓	<0.01 ✓
C-2	12/16/92	ND* ✓	ND ✓	<0.005 ✓	0.05 ✓	<0.05 ✓	0.08 ✓	0.08 ✓
C-3	02/16/92	ND ✓	ND ✓	<0.005 ✓	0.19 ✓	0.07 ✓	0.36 ✓	0.38 ✓
Detection Limits:		50	200	0.005	0.01	0.05	0.02	0.01
TPH = Total petroleum hydrocarbons ppb = Parts per billion ppm = Parts per million ND = Not detected * A typical chromatograph pattern; see certified analytical reports.								

8010
 ND
 3,5 ppb
 1,2-DEA
 ND

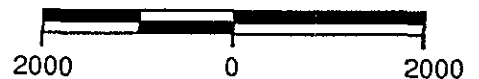


QUADRANGLE LOCATION

REFERENCES:

USGS 7.5 MIN. TOPOGRAPHIC MAP
 TITLED: OAKLAND WEST, CALIFORNIA
 DATED: 1959 REVISED: 1980
 TITLED: OAKLAND EAST, CALIFORNIA
 DATED: 1959 REVISED: 1980

SCALE IN FEET



PACIFIC ENVIRONMENTAL GROUP, INC.

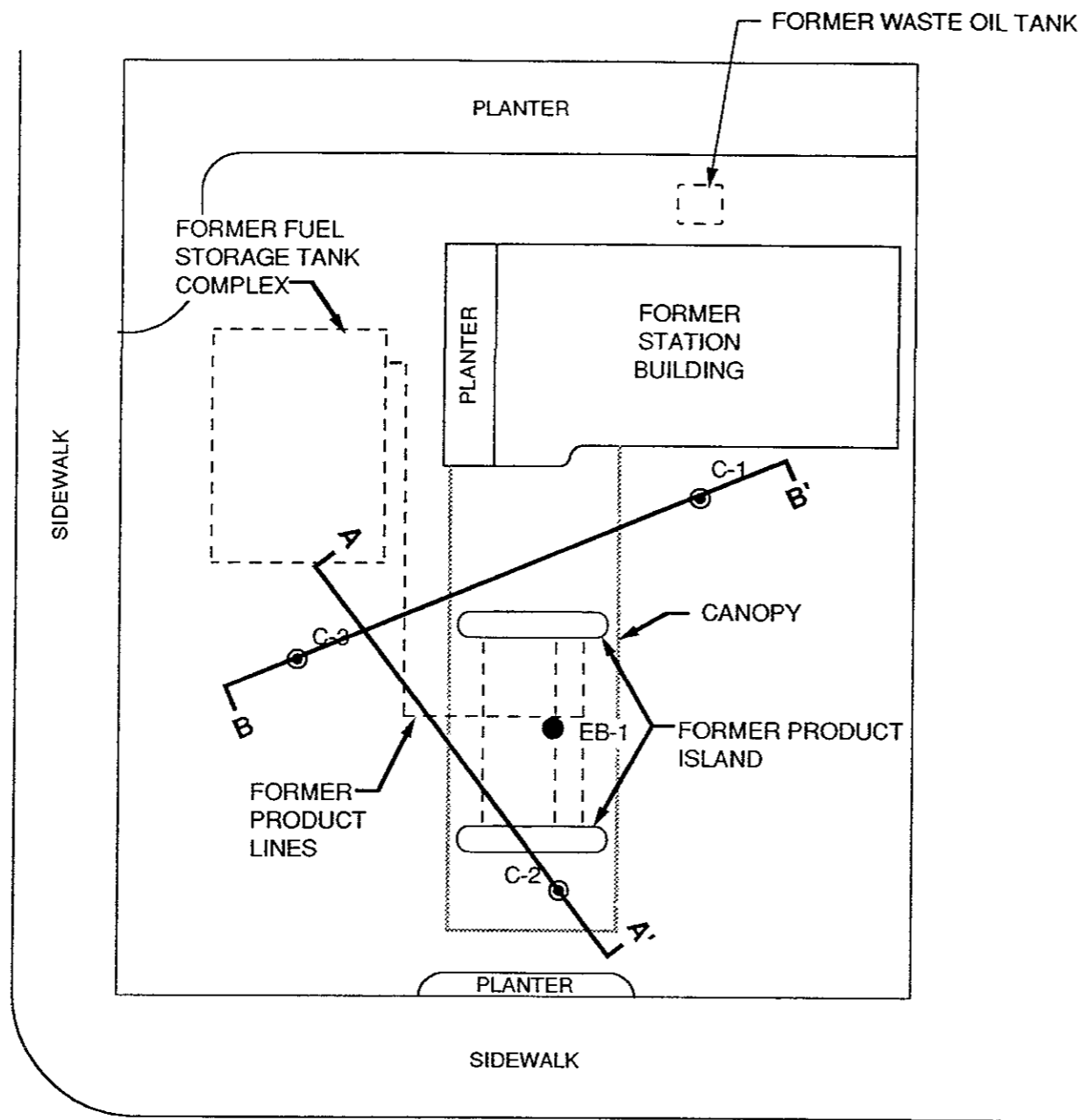
FORMER GULF SERVICE STATION 0006
 460 Grand Avenue at Bellevue Avenue
 Oakland, California

SITE LOCATION MAP

FIGURE:
1
PROJECT:
 325-31.01



BELLEVUE AVENUE



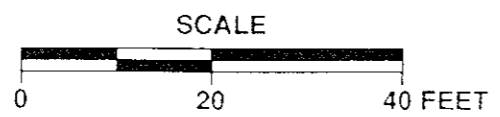
- LEGEND**
- C-1 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
 - EB-1 EXPLORATORY SOIL BORING LOCATION AND DESIGNATION
 - LINE OF GEOLOGIC CROSS-SECTION (SEE FIGURE 3 and 4)

GRAND AVENUE

MAP TAKEN FROM THEADWELL & ASSOCIATES INC



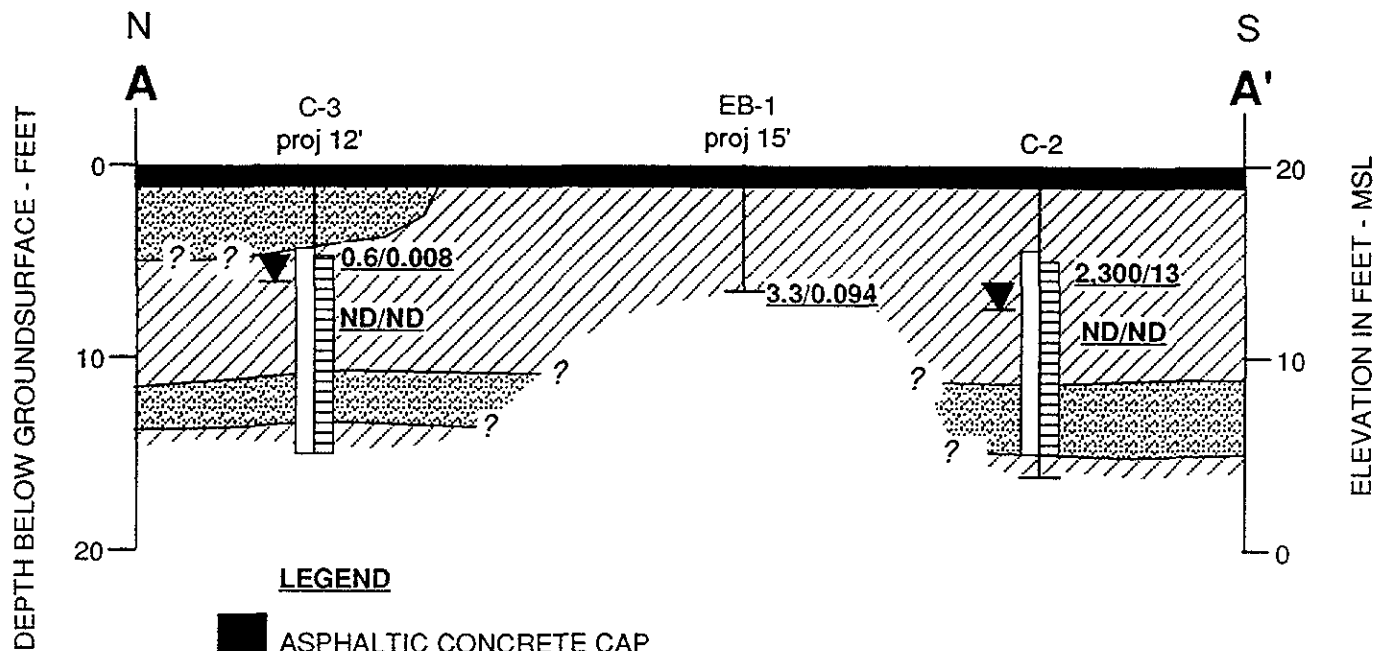
PACIFIC ENVIRONMENTAL GROUP, INC.



FORMER GULF SERVICE STATION 0006
460 Grand Avenue at Bellevue Avenue
Oakland, California

SITE MAP

FIGURE 2
PROJECT 325-31 01



LEGEND

- ASPHALTIC CONCRETE CAP
- PRIMARILY FINE GRAINED DEPOSITS - SILT AND CLAY
- PRIMARILY COARSE GRAINED DEPOSITS - SAND

C-2 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

EB-1 EXPLORATORY SOIL BORING LOCATION AND DESIGNATION

proj PROJECTED ONTO LINE OF SECTION IN FEET

0.6/0.008 TPH-GASOLINE/BENZENE CONCENTRATION IN SOIL, IN PARTS PER MILLION, 12-14-92 and 12-15-92

ND NOT DETECTED

SCALE

HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 10'

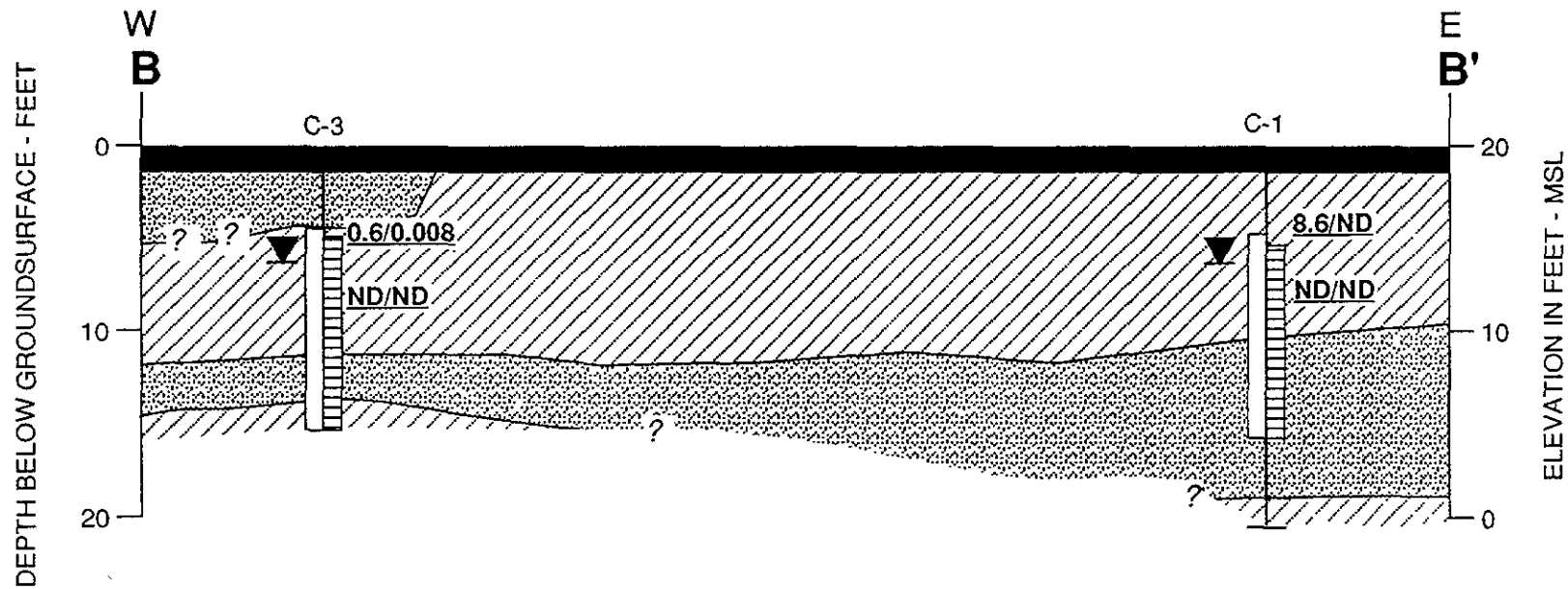


PACIFIC ENVIRONMENTAL GROUP, INC.

FORMER GULF SERVICE STATION 0006
 460 Grand Avenue at Bellevue Avenue
 Oakland, California

GENERALIZED GEOLOGIC CROSS-SECTION A-A'

FIGURE:
3
 PROJECT:
 325-31.01



LEGEND

- ASPHALTIC CONCRETE CAP
- PRIMARILY FINE GRAINED DEPOSITS - SILT AND CLAY
- PRIMARILY COARSE GRAINED DEPOSITS - SAND

C-3 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION

proj PROJECTED ONTO LINE OF SECTION IN FEET

0.6/0.008 TPH-GASOLINE/BENZENE CONCENTRATION IN SOIL, IN PARTS PER MILLION, 12-14-92 and 12-15-92

ND NOT DETECTED

SCALE

HORIZONTAL : 1" = 10'
 VERTICAL : 1" = 10'



PACIFIC ENVIRONMENTAL GROUP, INC.

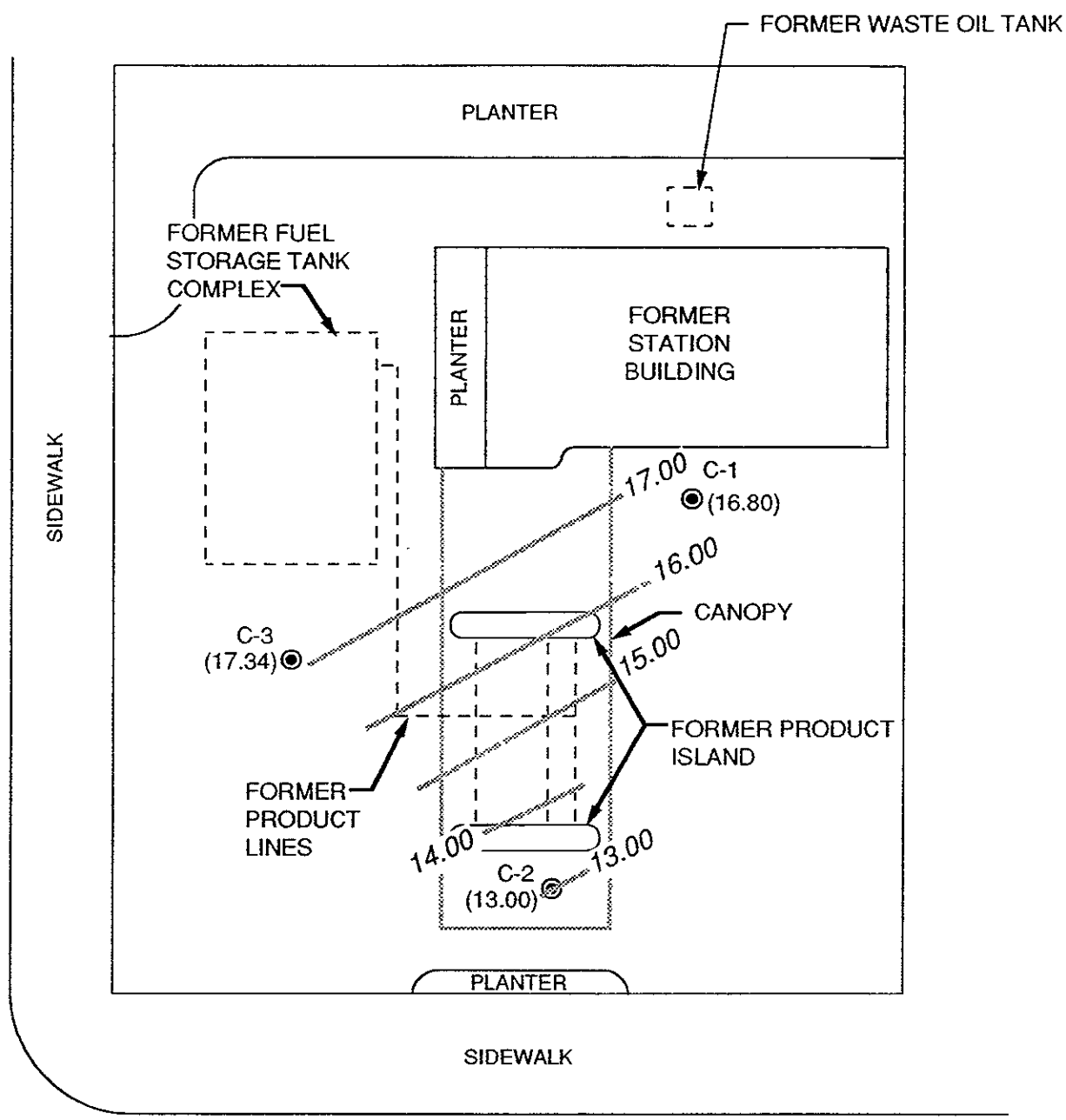
FORMER GULF SERVICE STATION 0006
 460 Grand Avenue at Bellevue Avenue
 Oakland, California

GENERALIZED GEOLOGIC CROSS-SECTION B-B'

FIGURE:
4
 PROJECT:
 325-31.01



BELLEVUE AVENUE



GRAND AVENUE

LEGEND

- C-1 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- (16.80) GROUNDWATER ELEVATION IN FEET - MSL, 12-16-92
- 14.00 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 12-16-92

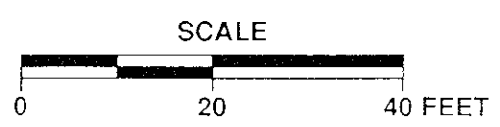


APPROXIMATE DIRECTION OF GROUNDWATER FLOW

MAP TAKEN FROM THEADWELL & ASSOCIATES INC



PACIFIC ENVIRONMENTAL GROUP, INC.



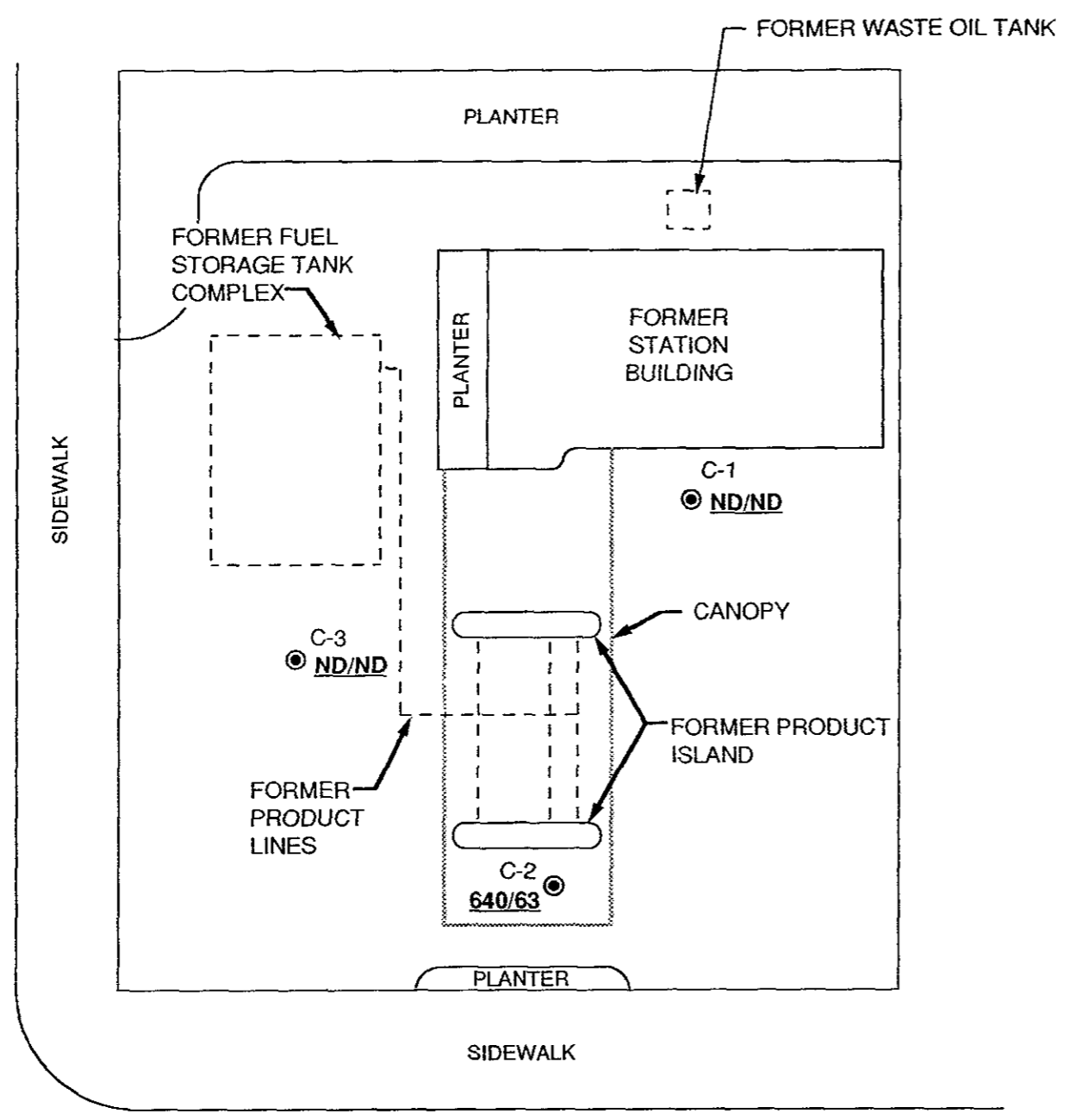
FORMER GULF SERVICE STATION 0006
 460 Grand Avenue at Bellevue Avenue
 Oakland California

GROUNDWATER ELEVATION CONTOUR MAP

FIGURE
5
 PROJECT
 325-31.01



BELLEVUE AVENUE



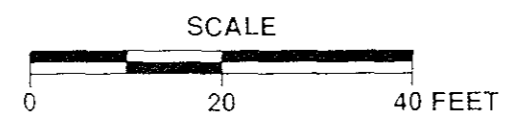
- LEGEND**
- C-1 ● GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
 - 640/63** TPH-GASOLINE/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 12-16-92
 - ND** NOT DETECTED

GRAND AVENUE

MAP TAKEN FROM THEADWELL & ASSOCIATES, INC



PACIFIC ENVIRONMENTAL GROUP, INC



FORMER GULF SERVICE STATION 0006
460 Grand Avenue at Bellevue Avenue
Oakland, California

DISSOLVED HYDROCARBON CONCENTRATION MAP

FIGURE 6
PROJECT 325-31 01

ATTACHMENT A
FIELD AND ANALYTICAL PROCEDURES

ATTACHMENT A

FIELD AND ANALYTICAL PROCEDURES

Exploratory Soil Boring and Monitoring Well Installation

The soil borings were drilled using hollow-stem auger drilling equipment, and logged by a PACIFIC geologist using the Unified Soil Classification System and standard geologic techniques. Soil samples for logging and chemical analysis from Wells C-1 through C-3 were collected at a maximum depth interval of 5 feet by advancing a California modified split-spoon sampler with brass sample liners into relatively undisturbed soil beyond the tip of the auger. The sampler was driven a maximum of 18 inches using a 140-pound hammer with a 30-inch drop. The soil boring for EB-1 was drilled using hand auger drilling equipment and a sample was collected by hammering a brass sample tube into soil collected by the hand auger. Soil samples for chemical analysis were retained in the brass liners, capped with Teflon squares and plastic end caps, and sealed in zip-lock bags. The samples were placed on ice and transported to the laboratory accompanied by the appropriate chain-of-custody documentation. The drilling equipment was steam-cleaned after each boring.

Selected borings were converted to groundwater monitoring wells by the installation of 2-inch diameter flush-threaded Schedule 40 PVC casing with 0.020-inch factory-slotted screen. Graded 2/12 sand pack was placed in the annular space across the screened interval, and the wells were surge-blocked to remove void spaces in the sand pack. A bentonite and concrete seal was placed from the top of the sand pack to the ground surface. A locking cap and protective vault box were installed on the top of each well. Well elevations were surveyed by a licensed surveyor to an accuracy of 0.01 foot, relative to the USGS mean sea level datum.

Organic Vapor Analysis

Soil samples collected during drilling were analyzed in the field for ionizable organic compounds using the HNU Model PI-101 photo-ionization detector with a 10.2 eV lamp. The test procedure involves measuring approximately 30 grams from an undisturbed soil sample, placing this subsample in a clean glass jar, and sealing the jar with

aluminum foil secured under a ring-type threaded lid. The jar is warmed for approximately 20 minutes, then the foil is pierced and the headspace within the jar is tested for total organic vapor, measured in parts per million as benzene (ppm). The instrument was previously calibrated using a 100-ppm isobutylene standard (in air) and a sensitivity factor of 0.7, which relates the photo-ionization sensitivity of benzene (10.0 ppm) to the ionization potential of isobutylene (7.0 ppm). Results of these tests were used to assist in selection of samples for laboratory analysis.

Groundwater Sampling

The groundwater sampling was performed using techniques approved by the Regional Water Quality Control Board (RWQCB). The sampling procedure consists of first measuring the water level in each well and checking each well for the presence of floating petroleum product using an optic probe or a clear Teflon bailer. If no free product is detected, the wells are purged of a minimum of four casing volumes of water (or until dryness). During purging, temperature, pH, and electrical conductivity were monitored until stable in order to ensure that a representative sample was obtained. After the water levels partially recover, groundwater samples were collected using a Teflon bailer and placed into appropriate EPA-approved containers. The samples were labeled, logged onto chain-of-custody documents, and transported on ice to the laboratory using appropriate chain-of-custody documentation.

Laboratory Analysis

Selected soil and groundwater samples were analyzed in the laboratory for the presence of total petroleum hydrocarbons calculated as gasoline (TPH-g), and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). Groundwater samples were also analyzed for total semi- and non-volatile hydrocarbons calculated as diesel (TPH-d), and motor oil (TPH-mo), halogenated volatile organics, and ICAP Metals. The method of analysis for TPH-g was by modified EPA Methods 8015, 8020, and 5030. Final analysis was performed by the purge-and-trap technique with final detection by gas chromatography using a flame-ionization detector and a photo-ionization detector. The method of analysis for TPH-d and TPH-mo was by modified EPA Method 8015. This method involves extracting the samples with solvent and examining the extract by gas chromatography using a flame ionization detector. The method of analysis for halogenated volatile organics was by EPA Method 8010 and the method of analysis for ICAP Metals was by EPA Method 2007. All analyses were performed by a state-certified laboratory.

ATTACHMENT B

BORING LOGS

WELL LOG KEY TO ABBREVIATIONS

Drilling Method

HSA - Hollow stem auger
CFA - Continuous flight auger
Air - Reverse air circulation

Gravel Pack

CA - Coarse aquarium sand

Sampling Method

Cal. Mod. - California modified split-spoon sampler (2" inner diameter) driven 18" by a 140-pound hammer having a 30" drop. Where penetration resistance is designated "P", sampler was instead pushed by drill rig.
Disturbed - Sample taken from drill-return materials as they surfaced.
Shelby - Shelby Tube thin-walled sampler (3" diameter), where sampler is pushed by drill-rig.

Moisture Content

Dry - Dry
Dp - Damp
Mst - Moist
Wt - Wet
Sat - Saturated

Sorting

PS - Poorly sorted
MS - Moderately sorted
WS - Well sorted

Plasticity

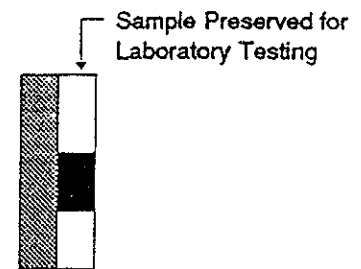
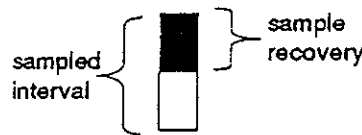
L - Low
M - Moderate
H - High

H-NU (ppm)

ND - No detection

Symbols

▽ - First encountered ground water
▼ - Static ground water level



Density (Blows/Foot - Cal Mod Sampler)

Sands and gravels

0 - 5 - Very Loose
5 - 13 - Loose
13 - 38 - Medium dense
38 - 63 - Dense
over 63 - Very dense

Silts and Clays

0 - 2.1 - Very Soft
2.1 - 4.3 - Soft
4.3 - 8.6 - Firm
8.6 - 17 - Stiff
17 - 37 - Very Stiff
37 - 72 - Hard
over 72 - Very dense

GRAIN - SIZE SCALE

GRADE LIMITS

U.S. Standard

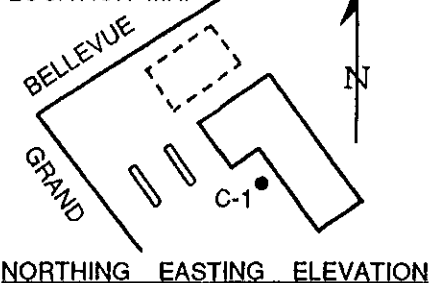
GRADE NAME

inch	sieve size	
12.0		Boulders
3.0	3.0 in.	Cobbles
0.19	No. 4	Gravels
0.08	No. 10	coarse
	No. 40	medium
	No. 200	fine
		Silt
		Clay Size

Unified Soil Classification System

Primary Divisions		Group		Symbol/Graphic	Typical Names	
COARSE GRAINED SOILS more than half is larger than #200 sieve	GRAVELS half of coarse fraction larger than #4 sieve	CLEAN GRAVELS (less than 5% fines)	GW		Well graded gravels, gravel-sand mixtures; little or no fines	
			GP		Poorly graded gravels or gravel-sand mixtures; little or no fines	
		GRAVEL WITH FINES	GM		Silty gravels, gravel-sand-silt mixtures	
			GC		Clayey gravels, gravel-sand-clay mixtures	
	SANDS half of coarse fraction smaller than #4 sieve	CLEAN SANDS (less than 5% fines)	SW		Well graded sands, gravelly sands, little or no fines	
			SP		Poorly graded sands or gravelly sands, little or no fines	
		SANDS WITH FINES	SM		Silty sands, sand-silt mixtures	
			SC		Clayey sands, sand-clay mixtures, plastic fines	
		FINE GRAINED SOILS more than half is smaller than #200 sieve	SILTS AND CLAYS liquid limit less than 50%	ML		Inorganic silts and very fine sand, rock flour, silty or clayey fine sands or clayey silts, with slight plasticity
				CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
OL				Organic silts and organic silty clays of low plasticity		
SILTS AND CLAYS liquid limit more than 50%	MH			Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts		
	CH			Inorganic clays of high plasticity, fat clays		
	OH			Organic clays of medium to high plasticity, organic silts		
	PT			Peat and other highly organic soils		

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. C-1
PAGE 1 OF 1

PROJECT NO. 325-31.01
 LOGGED BY: DEM
 DRILLER: BAYLANDS
 DRILLING METHOD: HSA
 SAMPLING METHOD: CAL MOD
 CASING TYPE: Sch 40 PVC
 SLOT SIZE: 0.020"
 GRAVEL PACK: 2/12 SAND

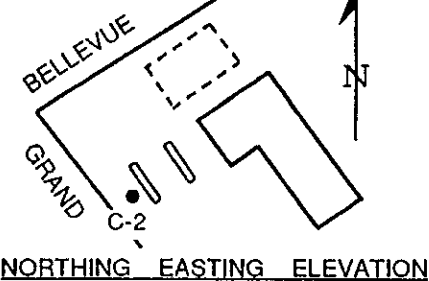
CLIENT: CHEVRON
 DATE DRILLED: 12/14/92
 LOCATION: 460 GRAND AVE., OAK
 HOLE DIAMETER: 8"
 HOLE DEPTH: 20'
 WELL DIAMETER: 2"
 WELL DEPTH: 15'
 CASING STICKUP: -0.37'

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS	
				2			FILL ML	Asphalt.	
				4				CLAYEY SILT: medium to light brown (5Y 4/3); low plasticity; blue gray mottling to 2 cm; micaceous; trace fine to medium sand; no product odor.	
		Dp	142	push	6			CL	CLAY: olive brown (5Y 5/3); silty; micaceous; very stiff; no product odor.
		Dp	1.0	22	8			SP	SAND: medium brown (2.5Y 4/4); <5% fines; fine to medium sand; orange brown mottling; micaceous; medium dense; no product odor.
		Wt/Sat	ND	18	14			CL	CLAY: yellowish brown (10YR 5/4); silty; low plasticity; micaceous; trace 1 mm wide orange brown liesegang banding; very stiff; no product odor.
		Dry/Dp	ND	30	18			SP	
					20			CL	
					22				
					24				
					26				
				28					
				30					
				32					
				34					
				36					
				38					
				40					
				42					
				44					

BOTTOM OF BORING AT 20'

Boring Logs
C1-C34EB1

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. C-2
PAGE 1 OF 1

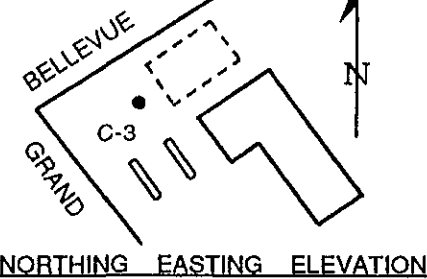
PROJECT NO. 325-31.01
 LOGGED BY: DEM
 DRILLER: BAYLANDS
 DRILLING METHOD: HSA
 SAMPLING METHOD: CAL MOD
 CASING TYPE: Sch 40 PVC
 SLOT SIZE: 0.020"
 GRAVEL PACK: 2/12 SAND

CLIENT: CHEVRON
 DATE DRILLED: 12/14/92
 LOCATION: 460 GRAND AVE., OAK
 HOLE DIAMETER: 8"
 HOLE DEPTH: 16-1/2"
 WELL DIAMETER: 2"
 WELL DEPTH: 15'
 CASING STICKUP: -0.34'

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
				2			FILL	Asphalt.
				4			ML	SANDY SILT (2.5Y5/3); low plasticity; 15-25% fine sand; stiff; faint product odor.
	Dry	1.4	12	6				
	Dry	13	16	8			CL	CLAY: (10YR5/4); low plasticity; orange brown mottling; blue gray mottling; stiff; no product odor.
	Mst/Wt	11.8	17	10			SC	CLAYEY SAND (2.5Y5/3); 30-40% fines; micaceous; sandier and wet at 15-1/2 to 16'; medium dense; no product odor.
	Dry	ND	29	12			ML	CLAYEY SILT: (5Y5/3); low plasticity; micaceous; 1-2 mm wide orange brown; liesegang banding; very stiff; no product odor.
				14				
				16				
				18				
				20				
				22				
				24				
				26				
				28				
				30				
				32				
				34				
				36				
				38				
				40				
				42				
				44				

BOTTOM OF BORING AT 16-1/2'

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. C-3
PAGE 1 OF 1

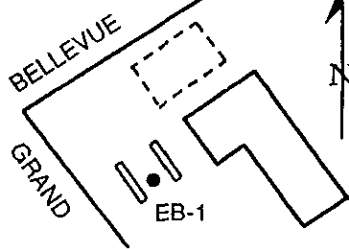
PROJECT NO. 325-31.01
 LOGGED BY: DEM
 DRILLER: BAYLANDS
 DRILLING METHOD: HSA
 SAMPLING METHOD: CAL MOD
 CASING TYPE: Sch 40 PVC
 SLOT SIZE: 0.020"
 GRAVEL PACK: 2/12 SAND

CLIENT: CHEVRON
 DATE DRILLED: 12/15/92
 LOCATION: 460 GRAND AVE., OAK
 HOLE DIAMETER: 7-1/4"
 HOLE DEPTH: 15'
 WELL DIAMETER: 2"
 WELL DEPTH: 15'
 CASING STICKUP: -0.34'

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
				2			FILL SC	Asphalt. CLAYEY SAND: (5GY 4/1); 15-25% fines; fine sand; dense; faint to moderate product odor.
				4				
	Dp	320	40	6			CL	CLAY: (5G 5/1); low plasticity; micaceous; medium brown mottling; silty; hard; no to faint product odor.
	Dp	0.6	19	8				@8-1/2': (2.5Y 4/2); silty; blue green mottling; trace 1-2 cm nodules fine gray sand; stiff; no product odor.
	Sat Dry/Dp	ND		12			SC	CLAYEY SAND: medium brown; 30-40% fines; fine to medium sand; medium dense; no product odor.
				14			CL	CLAY: (5Y 4/2); silty; low plasticity; micaceous; 10-20% blue green mottling; stiff; no product odor.
				16				
				18				
				20				
				22				
				24				
				26				
				28				
				30				
				32				
				34				
				36				
				38				
				40				
				42				
				44				

BOTTOM OF BORING AT 15'

LOCATION MAP



NORTHING EASTING ELEVATION

PACIFIC ENVIRONMENTAL GROUP, INC.

BORING NO. EB-1
PAGE 1 OF 1

PROJECT NO. 325-31.01
 LOGGED BY: DEM
 DRILLER: BAYLANDS
 DRILLING METHOD: HSA
 SAMPLING METHOD: CAL MOD
 CASING TYPE: NA
 SLOT SIZE: NA
 GRAVEL PACK: NA

CLIENT: CHEVRON
 DATE DRILLED: 12/15/92
 LOCATION: 460 GRAND AVE., OAK
 HOLE DIAMETER: 4"
 HOLE DEPTH: 7'
 WELL DIAMETER: NA
 WELL DEPTH: NA
 CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
				2			FILL	Asphalt.
				4			CL	CLAY: yellow brown; low plasticity; orange brown mottling; silty; green staining; faint to moderate product odor.
	Dp	260	HAND	6				@6.5': (5Y 4/1); low plasticity; green staining; faint to moderate product odor.
				8				
				10				
				12				
				14				
				16				
				18				
				20				
				22				
				24				
				26				
				28				
				30				
				32				
				34				
				36				
				38				
				40				
				42				
				44				

BOTTOM OF BORING AT 7'

ATTACHMENT C

**FIELD DATA SHEETS, CERTIFIED ANALYTICAL REPORTS AND
CHAIN-OF-CUSTODY DOCUMENTATION**

WELL DEVELOPMENT DATA SHEET

Project#: 325-31.01
 Site Address: 160 GRAND AVE
OAKLAND

Well #: C-1
 DTW (feet): 5.31 (TOC) 5.68 (TOB)
 DTL (feet): — (TOC) — (TOB)
 Purge Vol (10 Casings): 17.0 (gal)

Development Method Used: SURGE BLOCK, 2" Ø AT 2' INTERVALS
1.7 GAL/CASING

Time		Depth		Gallons		Measurements				Comments: (odor, clarity, grain size, etc.) activity
begin	end	TOC to water	TOB to bottom	pumped	total	pH	cond	temp	turbidity	
1023	1025	6.39	14.8	1.7	1.7	7.17	2,170	62.1	HEAVY	MUDDY, NO ODOR
1028	1030	6.60		1.7	3.4	7.18	2,110	62.7	"	
1032	1034	7.45		1.7	5.1	7.07	2,400	64.2		
1035	1037	7.55		1.7	6.8	6.69	1,380	65.0		
1040	1043	7.63		1.7	8.5	6.70	1,713	65.2		
1044	1047	7.74		1.7	10.2	6.73	1,635	65.5		
1048	1050	7.72		1.7	11.9	6.74	1,516	65.6		
1051	1053	7.74		1.7	13.6	6.64	1,270	65.8		
1054	1058	7.76		1.7	15.3	6.51	1,088	65.8		
1059	1101	7.83	▼	1.7	17.0	6.62	1,178	66.0	▼	

Completed by: JOHN MADDOX

date: 12/16/92

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 825-31.01 LOCATION: GRAND AVE OAKLAND WELL ID #: C-1

CLIENT/STATION No.: CHEVRON FIELD TECHNICIAN: JM X

WELL INFORMATION

Depth to Liquid: TOB TOC
 Depth to water: 5.68 TOB 5.31 TOC
 Total depth: 15.4 TOB TOC
 Date: 12.16.92 Time (2400): 0947

Probe Type and I.D. #
 Oil/Water interface
 Electronic Indicator 3
 Other:

CASING DIAMETER	GAL/LINEAR FT.
<input checked="" type="checkbox"/> 2	0.17
<input type="checkbox"/> 3	0.38
<input type="checkbox"/> 4	0.66
<input type="checkbox"/> 4.5	0.83
<input type="checkbox"/> 5	1.02
<input type="checkbox"/> 6	1.5
<input type="checkbox"/> 8	2.6

- SAMPLE TYPE
- Groundwater
 - Duplicate
 - Extraction well
 - Trip blank
 - Field blank
 - Equipment blank
 - Other:

TD 15.4 - DTW 5.68 = 9.72 Gal/Linear Foot 0.17 = 1.7 x Casings = Purge

DATE PURGED: 12.16.92 START: END (2400 hr): PURGED BY: JM X
 DATE SAMPLED: 12.16.92 START: 1116 END (2400 hr): SAMPLED BY: "

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>SEE WELL DEVELOPMENT SHEET</u>							
Pumped dry Yes / No					Cobalt 0-100 Clear Cloudy Yellow Brown	NTU 0-200 Heavy Moderate Light Trace	Strong Moderate Faint None
FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:							
DTW: <u> </u>		TOB/TOC <u> </u>		SAMPLING EQUIPMENT/I.D. #			
PURGING EQUIPMENT/I.D. #				SAMPLING EQUIPMENT/I.D. #			
<input checked="" type="checkbox"/> Bailer: <u>3-6</u>		<input type="checkbox"/> Airlift: <u> </u>		<input checked="" type="checkbox"/> Bailer: <u>3-6</u>		<input type="checkbox"/> Dedicated: <u> </u>	
<input type="checkbox"/> Centrifugal: <u> </u>		<input type="checkbox"/> Dedicated: <u> </u>		<input type="checkbox"/> Other: <u> </u>		<input type="checkbox"/> Other: <u> </u>	
<input type="checkbox"/> Other: <u> </u>							

SAMPLE I.D.	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>C-1</u>	<u>12.16.92</u>	<u>1110</u>	<u>3</u>	<u>40ml</u>	<u>VOA</u>	<u>HCL</u>	<u>GAS/BTEX</u>
<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>3</u>	<u>40ml</u>	<u>VOA</u>	<u>NP</u>	<u>HVOC</u>
<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>2</u>	<u>1L</u>	<u>Amcor</u>	<u>NP</u>	<u>DIESEL/NOB OIL</u>
<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>1</u>	<u>500ml</u>	<u>PLASTIC</u>	<u>NITRIC</u>	<u>METALS - Pb</u>

WELL INTEGRITY: Good Fair Poor

REMARKS: 10 CASING VOL PURGE ON NEW WELL
- ONLY 1L SIZE AVAILABLE FOR METALS

FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 925-31.01 LOCATION: OAKLAND WELL ID #: C-2
 CLIENT/STATION No.: CUSA FIELD TECHNICIAN: JMX

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC _____
 Depth to water: 7.49 TOB 7.15 TOC _____
 Total depth: 14.0 TOB _____ TOC _____
 Date: 12.16.92 Time (2400): 0943

CASING
DIAMETER GAL/
LINEAR FT.

<input checked="" type="checkbox"/>	2	0.17
<input type="checkbox"/>	3	0.38
<input type="checkbox"/>	4	0.66
<input type="checkbox"/>	4.5	0.83
<input type="checkbox"/>	5	1.02
<input type="checkbox"/>	6	1.5
<input type="checkbox"/>	8	2.6

SAMPLE TYPE

- Groundwater
- Duplicate
- Extraction well
- Trip blank
- Field blank
- Equipment blank
- Other; _____

Probe Type and I.D. #

- Oil/Water interface
- Electronic indicator 3
- Other; _____

TD 14.0 - DTW 7.49 = 7.31 x Foot 0.17 = 1.25 x Number of Casings = Calculated = Purge _____

DATE PURGED: _____ START: _____ END (2400 hr): _____ PURGED BY: _____
 DATE SAMPLED: 12.16.92 START: 1545 END (2400 hr): _____ SAMPLED BY: JMX

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 2.5°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>SEE DEVELOPMENT SHEET</u>							
Pumped dry Yes / No					Cobalt 0-100 Clear Cloudy Yellow Brown	NTU 0-200 Heavy Moderate Light Trace	Strong Moderate Faint None
FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:							
DTW: _____ TOB/TOC _____							
PURGING EQUIPMENT/I.D. #				SAMPLING EQUIPMENT/I.D. #			
<input checked="" type="checkbox"/> Bailor: <u>3-2</u>				<input checked="" type="checkbox"/> Bailor: <u>3-2</u>			
<input type="checkbox"/> Centrifugal: _____				<input type="checkbox"/> Dedicated: _____			
<input type="checkbox"/> Other: _____				<input type="checkbox"/> Other: _____			

SAMPLE I.D.	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>C-2</u>	<u>12.16.92</u>	<u>1545</u>	<u>3</u>	<u>40ml</u>	<u>VOA</u>	<u>HEI</u>	<u>CARBON</u>
			<u>3</u>	<u>40ml</u>	<u>VOA</u>	<u>NP</u>	<u>HVOC</u>
			<u>2</u>	<u>1L</u>	<u>AMBER PLASTIC</u>	<u>NP</u>	<u>DESEL / MOTOR OIL</u>
			<u>1</u>	<u>1L</u>		<u>HNO3</u>	<u>METALS</u>

WELL INTEGRITY: Good Fair Poor

REMARKS: _____

W. Asch III 1/1/93



FIELD DATA SHEET

WATER SAMPLE FIELD DATA SHEET

PROJECT No.: 225-31.01 LOCATION: GRAND AVE OAKLAND WELL ID #: C-3

CLIENT/STATION No.: CUSA FIELD TECHNICIAN: Jux

WELL INFORMATION

Depth to Liquid: _____ TOB _____ TOC _____
 Depth to water: 5.17 TOB 4.83 TOC _____
 Total depth: 15.3 TOB 5.01 TOC _____
 Date: 12.16.92 Time (2400): 1234

CASING DIAMETER	GAL/LINEAR FT.
<input checked="" type="checkbox"/> 2	0.17
<input type="checkbox"/> 3	0.38
<input type="checkbox"/> 4	0.66
<input type="checkbox"/> 4.5	0.83
<input type="checkbox"/> 5	1.02
<input type="checkbox"/> 6	1.5
<input type="checkbox"/> 8	2.6

- SAMPLE TYPE**
- Groundwater
 - Duplicate
 - Extraction well
 - Trip blank
 - Field blank
 - Equipment blank
 - Other: _____

Probe Type and I.D. #
 Oil/Water interface
 Electronic indicator 3
 Other: _____

TD 15.3 - DTW 5.17 = 10.13 Gal/Linear Foot 0.17 = 1.75 x Casings = Calculated = Purge

DATE PURGED: 12.16.92 START: _____ END (2400 hr): _____ PURGED BY: Jux
 DATE SAMPLED: 12.16.92 START: 1530 END (2400 hr): _____ SAMPLED BY: Jux

TIME (2400 hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR	TURBIDITY	ODOR
<u>SEE DEVELOPMENT SHEET</u>							
Pumped dry Yes / No					Cobalt D-100 Clear Cloudy Yellow Brown	NTU 0-200 Heavy Moderate Light Trace	Strong Moderate Faint None
FIELD MEASUREMENTS AT TIME OF SAMPLE, AFTER RECHARGE:							
DTW: _____ TOB/TOC _____							
PURGING EQUIPMENT/I.D. #				SAMPLING EQUIPMENT/I.D. #			
<input checked="" type="checkbox"/> Bailer: <u>3-3</u>				<input checked="" type="checkbox"/> Bailer: <u>3-3</u>			
<input type="checkbox"/> Centrifugal: _____				<input type="checkbox"/> Dedicated: _____			
<input type="checkbox"/> Other: _____				<input type="checkbox"/> Other: _____			

SAMPLE I.D.	DATE	TIME (2400)	No. of Cont.	SIZE	CONTAINER	PRESERVE	ANALYTICAL PARAMETER
<u>C-3</u>	<u>12.16.92</u>	<u>1530</u>	<u>3</u>	<u>40mL</u>	<u>VOA</u>	<u>NP</u>	<u>VHOC</u>
<u>✓</u>	<u>✓</u>	<u>✓</u>	<u>3</u>	<u>40mL</u>	<u>VOA</u>	<u>HCC</u>	<u>CAS/PEX</u>
<u>✓</u>	<u>✓</u>	<u>✓</u>	<u>2</u>	<u>LL</u>	<u>AMBER</u>	<u>NP</u>	<u>DIESEL/MOTOR OIL</u>
<u>✓</u>	<u>✓</u>	<u>✓</u>	<u>1</u>	<u>500mL</u>	<u>PLASTIC</u>	<u>NITRIC</u>	<u>METALS</u>

WELL INTEGRITY: Good Fair Poor
 REMARKS: 1L SIZE ONLY AVAILABLE FOR HNO3 PRESERVED

10.13 gal/lin ft



