



**Chevron**

October 3, 1994

**Chevron U.S.A. Products Company**  
6001 Bollinger Canyon Road  
Building L  
San Ramon, CA 94583  
P.O. Box 5004  
San Ramon, CA 94583-0804

Ms. Juliet Shin  
Alameda County Health Care Services  
Department of Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

**Marketing - Northwest Region**  
Phone 510 842 9500

**Re: Chevron Service Station #9-0290  
1802 Webster Street, Alameda, CA**

Dear Ms. Shin:

Enclosed is the Comprehensive Site Evaluation and Proposed Future Action Plan dated October 3, 1994, prepared by our consultant Weiss Associates for the above referenced site.

This work plan was prepared to respond to several of Alameda County's concerns expressed to Chevron over the past several months regarding this site. These concerns include installing additional monitor wells, ground water sampling requirements, and providing a plan for future action at the site.

The enclosed document responds to these requests by summarizing all data gathered to date and proposing scientifically based remedial actions to guide all future work at this site.

We would like to schedule a meeting with yourself and any other individuals or agencies you feel appropriate to discuss this document. I will contact you by telephone during the next week to set up such a meeting.

If you have any questions or comments, please do not hesitate to call me at (510) 842-8134.

Sincerely,  
CHEVRON U.S.A. PRODUCTS COMPANY

Mark A. Miller  
Site Assessment and Remediation Engineer

Enclosure

cc: Mr. Kevin Graves, RWQCB - S.F. Bay Region  
Mr. S.A. Willer

Ms. Louise Van De Deere  
Housing Authority of the City of Alameda  
701 Atlantic Avenue  
Alameda, CA 94501

File: 9-0290 WP1

- ① Use wells 5, 6, & 9 for gradient
- ② <sup>DS</sup> ~~DS~~ of B-1 or replacement
- ③ check area of excavation in relation to DST locations and piping. find location of well DSTs



**Weiss Associates**

*Environmental and Geologic Services*

5500 Shellmound Street, Emeryville, CA 94608-2411

Fax: 510-547-5043 Phone: 510-450-6000

**DRAFT**

**COMPREHENSIVE SITE EVALUATION  
AND  
PROPOSED FUTURE ACTION PLAN**

*at*

**Chevron Service Station 9-0290  
1802 Webster Street  
Alameda, California**

*prepared for*

**Chevron U.S.A. Products Company  
P.O. Box 5004  
San Ramon, California 94583-0804**

October 3, 1994

**COMPREHENSIVE SITE EVALUATION  
AND  
PROPOSED FUTURE ACTION PLAN**

*at*

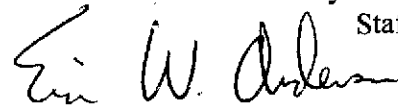
**Chevron Service Station 9-0290  
1802 Webster Street  
Alameda, California**

*prepared by*

**Weiss Associates  
5500 Shellmound Street  
Emeryville, CA 94608**

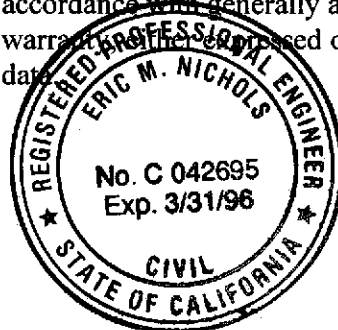


Cynthia N. Okano  
Staff Engineer



Eric W. Anderson  
Project Geologist

Weiss Associates work for Chevron U.S.A. Products Company, P.O. Box 5004, San Ramon, California, was conducted under my supervision. To the best of my knowledge, the data contained herein are true and accurate and satisfy the specified scope of work prescribed by the client for this project. The data, findings, recommendations, specifications, or professional opinions were prepared solely for the use of Chevron U.S.A. in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, expressed or implied, and are not responsible for the interpretation by others of these data.



Eric M. Nichols October 3, 1994  
Registered Civil Engineer  
No. 42695

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## SUMMARY

The Chevron site at 1802 Webster Street in Alameda, California is an operating Chevron service station. In 1982, following an estimated 50 gallon fuel leak loss, 6 monitoring wells were installed to define hydrogeologic conditions beneath the site. The tank system was subsequently removed and replaced. In 1991, approximately 1,400 gallons of diesel fuel were accidentally dispensed into a well completed in tank backfill. A product recovery program was immediately initiated and the bulk of the diesel was promptly removed. Three additional wells were installed in March 1993.

A review of subsurface site investigation and historical monitoring data show that:

- ***The plume is contained by natural processes, and no significant plume migration occurs with or without ground water extraction.*** The hydrocarbon plume which exists at this site is restricted to the area near the tank complex and pump islands. Three years of quarterly sampling in onsite and offsite wells have shown that this plume is not migrating.
- ***All source areas have been removed from the site:*** The bulk of the diesel fuel that was accidentally dispensed into the tank pit has been recovered by the product recovery program and a separate phase hydrocarbon removal program is currently being conducted to remove viscous residual hydrocarbons. The leaking gasoline tank was replaced in 1982 and two waste oil tanks, product piping and 600-700 cubic yards of soil were removed in April and May 1994.
- ***The site has been remediated to the extent feasible:*** Historical data identify a localized region in the vicinity of tank backfill well A-1 as the source for hydrocarbon concentrations in B-1, B-3 and B-4. The product recovery program was effective at reducing the plume mass and concentrations. No cost-effective technologies exist that might significantly accelerate cleanup of this plume.

Therefore, we submit that:

- The hydrocarbons remaining in the site subsurface do not present a threat to human health or to the quality of the surrounding aquifer; and
- All economically and technically feasible measures have been taken to reduce the contaminant plume.

We request that Alameda County Department of Environmental Health (ACDEH) declare that the Chevron site is remediated to the extent feasible and approve a gradual reduction in well sampling frequency and consider establishing a non-attainment area encompassing the residual plume associated with the Chevron station.

## INTRODUCTION

At the request of Chevron U.S.A (Chevron), Weiss Associates has prepared this site evaluation for operating Chevron Service Station 9-0290, located at 1802 Webster Street, Alameda, California. The objectives of this evaluation are to: 1) summarize all investigative and remedial actions performed at the site to date; 2) determine whether the site meets the Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) criteria for establishment of a non-attainment area; and 3) outline a recommended future action plan. The site-specific information presented in this evaluation was compiled from the reports listed in the References section of this report.

## SITE HISTORY

### SITE SETTING

Operating Chevron Service Station 9-0290 is located on the northeast corner of the intersection of Webster Street (Highway 61) and Buena Vista Avenue in Alameda, California (Appendix A). Commercial businesses are located on the adjacent property north of the site and across Webster Street west of the site. A residential building and parking lot are directly east of the site. A BP service station is located across Buena Vista Avenue to the south.

The site elevation is approximately 10 to 12 ft above mean sea level (msl) and the topography slopes gently to the north. Oakland Inner Harbor is about 0.75 mile to the north and San Francisco Bay lies about 0.67 mile to the south.

### SITE INVESTIGATIONS

**1982 Well Installation:** As a result of an apparent ~~50 gallon Regular gasoline leak~~ (Chevron 1982) from a 10,000-gallon underground storage tank (UST), six monitoring wells (B-1 through B-6) were installed at the site in January 1982 by J.H. Kleinfelder & Associates (K&A) of Walnut Creek,

California under the direction of I.T. Envirosience (ITE) of Concord, California. The tank was removed from service after a hole was found in the tank near the tank fill pipe. Although ground water samples were collected from all six wells for visual analysis on January 21, 1982, no soil or ground water samples were collected for chemical analysis. However, each well was analyzed for combustible gas concentration and percent of lower explosive limit (LEL). No sheen was observed in any of the samples during the visual analysis. Summary tables of these values and comments are presented in Appendix B. Boring logs are presented in Appendix C.

B-3 had  
st. sheen

**1982 Tank Excavation and Replacement:** The tank system was removed and replaced in early 1982. A gauge stick hole was observed in the bottom of the Regular tank during removal. A new diesel tank and new waste oil tank were also installed in the same tank complex as the product tanks. During tank replacement, monitoring well B-2 was destroyed to accommodate the new tanks and tank backfill wells A-1 and A-2 were installed with the new tanks.

**1991 Diesel Release and Ground Water Monitoring:** On September 19, 1991, approximately 1,400 gallons of diesel fuel were inadvertently pumped into tank-backfill monitoring well A-1 during tank testing activities (Chevron 1992a). 1,600 gallons of SPH were removed from the well immediately after the release was discovered. A weekly separate-phase hydrocarbon (SPH) recovery program established by Pacific Environmental Group, Inc. (PEG) of Santa Clara, California removed an additional 346 gallons of diesel SPH from well A-1 between September 1991 and July 1992. Since more SPH was recovered than apparently spilled, the SPH was analyzed to identify the various constituents. Laboratory analysis showed that the SPH consisted of 95.9 percent lube oil, 2.5 percent diesel fuel and 1.6 percent gasoline (Chevron 1992b). A July 15, 1992 letter from Chevron to Juliet Shin of the ACDEH noted that the bulk of the diesel fuel had apparently been recovered. Laboratory results suggested that waste oil had also been inadvertently disposed into well A-1 because waste oil was also being recovered during the weekly bailing. Since very small volumes of SPHs were being recovered during bailing events in early 1992, the bailing frequency was reduced to biweekly in January 1992, and then to monthly in February 1992. A ground water sampling program was initiated for wells B-1, B-3, B-4, B-5, B-6, A-1, and A-2 in September 1991.

**1993 Additional Well Installation:** Between March 29 and 30, 1993, Groundwater Technology of Concord, California (GTI) supervised the installation of ground water monitoring wells B-7, B-8 and



B-9. Analytic results of soil samples collected during drilling activities showed total petroleum hydrocarbons as gasoline (TPH-G) and benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations below detection limits. Ground water samples collected on April 23, 1993 from eight site monitoring wells, including B-7, B-8 and B-9, and were analyzed for TPH-G, total petroleum hydrocarbons as diesel (TPH-D) and BTEX. TPH-G was detected in wells B-1, B-3 and B-4 at 13,000, 18,000 and 5,700 parts per billion, respectively. A-1 and A-2 had SPH thicknesses of 0.6 ft and 0.18 ft, respectively. Analytic results tables for soil and ground water are presented in Appendix B and the boring logs for wells B-7, B-8 and B-9 are presented in Appendix C.

***April, May 1994, Tank Removal and Well Destruction:*** In April and May 1994, one 1,000 gallon fiberglass waste oil tank and one 350 gallon steel waste and/or heating oil tank were removed. In addition, product piping was removed and replaced and monitoring wells A-2, B-3, and B-4 were abandoned by drilling out the casing and/or pressure grouting. Soil samples from beneath site structures were collected by Touchstone Developments of San Francisco, California and the well abandonment was conducted by PEG. Approximately 400 to 500 cubic yards were excavated from the waste oil tank pits. Soil samples from the 1,000 gallon tank excavation contained up to 440 ppm TPH-G but had no benzene. The soil sample from beneath the 350 gallon tank contained 1,200 ppm TPH-G and 0.64 ppm benzene. The highest concentration of TPH-G and benzene in soil samples from beneath the product piping were 4,900 ppm and 4.6 ppm, respectively.

***1994 Ground Water Monitoring and SPH Removal:*** SPHs were being removed on a weekly basis from both monitoring wells A-1 and A-2 until April 1994 when well A-2 was abandoned. Weekly SPH removal is still being conducted in well A-1. Due to the SPH viscosity, the use of absorbent pads to remove the SPH in wells A-1 and A-2 began in June 1993 (Chevron 1994). Concentrations of TPH-G, TPH-D and BTEX have been consistently low or non-detect in all site wells for the last four quarters except for source area wells. Summary tables of historical ground water analytic results for hydrocarbons are presented in Appendix B, and the boring logs are presented in Appendix C.

## REMEDIAL ACTIONS

**Separate-Phase Hydrocarbons Removal:** A SPH recovery program was established by PEG in September 1991 and approximately 2,000 gallons of SPH's have been removed by bailing or absorbent pads since the program was initiated. Weekly removal by absorbent pads is currently being conducted in well A-1.

**Excavation:** A leaking Regular gasoline tank was removed and replaced in 1982 along with an undetermined volume of soil. In April and May 1994, 600 to 700 cubic yards of hydrocarbon-bearing soil was removed from beneath the two waste oil tanks and the product piping. In April and May 1994, one 1,000 gallon fiberglass waste oil tank, one 350 gallon waste oil tank and product piping were removed.

Not  
per grand?

## EVALUATION OF NON-ATTAINMENT AREA CRITERIA AND FUTURE ACTION PLAN

### DISCUSSION OF NON-ATTAINMENT AREA CRITERIA

The consistent low to non-detectable levels of TPH-G and benzene in site perimeter wells indicate that this site is an excellent candidate for establishment of a non-attainment area for the region within the perimeter of those wells. In the following section, each of RWQCB criteria for establishment of a non-attainment area is considered for the subject site.

*Criterion a. The Discharger has demonstrated (e.g., pump test, ground water monitoring, transport modeling) and will verify (e.g., ground water monitoring) that no significant pollution migration will occur due to hydrogeologic or chemical characteristics.*

**Site Hydrogeology:** Site sediments generally consist of sand with clayey sand and silty sand to a depth of 20 feet, the total depth explored. All site wells except wells B-1 and B-3 have lower permeability clayey sand from approximately 7 ft to 15 ft bgs. Wells B-1 and B-3 have high permeability sediments between 7 and 15 ft.

**Ground Water Flow:** The surface elevation at the site is approximately 10 to 12 ft above msl. The depth to water in site wells ranges from 4 to 7 ft bgs. The ~~ground water flow direction ranges from northeastward to northwestward at a gradient of approximately 0.003 feet per foot.~~ A ground water elevation contour map is presented in Appendix A. Compiled water level data for monitoring wells A-1, A-2, B-1 and B-3 through B-9, are presented in the Historical Groundwater Monitoring and Analytical Results table included in Appendix B.

**Plume Location:** Hydrocarbons in ground water at the site are contained in the vicinity of the UST complex and the pump islands near monitoring well B-1 and former wells B-3 and B-4. Hydrocarbon concentrations in down-gradient monitoring wells B-5 and B-9 and cross-gradient well B-7 have been historically non-detectable with low hydrocarbon concentrations detected only twice in B-5 and once

in B-7. The lateral and vertical extent of the plume has remained essentially stable since the ground water monitoring and SPH removal program began in 1991. Therefore, no useful new information could be obtained by installing wells in the area of former wells A-2, B-3 and B-4.

**Plume Stability:** Hydrocarbons have been present in ground water at this site since at least 1982. However, no significant hydrocarbons, if any, have been detected in downgradient monitoring wells B-5 and B-9 since monitoring was initiated, indicating that the plume is contained in the vicinity of the UST complex and pump islands. Apparently, natural plume containment through natural attenuation mechanisms, such as sorption, dispersion, volatilization through the unsaturated zone, and/or chemical and biological activity have degraded the hydrocarbons onsite, thereby limiting the concentration of hydrocarbons in ground water and hydrocarbon migration. Attenuation is supported by the fact that hydrocarbons in the vicinity of well B-4 have not migrated to well B-5, 40 ft away. In addition, since the gradient direction ranges between northeastward and northwestward, it is not likely that hydrocarbons in the vicinity of former well B-3 would migrate westward toward well B-7 and the sewer line beneath Webster Street 50-60 ft away. Migration would most likely be northward and attenuated within 40 ft as evidenced by attenuation between wells B-4 and B-5.

*Criterion b. Adequate source removal and/or isolation is undertaken to limit future migration of pollutants to ground water.*

**Source Removal:** The USTs were removed in 1982 along with an uncertain volume of excavated soil. Nearly all of the diesel fuel mass accidentally dispensed into tank pit well A-1 has been recovered by the product recovery program. In addition, significant total mass of less volatile and less mobile hydrocarbons have also been recovered by the absorbent pads. Recent tank removal and product line replacement activities resulted in the removal of 600 - 700 cubic yards of source area soil. Adequate source removal is indicated by the fact that hydrocarbons are not migrating to downgradient wells B-5 and B-9, therefore, additional source removal is not warranted.

*Criterion c. Dissolved phase cleanup is not cost-effective due to limited water quality impacts, environmental and human health risks and separate phases have been or are actively being removed. do indoor air risk assessment*

The only appropriate remedial technology for this site, product recovery, has been and is being successfully performed as discussed in the Remedial Actions section above. In addition, the extent of water quality impacts at this site are contained within the present well network and there is asphalt covering the entire area containing hydrocarbons in soil and ground water.

**Ground Water and Soil Vapor Extraction:** Monitoring data indicates that impacted ground water remains in the vicinity of the original source, and that engineered containment is not necessary to prevent offsite migration. The stable plume does not warrant the expense or uncertainty associated with any technologies to extract hydrocarbons from impacted soil or ground water at this site. Data collected at the site indicates that the remediation which has been performed at the site to date has removed as much of the hydrocarbons as is technically and economically feasible. Furthermore, natural processes are effectively controlling and remediating the ground water plume.

*Criterion d. An acceptable plan is submitted and implemented for containing and managing the remaining human health, water quality and environmental risks, if any, posed by residual soil and ground water pollution.*

Our plan for containing and managing the remaining risks posed by residual hydrocarbons at this site includes: 1) notification of the existence of a residual plume to the Alameda County Flood Control and Water Conservation District (Zone 7); 2) continued ground water monitoring for hydrocarbons within the plume for a limited period of time; and 3) implementing a contingency plan if monitoring indicates significant migration and/or increasing concentrations in the plume. We will continue monitoring B-6 to determine the status of any upgradient offsite hydrocarbon contamination.

**Zone 7 Notification:** Zone 7 regulates the installation and permitting of drinking water wells in this area. Notification will ensure that the potential risks from the remaining hydrocarbon plume are considered before a water supply well permit is issued for this site, or for adjacent sites.

Our proposed ground water monitoring schedule and contingency plan are presented in the Future Action Plan below.

## FUTURE ACTION PLAN

**Continued Ground Water Monitoring:** The hydrocarbon plume at this site has remained stable since monitoring was first performed in 1991. Currently, seven site wells are monitored quarterly for hydrocarbons. Hydrocarbons have only been detected once in crossgradient well B-7 and twice in downgradient well B-5 and then only at low concentrations. In addition, hydrocarbons have never been detected in downgradient well B-9 and upgradient wells B-6 and B-8, indicating that the plume remains contained onsite. Continued quarterly monitoring of the wells will not yield additional information concerning hydrocarbon concentrations in ground water at the Chevron site. To ensure compatibility with health risk concerns while reducing monitoring at this site, we plan to:

- 1) Continue gauging the depth to water quarterly in wells B-6 and B-8 to verify the gradient direction but discontinue ground water sampling since no hydrocarbons have been detected in these wells for 4 quarters. Frequency of gauging will follow the frequency of monitoring given in number 2 below.
- 2) Quarterly sampling and reporting for wells B-5, B-7 and B-9 through 1995 then annual sampling at the seasonal high water level through 1997. These three wells will be analyzed for TPH-G, TPH-D and BETX. After two years of annual sampling, cease gauging and sampling at the beginning of 1998 unless the contingency plan has been implemented. Monitoring these crossgradient and downgradient wells will confirm that the current configuration of the plume remains stable. *No adequ.*
- 3) Continue removing hydrocarbons from well A-1 until SPHs are no longer measured.
- 4) Quarterly sampling and reporting for well B-1 through 1995 then annual sampling at the seasonal high water level through 1997. This well will be analyzed for TPH-G, TPH-D and BETX. In addition, this well will be analyzed for total oil and grease (TOG) to confirm that the concentrations of these relatively immobile compounds remain stable or decreasing. After two years of annual sampling, cease gauging and sampling at the beginning of 1998 unless the contingency plan has been implemented. Monitoring this source area well will confirm that source area concentrations are stable or decreasing.

*No, wait to confirm decreasing trend, then can reduce sampling frequency*

**Contingency Plan:** For each of these five sampling points, "baseline" and "trigger" conditions have been defined (Appendix D). Should monitoring indicate that "trigger" concentrations occur in any well for two consecutive monitoring periods, a Contingency Plan for increased ground water monitoring and evaluating an appropriate course of action will go into effect. This plan will ensure that "baseline" conditions are maintained in all wells. Details of the contingency plan are presented in Appendix D.

## CONCLUSIONS

Data collected at the site over the past 3 years demonstrate that:

- Quarterly ground water samples have been collected from monitoring wells B-1 and B-3 through B-6 since 1991 and from monitoring wells B-7 through B-9 since 1993. Hydrocarbon concentrations in wells B-5, B-6, B-7, B-8 and B-9 have been low or non-detect since monitoring began in these wells.
- Hydrocarbons have been present in the subsurface at this site for at least 12 years. In that time, the contaminant plume has not migrated to B-5 or B-9, located downgradient approximately 40 ft and 90 ft, respectively. Data indicates that the hydrocarbon plume at this site is stable.
- The source of the majority of the hydrocarbons in ground water was a 1991 diesel release into tank pit well A-1. The diesel was promptly removed and an ongoing separate phase hydrocarbon removal program has dramatically decreased the remaining mass.
- The leaking gasoline tank was replaced in 1982 and two waste oil tanks, product piping and 600-700 cubic yards of soil were removed in April and May 1994.
- The product recovery program has been effective at reducing plume mass and concentrations. No cost-effective technologies exist that might significantly accelerate cleanup of this plume.

Based on the data summarized in this report, it is apparent that no additional remedial measures are necessary. Declaring the downgradient plume boundary wells as the attainment points for achievement of maximum contaminant levels (MCLs) will allow natural processes to continue to contain and degrade the plume. The proposed monitoring and contingency plan will ensure that the risks posed by the residual plume are contained and managed.

Therefore, we request that ACDEH and the RWQCB accept that drinking water standards cannot be attained in the central portion of this property and consider redefining the area of attainment of water quality objectives to outside the onsite plume. We will continue to monitor the non-attainment area boundary at downgradient wells B-5, B-7 and B-9 for three more years to further confirm the apparent stability of this plume.

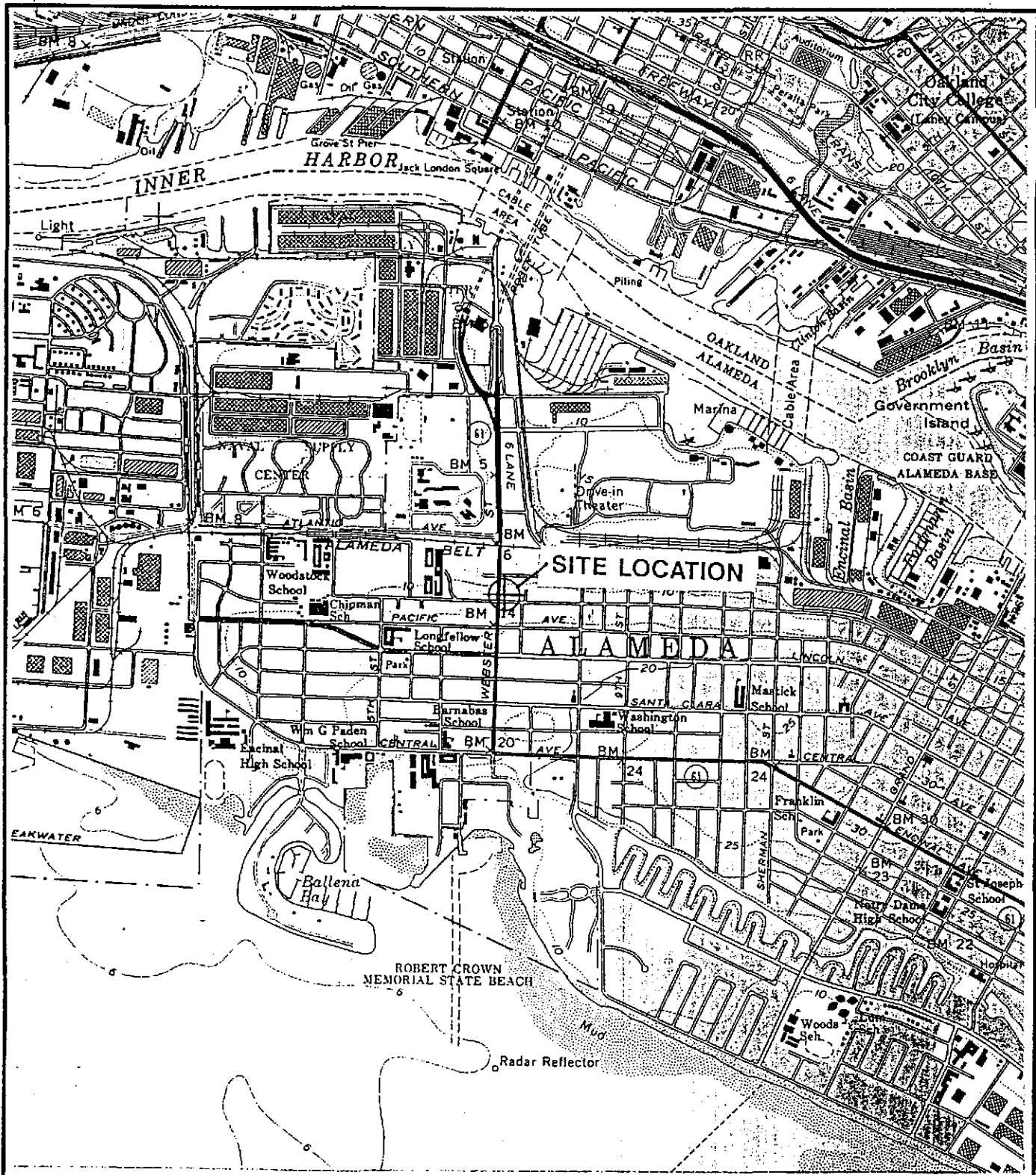


## REFERENCES

- K&A, February 4, 1982. Groundwater Monitoring Well Installation Report, Alameda Chevron Station, Alameda, California. File B-1163-1.
- ITE, February 8, 1982. Progress Report #1, Gasoline Leakage, Chevron Station, 1802 Webster Street, Alameda, CA 94501. WC58X5.
- K&A, February 11, 1982. Hydrogeologic Study, Chevron Service Station, 1802 Webster, Alameda, California.
- ITE, April 6, 1982. Progress Report #2 (FINAL), Gasoline Leakage, Chevron Station, 1802 Webster Street, Alameda, CA 94501. WC58X5.
- PEG, January 2, 1992. Groundwater Monitoring and Weekly Separate-Phase Hydrocarbon Removal Report, Chevron Service Station 9-0290, 1802 Webster Street at Buena Vista Avenue, Alameda, California. Project 325-10.01.
- Chevron, January 5, 1992a. Letter to Pamela Evans of the Alameda County Health Care Services from Nancy Vukelich of Chevron U.S.A., Inc., 2 pp.
- PEG, April 6, 1992. Quarterly Groundwater Sampling and Analytical Program Report, Chevron Service Station 9-0290, 1802 Webster Street at Buena Vista Avenue, Alameda, California. Project 325-10.01.
- PEG, July 8, 1992. Quarterly Groundwater Sampling and Analytical Program Report, Chevron Service Station 9-0290, 1802 Webster Street at Buena Vista Avenue, Alameda, California. Project 325-10.01.
- Chevron, July 15, 1992b. Letter to Juliet Shin of the Alameda County Health Care Services from Nancy Vukelich of Chevron U.S.A., Inc., 2 pp.
- GTI, March 9, 1993. Groundwater Monitoring and Sampling Activities, Chevron Service Station No. 9-0290, 1802 Webster Street, Alameda, California. Project No. 020202803.
- GTI, May 26, 1993. Additional Environmental Assessment Report, Chevron Service Station No. 9-0290, 1802 Webster Street, Alameda, California. Project No. 020202976.
- GTI, August 25, 1993. Groundwater Monitoring and Sampling Activities, Chevron Service Station No. 9-0290, 1802 Webster Street, Alameda, California. Project No. 020204104.

**REFERENCES (continued)**

- GTI, November 22, 1993. Groundwater Monitoring and Sampling Activities, Chevron Service Station No. 9-0290, 1802 Webster Street, Alameda, California. Project No. 020204104.
- GTI, February 25, 1994. Groundwater Monitoring and Sampling Activities, Chevron Service Station No. 9-0290, 1802 Webster Street, Alameda, California. Project No. 020204098.
- Chevron, April 19, 1994. Letter to Juliet Shin of the Alameda County Health Care Services from Mark Miller of Chevron U.S.A., Inc., 2 pp.
- Touchstone Developments, July 19, 1994. UST Removal, Product Line Replacement & Sampling Report, Chevron Service Station No. 9-0290, 1802 Webster Street, Alameda, California.
- PEG, July 27, 1994. Well Destruction Report, Chevron Service Station 9-0290, 1802 Webster Street at Buena Vista Avenue, Alameda, California. Project 320-108.1A.
- GTI, September 20, 1994. Groundwater Monitoring and Sampling Activities, Chevron Service Station No. 9-0290, 1802 Webster Street, Alameda, California.



**GROUNDWATER  
TECHNOLOGY**

4057 PORT CHICAGO HWY  
CONCORD, CA 94520  
(510) 671-2387



SCALE:

0 FEET 2000

**SITE LOCATION MAP**

CLIENT:

CHEVRON U.S.A. PRODUCTS CO.  
SERVICE STATION No. 9-0290

DATE:

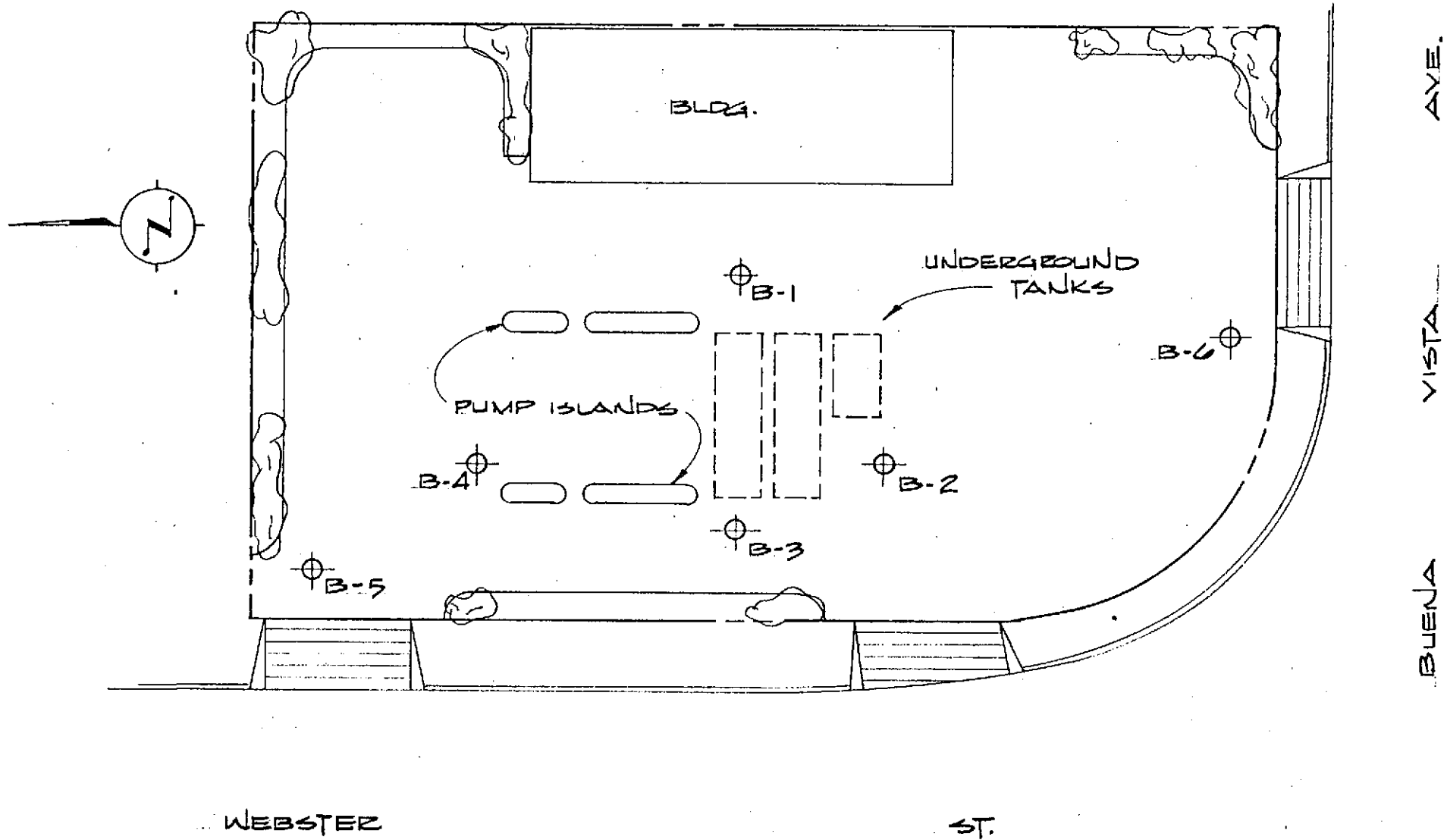
5/28/93

LOCATION:

1802 WEBSTER STREET  
ALAMEDA, CALIFORNIA

FIGURE:

1



LEGEND  
 ⊕ : MONITORING WELL

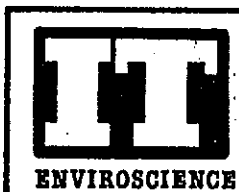
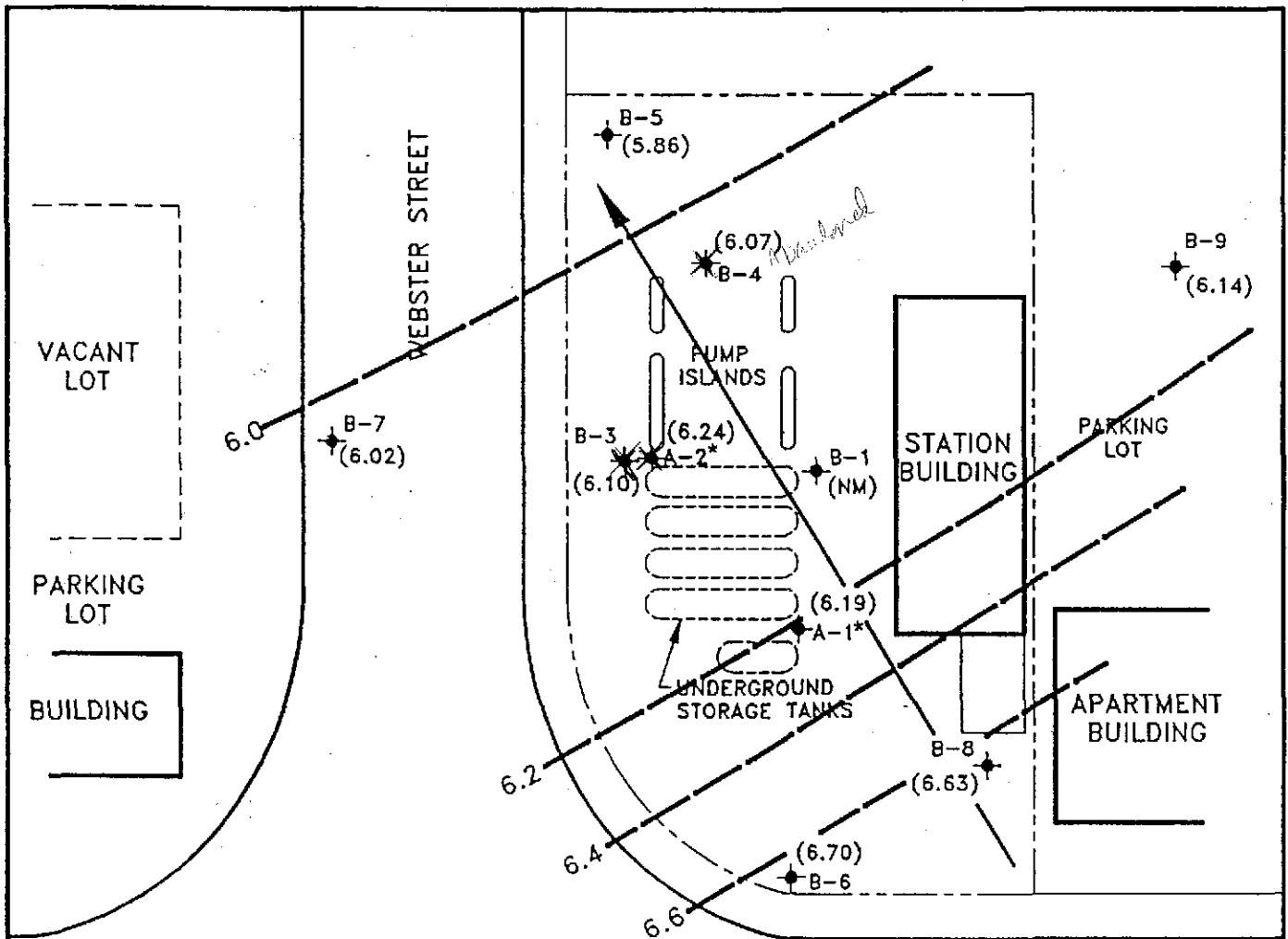


FIGURE 2  
 CHEVRON STATION - ALAMEDA, CA.  
 MONITORING WELL LOCATIONS



- LEGEND**
- ◆ MONITORING WELL
  - ( ) POTENTIOMETRIC SURFACE ELEVATION
  - - - POTENTIOMETRIC SURFACE CONTOUR
  - NM NOT MONITORED
  - GROUNDWATER FLOW DIRECTION
  - TANK PIT WELLS NOT USED IN CONTOURING

*B-1 casing is bent*

BUENA VISTA AVENUE

B.P. STATION



**GROUNDWATER TECHNOLOGY**  
 4057 PORT CHICAGO HWY.  
 CONCORD, CA 94520  
 (510) 671-2387

**POTENTIOMETRIC SURFACE MAP  
 (4/23/93)**

CLIENT: CHEVRON U.S.A. PRODUCTS CO.  
 SERVICE STATION No. 9-0290

LOCATION: 1802 WEBSTER STREET  
 ALAMEDA, CALIFORNIA

REV. NO.: 0 DATE: 5/14/93

PM *JMS*

PE/RG DRK

DESIGNED TW

DETAILED CY

ACAD FILE: SP593/SP1092

PROJECT NO.: 020202974

FIGURE: 6

TABLE 2

Alameda Station #290

	1/21/82 <u>INITIAL</u>	1/21/82 <u>FINAL</u>
<u>WELL B-1</u>		
PPM	>1000	<del>200-0</del>
LEL	60	2
GWL	4.50 Feet	4.42 Feet
Remarks: Sample	Cloudy Light Tan No Sheen <b>Strong Odor</b>	Clear No Sheen No Odor
Well	App. 30 sec until dry	
<u>WELL B-2</u>		
PPM	>1000	<del>500-200</del>
LEL	20-5	7
GWL	3.42 Feet	3.54 Feet
Remarks: Sample	Cloudy Light Tan 1/4" Hydrocarbon <b>Strong Odor</b>	Clear No Sheen <del>Slight Odor</del>
Well	App. 30 sec. until dry	
<u>WELL B-3</u>		
PPM	>1000	<del>100</del>
LEL	40-10	2
GWL	4.17 Feet	4.01 Feet
Remarks: Sample	Cloudy <b>Slight Sheen</b> <b>Moderate Odor</b>	Clear No Sheen <b>Strong Odor</b>
Well	App. 30 sec. until dry	
<u>WELL B-4</u>		
PPM	<del>650-400</del>	>1000
LEL	10-2	10
GWL	3.85 Feet	4.02 Feet
Remarks: Sample	Cloudy Tan No Sheen <b>Moderate Odor</b>	Clear No Sheen <b>Moderate Odor</b>
Well	App. 30 sec. until dry	

NOTE: Groundwater levels (GWL) except for wells B-1 and B-2 are normalized to a horizontal plane through the surface elevation of the top of well B-4.

TABLE 2

Alameda Station #290

<u>WELL B-5</u>	<u>1/21/82</u> <u>INITIAL</u>	<u>1/21/82</u> <u>FINAL</u>
PPM	0	0
LEL	0	0
GWL	4.05 Feet	4.10 Feet
Remarks:		
Sample	Cloudy Light Tan No Sheen No Odor	Clear No Sheen No Odor
Well	App. 30 sec. until dry	
 <u>WELL B-6</u>		
PPM	0	0
LEL	0	0
GWL	3.38 Feet	3.52 Feet
Remarks:		
Sample	Cloudy Light Tan 1/4" Foam Layer No Odor	Slightly Cloudy No Sheen No Odor
Well	App. 30 sec. until dry.	

NOTE: Groundwater levels (GWL) except for wells B-1 and B-2 are normalized to a plane through the surface elevation of the top of well B-4.

TABLE 1

Alameda Station #290

2/17/82

WELL B-1 Not sampled

WELL B-2 Removed

WELL B-3

PPM >1000  
LEL 20-10  
GWL 3.70 Feet

Remarks:  
Sample

Clear  
No sheen  
No odor

WELL B-6

PPM 50  
LEL 0  
GWL 3.37 Feet

Remarks:  
Sample

Clear  
No sheen  
No odor

WELL B-4

PPM >1000  
LEL 80-10  
GWL 3.56 Feet

Remarks:  
Sample

Clear  
No Sheen  
Faint odor

SOUTHEAST BACKFILL WELL

PPM >1000  
LEL 40-30  
GWL 3.57 Feet

Remarks:  
Sample

Clear  
No Sheen  
Faint odor

WELL B-5

PPM 50  
LEL 0  
GWL 4.04 Feet

Remarks:  
Sample

Clear  
No sheen  
No odor

NORTHWEST BACKFILL WELL

PPM 0  
LEL 0  
GWL 3.59 Feet

Remarks:  
Sample

Clear  
No sheen  
No odor

NOTE: Groundwater levels are all normalized to a horizontal plane through the surface elevation of the top of well B-4.



TABLE 1  
 ANALYTICAL RESULTS OF SOIL SAMPLES  
 Collected on March 29 and 30, 1993  
 (Concentrations in parts per million)

Date	Sample ID	Sample Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-G	TPH-D
03/29/93	B-7	5	<0.005	<0.005	<0.005	<0.015	<1	<1
03/29/93	B-8	5	<0.005	<0.005	<0.005	<0.015	<1	<1
03/30/93	B-9	5	<0.005	<0.005	<0.005	<0.015	<1	<1

TPH-G = Total petroleum hydrocarbons-as-gasoline

TPH-D = Total petroleum hydrocarbons-as-diesel fuel

**TABLE 1**  
**SEPARATE-PHASE HYDROCARBONS BAILED**  
**MONITORING WELL A-1**  
**Chevron Service Station No. 9-0290**  
**1802 Webster Street, Alameda, California**



Date	Amount Product Bailed (gallons)	Total Product Bailed (gallons)
06/11/93	2 gallons	2.00
06/15/93	0.13	2.13
06/18/93	0.13	2.26
06/22/93	0.5 gallon	2.76
06/29/93	*	2.76
07/09/93	**	2.76
07/15/93	***	2.76
07/20/93	***	2.76
07/27/93	***	2.76
08/06/93	***	2.76
08/10/93	***	2.76
08/16/93	***	2.76
09/16/93	***	2.76
09/24/93	***	2.76
10/01/93	***	2.76
10/07/93	***	2.76
10/13/93	***	2.76
10/20/93	***	2.76
10/28/93	***	2.76
11/12/93	***	2.76
11/19/93	***	2.76
11/30/93	***	2.76
12/10/93	***	2.76
12/16/93	**	2.76
12/23/93	***	2.76
12/29/93	**	2.76
01/03/94	***	2.76
01/17/94	***	2.76
01/26/94	***	2.76
02/07/94	**	2.76
02/11/94	***	2.76
02/18/94	***	2.76
02/25/94	***	2.76
03/04/94	**	2.76
03/11/94	***	2.76
03/16/94	***	2.76
03/25/94	**	2.76
04/01/94	***	2.76
08/18/94	***	2.76

\* = Absorbent pad installed to collect separate-phase product  
 \*\* = Absorbent pads turned over  
 \*\*\* = Replaced absorbent pad

TABLE 2  
 SEPARATE-PHASE HYDROCARBONS BAILED  
 MONITORING WELL A-2  
 Chevron Service Station No. 9-0290  
 1802 Webster Street, Alameda, California



Date	Amount Product Bailed (gallons)	Total Product Bailed (gallons)
06/11/93	1.00	1.00
06/15/93	0.13	1.13
06/18/93	0.26	1.39
06/22/93	0.50	1.89
06/29/93	*	1.89
07/09/93	**	1.89
07/15/93	***	1.89
07/20/93	***	1.89
07/27/93	***	1.89
08/06/93	***	1.89
08/10/93	***	1.89
08/16/93	***	1.89
09/16/93	***	1.89
09/24/93	***	1.89
10/01/93	***	1.89
10/07/93	***	1.89
10/13/93	***	1.89
10/20/93	***	1.89
10/28/93	***	1.89
11/12/93	***	1.89
11/19/93	***	1.89
11/30/93	***	1.89
12/10/93	**	1.89
12/16/93	***	1.89
12/23/93	***	1.89
12/29/93	***	1.89
01/03/94	***	1.89
01/17/94	***	1.89
01/26/94	**	1.89
02/07/94	**	1.89
02/11/94	***	1.89
02/18/94	***	1.89
02/25/94	***	1.89
03/04/94	***	1.89
03/11/94	**	1.89
03/16/94	**	1.89
03/25/94	***	1.89
04/01/94	***	1.89

\* = Absorbent pad installed to collect separate-phase product  
 \*\* = Absorbent pads turned over  
 \*\*\* = Replaced absorbent pad

**TABLE 3**  
**HISTORICAL GROUNDWATER MONITORING AND ANALYTICAL RESULTS**  
**Chevron Service Station No. 9-0290**  
**1802 Webster Street, Alameda, California**

Well ID/ Elev	Date	TPH-G	Benzene	Toluene	Ethyl- benzene	Xylenes	TOG	TPH-D	DTW (ft)	SPT (ft)	WTE (ft)
A1 8.13	09/20/91	---	---	---	---	---	---	---	9.23	1.58	0.48
	10/09/91	---	---	---	---	---	---	---	6.67	0.00	1.46
	10/17/91	---	---	---	---	---	---	---	7.28	0.58	1.43
	10/23/91	---	---	---	---	---	---	---	7.42	0.65	1.36
	11/01/91	---	---	---	---	---	---	---	7.14	0.50	1.49
	11/07/91	---	---	---	---	---	---	---	7.14	0.51	1.50
	11/15/91	---	---	---	---	---	---	---	7.19	0.53	1.47
	11/21/91	---	---	---	---	---	---	---	7.28	0.54	1.28
	12/12/91	---	---	---	---	---	---	---	7.33	0.49	1.29
	12/30/91	---	---	---	---	---	---	---	6.76	0.36	1.73
	01/13/92	---	---	---	---	---	---	---	6.29	0.37	2.21
	01/22/92	---	---	---	---	---	---	---	6.43	0.45	2.15
	02/12/92	---	---	---	---	---	---	---	6.30	0.38	2.21
	03/09/92	---	---	---	---	---	---	---	5.30	0.31	3.14
	04/10/92	---	---	---	---	---	---	---	5.37	0.07	2.83
05/18/92	---	---	---	---	---	---	---	6.14	0.40	2.39	
11.56	01/06/93	---	---	---	---	---	---	---	---	---	---
	02/03/93	---	---	---	---	---	---	---	---	---	---
	04/23/93	---	---	---	---	---	---	---	5.85	0.60	6.19
	07/19/93	---	---	---	---	---	---	---	6.23	0.26	5.54
	10/19/93	---	---	---	---	---	---	---	---	0.10	---
	01/17/94	---	---	---	---	---	---	---	---	---	---
	08/18/94	---	---	---	---	---	---	---	---	---	---

**TABLE 3**  
**HISTORICAL GROUNDWATER MONITORING AND ANALYTICAL RESULTS**  
**Chevron Service Station No. 9-0290**  
**1802 Webster Street, Alameda, California**

Well ID/ Elev	Date	TPH-G	Benzene	Toluene	Ethyl- benzene	Xylenes	TOG	TPH-D	DTW (ft)	SPT (ft)	WTE (ft)
A-2 8.00	09/20/91	8,100	860	14	110	53	---	**5,100	7.73	0.00	0.27
	10/09/91	---	---	---	---	---	---	---	6.61	0.00	1.39
	10/17/91	---	---	---	---	---	---	---	6.66	0.00	1.34
	10/23/91	---	---	---	---	---	---	---	6.80	0.09	1.29
	11/01/91	---	---	---	---	---	---	---	6.63	0.15	1.45
	11/07/91	---	---	---	---	---	---	---	6.64	0.21	1.45
	11/15/91	---	---	---	---	---	---	---	6.81	0.19	1.38
	11/21/91	---	---	---	---	---	---	---	6.93	0.24	1.31
	12/12/91	---	---	---	---	---	---	---	6.97	0.15	1.24
	12/30/91	---	---	---	---	---	---	---	6.54	0.24	1.70
	01/13/92	---	---	---	---	---	---	---	5.92	0.08	2.16
	01/22/92	---	---	---	---	---	---	---	6.01	0.10	2.00
	02/12/92	---	---	---	---	---	---	---	6.06	0.26	2.20
	03/09/92	---	---	---	---	---	---	---	4.93	0.04	3.11
	04/10/92	---	---	---	---	---	---	---	5.20	<0.01	2.80
	05/18/92	---	---	---	---	---	---	---	5.66	0.02	2.36
	01/06/93	---	---	---	---	---	---	---	---	---	---
	02/03/93	---	---	---	---	---	---	---	4.98	0.22	3.20
	11.46	04/23/93	---	---	---	---	---	---	---	5.36	0.18
07/19/93		---	---	---	---	---	---	---	6.79	1.07	5.53
10/19/93		---	---	---	---	---	---	---	6.36	1.41	6.23
Abandoned	01/17/94	---	---	---	---	---	---	---	---	---	---
B-1 12.12	04/23/93	13,000	4,900	22	250	47	---	8,300	5.93	0.00	6.19
	07/19/93	3,300	1,200	16	24	<30	---	1,600	6.66	0.00	5.46
	10/19/93	2,300	730	18	14	31	---	550	7.08	0.00	5.04
	01/17/94	22,000	6,500	170	210	430	---	<50	6.73	0.00	5.39
Casing Bent	08/18/94	---	---	---	---	---	---	---	6.85	0.00	5.27

**TABLE 3**  
**HISTORICAL GROUNDWATER MONITORING AND ANALYTICAL RESULTS**  
**Chevron Service Station No. 9-0290**  
**1802 Webster Street, Alameda, California**

Well ID/ Elev	Date	TPH-G	Benzene	Toluene	Ethyl- benzene	Xylenes	TOG	TPH-D	DTW (ft)	SPT (ft)	WTE (ft)	
B-3 8.01	09/20/91	---	---	---	---	---	---	---	6.94	0.01	1.08	
	10/09/91	---	---	---	---	---	---	---	6.35	0.00	1.66	
	10/17/91	---	---	---	---	---	---	---	6.44	0.00	1.57	
	10/23/91	---	---	---	---	---	---	---	6.84	0.00	1.53	
	11/01/91	---	---	---	---	---	---	---	6.31	0.00	1.70	
	11/07/91	---	---	---	---	---	---	---	6.32	0.00	1.69	
	11/15/91	---	---	---	---	---	---	---	6.39	0.00	1.62	
	11/21/91	---	---	---	---	---	---	---	6.44	0.00	1.57	
	12/12/91	---	---	---	---	---	---	---	6.82	<0.01	1.19	
	12/30/91	---	---	---	---	---	---	---	6.37	0.00	1.64	
	01/13/92	---	---	---	---	---	---	---	5.94	0.00	2.07	
	01/22/92	---	---	---	---	---	---	---	5.99	0.00	2.02	
	02/12/92	---	---	---	---	---	---	---	5.82	<0.01	2.19	
	03/09/92	---	---	---	---	---	---	---	5.10	0.00	2.91	
	04/10/92	---	---	---	---	---	---	---	5.36	0.00	2.65	
	05/18/92	6,200	550	58	13	51	<5,000	**250	5.72	0.00	2.29	
	01/06/93	5,400	490	54	51	82	---	***10,000	5.50	SHEEN	2.51	
	02/03/93	---	---	---	---	---	---	---	---	---	---	
	11.42	04/23/93	18,000	540	69	47	120	---	6,400	5.32	0.00	6.10
		07/29/93	40,000	780	69	49	150	---	4,000	5.94	0.00	5.48
10/19/93		20,000	520	37	43	100	---	1,500	6.32	0.00	5.10	
Abandoned	01/17/94	3,900	430	32	29	82	---	<50	6.95	0.00	4.47	

**TABLE 3**  
**HISTORICAL GROUNDWATER MONITORING AND ANALYTICAL RESULTS**  
**Chevron Service Station No. 9-0290**  
**1802 Webster Street, Alameda, California**

Well ID/ Elev	Date	TPH-G	Benzene	Toluene	Ethyl- benzene	Xylenes	TOG	TPH-D	DTW (ft)	SPT (ft)	WTE (ft)
B-4 8.04	09/20/91	19,000	710	160	650	2,000	---	*1,400	6.82	0.00	1.22
	10/09/91	---	---	---	---	---	---	---	6.63	0.00	1.41
	10/17/91	---	---	---	---	---	---	---	6.84	0.00	1.20
	10/23/91	---	---	---	---	---	---	---	6.87	0.00	1.17
	11/01/91	---	---	---	---	---	---	---	6.70	0.00	1.34
	11/07/91	---	---	---	---	---	---	---	6.73	0.00	1.31
	11/15/91	---	---	---	---	---	---	---	6.83	0.00	1.21
	11/21/91	---	---	---	---	---	---	---	6.84	0.00	1.20
	12/12/91	---	---	---	---	---	---	---	6.87	0.00	1.17
	12/30/91	---	---	---	---	---	---	---	6.46	0.00	1.58
	01/13/92	---	---	---	---	---	---	---	5.91	0.00	2.13
	01/22/92	---	---	---	---	---	---	---	5.95	0.00	2.09
	02/12/92	15,000	920	75	520	940	---	*860	5.78	0.00	2.26
	03/09/92	---	---	---	---	---	---	---	5.09	0.00	2.95
	04/10/92	---	---	---	---	---	---	---	5.39	0.00	2.65
11.46	05/18/92	19,000	2,000	97	560	1,200	<5,000	<50	5.59	0.00	2.45
	01/06/93	19,000	2,000	89	490	740	---	*2,700	5.50	SHEEN	2.54
	02/03/93	---	---	---	---	---	---	---	---	---	---
	04/23/93	5,700	2,400	75	380	580	---	2,300	5.39	0.00	6.07
	07/19/93	19,000	2,400	140	440	620	---	2,400	6.13	0.00	5.33
	10/19/93	13,000	1,200	84	290	530	---	2,100	6.51	0.00	4.95
	01/17/94	11,000	1,900	63	170	290	---	<50	6.18	0.00	5.28
Abandoned											

**TABLE 3**  
**HISTORICAL GROUNDWATER MONITORING AND ANALYTICAL RESULTS**  
 Chevron Service Station No. 9-0290  
 1802 Webster Street, Alameda, California

Well ID/ Elev	Date	TPH-G	Benzene	Toluene	Ethyl- benzene	Xylenes	TOG	TPH-D	DTW (ft)	SPT (ft)	WTE (ft)
B-5 7.73	09/20/91	<50	<0.5	<0.5	<0.5	<0.5	---	<50	5.53	0.00	2.20
	10/09/91	---	---	---	---	---	---	---	5.31	0.00	2.42
	10/17/91	---	---	---	---	---	---	---	5.64	0.00	2.09
	10/23/91	---	---	---	---	---	---	---	5.68	0.00	2.05
	11/01/91	---	---	---	---	---	---	---	5.49	0.00	2.24
	11/07/91	---	---	---	---	---	---	---	5.54	0.00	2.19
	11/15/91	---	---	---	---	---	---	---	5.63	0.00	2.10
	11/21/91	---	---	---	---	---	---	---	---	---	---
	12/12/91	---	---	---	---	---	---	---	5.68	0.00	2.05
	12/30/91	---	---	---	---	---	---	---	5.19	0.00	2.54
	01/13/92	---	---	---	---	---	---	---	4.65	0.00	3.07
	01/22/92	---	---	---	---	---	---	---	4.70	0.00	3.03
	02/12/92	<50	<0.5	<0.5	<0.5	<0.5	---	<50	4.45	0.00	3.28
	03/09/92	---	---	---	---	---	---	---	4.05	0.00	3.68
	04/10/92	---	---	---	---	---	---	---	4.43	0.00	3.30
05/18/92	390	39	1.9	11	24	<5,000	---	3.79	0.00	3.94	
01/06/93	<50	<0.5	<0.5	<0.5	<0.5	---	<50	4.44	SHEEN	3.29	
02/03/93	---	---	---	---	---	---	---	---	---	---	
10.18	04/23/93	<50	<0.5	<0.5	<0.5	<1.5	---	<50	4.32	0.00	5.86
	07/19/93	54	<0.5	0.7	<0.5	<1.5	---	<50	5.03	0.00	5.15
	10/19/93	<50	2.0	4.1	0.6	3.5	---	<50	5.10	0.00	5.08
	01/07/94	<50	<0.5	<0.5	<0.5	<0.5	---	<50	4.86	0.00	5.32
	08/18/94	<50	<0.5	<0.5	<0.5	<0.5	---	<50	5.14	0.00	5.04



**TABLE 3**  
**HISTORICAL GROUNDWATER MONITORING AND ANALYTICAL RESULTS**  
**Chevron Service Station No. 9-0290**  
**1802 Webster Street, Alameda, California**

Well ID/ Elev	Date	TPH-G	Benzene	Toluene	Ethyl- benzene	Xylenes	TOG	TPH-D	DTW (ft)	SPT (ft)	WTE (ft)
B-6 8.55	09/20/91	<50	<0.5	<0.5	<0.5	<0.5	---	<50	6.85	0.00	1.70
	10/09/91	---	---	---	---	---	---	---	6.83	0.00	1.72
	10/17/91	---	---	---	---	---	---	---	6.90	0.00	1.65
	10/23/91	---	---	---	---	---	---	---	6.93	0.00	1.62
	11/01/91	---	---	---	---	---	---	---	6.78	0.00	1.77
	11/07/91	---	---	---	---	---	---	---	6.81	0.00	1.74
	11/15/91	---	---	---	---	---	---	---	6.88	0.00	1.67
	11/21/91	---	---	---	---	---	---	---	6.95	0.00	1.60
	12/12/91	---	---	---	---	---	---	---	7.14	0.00	1.41
	12/30/91	---	---	---	---	---	---	---	6.50	0.00	2.05
	01/13/92	---	---	---	---	---	---	---	6.19	0.00	2.36
	01/22/92	---	---	---	---	---	---	---	6.27	0.00	2.28
	02/12/92	<50	<0.5	<0.5	<0.5	<0.5	---	<50	6.12	0.00	2.43
	03/09/92	---	---	---	---	---	---	---	5.28	0.00	3.27
	04/10/92	---	---	---	---	---	---	---	5.48	0.00	3.07
	05/18/92	<50	<0.5	<0.5	<0.5	<0.5	<5,000	<50	5.90	0.00	2.65
	01/08/93	<50	<0.5	<0.5	<0.5	<0.5	---	<50	5.79	0.00	2.76
	02/03/93	---	---	---	---	---	---	---	---	---	---
	11.97	04/23/93	<50	<0.5	<0.5	<0.5	<1.5	---	<50	5.27	0.00
07/19/93		74	<0.5	<0.5	<0.5	<1.5	---	<50	6.91	0.00	5.06
10/19/93		<50	<0.5	0.5	<0.5	2.2	---	<50	6.48	0.00	5.49
01/17/94		<50	<0.5	<0.5	<0.5	<0.5	---	<50	6.18	0.00	5.79
08/18/94		<50	<0.5	<0.5	<0.5	<0.5	---	<50	6.20	0.00	5.77
B-7 10.54		04/23/93	<50	<0.5	<0.5	<0.5	<1.5	<50	---	4.52	0.00
	07/19/93	<50	<0.5	<0.5	<0.5	<1.5	<50	<50	5.04	0.00	5.50
	10/19/93	<50	3.1	<0.5	<0.5	0.8	---	<50	5.40	0.00	5.14
	01/17/94	<50	<0.5	<0.5	<0.5	<0.5	---	<50	5.19	0.00	5.35
	08/18/94	<50	<0.5	<0.5	<0.5	1.1	---	<50	5.26	0.00	5.28

**TABLE 3**  
**HISTORICAL GROUNDWATER MONITORING AND ANALYTICAL RESULTS**  
**Chevron Service Station No. 9-0290**  
**1802 Webster Street, Alameda, California**

Well ID/ Elev	Date	TPH-G	Benzene	Toluene	Ethyl- benzene	Xylenes	TOG	TPH-D	DTW (ft)	SPT (ft)	WTE (ft)
B-8 11.99	04/23/93	<50	<0.5	<0.5	<0.5	<1.5	<50	---	5.36	0.00	6.63
	07/19/93	<50	<0.5	<0.5	<0.5	<1.5	<50	<50	6.22	0.00	5.77
	10/19/93	---	---	---	---	---	---	---	Dry	---	---
	01/17/94	<50	<0.5	<0.5	<0.5	<0.5	---	<50	6.30	0.00	5.69
	08/18/94	<50	<0.5	<0.5	<0.5	<0.5	---	<50	6.43	0.00	5.56
B-9 10.70	04/23/93	<50	<0.5	<0.5	<0.5	<1.5	<50	---	4.56	0.00	6.14
	07/19/93	<50	<0.5	<0.5	<0.5	<1.5	<50	<50	5.45	0.00	5.25
	10/19/93	<50	<0.5	<0.5	<0.5	<0.5	---	<50	5.89	0.00	4.81
	01/17/94	<50	<0.5	<0.5	<0.5	<0.5	---	<50	5.41	0.00	5.29
	08/18/94	<50	<0.5	<0.5	<0.5	<0.5	---	<50	5.55	0.00	5.15

**TABLE 3**  
**HISTORICAL GROUNDWATER MONITORING AND ANALYTICAL RESULTS**  
**Chevron Service Station No. 9-0290**  
**1802 Webster Street, Alameda, California**

Well ID/ Elev	Date	TPH-G	Benzene	Toluene	Ethyl- benzene	Xylenes	TOG	TPH-D	DTW (ft)	SPT (ft)	WTE (ft)
TBLB	01/06/93	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	04/23/93	---	---	---	---	---	---	---	---	---	---
	****07/19/93	---	---	---	---	---	---	---	---	---	---
	10/19/93	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	01/17/94	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	08/18/94	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---

- TPH-G = Total petroleum hydrocarbons-as-gasoline  
 TPH-D = Total petroleum hydrocarbons-as-diesel fuel  
 DTW = Depth to water  
 SPT = Separate-phase hydrocarbon thickness  
 WTE = Water table elevation in feet above mean sea level  
 TOG = Total oil and grease  
 --- = Not applicable/not sampled/not measured  
 \* = Diesel fuel range concentration reported. The pattern of peaks observed in the chromatogram is typical of gasoline.  
 \*\* = Does not match typical diesel patterns  
 \*\*\* = Diesel fuel range concentration reported. The pattern of peaks observed in the chromatogram is a mixture of gasoline and heavy hydrocarbons.  
 \*\*\*\* = Trip blank contaminated in lab; no back-up trip blank was carried.
- Analytical results in micrograms/liter ( $\mu$ l), parts per billion

DEPTH IN FEET

DEPTH IN FEET	DRY DENSITY lb/ft <sup>3</sup>	MOISTURE CONTENT % DRY WEIGHT	BLOW COUNT	SAMPLE	USCS	DESCRIPTION	WELL CONST.
0						Pavement section - 2"/6"	Concrete, typ.
					CH	Black silty clay, stiff, moist.	
3					SP	Dark gray brown sand, medium grained, moist to very moist.  Easier drilling in saturated material	Bentonite seal, typ.
6						Very soft.	
9					SP	Slightly stiff. Blue to olive gray clayey fine-grained sand.	Well screen, typ.
12					SP	Yellow brown clayey medium-grained sand, medium dense.	
15					SP	Grades to gray brown sand, loose to medium.	
18							Sand backfill, typ.
21						Bottom of boring at 20 ft.	

Concrete, typ.

Bentonite seal, typ.

Well screen, typ.

Sand backfill, typ.

J.H. KLEINFELDER & ASSOCIATES  
 GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PREPARED BY: FK      DATE: 1/28/82

CHECKED BY: CRN      DATE: 1/28/82

IT/ALAMEDA CHEVRON  
 ALAMEDA, CALIFORNIA

**LOG OF BORING NO. B-1**

PROJECT NO. B-1163-1

PLATE

2

DEPTH IN FEET

DEPTH IN FEET	DRY DENSITY lb/ft <sup>3</sup>	MOISTURE CONTENT % DRY WEIGHT	BLOW COUNT	SAMPLE	USCS	DESCRIPTION	WELL CONST.
0						Pavement section - 2"/6"	
0 - 3					SP	Dark gray brown, medium-grained sand, moist.	
3 - 6		18	Bag	2-4.5	SP	Grades to blue gray sand, trace clay, saturated material.	
6 - 9					SP	Stiffer, yellow brown clayey sand, medium dense.	
9 - 15					SP	Color grades to light gray brown.	
15 - 18					SP	Reddish yellow clayey, sand, medium dense, saturated.	
18 - 21		12	Bag	2-18.5			

J.H. KLEINFELDER & ASSOCIATES  
 GEOTECHNICAL CONSULTANTS • MATERIALS TESTING



IT/ALAMEDA CHEVRON  
 ALAMEDA, CALIFORNIA

LOG OF BORING NO. B-2

PLATE

3

PREPARED BY: FK      DATE: 1/28/82

CHECKED BY: CRN      DATE: 1/28/82

PROJECT NO. B-1163-1

DEPTH IN FEET	DRY DENSITY lb/ft <sup>3</sup>	MOISTURE CONTENT % DRY WEIGHT	BLOW COUNT	SAMPLE	USCS	DESCRIPTION	WELL CONST.
0						Pavement section - 2"/6"	
						Reddish yellow subbase-fill.	
3					SP	Dark brown fine-grained sand, moist, loose.	
6			6	3-6 *	SP	Blue gray medium-grained sand. loose. Saturated material. ▼	
9					SP	More dense. Olive gray sand, trace clay.	
12							
15					SP	Dark yellow brown medium- grained clayey sand.	
18							
21			35	3-21		Bottom of boring at 20 ft.	

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 GEOTECHNICAL CONSULTANTS • MATERIALS TESTING



IT/ALAMEDA CHEVRON  
 ALAMEDA, CALIFORNIA

LOG OF BORING NO. B-3

PLATE

4

PREPARED BY: FK      DATE: 1/28/82

CHECKED BY: CRN      DATE: 1/28/82

PROJECT NO. B-1163-1

DEPTH IN FEET

0	DRY DENSITY lb/ft <sup>3</sup>	MOISTURE CONTENT % DRY WEIGHT	BLOW COUNT	SAMPLE	USCS	DESCRIPTION	WELL CONST.
						Pavement section - 2"/6"	
						Reddish yellow subbase-fill.	
3					SP	Dark gray brown clayey, sand moist, medium.	
6						▼ Saturated, light color.	
9			25	4-11 *	SP	Dark blue gray sand, medium-grained, medium, trace clay. More dense.	
12						Yellow brown medium-grained, sand, some clay, medium. Lenses with light olive brown sand to bottom of boring	
15					SP		
18							
21						Bottom of boring at 20 ft.	

J.H. KLEINFELDER & ASSOCIATES  
 GEOTECHNICAL CONSULTANTS • MATERIALS TESTING



IT/ALAMEDA CHEVRON  
 ALAMEDA, CALIFORNIA  
 LOG OF BORING NO. B-4

PLATE

5

PREPARED BY: FK      DATE: 1/28/82

CHECKED BY: CRN      DATE: 1/28/82

PROJECT NO. B-1163-1

DEPTH IN FEET

DEPTH IN FEET	DRY DENSITY lb/ft <sup>3</sup>	MOISTURE CONTENT & DRY WEIGHT	BLOW COUNT	SAMPLE	USCS	DESCRIPTION	WELL CONST.
0						Pavement section - 2"/6"	
						Dark brown sand, moist, loose	
3					SP		
6						▼ Yellow brown medium- grained sand, saturated, trace clay.	
9		19	Bag	5-8	SP	More dense, more clay.	
12						Brown, clayey sand, medium.	
15					SP		
18						Caving sand.	
21						Bottom of boring at 20 ft.	

J.H. KLEINFELDER & ASSOCIATES  
 GEOTECHNICAL CONSULTANTS • MATERIALS TESTING



IT/ALAMEDA CHEVRON  
 ALAMEDA, CALIFORNIA

LOG OF BORING NO. B-5

PLATE

6

PREPARED BY: FK      DATE: 1/28/82

CHECKED BY: CRN      DATE: 1/28/82

PROJECT NO. B-1163-1



DEPTH IN FEET

DEPTH IN FEET	DRY DENSITY lb/ft <sup>3</sup>	MOISTURE CONTENT % DRY WEIGHT	BLOW COUNT	SAMPLE	USCS	DESCRIPTION	WELL CONST.
0						Pavement section - 2"/6"	
0 - 3		111	Bag	6-2	SP	Dark brown fine-grained silty sand.	
3 - 6						Saturated material.	
6 - 9						Grades to medium-grained yellow brown sand, trace clay.	
9 - 12						More dense, darker yellow brown, more clay.	
12 - 18					SP	Lenses of yellow and olive brown clayey medium-grained sand, medium dense.	
18 - 21						As above.	
21						Bottom of boring at 20 ft.	

J.H. KLEINFELDER & ASSOCIATES  
 GEOTECHNICAL CONSULTANTS • MATERIALS TESTING

PREPARED BY: FK      DATE: 1/28/82  
 CHECKED BY: CRN      DATE: 1/28/82

IT/ALAMEDA CHEVRON  
 ALAMEDA, CALIFORNIA

LOG OF BORING NO. B-6

PROJECT NO. B-1163-1

PLATE

7



# Drilling Log

Monitoring Well B-7

Project CHV/1802 Webster St. Owner Chevron  
 Location Alameda, CA Project No. 020202976 Date drilled 3/29/93  
 Surface Elev. N/A ft. Total Hole Depth 15.5 ft. Diameter 8 in.  
 Top of Casing N/A ft. Water Level Initial 5 ft. Static N/A ft.  
 Screen: Dia 2 in. Length 12 ft. Type/Size 0.020 in.  
 Casing: Dia 2 in. Length 3 ft. Type PVC SCH 40  
 Filter Pack Material #3 sand Rig/Core Type B-61/Mod. Cal. Split Spoon  
 Drilling Company Kvilhaug Drilling Method Hollow Stem Auger Permit # \_\_\_\_\_  
 Driller Rod Furlow Log By S.C. Hurley  
 Checked By David Kleesattel License No. RG# 5136 *David Kleesattel*

See Site Map  
For Boring Location

COMMENTS:

The well was set at approximately 15 feet below grade. The decon water and the soil cuttings were placed in labeled 55-gallon drums. The drums were left on site until they could be analyzed and disposed of properly.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure)
-2						Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0						ASPHALT
2					ML	SILT, dark brown, about 70% silt, about 30% fine sand (moist, no hydrocarbon odor)
4			8			Silty SAND, tan, about 60% fine sand, about 30% silt, about 10% clay (wet, no hydrocarbon odor). 3/29/93
6		1.7	10			
12			12			
10		1.7	38		SM	
14			48			
16		2.5	50			End of boring.
18			25			
20			25			
22			50			
24						



GROUNDWATER  
TECHNOLOGY

# Drilling Log

Monitoring Well 8-8

Project CHV/1802 Webster St. Owner Chevron  
 Location Alameda, CA Project No. 020202976 Date drilled 3/29/93  
 Surface Elev. N/A ft. Total Hole Depth 15.5 ft. Diameter 8 in.  
 Top of Casing N/A ft. Water Level Initial 5 ft. Static N/A ft.  
 Screen: Dia 2 in. Length 12 ft. Type/Size 0.020 in.  
 Casing: Dia 2 in. Length 3 ft. Type PVC SCH 40  
 Filter Pack Material #3 sand Rig/Core Type B-61/Mod. Cal. Split Spoon  
 Drilling Company Kvilhaug Drilling Method Hollow Stem Auger Permit # \_\_\_\_\_  
 Driller Rod Furlow Log By S.C. Hurley  
 Checked By David Kleesattel License No. RG# 5136 *David Kleesattel*

See Site Map  
For Boring Location

COMMENTS:

The well was set at approximately 15 feet below grade. The decon water and the soil cuttings were placed in labeled 55-gallon drums. The drums were left on site until they could be analyzed and disposed of properly.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description
						(Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						Road Base
2						Gravel
4						Silty SAND, tan, about 60% fine sand, about 30% silt, about 10% clay (wet, no hydrocarbon odor).
6		2.5	5	8 11 11		3/29/93
8						
10		2.5	10	40 50	SM	
12						
14						
16		1.7	15	20 30 45		End of boring.
18						
20						
22						
24						



GROUNDWATER  
TECHNOLOGY

# Drilling Log

Monitoring Well B-9

Project CHV/1802 Webster St. Owner Chevron  
 Location Alameda, CA Project No. 020202976 Date drilled 3/30/93  
 Surface Elev. N/A ft. Total Hole Depth 15.5 ft. Diameter 8 in.  
 Top of Casing N/A ft. Water Level Initial 5 ft. Static N/A ft.  
 Screen: Dia 2 in. Length 12 ft. Type/Size 0.020 in.  
 Casing: Dia 2 in. Length 3 ft. Type PVC SCH 40  
 Filter Pack Material #3 sand Rig/Core Type B-61/Mod. Cal. Split Spoon  
 Drilling Company Kvilhaug Drilling Method Hollow Stem Auger Permit # \_\_\_\_\_  
 Driller Rod Furlow Log By S.C. Hurley  
 Checked By David Kleesattel License No. RG# 5136 *David Kleesattel*

See Site Map  
For Boring Location

COMMENTS:

The well was set at approximately 15 feet below grade. The decon water and the soil cuttings were placed in labeled 55-gallon drums. The drums were left on site until they could be analyzed and disposed of properly.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ X Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						ASPHALT
0						Road Base
2					SM	Silty SAND, tan, about 60% fine sand, about 25% silt, about 15% clay (moist, no hydrocarbon odor).
4		2.5	5	18 20 22		SAND, tan, about 75% fine sand, about 20% silt, about 5% clay (wet, no hydrocarbon odor). 3/30/93
6						
8					SP	
10		0.8	10	22 44 50		
12						
14						
16		0	15	18 36 45		End of boring.
18						
20						
22						
24						

## APPENDIX D CONTINGENCY PLAN

This contingency plan will ensure compliance with the cleanup goals for the site. The cleanup goal is to maintain concentrations at or below MCLs in ground water at the downgradient edge of the plume. Hydrocarbon analyses will be performed to ensure that cleanup goals are not exceeded near the downgradient boundary and that compliance with cleanup goals is maintained.

Well B-1 (Table D-1) will serve as a "guard point" to monitor whether concentrations within the plume remain stable. Wells B-5, B-7 and B-9 will serve as a "boundary wells" and will be used to confirm that the plume is not migrating. Ground water from wells B-1, B-5, B-7 and B-9 will be sampled and analyzed for hydrocarbons quarterly through 1995, then annually for two years during the spring through 1997, then ceased in the spring of 1998. In 1998, if cleanup goals continue to be maintained at the boundary wells, monitoring will cease in all wells.

If this ground water monitoring indicates that certain trigger concentrations occur, this contingency plan will be implemented. These trigger concentrations and Contingency Plan responses are summarized in Table D-1. A "baseline" benzene concentration has been determined for each well based on trends over the last several years. A "trigger" concentration has been determined which represents a significant concentration increase that may indicate possible future non-compliance with the cleanup goal. When a trigger concentration occurs or when concentrations are increasing at a rate such that the trigger concentration might be met or exceeded before the next sampling event, the contingency plan will be implemented.

When triggered, this Contingency Plan calls for three responses:

- 1) The ACDEH will be notified;
- 2) Ground water monitoring will be performed at the triggered well the next quarter;  
and
- 3) If elevated concentrations are again detected, quarterly monitoring of that well will continue until an appropriate course of action, identified by Chevron and accepted by the ACDEH, is implemented.

Table D-1. Contingency Plan for Maintaining Compliance, Chevron Service Station #9-0290, 1802 Webster Street, Alameda, California. All conditions are for benzene unless otherwise noted.

	Monitoring Well	Baseline Concentration	Trigger Concentration	Response to Trigger Concentration <sup>1</sup>	Additional Monitoring
Guard Well	B-1	4,000 ppb	7,000 ppb	1. Notify ACDEH	Quarterly monitoring of all wells
Boundary Wells	B-5	5.0 ppb	10 ppb	2. Sample trigger well in the next quarter	
	B-7	2.0 ppb	5 ppb	3. Identify an appropriate course of action based upon determination of source	
	B-9	<0.5 ppb	2 ppb		

Footnotes:

<sup>1</sup> Response is triggered when the trigger concentration is met or exceeded, or when concentrations are increasing at a rate such that the trigger concentration might be met or exceeded before the next sampling event.