Chevron

June 7, 1993

Chevron U.S.A. Products Company
2410 Camino Ramon
San Ramon, CA 94583

Marketing Department
Phone 510 842 9500

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

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

Dear Ms. Shin:

Enclosed is the Additional Environmental Assessment Report dated May 26, 1993, prepared by our consultant Groundwater Technology, Inc. for the above referenced site. As indicated in the report, three (3) borings were advanced and completed into ground water monitor wells designated B-7 through B-9. This work was performed to further delineate hydrocarbon impacts to ground water beneath the site.

Soil samples collected from the drill cuttings were analyzed for total petroleum hydrocarbons as gasoline (TPH-G), total petroleum hydrocarbons as diesel (TPH-D), and BTEX. Laboratory results indicate that concentrations in all soil samples collected were below the method detection limits for these constituents.

Ground water samples were collected from the three new wells in addition to the six existing wells at the site and analyzed for the same constituents. Monitor well B-1, which was previously thought to be abandoned and paved over, was located and sampled at this time also. Separate phase hydrocarbons were detected in monitor wells A-1 and A-2 at measured thicknesses of 0.6 feet and 0.18 feet, respectively. Benzene was detected only in monitor wells B-1, B-3, and B-4 at concentrations of 4900, 540, and 2400 ppb, respectively. No hydrocarbons were detected in any of the ground water samples collected from the newly installed wells and the extent of hydrocarbon impacts to soil and groundwater appears to be defined. Depth to ground water was measured at approximately 4.3 feet to 5.9 feet below grade and the direction of flow is to the northwest.

Chevron will continue to monitor and sample all wells at this site on a quarterly basis. Chevron will instruct its consultant to begin a weekly bailing program to remove separate phase hydrocarbons from monitor wells A-1 and A-2 on a weekly basis. This bailing schedule will be modified based on amounts of hydrocarbons recovered and the hydrocarbon recovery observed in these wells. Amounts of hydrocarbons removed will be summarized in subsequent quarterly monitoring reports.

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

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

Mark A. Miller
Site Assessment and Remediation Engineer

Enclosure

cc: Mr. Eddy So, RWQCB-Bay Area
Mr. S.A. Willer
File (9-0290 SA1)

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ADDITIONAL ENVIRONMENTAL ASSESSMENT REPORT
CHEVRON SERVICE STATION NO. 9-0290
1802 WEBSTER STREET
ALAMEDA, CALIFORNIA

020202976

May 1993

May 26, 1993

Prepared for:
Mr. Mark Miller
Chevron U.S.A. Products Company
2410 Camino Ramon
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ADDITIONAL ENVIRONMENTAL ASSESSMENT REPORT
CHEVRON SERVICE STATION NO. 9-0290
1802 WEBSTER STREET
OAKLAND, CALIFORNIA

MAY 26, 1993

1.0 INTRODUCTION

This report summarizes the environmental assessment work conducted by Groundwater Technology, Inc. at the Chevron U.S.A. Products Company (Chevron) Service Station No. 9-0290 located at 1802 Webster Street in Alameda, California (Figure 1). The objective of this work was to further evaluate the lateral extent of petroleum hydrocarbons in the soil and groundwater at the referenced site. The assessment was performed during March and April 1993 and included installing three 2-inch-diameter groundwater monitoring wells, sampling soil and groundwater, submitting the collected samples for chemical analysis, evaluating the data, and preparing this report.

2.0 BACKGROUND

The site is located in Alameda County, City of Alameda on the northwest corner of the Highway 61 (Webster Street) and Buena Vista Avenue intersection (Figure 2). Commercial businesses are located north and west of the site. Residential buildings are east of the site. A British Petroleum Service Station is located across Buena Vista Avenue to the south. Currently, the site is an operating Chevron service station. The surface elevation at the site is approximately 10 to 13 feet above mean sea level (msl). San Francisco Bay is approximately 0.75 miles south of the site.

During January 1982, six groundwater monitoring wells (B-1, B-2, B-3, B-4, B-5, and B-6) were installed by I.T. Enviroscience (I.T. Enviroscience, February 8, 1982). The underground storage tanks (USTs) were replaced and two monitoring wells were installed in the UST backfill. Monitoring

well B-2 was removed during the excavation. Monitoring well B-1 was paved over and could not be located (I.T. Enviroscience, April 6, 1982).

Kleinfelder & Associates prepared a report on the site during January 1982 (J.H. Kleinfelder & Associates, 1982), which included an evaluation of hydrogeologic conditions at the site. According to the report, the site is underlain with sand dune deposits of the Merritt Sand Formation.

On September 19, 1991, approximately 1,400 gallons of diesel fuel were inadvertently pumped into tank-backfill monitoring well A-1. Approximately 7,616 gallons of a mixture of diesel fuel and water were removed from monitoring well A-1 between September 19 and 24, 1991. A product recovery program was established by Pacific Environmental Group, Inc. and approximately 1,888 gallons of product were removed between September and December 1991 (Pacific Environmental Group, Inc., January 2, 1992). The discrepancy in the amount of product recovered prompted Chevron to analyze the product. The product was 95.9 percent lube oil, 2.5 percent diesel fuel, and 1.6 percent gasoline.

Approximately 53 gallons of product were removed during the program between December 1991 and March 1992. Analytical results of groundwater samples collected from monitoring well B-4 on September 20, 1991, reported the highest concentrations of total petroleum hydrocarbons-as-gasoline (TPH-G) at 19,000 parts per billion (ppb). Analytical results of groundwater samples collected from monitoring well B-4 on February 12, 1992, reported TPH-G concentrations of 15,000 ppb (Pacific Environmental Group, Inc., April 6, 1992).

Approximately 71 gallons of product were removed between March and May 1992. Analytical results of groundwater samples collected on May 19, 1992, reported concentrations of TPH-G in monitoring wells B-3, B-4, and B-5. Separate-phase hydrocarbons were detected in wells A-1 and A-2 on May 19, 1992 (Pacific Environmental Group, Inc., July 8, 1992).

On June 17, 1992, at the request of Chevron, Groundwater Technology prepared a Work Plan to evaluate the extent of dissolved hydrocarbons in the soil and groundwater at the site. Product was bailed from the tank pit wells during February and April 1993 by Groundwater Technology. Approximately 1 gallon of oily sludge was recovered from the tank-pit wells.

3.0 WORK SCOPE

3.1 Site-Specific Health and Safety Plan and Permits

Groundwater Technology prepared a site-specific Health and Safety Plan required by the Occupational Health and Safety Administration Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR 1910.120). The site-specific Health and Safety Plan was prepared after a review of site conditions and existing available site-specific health and safety plans for the site. The Health and Safety Plan was reviewed and signed by Groundwater Technology personnel and subcontractors working at the site before field operations began.

Groundwater Technology reviewed site history and information with Chevron representatives before beginning work at the site. Drilling permits to install three groundwater monitoring wells were obtained from Alameda County Zone 7 Water Agency. Encroachment permits to install a monitoring well in the right-of-way on Highway 61 were issued by Caltrans. Copies of the permits are included in Appendix A.

3.2 Soil Borings

On March 29 and 30, 1993, Groundwater Technology supervised the installation of three groundwater monitoring wells (B-7, B-8, and B-9). The soil borings were drilled with a truck-mounted drill rig equipped with 8-inch hollow-stem augers. The augers were steam cleaned before drilling each monitoring well. The soil borings for the monitoring wells were drilled to approximately 15 feet below grade. A Groundwater Technology field geologist, under the supervision of a California Registered Geologist, logged the materials encountered during drilling of the soil borings using the Unified Soil Classification System.

The steam cleaning water was stored in labeled 55-gallon drums pending disposal. The soil cuttings generated during the drilling activities were placed in 55-gallon drums. Soil cuttings were characterized, profiled, and transported to City of Mountain View Public Landfill in Mountain View, California on April 16, 1993. Water generated from steam cleaning, purging, and sampling activities was removed and transported to the Chevron Terminal in Richmond.

3.3 Soil Sampling

During drilling, soil samples were collected from the soil borings at 5-foot intervals from approximately 5 to 15 feet below grade. Soil samples were collected using a 2-inch-outside-diameter split-spoon sampler lined with three 2-inch-diameter by 6-inch-long brass sample tubes. At each sample point, the sampler was advanced 18 inches ahead of the hollow-stem augers into undisturbed soil. One soil sample from each 5-foot interval was sealed with aluminum foil, capped, taped, labeled, placed on ice in an insulated container, and delivered to a California-certified laboratory. All sampling was performed according to Groundwater Technology Standard Operating Procedures, which are included in Appendix B.

One soil sample collected from the boring for each monitoring well was submitted to a California-certified laboratory and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and TPH-G using Environmental Protection Agency (EPA) Methods 5030/8020 and modified EPA Method 8015. The soil samples were also analyzed for total petroleum hydrocarbons-as-diesel fuel (TPH-D) using modified EPA Method SW-846.

3.4 Monitoring Well Installation

Monitoring wells B-7, B-8, and B-9 were constructed of 5 feet of 2-inch-diameter Schedule 40 polyvinylchloride (PVC) casing with flush threads and 10 feet of 0.020-inch-slot well screen. A sand filter pack was placed around the well screens in each monitoring well to approximately 0.5-foot above the slotted well screen. The monitoring wells were completed with 0.5 foot of hydrated bentonite and a neat-cement seal to grade. Each wellhead was protected by a locking cap and a traffic-rated street box with a watertight bolted lid. Well construction details are included with the drill logs (Appendix C). On April 26, 1993, the top-of-casing elevation of each monitoring well was surveyed by a professional licensed surveyor relative to msl from a United States Geological Survey Bench Mark (a brass disc) located at the southwest corner of the Atlantic Avenue and Webster Street intersection.

3.5 Monitoring Well Development

On April 12, 1993, monitoring well B-8 was developed by surging and bailing groundwater using a PVC bailer. Development efforts were impaired by fine-grain sand material of the Merritt formation entering the well through the well slots. A diaphragm water pump able to remove the fine-grain material from the wells was used for well development on April 16, 1993. The groundwater from the well was bailed until the fine-grain sediments were removed. Approximately 15 to 17 gallons of water were removed from monitoring wells B-7, B-8, and B-9, during development activities.

3.6 Groundwater Monitoring

On April 23, 1993, monitoring wells A-1, A-2, and B-3 through B-9 were monitored to measure the depth to groundwater and the thickness of separate-phase hydrocarbons, if present. The water levels were measured using an ORS Environmental Equipment INTERFACE PROBE™ Well Monitoring System consisting of a dual optical sensor and electrical conductivity probe that distinguishes between water and petroleum products. Separate-phase hydrocarbons were detected in monitoring wells A-1 and A-2 at thicknesses of 0.6 and 0.18 foot, respectively.

3.7 Groundwater Sampling

On April 23, 1993, groundwater monitoring wells B-3 through B-9 were purged and groundwater samples were collected. Approximately 5 to 7 gallons of water were purged from each monitoring well. Immediately before collecting each water sample, a distilled-water rinsate blank was collected from the Teflon® sampler as a quality control check on the cleanliness of the sampler. A trip/lab blank was also prepared for quality control. Each sample was acidified, labeled, placed on ice in an insulated container, and delivered to a California-certified laboratory. The samples were accompanied by a chain-of-custody record during transport. The samples were analyzed for BTEX and TPH-G using EPA Methods 5030/8020 and modified EPA Method 8015. Additional samples were collected for TPH-D analyses using EPA Method 8015. Water generated during the purging and sampling process was stored in Department of Transportation-approved steel drums. The water was then pumped to a water trailer and transported for recycling to the Chevron Refinery in Richmond, California.

On April 27, 1993, based on 1982 site maps, monitoring well B-1 was located. During 1982, monitoring well B-1 was suspected of having been abandoned and was subsequently paved over during the 1982 UST replacement. On April 30, 1993, monitoring well B-1 was monitored and sampled for TPH-G and TPH-D. However, monitoring well B-1 was not surveyed during the site monitoring-well elevation survey on April 26, 1993, and therefore could not be included in the construction of a potentiometric surface map.

4.0 SITE CONDITIONS

4.1 Analytical Results for Soil

Laboratory analytical results of soil samples collected from monitoring wells B-7, B-8, and B-9 at 5 feet below grade during soil boring activities on March 29 and 30, 1993, reported TPH-G and BTEX concentrations below method detection limits (MDLs). Laboratory analytical results of soil samples collected from monitoring wells B-7, B-8, and B-9 at 5 feet below grade reported TPH-D concentrations below MDLs. The results of the soil analyses are summarized in Table 1, and the laboratory reports are included in Appendix D.

4.2 Analytical Results for Groundwater

Analytical results of groundwater samples collected on April 23, 1993, from monitoring wells B-5 through B-9 reported BTEX, TPH-G, and TPH-D concentrations below MDLs. Analytical results of the groundwater samples collected from monitoring well B-1 reported TPH-G concentrations of 13,000 ppb, TPH-D concentrations of 8,300 ppb, and benzene concentrations of 4,900 ppb. Analytical results of the groundwater samples collected from monitoring wells B-3 and B-4 reported TPH-G concentrations at 18,000 ppb and 5,700 ppb; benzene concentrations at 540 ppb and 2,400 ppb; and TPH-D concentrations at 6,400 ppb and 2,300 ppb, respectively. A summary of the groundwater sample analytical results is presented in Table 2. Copies of the laboratory reports are included in Appendix D.

4.3 Hydrogeology

The site is located on the East Bay Plains in East Alameda County separated from the older bedrock units of the Easy Bay hills by the Hayward Fault. The younger unconsolidated units of the East Bay Plains are Pliocene-to-Pleistocene in age. Groundwater in these sediments can be either confined or unconfined. The major groundwater-producing area in the East Bay region of Alameda County is the Bay Plain. Regional groundwater flow is generally west toward San Francisco Bay (Alameda County Flood Control and Water Conservation District, June 1988).

The materials encountered during drilling consisted of gravels, silty sands, and silt. Cross section locations are illustrated in Figure 3. Figures 4 and 5 illustrate the cross sections A-A' and B-B'. Groundwater levels measured on April 23, 1993, ranged from 5.85 feet below grade in monitoring well A-1 to 4.32 feet below grade in monitoring well B-5. A potentiometric surface map (Figure 6) was prepared using the water-level data collected on April 23, 1993. Figure 6 indicates a northwest groundwater flow direction with a gradient of approximately 0.004 foot per foot (ft/ft). Groundwater-level data are presented in Table 2.

4.4 Well Survey

On June 14, 1992, a survey of Department of Water Resources records indicated that 20 wells exist within a 0.5-mile radius of the site. Six are irrigation wells, two are domestic, three are monitoring, four are test, three are cathodic protection, and two are of unknown use. A copy of the well survey data, which include the owner, location, and date the wells were drilled, is presented in Appendix E.

5.0 SUMMARY

- On March 29 and 30, 1993, Groundwater Technology supervised the drilling of three soil borings (B-7, B-8, and B-9) using a Mobile B-61 drilling rig. Each of the soil borings were subsequently converted to shallow groundwater monitoring wells.
- Analytical results of soil samples collected during drilling activities for on-site monitoring wells B-7, B-8, and B-9 reported TPH-G and BTEX concentrations below MDLs.

- On April 23, 1993, the groundwater level was measured in each of the monitoring wells at the site. The depth to water ranged from 5.85 to 4.32 feet below grade. Analysis of the monitoring data indicated a groundwater flow direction toward the northwest with a gradient of 0.004 ft/ft.

- Analytical results of groundwater samples collected from monitoring wells B-5 through B-9 reported TPH-G, TPH-D, and BTEX concentrations below MDLs. Analytical results of the groundwater samples collected from monitoring well B-1 reported TPH-G concentrations at 13,000 ppb, TPH-D concentrations at 8,300 ppb, and benzene concentrations at 4,900 ppb. Analytical results of groundwater samples collected from monitoring wells B-3 and B-4 reported TPH-G concentrations at 18,000 ppb and 5,700 ppb, benzene concentrations at 540 ppb and 2,400 ppb, and TPH-D concentrations at 6,400 ppb and 2,300 ppb, respectively.

6.0 REFERENCES

Alameda County Flood Control and Water Conservation District; June 1988; Geohydrogeology and Groundwater--Quality Overview, East Bay Plain Area, Alameda County, California, 205(J) Report.

I.T. Enviroscience; February 8, 1982; Progress Report No.1, Gasoline Leakage, Chevron Service Station, 1802 Webster Street, Alameda, California.

I.T. Enviroscience; April 6, 1982; Status Report, Chevron Service Station, 1802 Webster Street, Alameda, California.

J.H. Kleinfelder & Associates; February 11, 1982; Hydrogeologic Study Report, Chevron Service Station, 1802 Webster Street, Alameda, California.

Pacific Environmental Group, Inc.; January 2, 1992; Status Report, Chevron Service Station 9-0290, 1802 Webster Street at Buena Vista Avenue, Alameda, California.

Pacific Environmental Group Inc.; April 6, 1992; Status Report, Chevron Service Station 9-0290, 1802 Webster Street at Buena Vista Avenue, Alameda, California.

Pacific Environmental Group Inc.; July 8, 1992; Status Report, Chevron Service Station 9-0290, 1802 Webster Street at Buena Vista Avenue, Alameda, California.

FIGURES

FIGURE 1 SITE LOCATION MAP

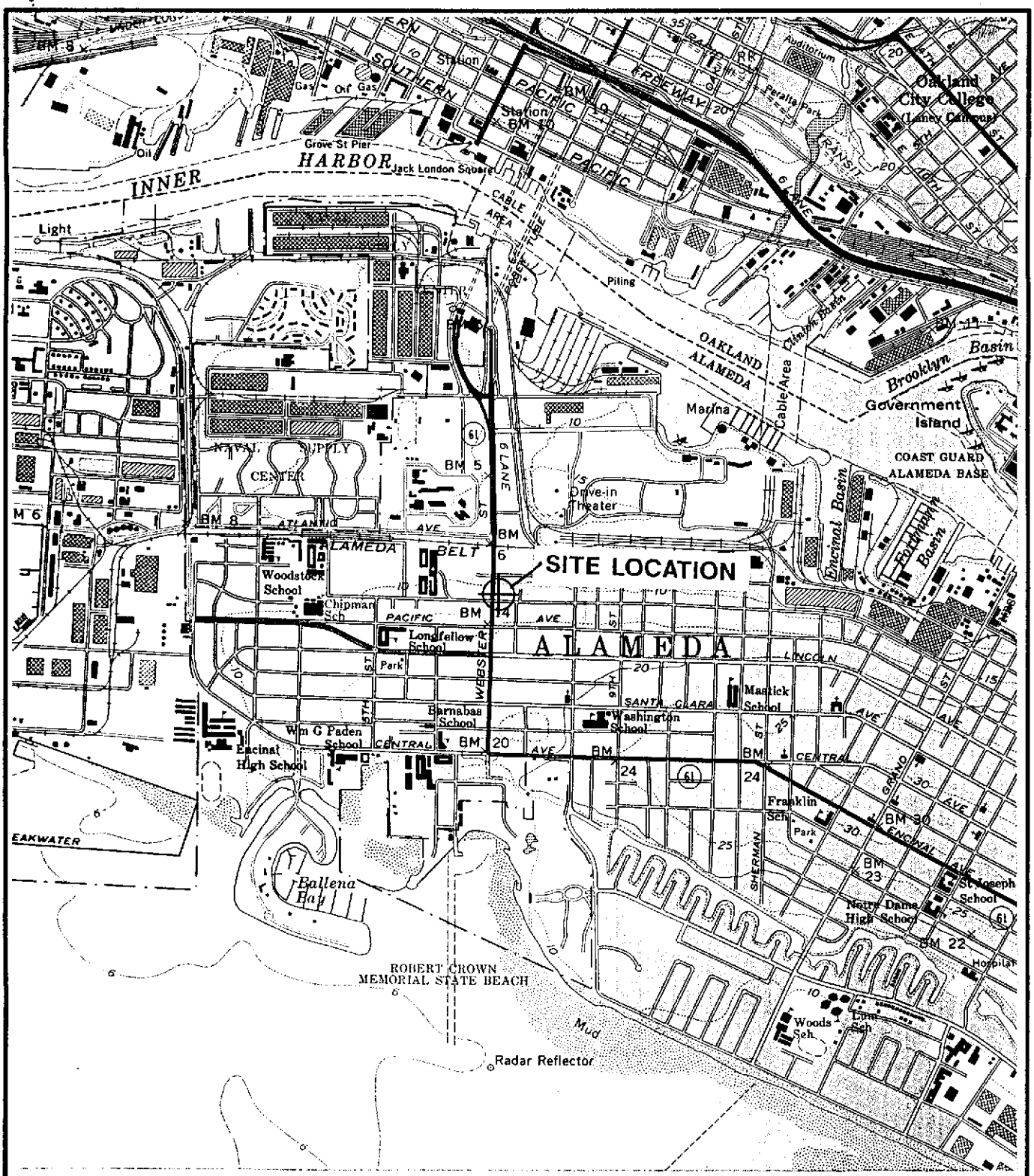
FIGURE 2 SITE PLAN

FIGURE 3 CROSS SECTION LOCATION MAP

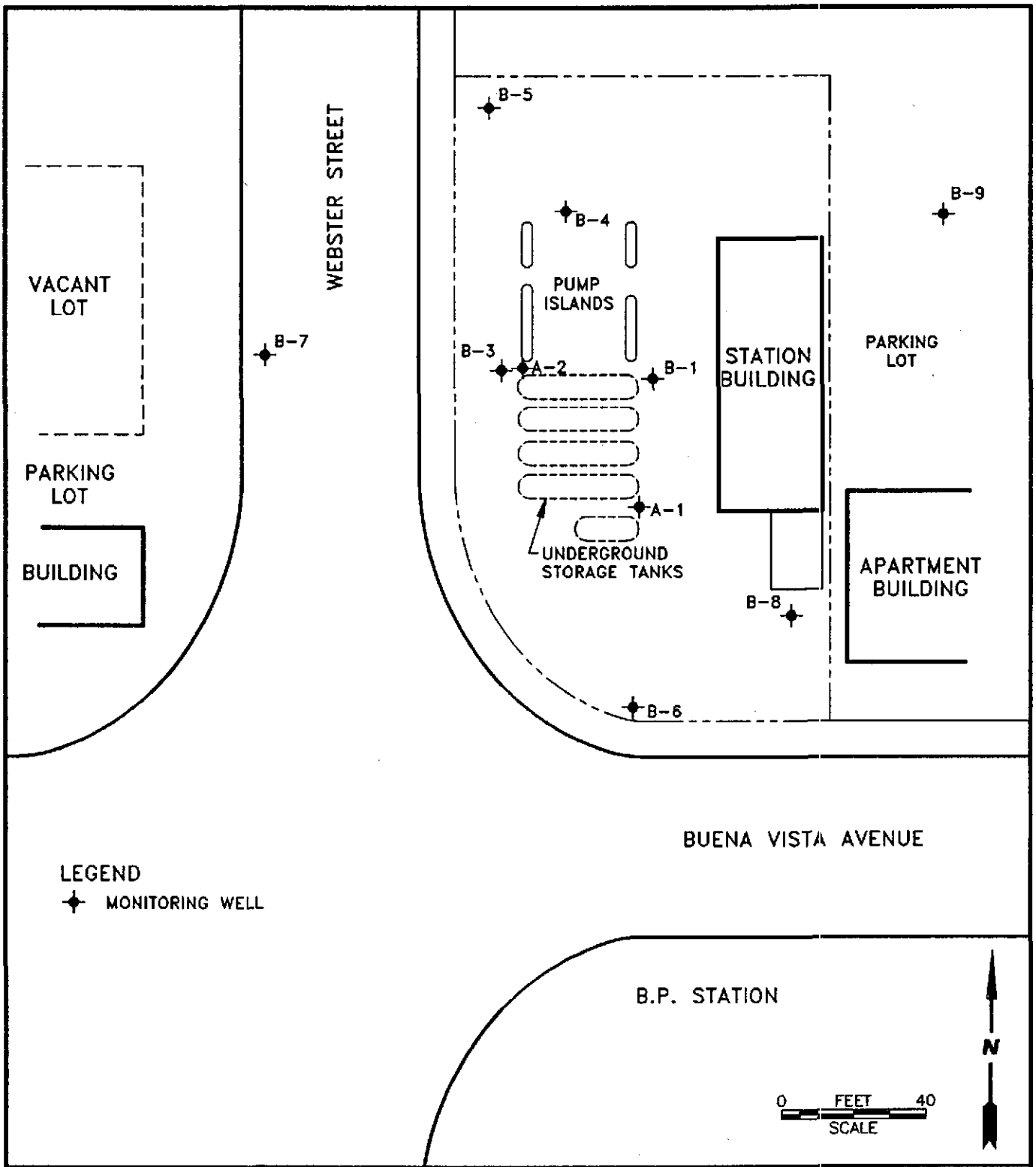
FIGURE 4 CROSS SECTION A-A'

FIGURE 5 CROSS SECTION B-B'

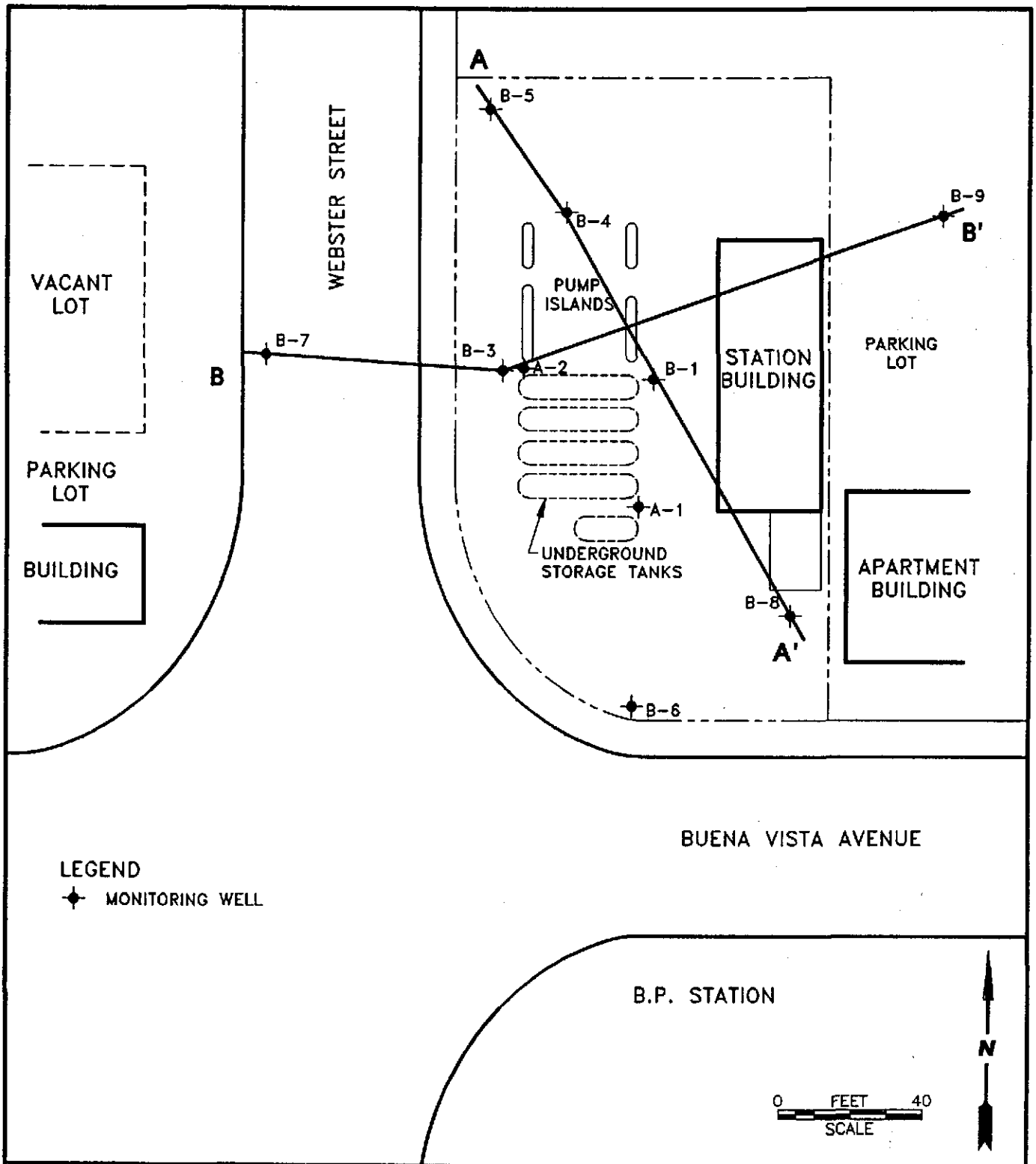
FIGURE 6 POTENTIOMETRIC SURFACE MAP (04/23/93)



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



GROUNDWATER TECHNOLOGY 4057 PORT CHICAGO HWY. CONCORD, CA 94520 (510) 671-2387				**SITE PLAN**		
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 JAW	PE/RG ORK	DESIGNED TW	DETAILED CY	ACAD FILE: SP593/SP1092	PROJECT NO.: 020202974	FIGURE: 2



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

CROSS SECTION LOCATION MAP

CLIENT:	LOCATION:	REV. NO.:	DATE:
CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-0290	1802 WEBSTER STREET ALAMEDA, CALIFORNIA	0	5/14/93

PM	PE/RG	DESIGNED	DETAILED	ACAD FILE:	PROJECT NO.:	FIGURE:
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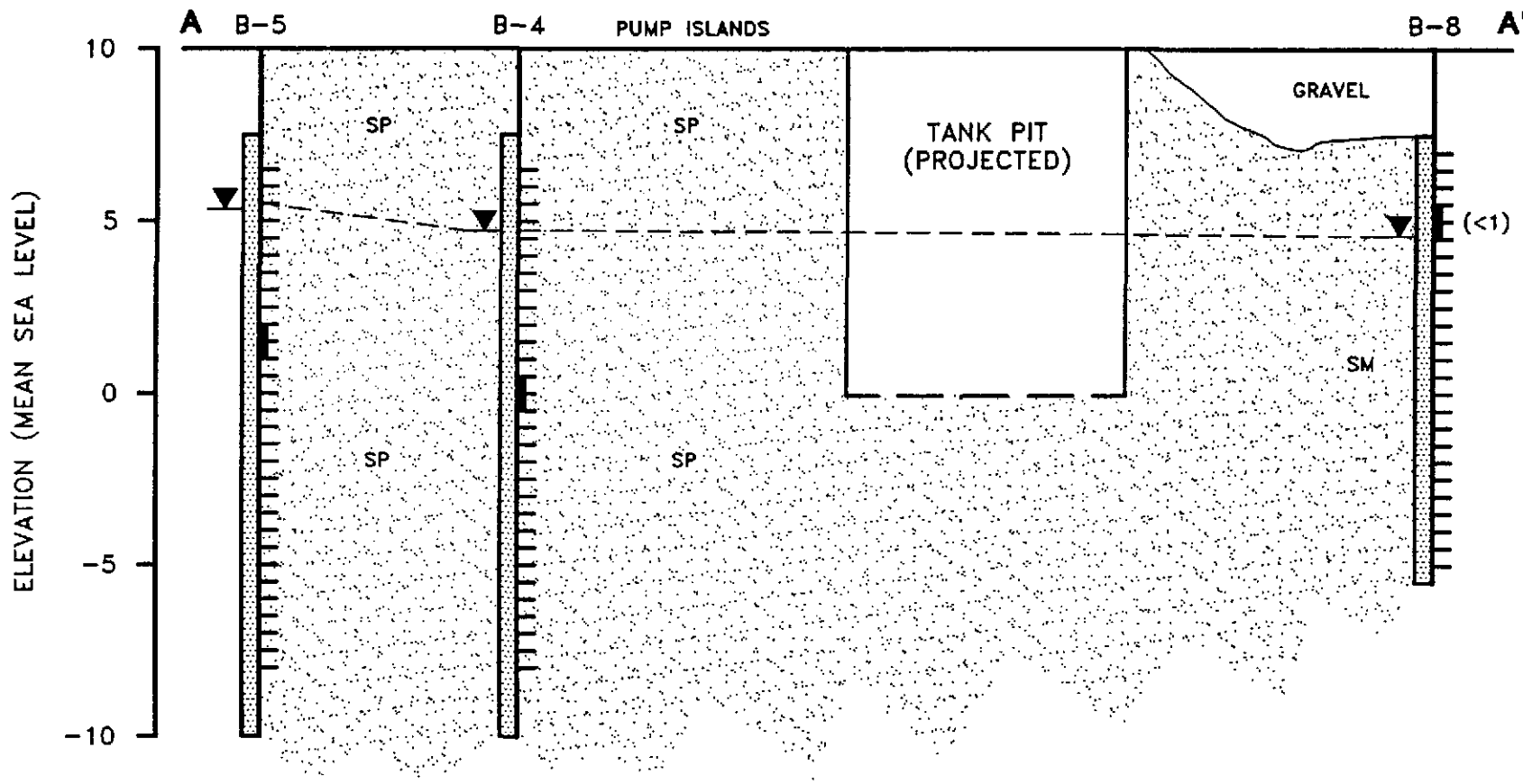


LEGEND

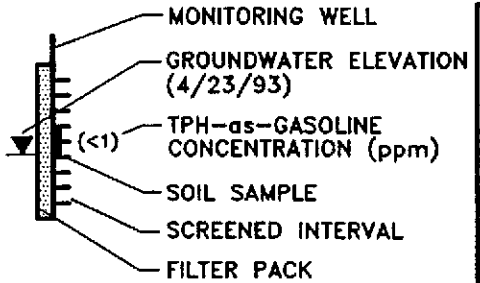
SP POORLY GRADED SAND

SM SILTY SAND

APPROXIMATE GROUNDWATER LEVEL

VIEW LOOKING WEST

0 FEET 25
HORIZ. SCALE

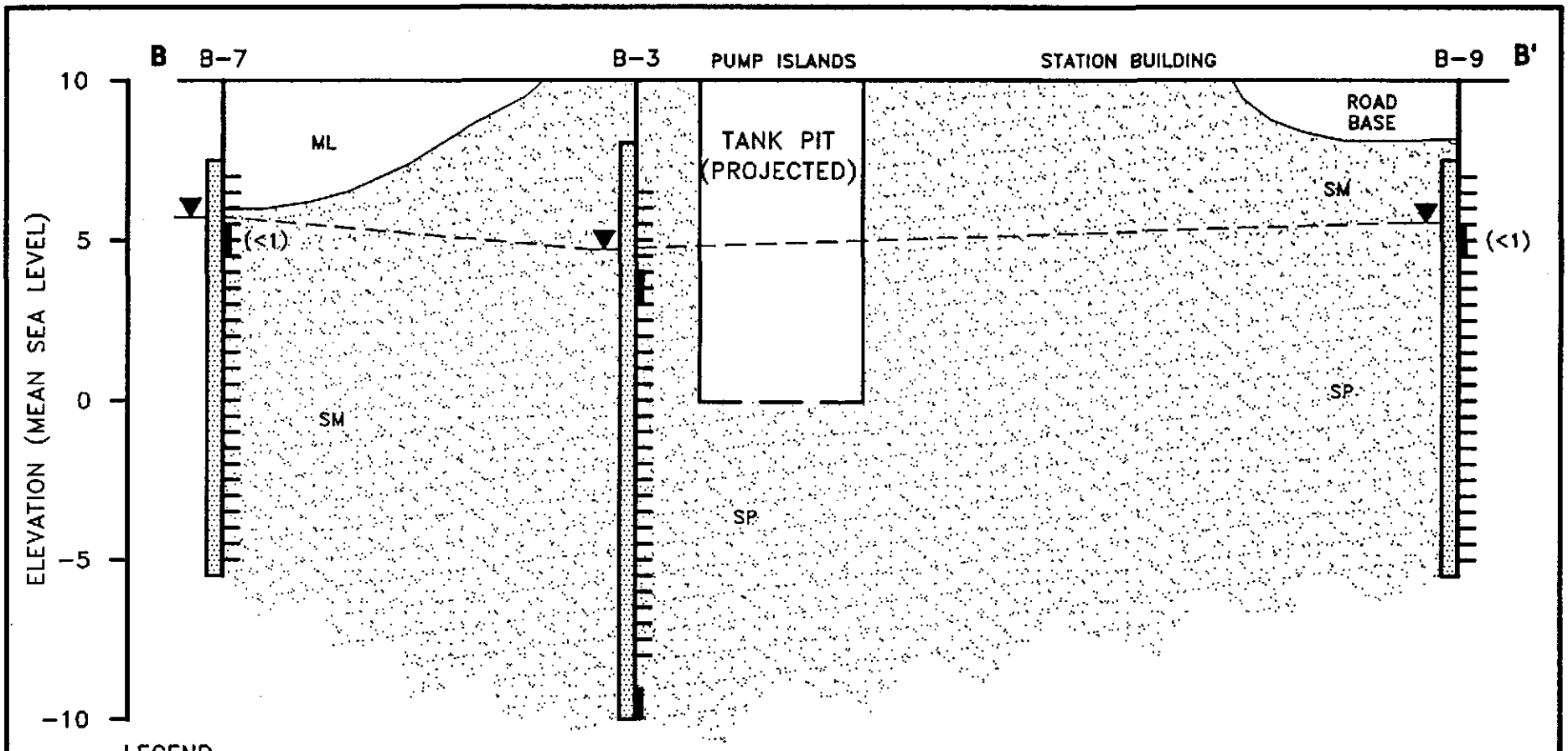


GROUNDWATER TECHNOLOGY 4057 PORT CHICAGO HWY CONCORD, CA 94520 (510) 671-2387

GENERALIZED GEOLOGIC CROSS SECTION A-A'

CLIENT:	LOCATION:	REV. NO.:	DATE:
CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION NO. 9-0290	1802 WEBSTER STREET OAKLAND, CALIFORNIA	0	5/14/93

PM	PE/RG	DESIGNED	DETAILED	ACAD FILE:	PROJECT NO.:	FIGURE:
[signature]	DRK	CH	CY	XSAA593	020202976	4

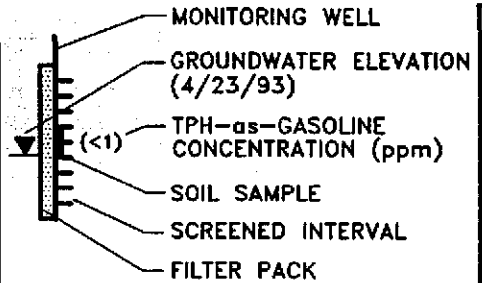


LEGEND

SP POORLY GRADED SAND
SM SILTY SAND
ML SILT
APPROXIMATE GROUNDWATER LEVEL

VIEW LOOKING NORTH

0 FEET 25
HORIZ. SCALE



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

GENERALIZED GEOLOGIC CROSS SECTION B-B'

CLIENT:	LOCATION:	REV. NO.:	DATE:
CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION NO. 9-0290	1802 WEBSTER STREET OAKLAND, CALIFORNIA	0	5/14/93

PM	PE/RG	DESIGNED	DETAILED	ACAD FILE:	PROJECT NO.:	FIGURE:
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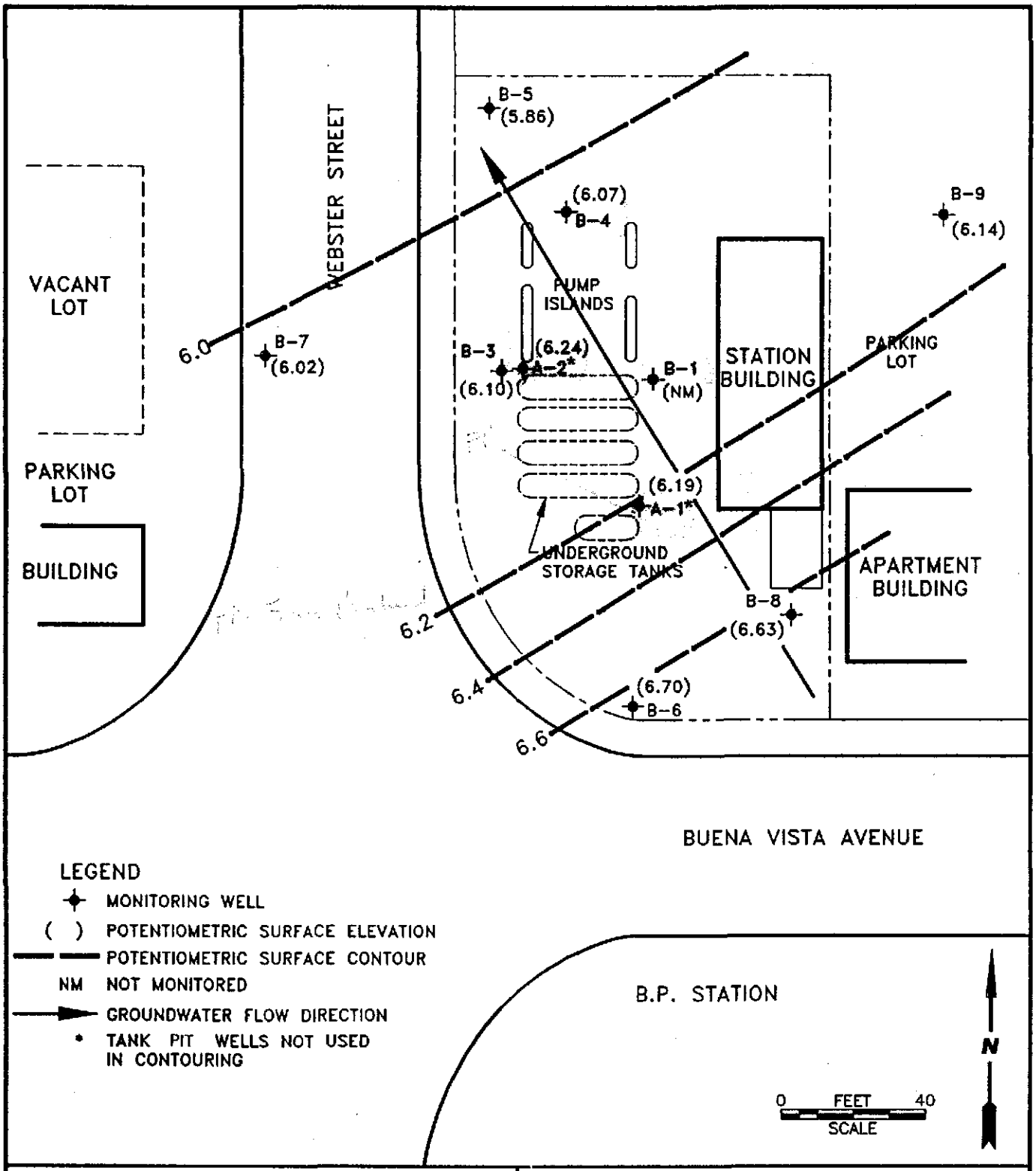

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4057 PORT CHICAGO HWY.
CONCORD, CA 94520
(510) 671-2387

POTENTIOMETRIC SURFACE MAP (4/23/93)

CLIENT:	LOCATION:	REV. NO.:	DATE:
CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-0290	1802 WEBSTER STREET ALAMEDA, CALIFORNIA	0	5/14/93

PM	PE/RG	DESIGNED	DETAILED	ACAD FILE:	PROJECT NO.:	FIGURE:
JAW	DRK	TW	CY	SP593/SP1092	020202974	6

TABLES

TABLE 1 ANALYTICAL RESULTS OF SOIL SAMPLES COLLECTED ON MARCH 29 AND 30, 1993

TABLE 2 MONITORING DATA AND ANALYTICAL RESULTS OF GROUNDWATER SAMPLES COLLECTED ON APRIL 23, 1993

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 2
MONITORING DATA AND ANALYTICAL RESULTS
OF GROUNDWATER SAMPLES
Collected on April 23, 1993
(Concentrations in parts per billion)

Well ID	TOC Elevation (msl)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-G	TPH-D	DTW (ft)	SPT (ft)	GWE (ft)
A-1	11.56	--	--	--	--	--	--	5.85	0.60	6.19
A-2	11.46	--	--	--	--	--	--	5.36	0.18	6.24
B-1*	--	4,900	22	250	47	13,000	8,300	5.93	0.00	--
B-3	11.42	540	69	47	120	18,000	6,400	5.32	0.00	6.10
B-4	11.46	2,400	75	380	580	5,700	2,300	5.39	0.00	6.07
B-5	10.18	<0.5	<0.5	<0.5	<1.5	<50	<50	4.32	0.00	5.86
B-6	11.97	<0.5	<0.5	<0.5	<1.5	<50	<50	5.27	0.00	6.70
B-7	10.54	<0.5	<0.5	<0.5	<1.5	<50	<50	4.52	0.00	6.02
B-8	11.99	<0.5	<0.5	<0.5	<1.5	<50	<50	5.36	0.00	6.63
B-9	10.70	<0.5	<0.5	<0.5	<1.5	<50	<50	4.56	0.00	6.14

TOC = Top of casing
msl = Mean sea level
TPH-G = Total petroleum hydrocarbons-as-gasoline
TPH-D = Total petroleum hydrocarbons-as-diesel fuel
DTW = Depth to water
SPT = Separate-phase hydrocarbon thickness
GWE = Groundwater elevation in feet above mean sea level relative to a United States Geological Survey benchmark.
-- = Not measured, not available, not sampled

* Sample collected on May 3 and 4, 1993

APPENDIX A

WELL INSTALLATION PERMITS

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 1802 Webster Street
Alameda, CA

CLIENT
Name Chevron USA Products Company
Address 2410 Camino Ramon Phone 510-842-9500
City San Ramon Zip 94583-0804

APPLICANT
Name Groundwater Technology Inc.
Address 4057 Port Chicago HWY Phone 510-671-2387
City Concord Zip 94520

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ (Other) observation
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. 482390

WELL PROJECTS

Drill Hole Diameter	8 in.	Maximum		
Casing Diameter	2 in.	Depth	25	ft.
Surface Seal Depth	5 ft.	Number	3	

GEOTECHNICAL PROJECTS

Number of Borings	~~X~~ 3	Maximum		
Hole Diameter	8 in.	Depth	15 ~~25~~	ft.

ESTIMATED STARTING DATE 8-12-92
ESTIMATED COMPLETION DATE 8-13-92

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Gregg A. Hall Date 7-21-92

FOR OFFICE USE

PERMIT NUMBER 92364
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 27 Jul 92
Wyman Hong

31992

STATE OF CALIFORNIA · DEPARTMENT OF TRANSPORTATION

ENCROACHMENT PERMIT

TR-0120 (NEW 9/91)

Permit No.	MAR 5 '93 J.M.M.
	0493-6SV-0299
Dist/Co/Rte/PM	04-ALA-260 0.45
Date	February 26, 1993
Fee Paid	$ 260.00
Deposit	$ - -
Performance Bond Amount (1)	$ 2,000.00
Payment Bond Amount (2)	$ - -
Bond Company	United Pacific Insurance Co.
Bond Number (1)	U80 51 20-1075
Bond Number (2)	

In compliance with (check one):

X Your application of January 20,1993

____ Utility Notice No. _____ of _____

____ Agreement No. _____ of _____

____ R/W Contract No. _____ of _____

TO:

Chevron U.S.A. Product Co.
P.O. Box 5004
San Ramon. Ca 94583-0804

ATTN: Mr. Mark A. Miller
PHONE: (510) 842-8134

, PERMITTEE

and subject to the following, PERMISSION IS HEREBY GRANTED to:

Install, maintain and monitor one groundwater monitoring well on the west side of State Highway 04-ALA-260, Post Mile 0.45, at 1802 Webster Street.

Two days before work is started under this permit, notice shall be given to, and approval of construction details, operations, public safety, and traffic control shall be obtained from State Representative N. Freitag, 600 Lewelling Blvd., P. O. Box 337, San Lorenzo, 94580, 510-352-0636.

Immediately following completion of the work permitted herein, the Permittee shall fill out and mail the Notice of Completion attached to this permit.

The following attachments are also included as part of this permit. (Check applicable):

X Yes	__ No	General Provisions
__ Yes	X No	Utility Maintenance Provisions
__ Yes	X No	Special Provisions
__ Yes	X No	A Cal-OSHA permit required prior to beginning work; # _____

In addition to fee the permittee will be billed actual costs for:

__ Yes	X No	Review
__ Yes	X No	Inspection
X Yes	_____	Field Work

(If any Caltrans effort expended)

__ Yes X No The information in the environmental documentation has been reviewed and considered prior to approval of this permit.

This permit is void unless the work is completed before March 30,1995.

This permit is to be strictly construed and no other work other than specifically mentioned is hereby authorized.

No project work shall be commenced until all other necessary permits and environmental clearances have been obtained.

APPROVED:

Preston W. Kelley, District Director

BY:

R. L. Cashion, District Permit Engineer

APPENDIX B

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURES

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE
CONCERNING GROUNDWATER MONITORING
SOP 8

Groundwater monitoring of wells at the site shall be conducted using an ORS Environmental Equipment (ORS) INTERFACE PROBE ™ and SURFACE SAMPLER™. The INTERFACE PROBE ™ is a hand-held, battery-operated device for measuring depth to petroleum product and depth to water as measured from an established datum (*i.e.*, top of the well casing which has ben surveyed). Separate-phase hydrocarbon (product) thickness is then calculated by subtracting the depth to product from the depth to water. In addition, water elevations are adjusted for the presence of fuel with the following calculation:

(Product Thickness) (0.8) + (Water Elevation) = Corrected Water Elevation

Note: The factor of 0.8 accounts for the density difference between water and petroleum hydrocarbons.

The INTERFACE PROBE ™ consists of a dual-sensing probe which utilizes an optical liquid sensor and electrical conductivity to distinguish between water and petroleum products. A coated steel measuring tape transmits the sensor's signals to the reel assembly where an audible alarm sounds a continuous tone when the sensor is immersed in petroleum product and an oscillating tone when immersed in water. The INTERFACE PROBE ™ is accurate to 1/16th inch.

A SURFACE SAMPLER™ shall be used for visual inspection of the groundwater to note sheens (difficult to detect with the INTERFACE PROBE ™), odors, microbial action, etc.

The SURFACE SAMPLER™ used consists of a 12-inch-long case acrylic tube with a Delrin ball which closes onto a conical surface creating a seal as the sampler is pulled up. The sampler is calibrated in inches and centimeters for visual inspection of product thickness.

To reduce the potential for cross contamination between wells, the monitorings shall take place in order from the least to the most contaminated wells. Wells containing separate-phase hydrocarbons (free product) should be monitored last. Between each monitoring the equipment shall be washed with laboratory-grade detergent and double rinsed with distilled water.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE
CONCERNING WATER SAMPLING METHODOLOGY
SOP 9

Before water sampling, each well shall be purged by pumping a minimum of four well volumes or until the discharge water indicates stabilization of temperature conductivity and pH. If the well is evacuated before four well volumes are removed or stabilization is achieved, the sample should be taken when the water level in the well recovers to 80 percent of its initial level.

Retrieval of the water sample, sample handling and sample preservation shall be conducted according to Standard Operating Procedure 10 concerning "Sampling for Volatiles in Water." The sampling equipment used shall consist of a Teflon® and/or stainless steel samplers which meet U.S. Environmental Protection Agency (EPA) regulations. Glass vials with Teflon® lids should be used to store the collected samples.

To ensure sample integrity, each vial shall be filled with the sampled water in such a way that the water stands above the lip of the vial. The cap should then be quickly placed on the vial and tightened securely. The vial should then be checked to ensure that air bubbles are not present prior to labeling of the sample. Label information should include a sample identification number, job identification, date, time, type of analysis requested, and sampler's name. Chain-of-custody records shall be completed according to Standard Operating Procedure (SOP) 11 concerning chain of custody.

The vials should be immediately placed in high quality coolers for shipment to the laboratory. The coolers should be packed with sufficient ice or freezer packs to ensure that the samples are kept below 4° Celsius (C). To minimize sample degradation the prescribed analysis shall take place within seven days of sample collection unless specially prepared acidified vials are used.

To minimize the potential for cross contamination between wells, all the well development and water sampling equipment which contacts the groundwater shall be cleaned between each sampling. As a second precautionary measure, the wells shall be sampled in order of increasing contaminant concentrations (the least contaminated well first, the most contaminated well last) as established by previous analysis.

STANDARD OPERATING PROCEDURE 10
CONCERNING SAMPLING FOR VOLATILES IN WATER
(DISSOLVED GASOLINE, SOLVENTS, ETC.)
SOP 10

1. Use only vials properly washed and baked.

2. Use clean sampling equipment. Scrub with Alconox or equivalent laboratory detergent and water followed by a thorough water rinse. Complete with a distilled water rinse.

   Sampling equipment which has come into contact with liquid hydrocarbons (free product) should be regarded with suspicion. Such equipment should have tubing and cables replaced and all resilient parts washed with laboratory detergent solution as indicated above. Visible deposits may have to be removed with hexane. Solvent washing should be followed by detergent washing, as indicated above.

   This procedure is valid for volatile organic analysis only. For extractable organics (for example, pesticides, or base neutrals for U.S. Environmental Protection Agency [EPA] Method 625 a final rinse with pesticide-grade isopropyl alcohol), followed by overnight or oven drying will be necessary.

3. Take duplicate samples. Mark on forms as a single sample with two containers to avoid duplication of analyses.

4. Take a site blank using distilled water or known uncontaminated source. This sample will be run at the discretion of the project manager.

5. Fill out labels and forms as much as possible ahead of time. Use an indelible marker.

6. Preservatives are required for some types of samples. Use specially prepared vials marked as indicated below, or use the appropriate field procedure (SOP 12 for acidification). Make note on forms that samples were preserved. Always have extra vials in case of problems. Samples for volatile analyses should be acidified below pH 2 upright. Eye protection, foot protection, and disposable vinyl gloves are required for handling. Samples designated for expedited service and analyzed within seven (7) days of sampling will be acceptable without preservation. Acid-causing burns. Glasses or goggles (not contact lenses) are necessary for protection of the eyes. Flush eyes with water for 15 minutes if contact occurs and seek medical attention. Rinse off hands frequently with water during handling.

   For sampling chlorinated drinking water supplies for chlorinated volatiles, samples shall be preserved with sodium thiosulfate. Use vials labeled "CONTAINS THIOSULFATE." No particular cautions are necessary.

7. Fill vial to overflowing with water, avoiding turbulence and bubbling as much as possible. Water should stand above lip of vial.

8. Carefully, but quickly, slip cap onto vial. Avoid dropping the Teflon® septum from cap by not inverting cap until it is in contact with the vial. Disc should have Teflon® face toward the water. Also avoid touching white Teflon® face with dirty fingers.

9. Tighten cap securely, invert vial, and tap against hand to see there are not bubbles inside.

10. Label vial, using indelible ink, as follows:

    A. Sample I.D. No.
    B. Job I.D. No.
    C. Date and Time
    D. Type of analysis required
    E. Your name

11. Unless the fabric-type label is used, place Scotch™ tape over the label to preserve its integrity.

12. For chain-of-custody reasons, sample vial should be wrapped end-for-end with Scotch™ tape or evidence tape and signed with indelible ink where the end of the tape seals on itself. The septum needs to be covered.

13. Chill samples immediately. Samples to be stored should be kept at 4° Celsius (C) (30° Fahrenheit [F]). Samples received at the laboratory above 10°C (as measured at glass surface by a thermocouple probe), after overnight shipping, will be considered substandard, so use a high quality cooler with sufficient ice or freezer packs.

14. Fill out Chain-of-Custody Manifest and Analysis Request Form (see Chain of Custody Procedures, SOP 11).

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE
CONCERNING CHAIN OF CUSTODY
SOP 11

1. Samples must be maintained under custody until shipped or delivered to the laboratory. The laboratory will then maintain custody. A sample is under custody if:

    a) It is in your possession
    b) It is in your view after being in your possession
    c) You locked it up after it was in your possession
    d) It is in a designated secure area

2. Custody of samples may be transferred from one person to another. Each transferrer and recipient must date, sign and note the time on the chain-of-custody form.

3. In shipping, the container must be sealed with tape, and bear the sender's signature across the area of bonding at the ends of the tape to prevent undetected tampering. Each sampling jar should be taped and signed as well. Scotch tape works well.

4. Write "sealed by" and sign in the "Remarks" box at the bottom of the form before sealing the box. Place form in a plastic bag and seal it inside the box.

5. The "REMARKS" section of the form is for documenting details such as:

    a) Correlation of sample numbers if samples are split between labs.
    b) QC numbers when lab is logging in the samples.
    c) Sample temperature and condition when received by lab.
    d) Preservation notation.
    e) pH of samples when opened for analysis (if acidified).
    f) Sampling observation or sampling problem.

6. The chain-of-custody form should be included inside the shipping container. A copy should be sent to the project manager.

7. When the samples are received by the lab, the chain-of-custody form will be dated, signed, and the time noted by a laboratory representative. The form will be retained in the laboratory files along with shipping bills and receipts .

8. At the time of receipt of samples by the laboratory, the shipping container will be inspected and the sealing signature will be checked. The samples will be inspected for condition and bubbles, and the temperature of a representative sample container will be measured externally by a thermocouple probe (held tightly between two samples) and recorded. The laboratory QC numbers will be placed on the labels, in the accession log, and on the chain-of-custody form. If samples are acidified, their pH will be measured by narrow range pH paper at the time of opening for analysis. All comments concerning procedures requiring handling of the samples will be dated and initialed on the form by the laboratory person performing the procedure. A copy of the completed chain-of-custody form with the comments on sample integrity will be returned to the sampler.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE
CONCERNING SOIL SAMPLING METHODOLOGY
SOP 14

1. Soil samples should be collected and preserved in accordance with Groundwater Technology Standard Operating Procedure (SOP 15) concerning Soil Sample Collection and Handling when Sampling for Volatile Organics. A hollow stem soil auger should be used to drill to the desired sampling depth. A standard 2 inch diameter split spoon sampler 18 inches in length shall be used to collect the samples. The samples are contained in 2 inch diameter by 6 inch long thin walled brass tube liners fitted into the split spoon sampler (three per sampler).

2. The split spoon sampler should be driven the full depth of the spoon into the soil by a 140 pound hammer. The spoon shall then be extracted from the borehole and the brass tube liners containing the soil sample removed from the sampler. The ends of the liner tubes should be immediately covered with aluminum foil, sealed with a teflon or plastic cap, and taped with duct tape. After being properly identified with sample data entered on a standard chain of custody form the samples shall be placed on dry ice (maintained below 4~C) and transported to the laboratory within 24 hours.

3. One of the three soil samples retrieved at each sample depth shall be analyzed in the field using a photoionization detector and/or explosimeter. The purpose of the field analysis is to provide a means to choose samples to be laboratory analyzed for hydrocarbon concentrations and to enable comparisons between the field and laboratory analyses. The soil sample shall be sealed in a plastic bag and allowed to equilibrate with the air surrounding the soil for approximately 10 minutes. One of the two field vapor instruments shall be used to quantify the amount of hydrocarbon released to the air from the soils. The data shall be recorded on the drill logs at the depth corresponding to the sample point.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE
CONCERNING SOIL SAMPLE COLLECTION AND
HANDLING WHEN SAMPLING FOR VOLATILE ORGANICS
SOP 15

1. Use a sampling means which maintains the physical integrity of the samples. The project sampling protocol will designate a preferred sampling tool. A split spoon sampler with liners, or similar tube sampler which can be sealed, is best.

2. The samples should be sealed in the liner, with teflon plugs (The "California Sampler") or plastic caps.

3. For sending whole-core samples (above):

   A. Seal ends of liner with teflon plugs or plastic caps, leaving no free air space inside.

   B. Tape with duct tape.

   C. Label the sample with the following information: sample identification, depth, date and time, project number and required analyses.

   D. Place in plastic bag labeled with indelible marker. Use Well #, depth, date, and job #.

   E. Place inside a second bag and place a labelling tag inside outer bag.

   F. Enclose samples in a cooler with sufficient ice or dry ice to maintain samples at 4 degrees C during shipment.

   G. Seal cooler with a lock, or tape with samplers signature so tampering can be detected.

   H. Package cooler in a box with insulating material. Chain of custody forms can be placed in a plastic bag in this outer box.

   I. If dry ice is used, a maximum of 5 pounds is allowed by Federal Express without special documents(documents are easy to obtain but are not necessary for under 5 pounds). Write "ORM-A dry ice", "_____ pounds, for research" on outside packaging and on regular airbill under classification. UPS does not accept dry ice.

   J. Soil cores kept a 4 degrees C are only viable for up to 7 days when aromatic hydrocarbons are involved. The lab should prepare the samples in methanol once in the lab.

4. Good sampling practice would include preparing 1 out of 5 samples to be prepared in duplicates for analysis. These 4 out of 20 samples will be used for the following purposes:

   A. One in every 20 samples should be analyzed as a field replicate to evaluate the precision of the sampling technique. A minimum of 1 sample per data set is suggested.

   B. An additional 1 in 20 samples should be selected by sampler to be prepared in duplicate as alternative to Step (A). Choose a different soil type if available.

C. The remaining 2 in 20 samples should be used by lab for spiking with reference materials for internal QC.

Other QC procedures can be specified at the project manager's discretion. See Table 3-2 (reference 2) attached.

5. Decontamination of equipment in the field requires a detergent wash, with a distilled water rinse.

REFERENCES

1. Soil Sampling Quality Assurance Users Guide, U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, NV, EPA 600/4-84-043, May 1984.

2. Preparation of Soil Sampling Protocol. Techniques and Strategies, U.S. EPA, Environmental Monitoring Systems Laboratory, Las Vegas, NV, EPA 600/4-83-020, August 1983 (PB83-206979).

3. Test Methods for Evaluating Solid Waste, U.S. EPA, Office of Solid Waste and Emergency Response, Washington, D.C., SW 846, July 1982.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE
CONCERNING OPERATION/CALIBRATION OF
PHOTOIONIZATION ANALYZER
SOP 19

1. The Thermo Environmental Instruments Inc. Model 580B OVM Photoionization Analyzer shall be used, using photoionization, to measure the concentration of trace gases over a range of less than 1 ppm to 2,000 ppm. The specific instrument used for investigations related to hydrocarbon contamination should be calibrated for direct readings in parts per million (ppm) volume/volume of isobutylene. Specifics of the detection principle/theory and functions of various components can be found in the manufactures instruction manual.

2. To assure optimum performance, the photoionization analyzer should be calibrated with a standard gas mixture of known concentration from a pressurized container. A dally procedure for calibration involves bringing the probe and readout close to the calibration gas, cracking the valve on the tank and checking the instrument reading. This provides a useful spot check for the instrument.

3. A procedure conducted weekly for more accurate calibration of the instrument from a pressurized container is to connect one side of a "T" to the pressurized container of calibration gas, another side of the "T" to a rotameter and the third side of the "T" directly to the 8" extension to the photoionization probe (see Figure 2). Crack the valve of the pressurized container until a slight flow is indicated on the rotameter. The instrument draws in the volume of sample required for detection, and the flow in the rotameter indicates an excess of sample. Now adjust the span pot so that the instrument reads the exact value of the calibration gas. (If the instrument span setting is changed, the instrument should be turned back to the standby position and the electronic zero should be readjusted, if necessary).

APPENDIX C

DRILL LOGS AND WELL CONSTRUCTION SPECIFICATIONS

Drilling Log

GROUNDWATER TECHNOLOGY

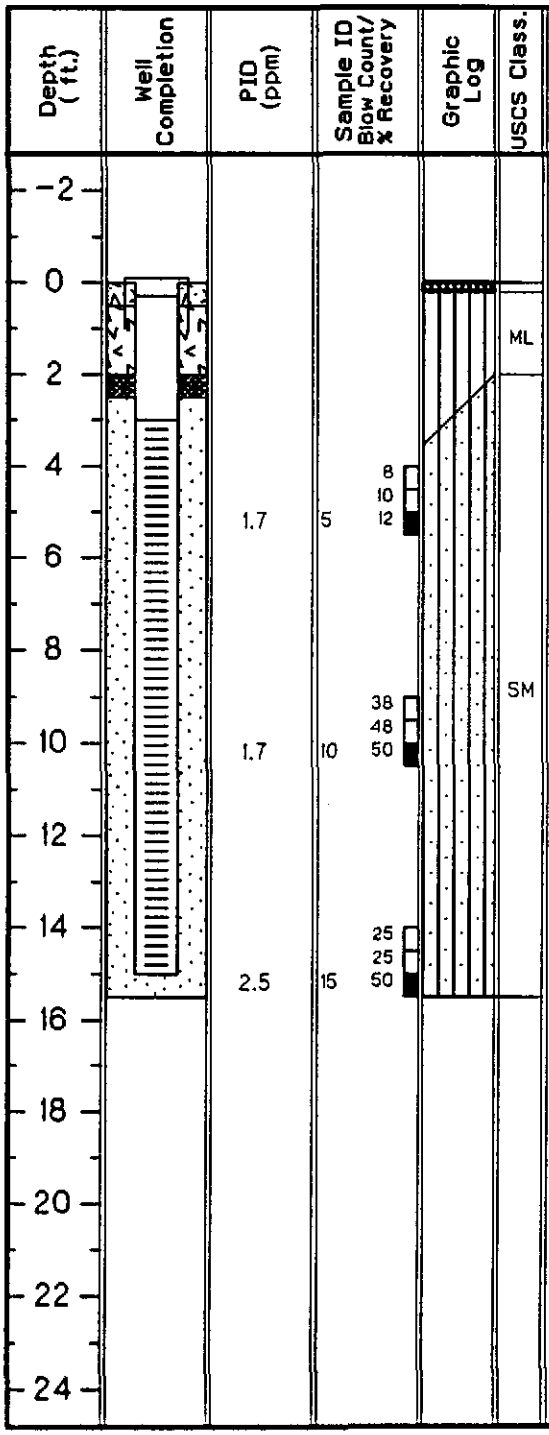
Monitoring Well B-7

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 labled 55-gallon drums. The drums were left on site until they could be analyzed and disposed of properly.



Description

(Color, Texture, Structure)

Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

ASPHALT

SILT, dark brown, about 70% silt, about 30% fine sand (moist, no hydrocarbon odor)

Silty SAND, tan, about 60% fine sand, about 30% silt, about 10% clay (wet, no hydrocarbon odor).

3/29/93

End of boring.

Drilling Log

GROUNDWATER TECHNOLOGY

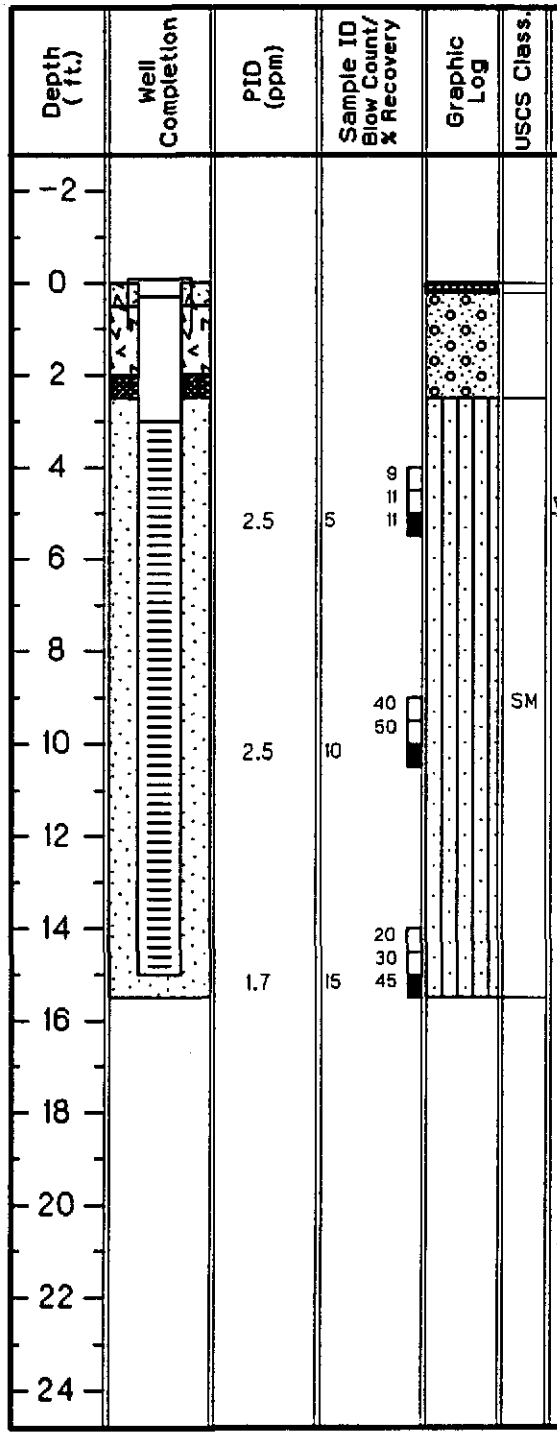
Monitoring Well **B-8**

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 labled 55-gallon drums. The drums were left on site until they could be analyzed and disposed of properly.



Description

(Color, Texture, Structure)

Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

Road Base

Gravel

Silty SAND, tan, about 60% fine sand, about 30% silt, about 10% clay (wet, no hydrocarbon odor).

3/29/93

End of boring.

Drilling Log

GROUNDWATER TECHNOLOGY

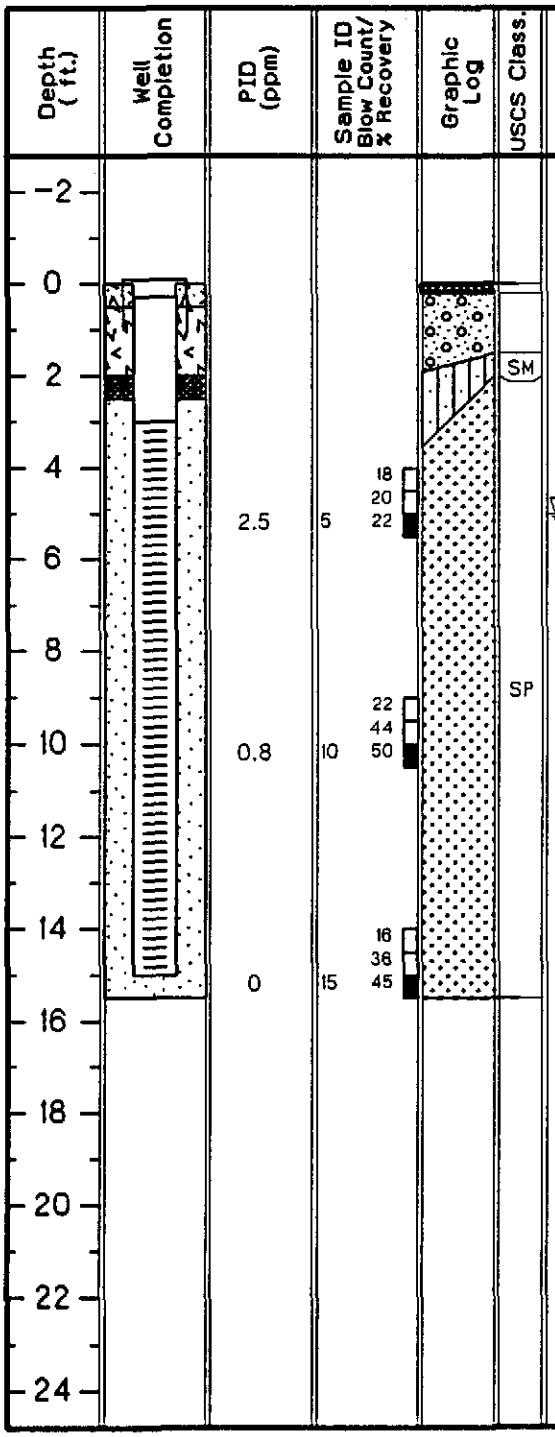
Monitoring Well B-9

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 labled 55-gallon drums. The drums were left on site until they could be analyzed and disposed of properly.



Description

(Color, Texture, Structure)
Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

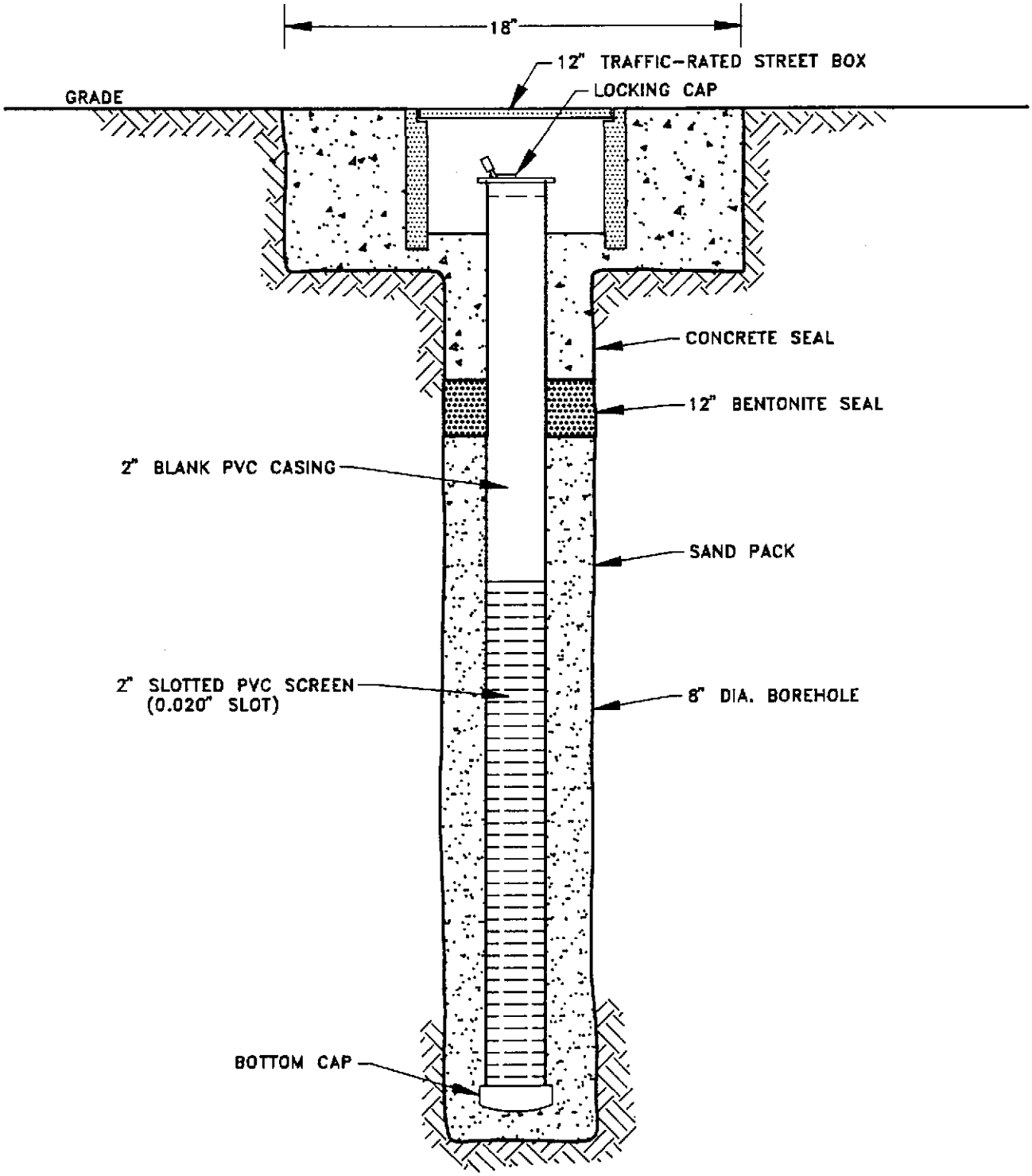
ASPHALT

Road Base

Silty SAND, tan, about 60% fine sand, about 25% silt, about 15% clay (moist, no hydrocarbon odor).

SAND, tan, about 75% fine sand, about 20% silt, about 5% clay (wet, no hydrocarbon odor).
3/30/93

End of boring.



NOT TO SCALE

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

TYPICAL MONITORING WELL CONSTRUCTION

CLIENT:	LOCATION:	REV. NO.:	DATE:
CHEVRON U.S.A. PRODUCTS CO.			

PM	PE/RG	DESIGNED	DETAILED	ACAD FILE:	PROJECT NO.:	FIGURE:
			ML	FMONWELL		

APPENDIX D

LABORATORY REPORTS AND CHAIN-OF-CUSTODY RECORDS

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

GROUNDWATER TECHNOLOGY, INC.
Attn: TIM WATCHERS

Project 020202976
Reported 04/08/93

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
88224- 1	B-7 (5)	03/29/93	04/05/93	Soil
88224- 4	B-8 (5)	03/29/93	04/05/93	Soil
88224- 7	B-9 (5)	03/29/93	04/05/93	Soil

RESULTS OF ANALYSIS

Laboratory Number:	88224- 1	88224- 4	88224- 7
Gasoline:	ND<1	ND<1	ND<1
Benzene:	ND<.005	ND<.005	ND<.005
Toluene:	ND<.005	ND<.005	ND<.005
Ethyl Benzene:	ND<.005	ND<.005	ND<.005
Xylenes:	ND<.015	ND<.015	ND<.015
Diesel:	ND<1	ND<1	ND<1
Concentration:	mg/kg	mg/kg	mg/kg

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 ▪ Martinez, California 94553 ▪ (510) 229-1512 / fax (510) 229-1526

C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 88224

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
mg/kg = parts per million (ppm)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 1mg/kg

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/kg

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	109/106	3%	70-130
Benzene:	105/108	3%	70-130
Toluene:	101/103	2%	70-130
Ethyl Benzene:	106/105	1%	70-130
Xylenes:	106/105	1%	70-130
Diesel:	120/113	6%	75-125

Richard Srna, Ph.D.
Jelomina V Tanguilig (for)
Laboratory Director

Fax copy of Lab Report and COC Chevron Contact: [redacted] / Chain of Custody Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 9.0290
Facility Address: 1802 Webster St
Consultant Project Number: 020202976
Consultant Name: Groundwater Technology Inc
Address: 4057 Port Chicago Hwy
Project Contact (Name): Tim Watchers
(Phone) 90-671-2337 (Fax Number)

Chevron Contact (Name): Mark Miller
(Phone)
Laboratory Name: Superior
Laboratory Release Number: 7664480
Samples Collected by (Name): Chip Hurley
Collection Date: 3-29 / 3-30-93
Signature: [signature]

Analyses To Be Performed

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)	HOLD				Remarks
B-7(5)		1	S	G			yes	X	X											
B-7(10)																X				
B-7(15)																X				
B-8(5)								X	X											
B-8(10)																X				
B-8(15)																X				
B-9(5)								X	X											
B-9(10)															10	X				
B-9(15)		↓	↓	↓			↓									X				

Please Initial: val
Samples stored in ice: yes
Appropriate containers: yes
Samples preserved: NO
VOA's without headspace: NA
Comments:

Note: Samples are marked MW not B. Please report results as (i.e. B-7, not MW-7).

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
[signature]	GTI	4/1/93	Val Ojanke		4/1/93 1257
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

COC-SUPS/03 1/MJH

Superior Precision Analytical, Inc.
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GROUNDWATER TECHNOLOGY, INC.
Attn: TIM WATCHERS

Project 020202976
Reported 05/01/93

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
88420- 1	TB_LB	04/23/93	04/27/93	Water
88420- 3	B-7	04/23/93	04/28/93	Water
88420- 5	B-8	04/23/93	04/28/93	Water
88420- 7	B-9	04/23/93	04/28/93	Water
88420- 9	B-6	04/23/93	04/28/93	Water
88420-11	B-5	04/23/93	04/28/93	Water
88420-13	B-4	04/23/93	04/29/93	Water
88420-15	B-3	04/23/93	04/28/93	Water

RESULTS OF ANALYSIS

Laboratory Number:	88420- 1	88420- 3	88420- 5	88420- 7	88420- 9
Gasoline:	ND<50	ND<50	ND<50	ND<50	ND<50
Benzene:	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Toluene:	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Ethyl Benzene:	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
Xylenes:	ND<1.5	ND<1.5	ND<1.5	ND<1.5	ND<1.5
Diesel:	NA	ND<50	ND<50	ND<50	ND<50
Concentration:	ug/L	ug/L	ug/L	ug/L	ug/L

Laboratory Number:	88420-11	88420-13	88420-15
Gasoline:	ND<50	5700	18000
Benzene:	ND<0.5	2400	540
Toluene:	ND<0.5	75	69
Ethyl Benzene:	ND<0.5	380	47
Xylenes:	ND<1.5	580	120
Diesel:	ND<50	2300	6400
Concentration:	ug/L	ug/L	ug/L

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C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 88420

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
ug/L = parts per billion (ppb)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Water: 5000ug/L

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 50ug/L

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Water: 0.5ug/L

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	106/100	6%	70-130
Benzene:	109/108	1%	70-130
Toluene:	93/96	3%	70-130
Ethyl Benzene:	101/105	4%	70-130
Xylenes:	102/105	3%	70-130
Diesel:	118/106	11%	75-125

Richard Srna, Ph.D.
Jelomina V Sanguilig (for)
Laboratory Director

Fax copy of Lab Report and COC to Chevron Contact [redacted]

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 9-0290
Facility Address: 1802 Webster St.
Consultant Project Number: 020202976
Consultant Name: Groundwater Tech
Address: 4057 Port Chicago Hwy
Project Contact (Name): Tim Watchers
(Phone) 671-2387 (Fax Number)

Chevron Contact (Name): Mark Miller
(Phone) 842-8134
Laboratory Name: Superior
Laboratory Release Number: 766480
Samples Collected by (Name): Greg Mason
Collection Date: 4/23-25
Signature:

Sample Number	Lab Sample Number	Number of Containers	Matrix: S = Soil W = Water A = Air C = Charcoal	Type: G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)	HOLD				
BLB	1					HCl/None	12:20	X								X				
BB B-7	2																			
B-7	3						12:30	X	X											
SB B-8	4																			
B-8	5						12:40	X	X											
RB B-9	6																			
B-9	7						12:50	X	X											
RB B-6	8																			
B-6	9						1:00	X	X											
RB B-5	10															X				
B-5	11						1:10	X	X											
RB B-4	12															X				
B-4	13						1:20	X	X											
RB B-3	14															X				

Analyses To Be Performed

Purge Initiated
Samples stored in ice
Samples preserved
VOA's without headspace
Containers

HH
Yes
4°C

Don't analyse RB's. Analyse TBLB but do not bill

Remarks

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	GTI	4/26		GTI	4/26 8:40AM
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	GTI	4/26 8:55 AM			
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
					4/26 8:40AM

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

Fax copy of Lab Report and [illegible]

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number 9-0290
Facility Address 1802 Webster St.
Consultant Project Number 020202976
Consultant Name Groundwater Tech
Address 4057 Port Chicago Hwy
Project Contact (Name) Tim Watchers
(Phone) 671-2387 (Fax Number)

Chevron Contact (Name) Mark Miller
(Phone) 842-8134
Laboratory Name Superior
Laboratory Release Number 766480
Samples Collected by (Name) Greg Myers
Collection Date 4/23-93
Signature

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)						Remarks
								Analyses To Be Performed														Don't analyse RB's. Analyse TBLB but do not bill
B-3	15		W	D	1:30	HCl/none	Y	X	X												

Temp 4°C

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	GTI	4/26		GTI	4/26 8:40 AM
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Anthony E. Smith SR	GTI	4/26 8:55 AM			
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
					4/26/12:40

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

GROUNDWATER TECHNOLOGY, INC.
Attn: TIM WATCHERS

Project 020202976.030599
Reported 05/10/93

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
88506- 1	B-1	05/03/93	05/06/93	Water

RESULTS OF ANALYSIS

Laboratory Number: 88506- 1

Gasoline:	13,000
Benzene:	4,900
Toluene:	22
Ethyl Benzene:	250
Xylenes:	47
Concentration:	ug/L

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C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 88506

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
ug/L = parts per billion (ppb)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Water: 5000ug/L

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 50ug/L

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Water: 0.5ug/L

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	96/100	4%	70-130
Benzene:	100/101	1%	70-130
Toluene:	107/108	1%	70-130
Ethyl Benzene:	110/112	2%	70-130
Xylenes:	107/110	3%	70-130

Richard Srna, Ph.D.
Hsaneh. Lalwani
Laboratory Director

Fax copy of Lab Report and COC to Chevron Contact: ☐ Yes ☐ No 8850

Chain-of-Custody-Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 9-0290
Facility Address: 1802 Webster St., Alameda
Consultant Project Number: 02020 2976 030599
Consultant Name: Groundwater Tech.
Address: 4057 Port Chicago Hwy, Concord
Project Contact (Name): Tim Wetchers
(Phone) 671-2387 (Fax Number) 685-9148

Chevron Contact (Name): Mark Miller
(Phone) 842-8134
Laboratory Name: Superior
Laboratory Release Number: 7664480
Samples Collected by (Name): Randy Phillips
Collection Date: 5/3/93
Signature: Randy Phillips

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	Analyses To Be Performed: BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)	Hold	Remarks
B-1		9	W	G	3:15	HCL	X	X	X							X	Don't analyse (RB) B-1
B-1 (dup)		1	W	G	3:15	↓											
~~FB-B~~		~~1~~				↓		~~X~~									

Please Initial: RP
Samples stored in ice: yes
Appropriate containers
Samples preserved
VOA's without headspace
Comments:

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Randy Phillips	GTI	5/4/93 10:30			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received for Laboratory By (Signature)		Date/Time
			[illegible]		5-4-93 10:20

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

GROUNDWATER TECHNOLOGY, INC.
Attn: TIM WATCHERS

Project 020202976.030599
Reported 05/10/93

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
88508- 1	B-1	05/04/93	05/06/93	Water

RESULTS OF ANALYSIS

Laboratory Number: 88508- 1

Diesel:	8,300
Concentration:	ug/L

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 88508

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
ug/L = parts per billion (ppb)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Water: 5000ug/L

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 50ug/L

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Water: 0.5ug/L

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Diesel:	100/105	5%	75-125

Richard Srna, Ph.D.
Jelomina V Tanquilig (for)
Laboratory Director

Fax copy of Lab Report and COC to Chevron Contact: ☐ Yes ☐ No 88508

Chain-of-Custody-Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 9-0290
Facility Address: 1802 Webster Street
Consultant Project Number: 20202976.030599
Consultant Name: Groundwater Technology
Address: 4057 Port Chicago Hyway
Project Contact (Name): Tim Watchers
(Phone) 671-2387 (Fax Number)

Chevron Contact (Name): Mark Miller
(Phone) 842-8134
Laboratory Name: Superior
Laboratory Release Number: 76654480
Samples Collected by (Name): Randy Ray Phillips
Collection Date: 5/4/93
Signature: Randy Ray Phillips

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	Analyses To Be Performed: BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)						2 - liters for TPH-G Remarks
B-1		2	W	G			X		X												

Please Initial:
Samples shipped in ice. yes
Appropriate containers yes
Samples preserved yes
VOA's without headspace N/A
Comments:

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Randy Ray Phillips	GTI	5/5/93 9:15		GTI	5/5/93 8:00
	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	GTI	5/5/93 10:37	K. Carlyon	Superior	5/5/93 1037
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

APPENDIX E

WELL SURVEY DATA

I = Irrigation O = Oakland Sheet 1 of 1
A = Alameda Cp = Cathodic Protection
D = Domestic NG = Not given
Inventory of Wells Located in Township 3S Range 4W Section 2, County Alameda
Aurora Vista + Webster

Owner	Owner's Address	Well Location	Year Drilled	Use
Vintage Properties	1150 Marina Village Pkway, Alameda	Same (4 wells)	87	Test
		Section 3		
there are no Logs filed for Subsection R				
		Section 10		
A.E. Bryant	447 Taylor, Alameda	Same	77	I
Richard Fawcett	427 Santa Clara, A.	"	77	D
PG+E	4801 Oakport, O.	462 Santa Clara	76	Cp
Alameda Park Co.	Neptune Beach	NG	NG	NG
Naval Facilities Eng. Com.	PO Box 727 Code 1813BD San Bruno	11th St.	90	M
		Sec. 11		
PG+E	4801 Oakport O.	Pacific + Clopin	76	Cp
H.W. Moore	603 Pacific, A.	Same	77	I
Daniel Robinson	1614 6th St, A.	"	77	I
Shell Oil	PO Box 4848, Anaheim	1601 Webster (2 wells)	90	M
PG+E	4801 Oakport, O.	Santa Clara + Verdi	76	Cp
WC Lyons	1205 Bay St, A.	Same	77	I
Grover Chessmore	1036 San Antonio, A.	"	77	D+I
Frank Weeden	1236 St. Charles, A.	"	77	I
Richard Bartalini	1224 Bay St, A.	"	77	I
Lawrence Picetti	1269 Carolina, A.	920 Centennial	87	NG

Information is only as current as 7/14/92 DWR's current files: