Chevron

Chevron

July 22, 1994

Chevron U.S.A. Products Company
2410 Camino Ramon
San Ramon, CA 94583
P.O. Box 5004
San Ramon, CA 94583-0804

Marketing Department
Phone 510 842 9500

Ms. Eva Chu
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94501

Re: Former Chevron Service Station #9-1723
9757 San Leandro Boulevard, Oakland, CA

Dear Ms. Chu:

Enclosed is the Comprehensive Site Evaluation and Proposed Future Action Plan dated June 23, 1994, prepared by our consultant Weiss Associates for the above referenced site.

As we discussed, Chevron is currently in the process of evaluating a large number of our sites to determine what activities are necessary to move them to a "no further action" or "closure" point. The enclosed document summarizes all data gathered to date and proposes 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 or Kenneth Kan at (510) 842-8752.

Sincerely,
CHEVRON U.S.A. PRODUCTS COMPANY

Mark A. Miller
Site Assessment and Remediation Engineer

Enclosure

cc: Mr. Kenneth Kan, Office
Mr. Kevin Graves, RWQCB - Bay Area
Ms. B.C. Owen

Mr. Ron Hothem
Pacific American Management Company
369 Broadway
San Francisco, CA 94133

File: 9-1723 WP1

1-40 - 2-20 - .7

Weiss Associates

COMPREHENSIVE SITE EVALUATION AND PROPOSED FUTURE ACTION PLAN

at

Former Chevron Service Station 9-1723
9757 San Leandro Boulevard
Oakland, California

prepared for

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

① Cannot stop monitoring after just one more quarter
② Levels of TPH-G, BTEX in MW-8 - could it be risk to employees at auto repair facility?
③ Has contamination source been removed to the extent possible? Any soil excavation at time of UST removal?

June 23, 1994

Weiss Associates

COMPREHENSIVE SITE EVALUATION AND PROPOSED FUTURE ACTION PLAN

at

Former Chevron Service Station 9-1723
9757 San Leandro Boulevard
Oakland, California

prepared by

Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608

Deborah Underwood
Staff Geologist

Alison W. Watts
Senior Staff 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 in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied, and are not responsible for the interpretation by others of these data.

Eric M. Nichols June 23, 1994
Registered Civil Engineer
No. 42695

CONTENTS

APPENDICES

SUMMARY

The Chevron site at 9757 San Leandro Boulevard in Oakland, California is a former Chevron Service Station. The station was demolished and all subsurface facilities were removed in 1978. In 1980, Gerber Products Company (GPC) acquired property, including the former Chevron station, on the corner of 98th Street and San Leandro Boulevard. Currently, the former Chevron station is developed as an auto-body shop.

A total of 21 soil borings have been drilled and 9 borings converted to monitoring wells at the former GPC site, including the former Chevron site, as part of subsurface investigations commissioned from 1987 to 1990 by GPC and by Chevron in 1994. Data collected during these investigations demonstrate that:

- ***The plume is contained by natural processes, and no significant plume migration occurs with or without ground water extraction.*** Although hydrocarbons have been present at this site for at least 16 years, during this time the low permeability sediments have kept the plume confined to the vicinity of the former Chevron station, and it is very unlikely that significant additional migration will occur before natural degradation of the plume occurs; How long will this take?

- ***Offsite sources have impacted ground water quality:*** Operations associated with the current site owner and adjacent service stations have also impacted ground water in the vicinity of the former Chevron station. Has this affect Chevron site?

- ***The onsite source has been removed, and the site has been remediated to the extent feasible:*** The hydrocarbon sources at the former Chevron site, identified as the underground storage tanks and product piping, have been removed. Due to the hydrogeologic characteristics of the subsurface sediments and the risk of encouraging migration of offsite plumes, no additional appropriate or cost-effective technologies exist that might significantly accelerate cleanup of this plume.

what about contaminated soil?

explain. what about arsenic.

Therefore, we submit that:

- The remaining hydrocarbons present at the site are contained in the vicinity of the site, and do not present a threat to human health or to the quality of the surrounding aquifer; and We are talking about 2,000 ppb benzene! at 15' depth!

- No economically and technically feasible measures are available to further reduce the contaminant plume.

We request that Alameda County Department of Environmental Health (ACDEH) allow a gradual reduction in well sampling frequency, and consider establishing a non-attainment zone encompassing the residual plume associated with the former Chevron station.

INTRODUCTION

At the request of Chevron U.S.A (Chevron), Weiss Associates (WA) has prepared this site evaluation for former Chevron service station 9-1723, located at 9757 San Leandro Boulevard in Oakland, California. The objectives of this evaluation are to; 1) provide a comprehensive summary of all investigative and remedial actions performed at this site to date, 2) evaluate whether the site meets the Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) criteria for establishment of a non-attainment zone, and 3) outline a recommended future action plan. This summary presents background on the site investigation and remediation activities, reviews the RWQCB criteria for establishment of a non-attainment zone, and outlines the proposed future action plan. The site-specific information presented in this petition is compiled from the reports listed in the references section.

SITE HISTORY

SITE SETTING

The former service station is located in a primarily industrial area with a few retail businesses and private residences (Appendix A). The site is currently developed as an auto body shop. The surrounding topography is generally flat with a gentle upward slope to the east, toward the Oakland Hills, which are about 2 miles east of the site. The site is about 20 ft above mean sea level (msl) and San Leandro Creek, which flows into San Leandro Bay, is about one mile west of the site. Significant hydrocarbon levels were first identified in 1987 during a subsurface investigation conducted by Beta Associates (BA).

Approximately 80 wells are located within a one-half mile radius of the site. Most of these wells are used for monitoring ground water and are about 25 to 30 ft deep. Ground water use from the

deeper confined aquifers is limited to industrial and irrigation uses and of the fourteen industrial wells listed, total depths range from 120 to 957 ft depth.

SITE INVESTIGATION

1978 Station Demolition: In 1978, the Chevron station was demolished and the underground tanks removed prior to acquisition of the property by GPC. No detailed records of the demolition and tank excavation activity exist.

1987 Subsurface Investigation: In March and April 1987, BA inspected the entire GPC property for potential sources of contamination and drilled 11 borings as part of a subsurface investigation for GPC. Boring 1, located about 200 ft northwest of the former Chevron site, boring 2, located about 100 ft southwest of the former Chevron site, and boring 4, located about 500 ft west of the former Chevron site, were converted to monitoring wells MW-1, MW-2, and MW-4. Selected soil samples collected from the borings were analyzed for various compounds depending on the nature of operations performed at or near the boring locations.

No hydrocarbons were detected in soil samples collected from boreholes DH-1 through DH-7, DH-9, and DH-10 (Appendix B). Soil from 10 ft depth in boring DH-8, located on the former Chevron site, contained 1,017 parts per million (ppm) total petroleum hydrocarbons as gasoline (TPH-G). 1.063 parts per billion (ppb) benzene, and 240 ppm motor oil, and 380 ppm motor oil were detected in soil collected 1 ft below ground surface (bgs) from boring DH-11. The presence of motor oil was attributed to the past oil-treatment of the sub-base beneath the concrete. Ground water samples were collected from MW-1, MW-2, and MW-4 three times between April 1987 and August 1989 (Appendix B). No hydrocarbons and up to 93.1 parts per billion (ppb) volatile organic compounds (VOCs) were detected in MW-1, up to 477 ppb of benzene, toluene, ethylbenzene and total xylenes (BTEX) and 1,100 ppb TPH-G were detected in ground water from MW-2, and no hydrocarbons or VOCs were detected in MW-4.

1988 Subsurface Investigation: In May 1988, Groundwater Technology, Inc. conducted a subsurface hydrocarbon investigation for GPC which included a ground-penetrating radar (GPR) survey, drilling four borings in the southeast corner of the GPC site, and converting the borings to monitoring wells

MW-5, MW-6, MW-7, and MW-8. Well MW-7 is located about 100 ft northwest of the former Chevron station, and MW-5, MW-6, and MW-8 are located on the Chevron site (Appendix A). The GPR survey data indicated the presence of remnant utility piping but no underground storage tanks on the former Chevron service station site. TPH-G concentrations ranged from 5 to 310 ppm in soil samples collected at about 10 ft bgs from MW-5, MW-6, and MW-8 (Appendix B). Ground water samples were collected twice from these wells: once in June 1988 and once in August 1989 (Appendix B). TPH-G concentrations have been non-detectable in MW-5 and MW-7, although up to 93 ppb benzene has been detected in MW-5. VOCs have been detected in both MW-1 and MW-7, northwest of the former Chevron site. GPC operations in the vicinity of these two wells involved the use of VOCs. TPH-G has been detected in MW-6 and MW-8 at 1,000 and 77,000 ppb, respectively, and benzene has been detected in these wells at up to 2,300 ppb.

1989 Subsurface Investigation: From August to November 1989, Harding Lawson Associates (HLA) further investigated the hydrocarbon distribution in the unsaturated soil beneath the former Chevron service station and in the ground water downgradient of the former station. Of 8 borings drilled, borings SB-1 through SB-6 were located in the area surrounding the previously drilled boring DH-8, which contained the highest soil hydrocarbon levels. Up to 470 ppm TPH-G was detected in soil samples collected from about 10 ft bgs in borings SB-1 through SB-6. These samples also contained up to 3.3 ppm benzene. Two of the borings were converted to monitoring wells MW-9 and MW-10 (Appendix A). No TPH-G or BTEX were detected in soil samples collected from MW-9 and MW-10 (Appendix B). This investigation did not advance SB about former UST pit or product lines (between MW-8 + MW-5)

1993 Environmental Assessment: From October to November 1993, Groundwater Technology, Inc. was retained by Chevron to conduct an environmental investigation which included ground water sampling of monitoring wells MW-5, MW-6, and MW-8, surveying surrounding areas for wells currently in use, and investigating potential offsite hydrocarbon sources. Benzene levels ranged from 19 to 43 ppb in ground water from wells MW-5 and MW-6, and MW-8 contained 2,000 ppb benzene (Appendix B). Monitoring of wells MW-2, MW-5, MW-6, MW-8, and MW-9 is scheduled to occur in the summer of 1994.

REMEDIAL ACTIONS

The underground storage tanks were removed from the property in 1978. The extent of excavation at this time is not known, but soil samples collected from borings indicate that no soil containing more than 3 ppm benzene remains at the site. Ground water and soil in this area have also been impacted by substances associated with GPC's operation, and determination of appropriate remedial action was delayed while sources of each contaminant were identified.

this is high

let's characterize site by advancing SBs around / through former tank pit + product lines.

EVALUATION OF NON-ATTAINMENT ZONE CRITERIA AND FUTURE ACTION PLAN

DISCUSSION OF NON-ATTAINMENT ZONE CRITERIA

The configuration of the remaining hydrocarbon plume and the site hydrogeologic and chemical conditions indicate that this site is an excellent candidate for establishment of a non-attainment zone. In the following section, each of the criterion specified by the RWQCB for establishing a non-attainment zone are considered for the subject site.

Criteria 1. The Discharger has demonstrated (e.g., pump tests, 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.

Plume Stability: Hydrocarbons have been present in ground water at this site since at least 1978. The consistent absence of hydrocarbons in downgradient and cross-gradient wells MW-1, MW-4, MW-7, MW-9 and MW-10 and the low levels of hydrocarbons detected in MW-2, indicate that the onsite plume is contained in the vicinity of the former Chevron Station, and does not extend offsite beyond the GPC property. The predominantly low permeability sediments beneath the site apparently provide natural containment of the plume, slowing migration enough to allow natural attenuation mechanisms, including sorption, dispersion, volatilization through the unsaturated zone, and/or chemical and

biological activity to degrade the hydrocarbons onsite, thereby limiting the lateral and vertical extent of hydrocarbons in ground water.

In general, the ground water quality in the vicinity of the Chevron site has been degraded by the operational activities of other service stations, a former Shell station and former Thrifty service station located on the corner southeast of the Chevron site, and by GPC activities using chlorinated solvents. The hydrocarbons detected in upgradient well MW-5 may be all or partially attributable to an offsite source.

Plume Location: Hydrocarbons in the unsaturated zone beneath the site are contained primarily in the vicinity of the former underground tank and product piping locations, within an area of about 200 by 200 ft extending across the former service station occupying the southeast corner of the GPC property (Appendix A). The lateral and vertical extent of the plume has remained essentially unchanged since subsurface investigations began in 1987. No free product has ever been detected at the site.

Site Hydrogeology: The Quaternary age channel and floodplain sediments in the area of the former service station were deposited by the San Leandro Creek and comprise the San Leandro alluvial fan. The sediments beneath the site consist of low permeability clay and silty clay with clayey sand and gravel layers. The first laterally continuous, saturated clayey sand layer occurs at about 12 to 15 ft depth and is about 4 to 5 ft thick. It is well confined by silty clay, which is a minimum of 4 ft thick below the sand layer. The clay layers, with inter-layered sand and gravel, are characteristic of the San Leandro alluvial fan and function as confining layers for the deeper aquifers. Wells MW-5, MW-6, MW-7, and MW-8 are mostly screened in the silty clay to about 13 ft depth and terminate in the clayey sand/sandy clay at about 20 ft depth.

Site Hydrology: Since 1987, depth to water has consistently been measured at about 11 ft below ground surface, ranging only 0.8 ft, and the inferred ground water flow direction has been steadily toward the west with a gradient of about 0.002 ft/ft. A more detailed description of the hydrogeology and ground water chemistry at the site can be found in the subsurface investigation reports listed in the reference section.

Criteria 2. Adequate Source Removal and/or isolation is undertaken to limit future migration of pollutants to ground water.

Source Removal: Based on the analytical results of the subsurface investigations at the former service station, the likely sources of hydrocarbons were the underground storage tanks, product piping lines, and the pump islands. HLA noted that the distribution of remaining hydrocarbons correlated closely with the former locations of these facilities. A GPR survey confirmed that the underground tanks and majority of product piping were removed. But no evidence of adequate source removal

Criteria 3. Dissolved phase cleanup is not appropriate or cost-effective due to limited water quality impacts or human health risks.

Excavation: The underground storage tanks were removed from the site in 1987. 1986 Additional excavation of the hydrocarbon-impacted soil beneath the site is not feasible as the site is currently developed as an auto-body shop. In addition, monitoring data indicate that additional excavation is not necessary to prevent migration of the plume.

NOT true former tanks in open space not under bldg.

Ground Water and Soil Vapor Extraction: Ground water extraction and treatment combined with soil vapor extraction and treatment is the most common and single most effective technology for controlling and remediating ground water hydrocarbon plumes. Ground water/soil vapor extraction is initially very effective at reducing plume mass and concentrations. However, it has been demonstrated at this site and others that hydrocarbon concentrations eventually approach "asymptotic" conditions, apparently because the hydrocarbon mass extracted by the system is balanced by hydrocarbon diffusion and desorption from low permeability materials in the plume. At this point, continued extraction removes small additional quantities of hydrocarbon mass, but does little or nothing to further reduce plume concentrations.

What about excavate/dispose

Ground water/soil vapor extraction would not be an effective means of remediating ground water at this site, because the vadose and upper saturated zones consist predominantly of low permeability, clay-rich soil. A second benefit of ground water extraction is hydraulic containment of the plume, however the hydrocarbon distribution at this site suggests that the impacted ground water remains in the vicinity of the original source, and that engineered containment is not necessary to prevent offsite

migration. We are also concerned that ground water extraction may facilitate transport of the offsite VOC plume onto the site.

Air Sparging: Air sparging might theoretically enhance clean-up by encouraging biological degradation of hydrocarbons in both the unsaturated and saturated zones, but this method is rarely effective in low-permeability sediments. However, the apparently slow rate of migration of the plume indicate that bioactivity is already occurring at the site.

Innovative Technologies: Technologies for increasing benzene mobility and/or degradation are not proven, and would not be appropriate or cost-effective at this site. All data indicate that the bulk of benzene remaining at the site is contained in the low permeability sediments just below ground surface. This technique would be greatly hindered by the clay-rich sediments just below ground surface, and it does not warrant the expense and uncertainty associated with technologies to increase mobility.

In summary, data collected at the site indicate 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.

Criteria 4. An acceptable plan is submitted for containing and managing the remaining human health 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) a future action plan for ground water monitoring for hydrocarbons downgradient of the plume; and, 2) a contingency plan to be implemented if monitoring indicates significant downgradient migration and/or increasing concentrations in the plume.

FUTURE ACTION PLAN

Continued Ground Water Monitoring: The hydrocarbon plume at this site has remained very stable since monitoring was first performed in 1987, and additional monitoring will unlikely yield additional information. However since monitoring of offsite, downgradient wells has not been performed recently,

we will complete one additional round of quarterly sampling to confirm that the plume configuration remains stable. Three wells at the former Chevron site and two wells on the GPC property will be monitored for hydrocarbons in the summer of 1994. Of the five wells, MW-2 and MW-9 are located downgradient of the former Chevron site. Our plan for ensuring that compliance with cleanup goals will be maintained at the downgradient plume boundary is outlined below:

1) Monitor wells MW-2, MW-5, MW-6, MW-8 and MW-9 once to confirm the configuration of the hydrocarbon plume has remained stable.

2) After this sampling event, if the contingency plan is not activated, we plan to cease monitoring. NO !

Contingency Plan: Two wells, MW-2, and MW-9 are assigned "baseline" and "trigger" concentrations. Should monitoring indicate that "trigger" concentrations are met or exceeded in any well, a contingency plan for increasing ground water monitoring will go into effect. Details of the contingency plan are presented in Appendix D.

CONCLUSIONS

Data collected at the site over the past 6 years demonstrate the following points;

- Hydrocarbons have been present at this site for at least 16 years, during this time the low permeability sediments have kept the plume confined to the vicinity of the former Chevron station, and it is very unlikely that significant additional migration will occur before natural degradation of the plume occurs;
- No hydrocarbons from the Chevron plume have migrated off the GPC property.
- The hydrocarbon sources at the Chevron site, identified as the underground storage tanks and product piping, have been removed;
- At least one, and possibly three, offsite sources have also impacted ground water in this area; and
- Due to the hydrogeologic characteristics of the subsurface sediments and the infeasibility of implementing additional remedial technologies, no appropriate or cost-effective technologies exist that might significantly accelerate cleanup of this plume.

The subject site meets all the RWQCB criteria for establishing a non-attainment zone. Setting the downgradient hydrocarbon plume boundary as the point of compliance with maximum concentration levels (MCLs) will allow natural processes to continue to contain and slowly degrade the plume. The proposed monitoring and contingency plan will ensure that the risks posed by the residual plume are contained and managed.

We request that the ACDEH and the RWQCB accept that drinking water standards cannot be attained at this site, and establish a non-attainment zone encompassing the residual plume associated with the former Chevron station.

REFERENCE LIST

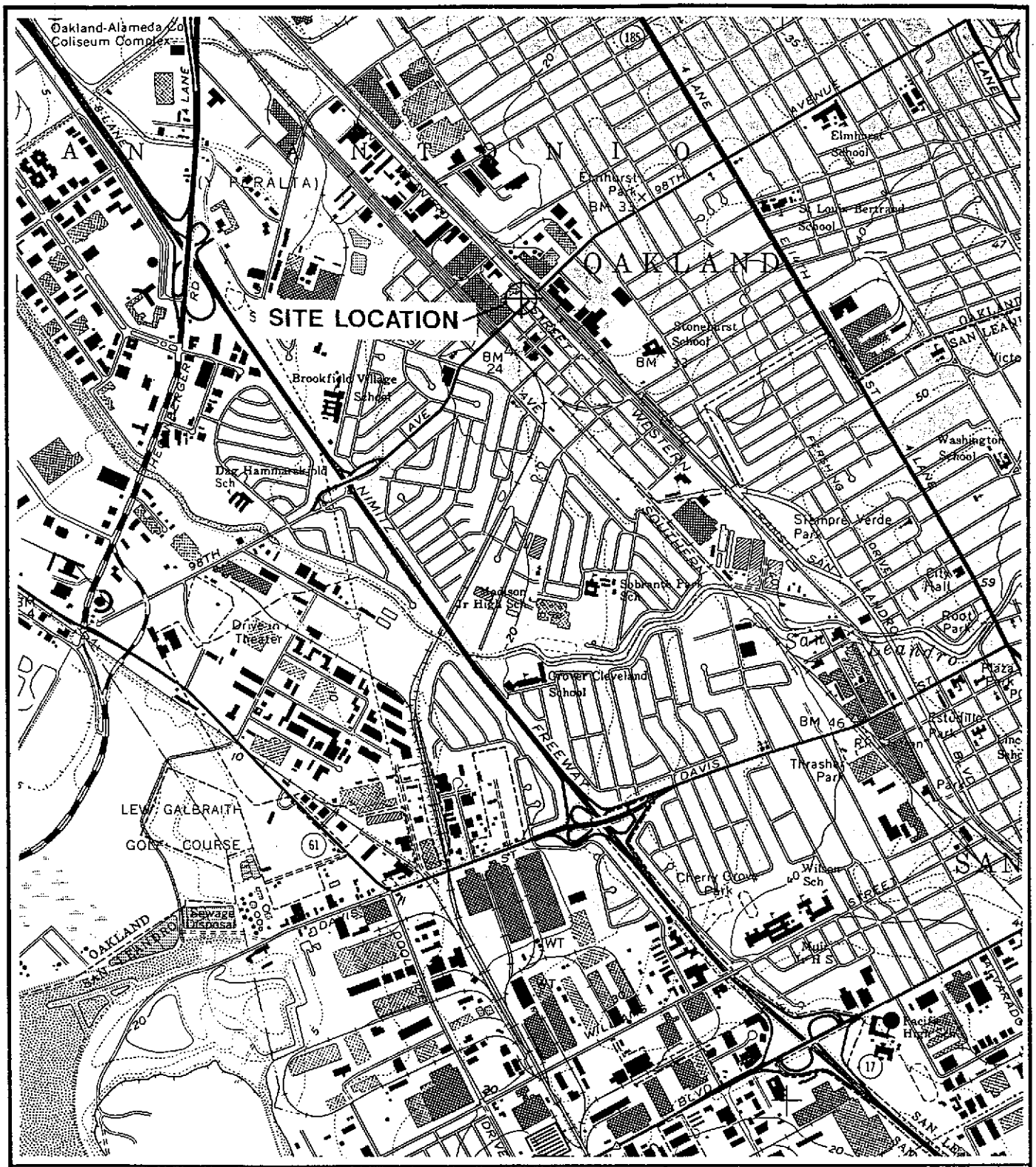
Beta Associates, May 1987. Subsurface Soil and Ground Water Contamination Report, Gerber Products Facility, Oakland, California, 5 pp. plus figures and attachments.

Groundwater Technology, Inc., November 1988. Subsurface Hydrocarbon Investigation, Gerber Products Facility, Oakland, California, 24 pp. plus attachments.

Harding Lawson Associates, February 1990. Phase III Site Investigation Addendum, Former Gerber Products Facility, Oakland, California, 19 pp. plus figures and attachments.

Groundwater Technology, Inc., January 1994. Environmental Investigation Report, Former Chevron Service Station 9-1723, 9757 San Leandro Boulevard, Oakland, California, 9 pp. plus figures and attachments.

RWQCB, June 1994. Ground Water Basin Plan Amendments, 23 pp. plus tables and attachments.



GROUNDWATER TECHNOLOGY

SOURCE: U.S.G.S. 7.5' QUAD SHEET
SAN LEANDRO, CALIFORNIA
PHOTOREVISED 1980

N

SCALE: 0 FEET 2000

SITE LOCATION MAP

CLIENT: CHEVRON U.S.A. PRODUCTS CO.
SERVICE STATION No. 9-1723

DATE: 11/4/93

LOCATION: 9757 SAN LEANDRO STRRET
OAKLAND, CALIFORNIA

FIGURE: 1

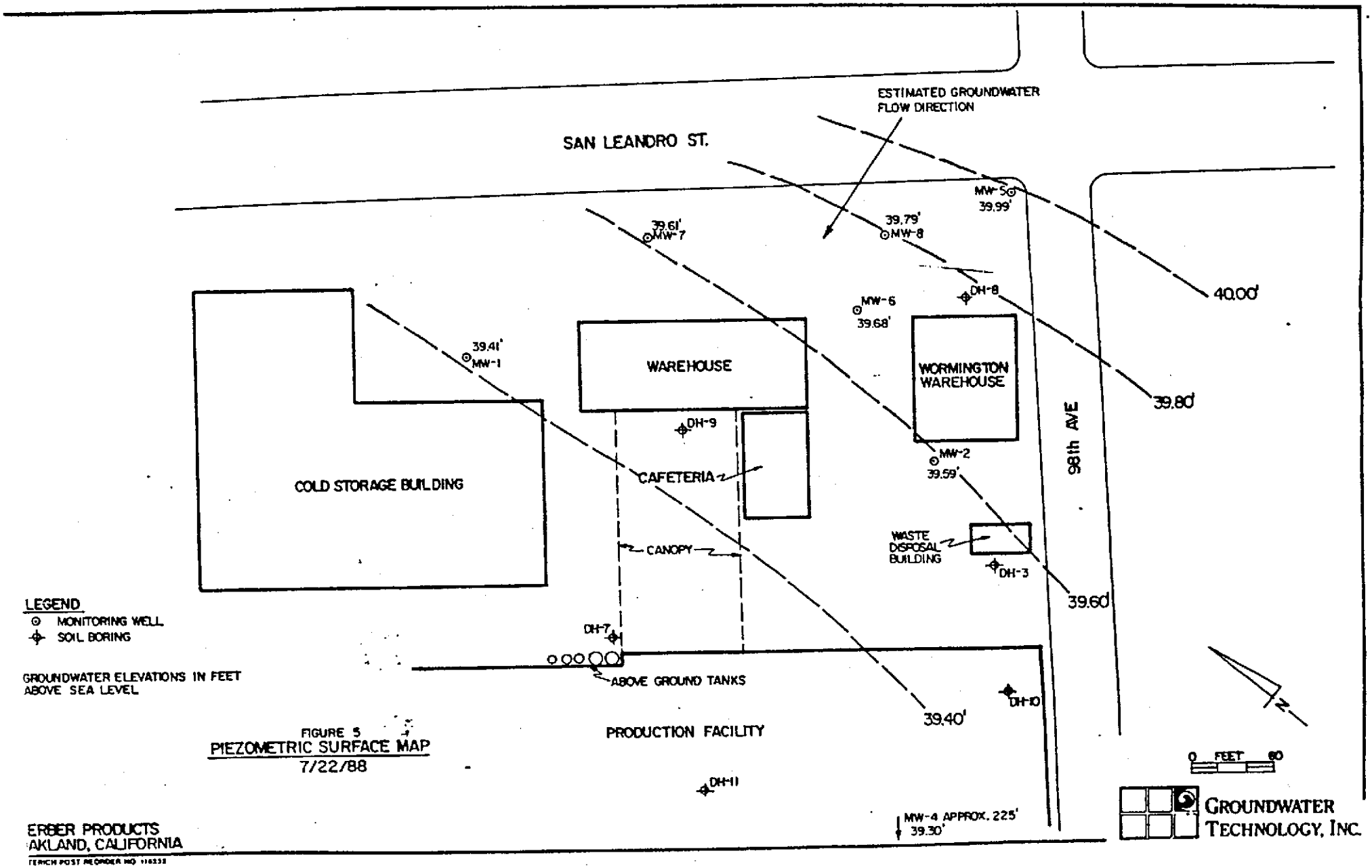
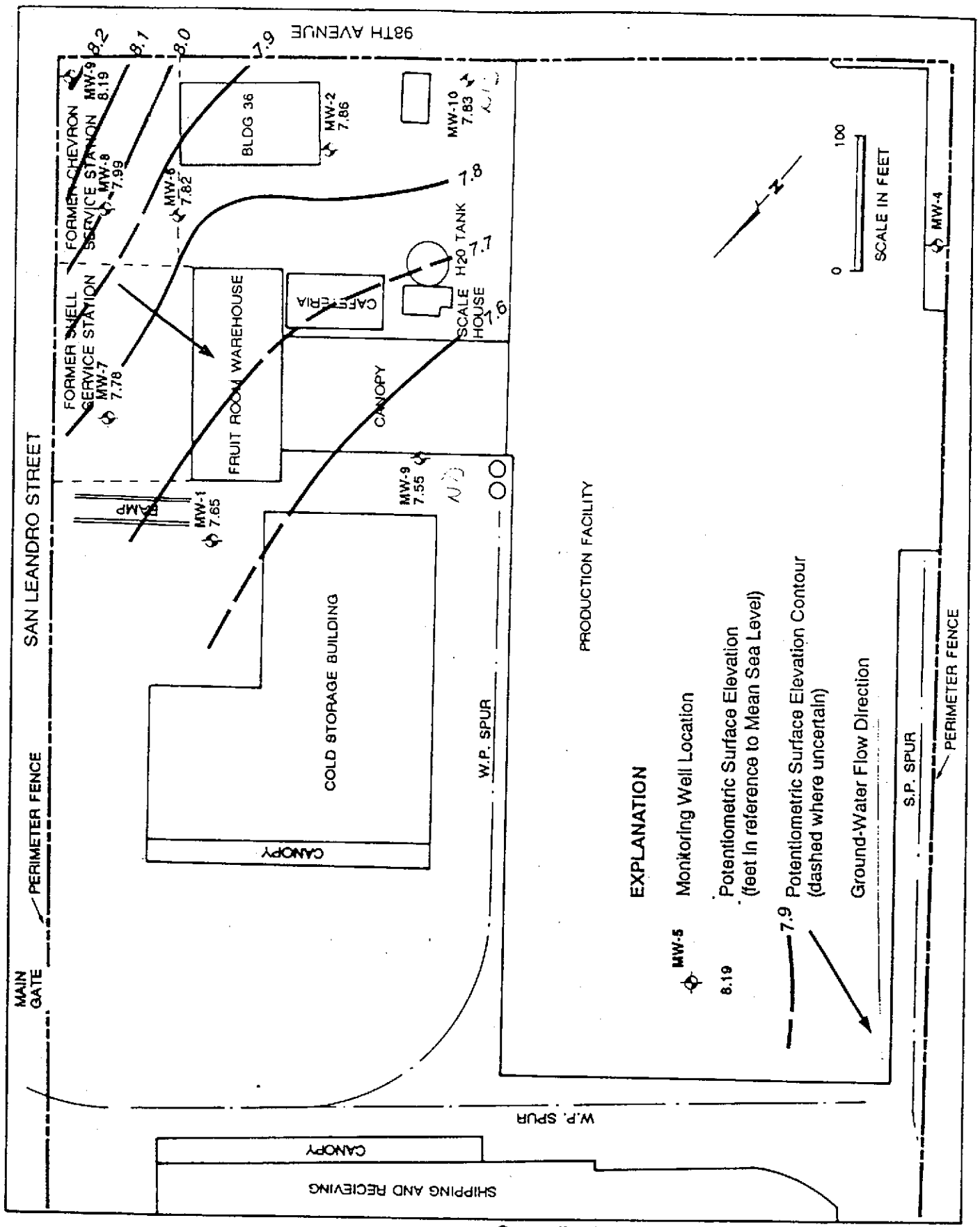


FIGURE 5
PIEZOMETRIC SURFACE MAP
7/22/88

ERBER PRODUCTS
AKLAND, CALIFORNIA

15704

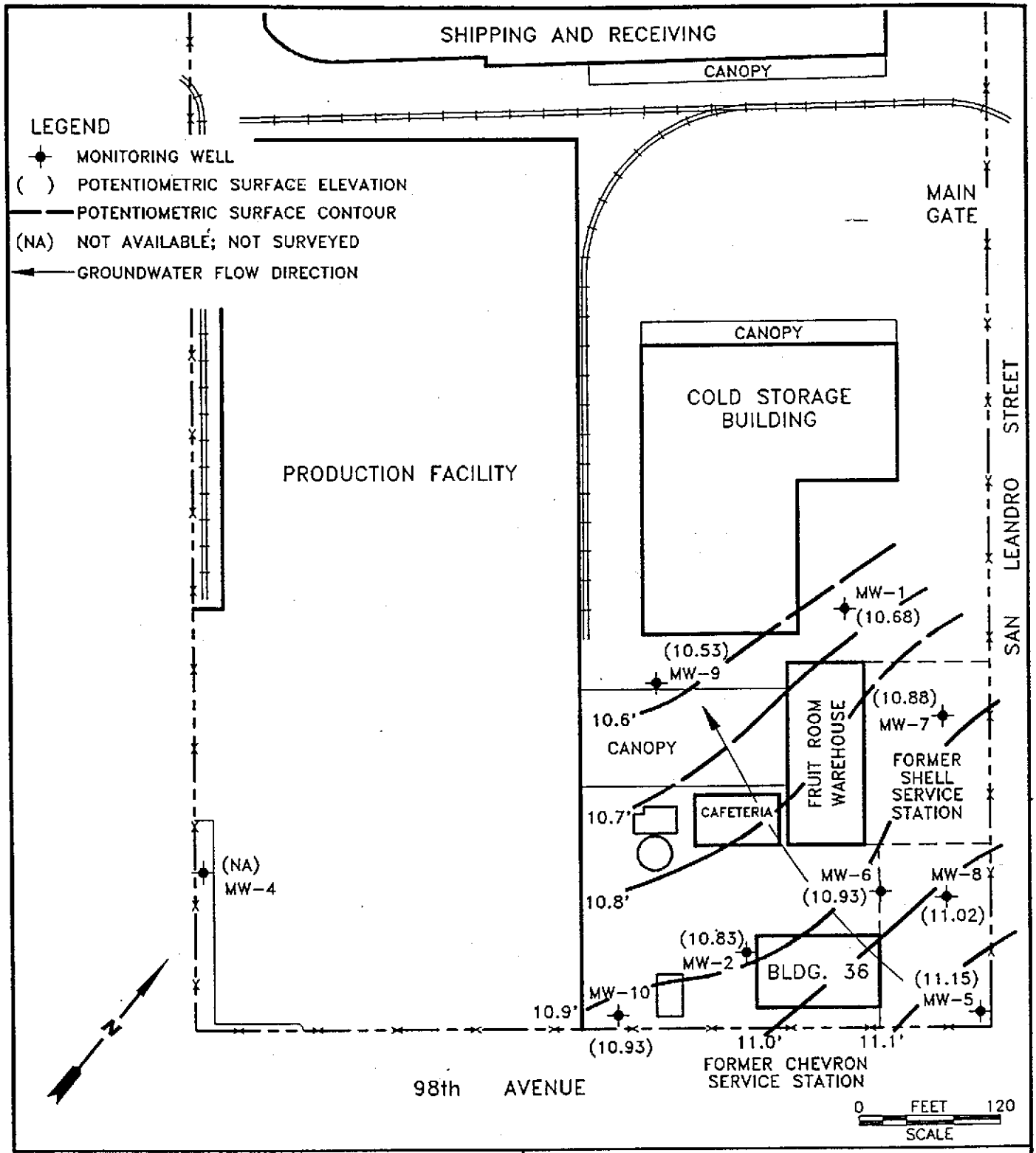


Harding Lawson Associates
Engineering and Environmental Services

Generalized Potentiometric Surface Contour Map - August 8, 1989
Gerber Products Company
Oakland, California

PLATE **3**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
EH	19459,001.02	[illegible]	11/89	



GROUNDWATER TECHNOLOGY 4057 PORT CHICAGO HWY. CONCORD, CA 94520 (510) 671-2387			POTENTIOMETRIC SURFACE MAP (11/24/93)
CLIENT: CHEVRON U.S.A. PRODUCTS CO SERVICE STATION NO. 9-1723	LOCATION: 9757 SAN LEANDRO STREET NEWARK, CALIFORNIA	REV. NO.: 0	DATE: 12/29/93
PM	PE/RG	DESIGNED: TW	DETAILED: ML
ACAD FILE: PSMN2493/SPN93	PROJECT NO.: 020204519	FIGURE: 3	

15875

San Leandro Street

PROPERTY BOUNDARY FENCE

98th Avenue

MW-8

ft	TPH
5	2
10	5

DTW - 10'

MW-5

ft	TPH
5	ND
10	160
15	ND

SB-2

ft	TPH
6	ND
9	34
15.5	140

SB-1

ft	TPH
6	ND
10	400

SB-3

ft	TPH
6	ND
9	130
15	ND

DH-8

ft	TPH
10	1,017 ★

SB-6

ft	TPH
5	ND
10	270
15	ND

SB-5

ft	TPH
5	ND
10	470
15	ND

SB-4

ft	TPH
5	ND
10	300
15	ND

MW-6

ft	TPH
5	ND
10	310

WORMINGTON WAREHOUSE
BUILDING 36

N

0 20

SCALE IN FEET

EXPLANATION

MW-5 Monitoring Well Location

SB-2 Soil Boring Location

DH-8 Former Soil Boring Location

ft	TPH
10	300

Concentration profile of Total Petroleum Hydrocarbons (TPH) detected in soil samples [depth of sample (ft) expressed in feet, TPH concentration expressed in mg/kg]

★ Sample collected April 18, 1987 (Beta Assoc. 1987)

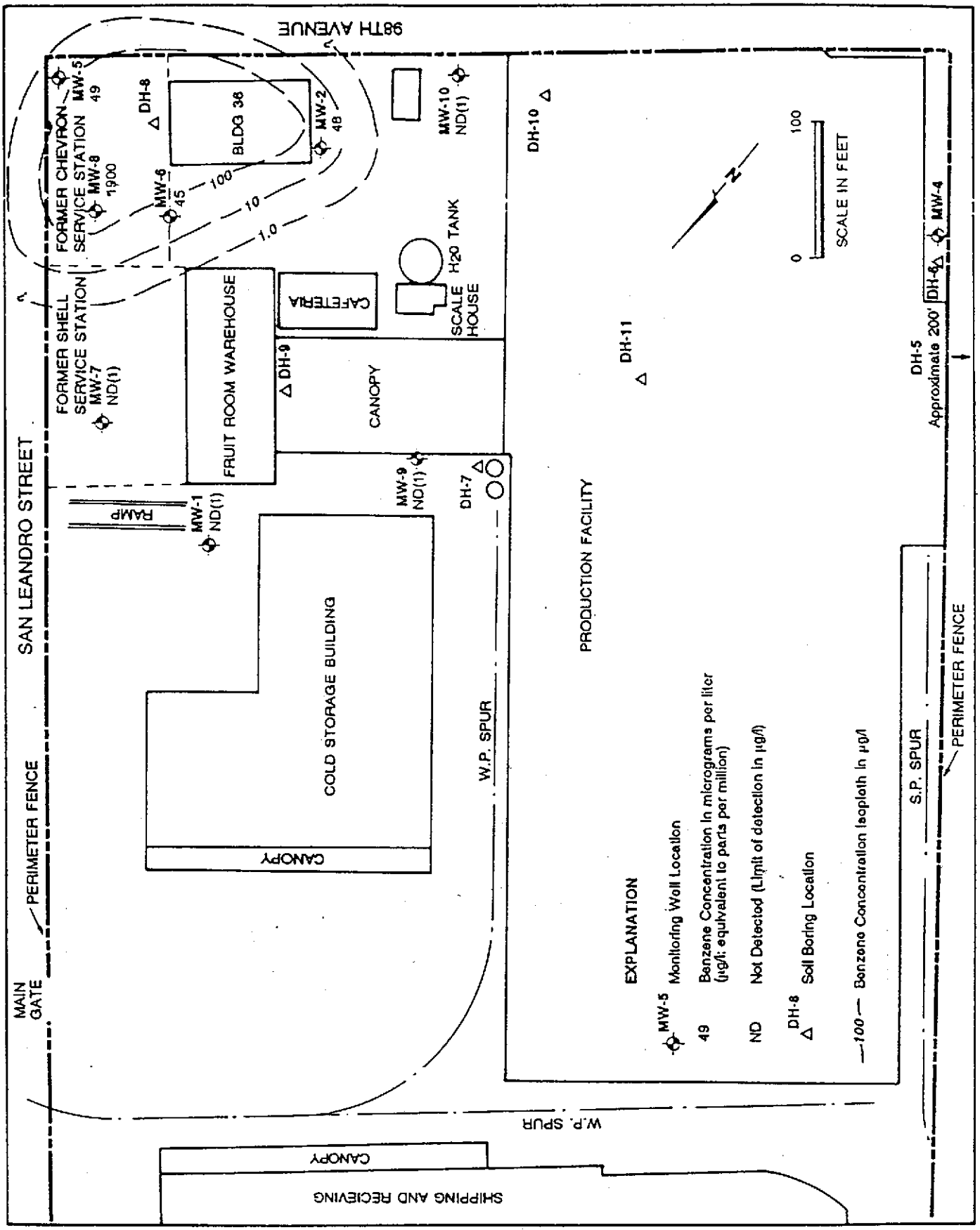
Distribution of TPH Concentrations in Soil Samples
Gerber Products Company
Oakland, California

PLATE **4**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
BDS	19459.001.02	BDS	11/89	

Harding Lawson Associates
Engineering and Environmental Services

15876



Harding Lawson Associates
Engineering and Environmental Services

Distribution of Benzene Concentrations in Groundwater - August 8, 1989
Gerber Products Company
Oakland, California

PLATE **5**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
EH	19459,001.02	JDS	11/89	

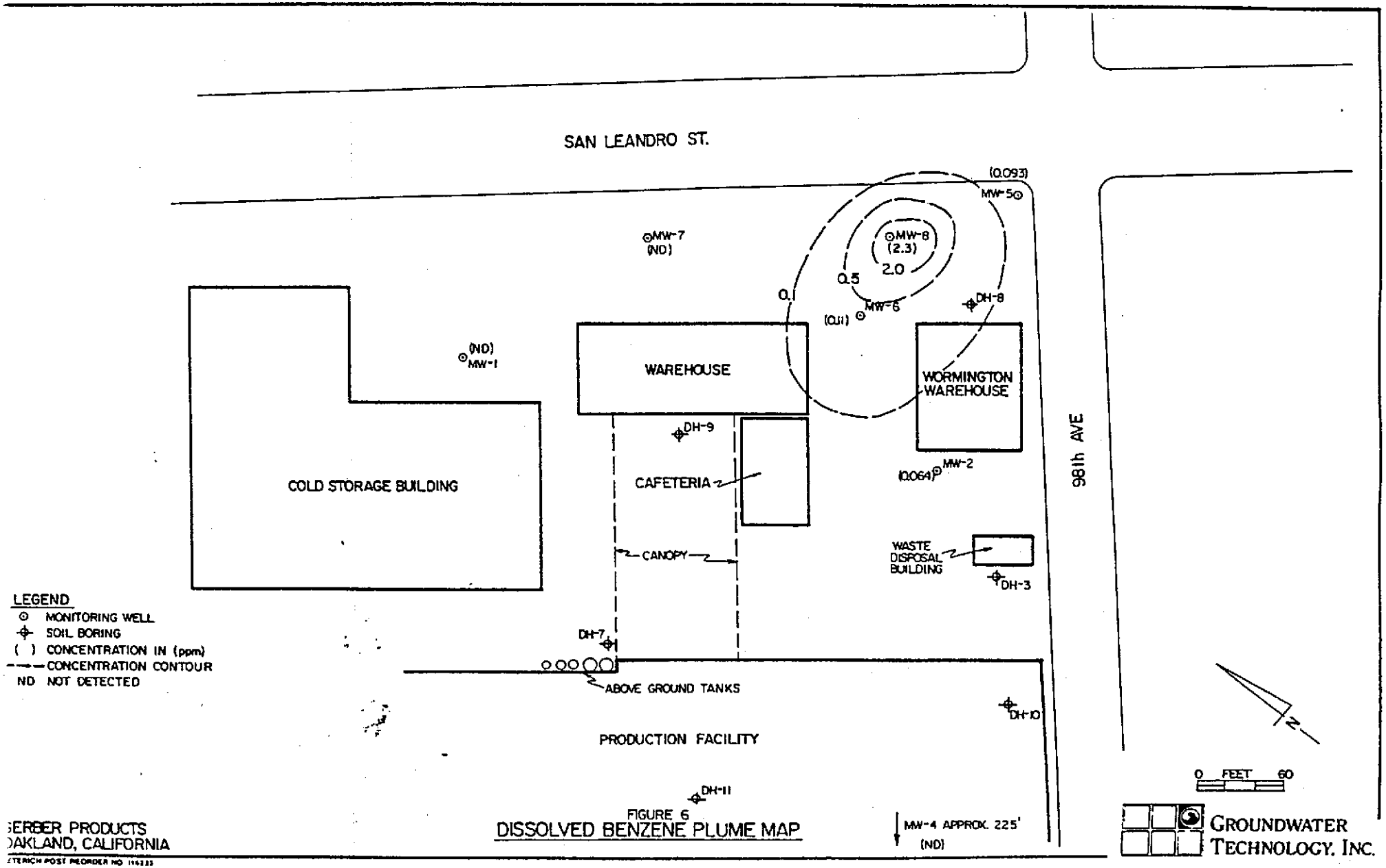


FIGURE 6

DISSOLVED BENZENE PLUME MAP

GERBER PRODUCTS
OAKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.

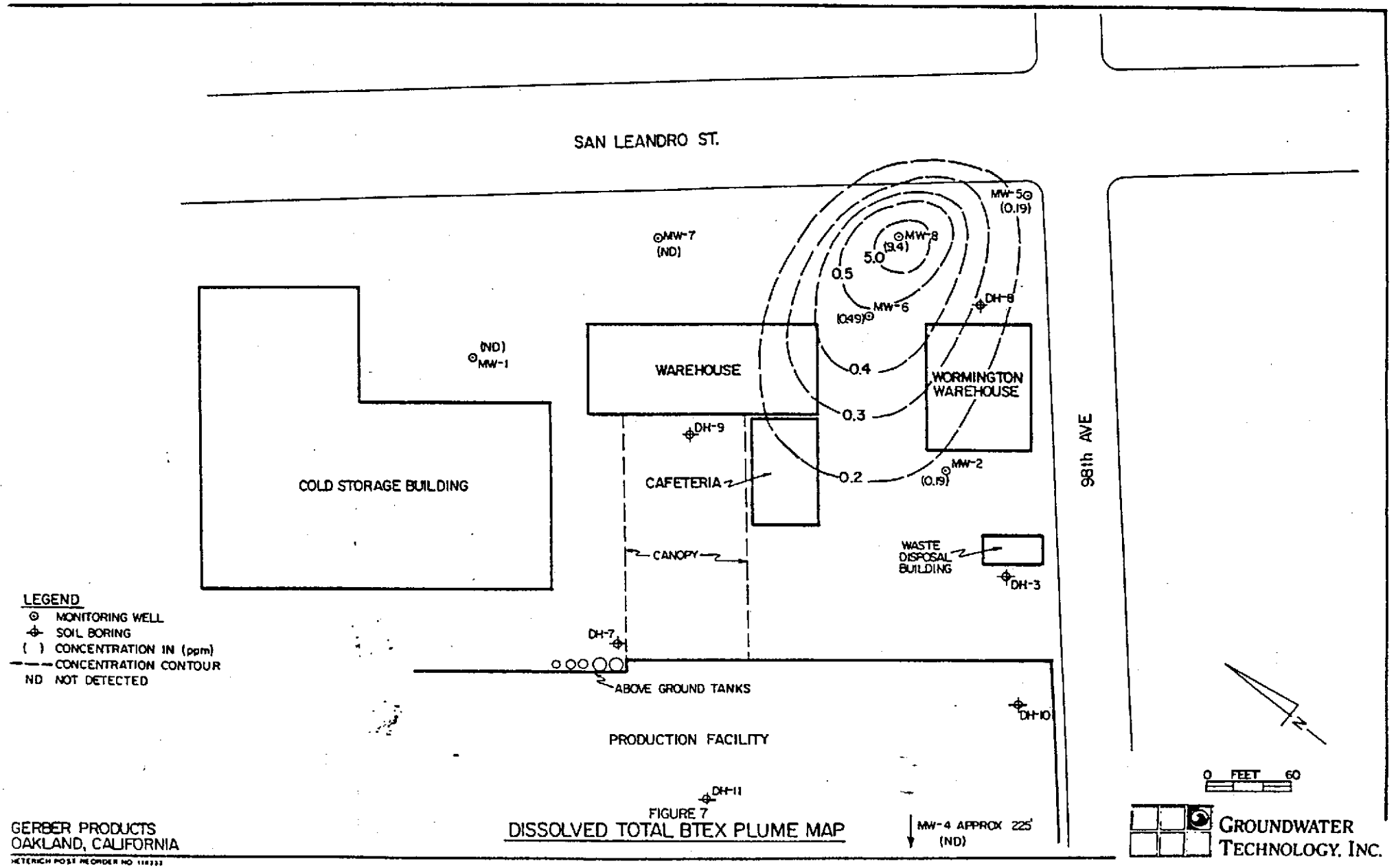


FIGURE 7

DISSOLVED TOTAL BTEX PLUME MAP

GERBER PRODUCTS
OAKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.

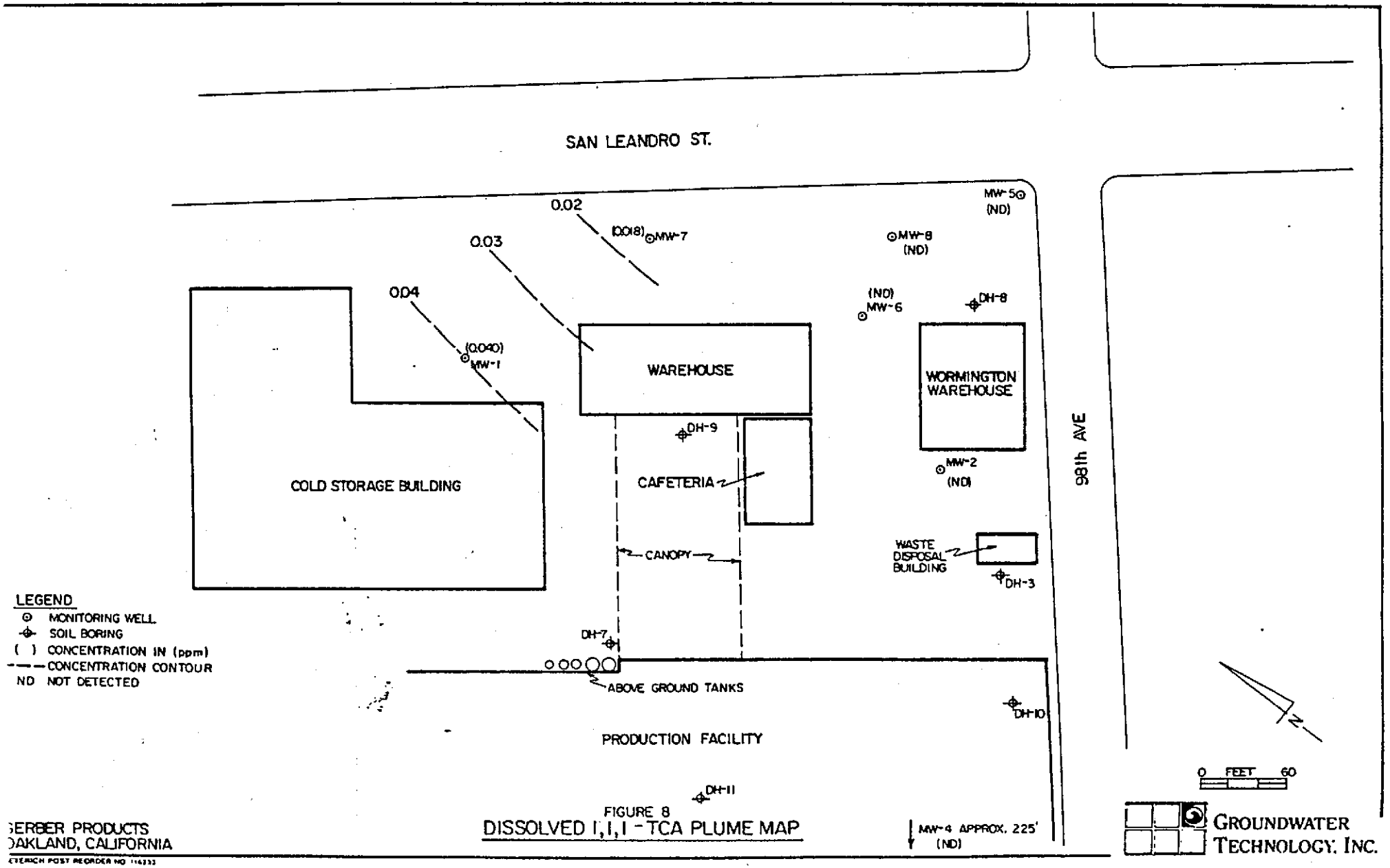
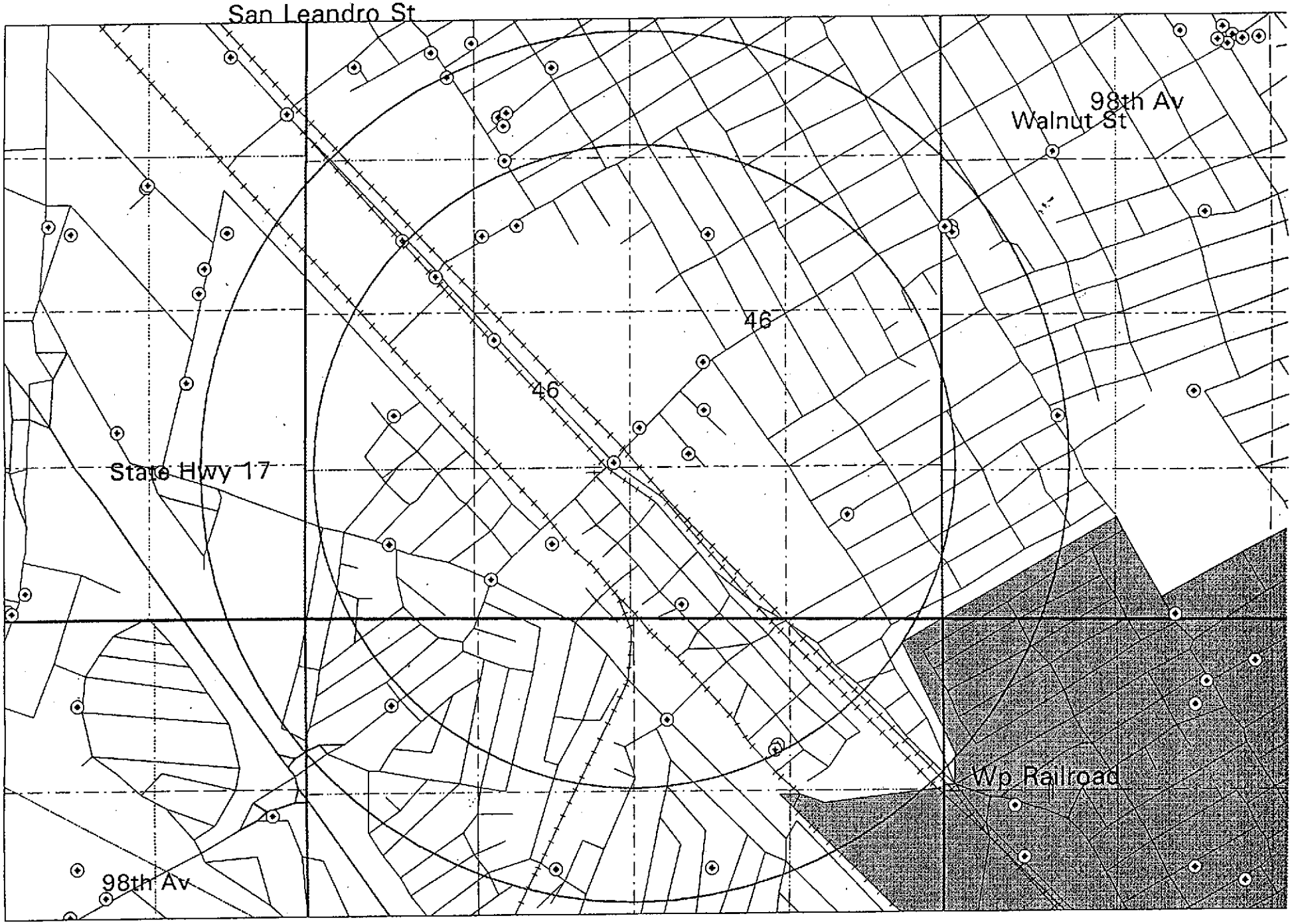


FIGURE 8

DISSOLVED 1,1,1 - TCA PLUME MAP

ERBER PRODUCTS
AKLAND, CALIFORNIA

GROUNDWATER TECHNOLOGY, INC.


San Leandro St
98th Av
Walnut St
46
46
State Hwy 17
Wp Railroad
98th Av

WELL #	CITY	ADDRESS	OWNER	PHONE	USE	DR.DATE	DIAM	TOT.DEPTH	DTW	ST.ELEV	WA.ELEV	YIELD	LOG	WQ	WL	DATAORGN	MARGIN
2S/3W 22C 2	OAK	910 89 AV.	BARRETT'S METAL FNSH.	0	MON	01/89	2	19	13	0	0	0	G	0	0	L	Yes
2S/3W 22C 3	OAK	910 89 AV.	BARRETT'S METAL FNSH.	0	MON	01/89	2	20	13	0	0	0	G	0	0	L	Yes
2S/3W 22E	OAK	9201 San Leandro Street	Paco Pumps PBMW3	0	BOR	11/92	0	20	0	0	0	0	D	0	0	D	
2S/3W 22E 8	OAK	9201 San Leandro Street	Paco Pumps 9MW1	0	MON	11/92	4	21	10	0	0	0	D	0	0	D	
2S/3W 22E 9	OAK	9201 San Leandro Street	Paco Pumps 9MW2	0	MON	11/92	4	21	10	0	0	0	D	0	0	D	
2S/3W 22E10	OAK	9201 San Leandro Street	Paco Pumps 9MW3	0	MON	11/92	4	21	11	0	0	0	D	0	0	D	
2S/3W 22E11	OAK	9201 San Leandro Street	Paco Pumps 9MW4	0	MON	11/92	4	21	9	0	0	0	D	0	0	D	
2S/3W 22F 2	OAK	888 92ND AVE	PUGET SOUND PIPE	0	MON	06/88	2	24	13	0	0	0	D	1	0	L	
2S/3W 22F 2	OAK	888 92ND AVE	PUGET SOUND PIPE	0			0	0	0	0	0	0				A	
2S/3W 22F 3	OAK	888 92ND AVE	PUGET SOUND PIPE	0	MON	06/88	2	25	13	0	0	0	D	1	0	L	
2S/3W 22F 4	OAK	888 92ND AVE	PUGET SOUND PIPE	0	MON	06/88	2	25	13	0	0	0	D	1	0	L	
2S/3W 22F 5	OAK	888 92ND AVE	PUGET SOUND PIPE	0	MON	06/88	2	25	13	0	0	0	D	1	0	L	
2S/3W 22F 6	OAK	888 92ND AVE	PUGET SOUND PIPE	0	MON	6/88	2	25	13	0	0	0	D	0	0	L	
2S/3W 22F 7	OAK	888 92ND AVE	PUGET SOUND PIPE	0	MON	6/88	2	24	13	0	0	0	D	0	0	L	
2S/3W 22F 8	OAK	888 92ND AVE	PUGET SOUND PIPE	0	MON	6/88	2	25	13	0	0	0	D	0	0	L	
2S/3W 22F 9	OAK	845 92nd Avenue	Paco Pumps 8MW1	0	MON	11/92	4	20	9	0	0	0	D	0	0	D	
2S/3W 22F10	OAK	845 92nd Avenue	Paco Pumps 8MW2	0	MON	11/92	4	21	11	0	0	0	D	0	0	D	
2S/3W 22F11	OAK	845 92nd Avenue	Paco Pumps 9MW1	0	MON	11/92	4	21	10	0	0	0	D	0	0	D	
2S/3W 22F12	OAK	845 92nd Avenue	Paco Pumps 9MW2	0	MON	11/92	4	21	11	0	0	0	D	0	0	D	
2S/3W 22F13	OAK	845 92nd Avenue	Paco Pumps 9MW3	0	MON	11/92	4	21	11	0	0	0	D	0	0	D	
2S/3W 22F14	OAK	845 92nd Avenue	Paco Pumps 9MW4	0	MON	11/92	4	21	9	0	0	0	D	0	0	D	
2S/3W 22G 2	OAK	ELMHURST ST	EBMUD	0	CAT	6/81	0	65	0	0	0	0	D	0	0	L	
2S/3W 22J 1	OAK	9957 MEDFORD AV	AMERICAN HOME FOODS	0	IND	/46	14	950	0	0	0	1100	?	0	0	L	
2S/3W 22K	OAK	1025 98th Ave.	Pioneer Packing	0	BOR	8/92	0	10	10	0	0	0	G	0	0	D	
2S/3W 22K 1	OAK	9838 Gould St	David Barretta MW-1	0	MON	11/91	2	25	13	105	92	0	G	1	1	D	
2S/3W 22K 2	OAK	9838 Gould St	David Barretta MW-2	0	MON	11/91	2	25	13	106	93	0	G	1	1	D	
2S/3W 22K 3	OAK	9838 Gould St	David Barretta MW-3	0	MON	11/91	2	30	0	105	92	0	G	1	1	D	
2S/3W 22K 4	OAK	1025 98th Ave.	Pioneer Packing MW-1	0	MON	8/92	2	19	10	0	0	0	G	0	0	D	
2S/3W 22L	OAK	921 98th Ave.	Fleischmann's Yeast	0	MON	12/90	4	25	13	0	0	0	G	1	0	D	
2S/3W 22L 1	OAK	888 92ND AVE	PARKER-HANNIFIN	0	IND	9/54	14	950	0	0	0	1250	D	0	0	L	
2S/3W 22L 2	OAK	921 98TH AV	STANDARD BRANDS INC	6332209	IND	7/32	14	953	62	21	-41	940	D	0	0	L	
2S/3W 22L 3	OAK	921 98TH AV	STANDARD BRANDS INC	0	IND	11/67	14	957	0	0	0	1000	D	0	0	L	
2S/3W 22L 4	OAK	921 98th Ave.	Fleischmann's Yeast	0	MON	11/90	2	30	12	0	0	0	G	0	0	D	
2S/3W 22L 5	OAK	921 98th Ave	Fleischmann's Yeast	0	MON	8/90	3	28	20	41	21	0	G	0	0	D	
2S/3W 22L 6	OAK	921 98th Ave	Fleischmann's Yeast	0	MON	9/90	2	26	15	0	0	0	G	0	0	D	
2S/3W 22L 7	OAK	921 98th Ave	Fleischmann's Yeast	0	MON	9/90	2	25	15	0	0	0	G	0	0	D	
2S/3W 22M 1	OAK	711 LOUISIANA	S.G. MASTERS	0	IRR	?	6	0	5	0	0	0	?	0	1	L	
2S/3W 22N	OAK	Edes Ave & Rossmoor	Edes Ave Senior Housing	0	IRR	4/90	6	282	35	0	0	50	D	0	0	D	
2S/3W 22P	OAK	98th & Edes	City of Oak. Construction	0	BOR*	2/90	2	0	0	99	0	0	G	0	0	D	
2S/3W 22P 2	OAK	801 98TH AV	GERBERS PRODUCTS CO.	5691100	IND	4/48	14	602	52	22	-30	1150	D	Y	0	L	
2S/3W 22P 3	OAK	801 98TH AV	GERBERS PRODUCTS	0	IND+	?	10	0	0	22	0	0	?	D	+	L	
2S/3W 22P 4	OAK	9401 SAN LEANDRO STREET	KALMAN COMPANIES	0	MON	4/87	2	22	10	0	0	0	D	0	0	L	
2S/3W 22P 5	OAK	9401 SAN LEANDRO STREET	KALMAN COMPANIES	0	MON	4/87	2	23	10	0	0	0	D	0	0	L	
2S/3W 22P 6	OAK	9401 SAN LEANDRO STREET	KALMAN COMPANIES	0	MON	4/87	2	22	11	0	0	0	D	0	0	L	
2S/3W 22P 8	OAK	98th & Edes	City of Oak. Construction	0	MON	2/90	2	23	11	99	88	0	G	0	0	D	
2S/3W 22P 9	OAK	98th & Edes	City of Oak. Construction	0	MON	2/90	2	29	13	100	88	0	G	0	0	D	
2S/3W 22P07	OAK	9401 SANLEANDRO ST.	GERBER PRODUCTS CO.	0	MON	05/88	2	20	9	0	0	0	G	0	0	L	
2S/3W 22P10	OAK	98th & Edes	City of Oak. Construction	0	MON	2/90	2	23	14	101	87	0	G	0	0	D	
2S/3W 22P11	OAK	98th & Edes	City of Oak. Construction	0	MON	2/90	2	22	8	100	92	0	G	0	0	D	
2S/3W 22P12	OAK	98th & Edes	City of Oak. Construction	0	MON	2/90	2	23	15	101	8	0	G	0	0	D	
2S/3W 22P13	OAK	98th Av./San Leandro St.	City of Oakland	0	MON	10/89	2	24	11	0	0	0	G	0	0	D	
2S/3W 22P14	OAK	98th Av./San Leandro St.	City of Oakland	0	MON	10/89	2	22	10	0	0	0	G	0	0	D	
2S/3W 22P15	OAK	98th Av./San Leandro St	City of Oakland	0	MON	10/89	2	22	15	0	0	0	G	0	0	D	
2S/3W 22P16	OAK	98th Av./San Leandro St.	City of Oakland	0	MON	10/89	2	26	0	0	0	0	G	0	0	D	
2S/3W 22P17	OAK	98th Av./San Leandro St.	City of Oakland	0	MON	10/89	2	41	11	0	0	0	G	0	0	D	
2S/3W 22P18	OAK	98th Av.\San Leandro St.	City of Oakland	0	MON	11/89	2	19	0	0	0	0	G	0	0	D	
2S/3W 22P19	OAK	1901 San Leandro St.	Gerber Products	0	MON	11/90	2	59	43	0	0	0	D	0	0	D	
2S/3W 22P20	OAK	1901 San Leandro St.	Gerber Products	0	MON	8/89	4	21	10	40	30	0	G	0	0	D	
2S/3W 22P21	OAK	98th Ave & San Leandro St	City Attorney, Oakland	0	MON	8/90	2	35	24	0	0	0	G	0	0	D	
2S/3W 22Q 1	OAK	9957 MEDFORD AV	MEDEZES BROS	6388750	IND	7/56	14	598	115	0	0	1200	D	0	0	L	
2S/3W 22Q 2	OAK	98TH&SAN LEANDRO ST	FLEISCHMAN YEAST	0	IND	?	0	944	0	0	0	940	D	0	0	L	
2S/3W 22Q 3	OAK	10222 Pearmain	Melrose Metal Fab MW-1	0	MON	6/91	2	25	16	0	0	0	G	1	0	D	

WELL #	CITY	ADDRESS	OWNER	PHONE	USE	DR.DATE	DIAM	TOT.DEPTH	DTW	ST.ELEV	WA.ELEV	YIELD	LOG	WQ	WL	DATAORGN	MARGIN
2S/3W 22R 1	OAK	103RD AVE	PG&E	0	CAT	3/73	0	120	0	0	0	0	D	0	0	L	
2S/3W 23M 1	OAK	9957 MEDFORD AV	AMERICAN HOME FOOD	0	?	?	0	0	0	0	0	0	?	0	0	L	
2S/3W 27B	OAK	105th Avenue & Edes	Reynolds & Brown	0	BOR*	4/89	0	20	19	0	0	0	G	0	0	D	
2S/3W 27B	OAK	750 107th Ave	Hard Chrome Engrg SB-1	0	BOR*	8/91	0	20	0	0	0	0	G	0	0	D	
2S/3W 27B 8	OAK	750 107th Ave.	Hardchrome Eng. Inc. MW-1	0	MON	6/92	2	28	18	33	15	0	G	0	0	D	
2S/3W 27B 9	OAK	750 107th Ave.	Hardchrome Eng. Inc. MW-2	0	MON	6/92	2	24	18	33	15	0	G	0	0	D	
2S/3W 27B10	OAK	750 107th Ave.	Hardchrome Eng. Inc. MW-3	0	MON	6/92	2	24	18	33	15	0	G	0	0	D	
2S/3W 27B11	OAK	750 107th Ave.	Hard Chrome Engr. SB-2	0	BOR	8/91	2	25	0	0	0	0	G	0	0	D	
2S/3W 27B12	OAK	750 107th Ave.	Hard Chrome Engr. SB-3	0	BOR	8/91	2	28	0	0	0	0	G	0	0	D	
2S/3W 27B13	OAK	750 107th Ave.	Hard Chrome Engr. SB-4	0	BOR	8/91	2	25	0	0	0	0	G	0	0	D	
2S/3W 27B14	OAK	750 107th Ave.	Hard Chrome Engr. SB-5	0	BOR	8/91	2	25	0	0	0	0	G	0	0	D	
2S/3W 27D 2	SLE	324 JONES AVE	EDWARD PENS	0	IRR	/56	0	2	0	0	0	0	?	0	0	L	Yes
2S/3W 27F 1	OAK	1160 105TH AVE	IBUE	0	IRR	3/56	12	220	12	21	9	0	D	0	0	L	Yes
2S/3W 27F 2	SLE	358 105TH AVE	G. KINDLE	0	IRR	8/45	0	120	0	0	0	0	D	0	0	L	Yes
2S/3W 27F 3	OAK	ETMO & HUNTER ST	PG&E	0	CAT	2/76	0	120	0	0	0	0	D	0	0	L	Yes
2S/3W 27G 1	OAK	460 - 105TH AV	OBIE'S NURSERY	0	IRR	10/57	10	236	20	0	0	0	D	0	0	L	Yes

WELL INVENTORY FILE

Definitions and abbreviations for items listed in the well inventory file are as follows:

[WELLNO] Well number - Wells are numbered according to their location in the rectangular system of the Public Land Survey. The part of the number preceding the slash indicates the township; the part following the slash indicates the range and section number; the letter following the section number indicates the 40-acre subdivision; and the final digit is a serial number for wells in each 40-acre subdivision.

[DAT] Date - The month and year when drilling or boring was completed.

[ELEV] Surface elevation - The surface elevation of the well, if known, in feet above mean sea level. A zero designates an unknown elevation.

[TD] Total depth - The depth of the well. This usually designates the completed well depth. If the well has a well log available on file, then the total drilled depth of the well is given. The inventory does not show total depth data for geotechnical borings. This is because only one state well number is assigned to one boring at a site, and there are usually several borings of different depth.

[DTW] Depth to water - This category usually indicates the standing groundwater level in the well on the date of completion. The "depth to first water encountered" is recorded in the inventory when it is the only water level data reported on the well driller's report.

[USE] Use - The well use (or in the case of cathodic protection wells and geotechnical borings, the reason for the excavation) as indicated in the well driller's report or data sheets. A plus sign (+) after the well use indicates a well in the current ACFC & WCD monitoring network.

[ABN] Abandoned well - A well whose use has been permanently discontinued or which is in such a state of disrepair that no water can be produced. In the inventory, this may include wells which are covered or capped but not properly destroyed.

[DES] Destroyed well - A well that has been properly filled so that it cannot produce water nor act as a vertical conduit for the movement of groundwater.

[DOM] Domestic well - A water well which is used to supply water for the domestic needs of an individual residence or systems of four or less service connections or "hookups".

[INA] Inactive well - A well not routinely operating but capable of being made operable with a minimum of effort. Also called a "standby well".

[IND] Industrial well - A water well used to supply industry on an individual basis.

[IRR] Irrigation well - A water well used to supply water only for irrigation or other agricultural purposes. In the inventory, this category includes large capacity wells as well as small capacity wells for lawn irrigation.

[MON] Monitoring or observation well - Wells constructed for the purpose of observing or monitoring groundwater conditions. (see piezometer).

[MUN] Municipal well - A water well used to supply water for domestic purposes in systems subject to Chapter 7, Part 1, Division 5 of the California Health and Safety Code. Included are wells supplying public water systems classified by the Department of Health Services. (Also referred to as community water supply wells).

[PIE] Piezometer - A piezometer is a well specifically designated to measure the hydraulic head within a zone small enough to be considered a point as contrasted with a well that reflects the average head of the aquifer for the screened interval.

[STO] Stock - A water well used primarily for livestock.

[TES] Test well and test hole - A test well is constructed for the purpose of obtaining the information needed to design a well prior to its construction. Such wells are not to be confused with "test holes" which are temporary in nature (i.e., uncased excavations whose purpose is the immediate determination of existing geologic and hydrologic conditions). Test wells are cased and can be converted to observation or monitoring wells, and under certain circumstances, to production wells. In the inventory, "TES" includes both test wells and test holes.

[?] Unidentified use - This indicates water wells whose use could not be ascertained from the available well data.

[CAT] Cathodic protection well - Any artificial excavation constructed by any method for the purpose of installing equipment or facilities for the protection from corrosion by electrochemical methods of metallic equipment (usually piping) in contact with the ground; commonly referred to as cathodic protection.

[GEO] Geotechnical boring - A temporary boring made to determine certain engineering properties of soils. An asterisk (*) indicates that the state well number assigned to the boring represents more than one boring at a particular site.

[LOG] Log - This category indicates whether a geologic record, or log, for the well or boring is available in the Agency's files. Abbreviations are as follows:

D - well driller's log
G - geotechnical boring log
E - electric (resistivity) log or other subsurface geophysical logs.

[WQ] Water quality data available - This category indicates which wells have water quality data available in ACFC & WCD files. The numbers 1 through 9 signify the number of sets of water quality measurements available for that well. A plus sign (+) indicates that 10 or more sets of data are available. A "0" indicates that no data is available.

[WL] Water level data available - This category indicates which wells have water level data other than the data reported on the well driller's logs. The numbers 1 through 9 signify the number of water level measurements available. A plus sign (+) indicates that 10 or more measurements are available for that well. A "0" indicates that no data is available.

[YLD] Yield - The maximum pumping rate in gallons per minute that can be supplied by a well without lowering the water level in the well below the pump intake. This data is taken from pump test data recorded in the driller's records. Some of the yield data reflects current production rates and does not reflect maximum yield values determined in a capacity test.

[DIA] Diameter - The diameter in inches of the main casing in a well. May also indicate the diameter of a hand-dug well. Diameter data is not recorded for geotechnical borings.

Table 1. Summary of Previous Chemical Results from Soil Samples

WELL NUMBER	SAMPLING DATE	DEPTH (FEET)	TPH (GASOLINE) mg/kg	BENZENE ug/kg	TOLUENE ug/kg	ETHYL BENZENE ug/kg	XYLENES, TOTAL ug/kg	DIESEL mg/kg	MOTOR OIL mg/kg
Source: Groundwater Technology, Inc., 1988									
MW-5	18-May-88	5	ND(1)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NT	NT
	18-May-88	10	160	ND(0.5)	ND(0.5)	3000	7000	NT	NT
	18-May-88	15	ND(1)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	NT	NT
MW-6	18-May-88	5	ND(1)	ND(0.5)	ND(5)	ND(5)	ND(5)	NT	NT
	18-May-88	10	310	ND(0.5)	2000	4000	18000	NT	NT
MW-7	18-May-88	5	ND(1)	ND(0.5)	ND(5)	ND(5)	ND(5)	NT	NT
	18-May-88	10	ND(1)	ND(0.5)	ND(5)	ND(5)	ND(5)	NT	NT
MW-8	19-May-88	5	2	ND(0.5)	ND(5)	ND(5)	ND(5)	NT	NT
	19-May-88	10	5	ND(0.5)	ND(5)	ND(5)	ND(5)	NT	NT
Source: Beta Associates, 1987									
MW-1	18-Apr-87	3	NT	ND(10)	ND(10)	ND(10)	ND(20)	NT	NT
MW-2	18-Apr-87	3	NT	ND(10)	ND(10)	ND(10)	ND(20)	NT	NT
DH-3	18-Apr-87	2.5	NT	ND(10)	ND(10)	ND(10)	ND(20)	NT	NT
MW-4	18-Apr-87	10.5	NT	ND(10)	ND(10)	NT	ND(10)	ND	ND
DH-5	18-Apr-87	5	NT	ND(10)	ND(10)	ND(10)	ND(20)	NT	NT
DH-6	18-Apr-87	10.5	NT	ND(10)	ND(10)	NT	ND(10)	ND	ND
DH-7	18-Apr-87	3.5	ND(1)	ND(10)	ND(10)	NT	ND(10)	NT	NT
DH-8	18-Apr-87	10	1017	1063	9997	NT	108092	ND(1)	240
DH-9	18-Apr-87	1	NT	ND(10)	ND(10)	ND(10)	ND(20)	NT	NT
DH-10	18-Apr-87	1	NT	NT	NT	NT	NT	NT	NT
DH-11	18-Apr-87	1	NT	ND(10)	ND(10)	NT	ND(10)	NT	380

NOTES:

mg/kg: milligrams per kilogram (equivalent to parts per million)
ug/kg: micrograms per kilogram (equivalent to parts per billion)
ND: Not detected; Limit of detection indicated in parenthesis
NT: Not Tested

Total Petroleum Hydrocarbons (TPH) by EPA Method 8015
Benzene, Toluene, Ethyl Benzene, Total Xylenes by EPA Method 8020
Extraction by EPA Method 5030, Purge and Trap

Table 5. Summary of Chemical Results from Soil Samples

WELL NUMBER	SAMPLING DATE	DEPTH (FEET)	TPH (GASOLINE) mg/kg	BENZENE ug/kg	TOLUENE ug/kg	BENZENE ug/kg	TOTAL ug/kg
SB-1	03-Aug-89	6-6.5	ND(10)	ND(5)	30	ND(5)	ND(5)
	03-Aug-89	10-10.5	400	1900	1400	4100	11000
SB-2	03-Aug-89	6-6.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
	03-Aug-89	9-9.5	34	140	200	270	430
	03-Aug-89	15.5-16	140	670	790	1300	4900
SB-3	03-Aug-89	6-6.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
	03-Aug-89	9-9.5	130	900	ND(100)	1500	3400
	03-Aug-89	15-15.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
SB-4	03-Aug-89	5-5.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
	03-Aug-89	10-10.5	300	3300	420	8200	12000
	03-Aug-89	15-15.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
SB-5	03-Aug-89	5-5.5	ND(10)	47	ND(5)	ND(5)	ND(5)
	03-Aug-89	10-10.5	470	1900	580	7200	22000
	03-Aug-89	15-15.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
SB-6	05-Oct-89	5-5.5	ND(10)	18	23	8.0	27
	05-Oct-89	10-10.5	270	2000	900	1600	3800
	05-Oct-89	15-15.5	ND(10)	33	34	5.5	26
MW-9	04-Aug-89	6-6.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
	04-Aug-89	12-12.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
MW-10	04-Aug-89	6-6.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)
	04-Aug-89	12-12.5	ND(10)	ND(5)	ND(5)	ND(5)	ND(5)

NOTES:

mg/kg: milligrams per kilogram (equivalent to parts per million)
ug/kg: micrograms per kilogram (equivalent to parts per billion)
ND: Not detected; Limit of detection indicated in parenthesis

Total Petroleum Hydrocarbons (TPH) by EPA Method 8015
Benzene, Toluene, Ethyl Benzene, Total Xylenes by EPA Method 8020
Extraction by EPA Method 5030, Purge and Trap

Analyses performed by Curtis & Tompkins, Ltd.

Table 2. Summary of Chemical Results from Ground-water Samples

WELL NUMBER	SAMPLING DATE	TPH (GASOLINE) mg/l	BENZENE ug/l	TOLUENE ug/l	ETHYL BENZENE ug/l	XYLENES, TOTAL ug/l	OTHER DETECTABLE VOLATILE COMPOUNDS 1,1-DCE ug/l	1,1-DCA ug/l	1,1,1-TCA ug/l	1,2-DCA ug/l
MW-1	18-Apr-87	NT	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	61	9.5	93.1	0.5
	03-Jun-88	NT	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	8	40	ND(5)
	08-Aug-89	ND(0.05)	ND(1)	ND(1)	ND(1)	ND(1)	47	9	21	ND(1)
MW-2	18-Apr-87	NT	76.9	121	93.4	477	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.5)
	03-Jun-88	NT	64	18	48	60	ND(5)	ND(5)	ND(5)	ND(5)
	08-Aug-89	1.1	48	9	33	55	ND(1)	ND(1)	ND(1)	ND(1)
MW-4	18-Apr-87	NT	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.2)	ND(0.5)	ND(0.5)	ND(0.5)
	03-Jun-88	NT	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
	08-Aug-89	ND(0.05)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
MW-5	03-Jun-88	NT	93	ND(5)	100	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
	08-Aug-89	ND(0.05)	49	8	15	63	ND(1)	ND(1)	ND(1)	ND(1)
MW-6	03-Jun-88	NT	110	140	35	210	ND(5)	ND(5)	ND(5)	ND(5)
	08-Aug-89	1.0	45	8	15	74	ND(1)	ND(1)	ND(1)	ND(1)
MW-7	03-Jun-88	NT	ND(5)	ND(5)	ND(5)	ND(5)	25	5	18	ND(5)
	08-Aug-89	ND(0.05)	ND(1)	ND(1)	ND(1)	ND(1)	39	8	13	ND(1)
MW-8	03-Jun-88	NT	2300	2000	950	4100	ND(5)	ND(5)	ND(5)	ND(5)
	08-Aug-89	77	1900	820	1000	3600	ND(1)	ND(1)	ND(1)	ND(1)
MW-9	08-Aug-89	ND(0.05)	ND(1)	ND(1)	ND(1)	ND(1)	3	ND(1)	ND(1)	ND(1)
MW-10	08-Aug-89	ND(0.05)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)
Field Blank	03-Jun-88	NT	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)	ND(5)
	08-Aug-89	ND(0.05)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)

NOTES:

mg/l: milligrams per liter (equivalent to parts per million)
ug/l: micrograms per liter (equivalent to parts per billion)
NT: Not Tested
ND: Not detected; Limit of detection indicated in parenthesis
1,1-DCE: 1,1-Dichloroethene
1,1-DCA: 1,1-Dichloroethane
1,1,1-TCA: 1,1,1-Trichloroethane
1,2-DCA: 1,2-Dichloroethane

Volatile Organics in Water by EPA Method 624
Total Petroleum Hydrocarbons (TPH) as Gasoline in Aqueous Solutions by EPA Method 8015 (Modified)
Extraction by EPA Method 5030, Purge and Trap

April 18, 1987 Results from Beta Associates (1987)
June 3, 1988 Results from Groundwater Technology (1988)
August 8, 1989 Results from Curtis & Tompkins, Ltd.

TABLE 1
DATA MONITORING AND ANALYTICAL RESULTS OF GROUNDWATER
Collected on November 2 and 24, 1993
(Concentrations in parts per billion)

Well I.D.	TOC Elevation (msl)	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-G	Lead	DTW	DPT	GWE (ft)
MW-1	20.92	--	--	--	--	--	--	10.24	0.00	10.68
MW-2	21.31	--	--	--	--	--	--	10.48	0.00	10.83
MW-4	--	--	--	--	--	--	--	10.23	0.00	--
MW-5	21.84	43	3.4	22	12	790	<400	10.69	0.00	11.15
MW-6	21.71	19	1.8	2.5	5.0	300	<400	10.78	0.00	10.93
MW-7	20.95	--	--	--	--	--	--	10.07	0.00	10.88
MW-8	21.84	2,000	440	420	1,400	15,000	<400	10.82	0.00	11.02
MW-9	20.55	--	--	--	--	--	--	10.02	0.00	10.53
MW-10	21.25	--	--	--	--	--	--	10.32	0.00	10.93

TOC = Top of casing elevation. Benchmark used was Coast and Geodetic benchmark "San Leandro SE Base RM3," a brass disk in the west corner of concrete freight loading dock at the Southern Pacific Railroad tracks southeast of 98th Avenue crossing.
MSL = mean sea level
TPH-G = Total petroleum hydrocarbons-as-gasoline
DTW = Depth to water
DTP = Depth to product
GWE = Groundwater elevation relative to mean sea level
-- = Not measured, not sampled, and not analyzed

Monitoring wells MW-5, MW-6, and MW-8 were sampled on November 2, 1993, and monitored on November 24, 1993.

Table 3. Water-Level Elevations

WELL NUMBER	MW-1	MW-2	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10
Top of Casing Elevation	18.05	18.42	18.74	18.96	18.71	18.05	18.97	17.66	18.36
DATE	DEPTH TO WATER (FEET) FROM TOP OF CASING								
20-Apr-87	10.28	10.38	NA	10.84	NA	NA	NA	NA	NA
22-Jul-88	10.48	10.71	11.43	10.86	11.00	10.39	11.04	NM	NM
04-Aug-89	10.41	NM	NM	10.63	10.91	NM	10.95	NM	NM
08-Aug-89	10.40	10.56	11.19	10.77	10.89	10.27	10.98	10.11	10.53
DATE	GROUND-WATER ELEVATION (FEET) ABOVE MEAN SEA LEVEL								
20-Apr-87	7.77	8.04	NA	8.12	NA	NA	NA	NA	NA
22-Jul-88	7.57	7.71	7.31	8.10	7.71	7.66	7.93	NM	NM
04-Aug-89	7.64	NM	NM	8.33	7.80	NM	8.02	NM	NM
08-Aug-89	7.65	7.86	7.55	8.19	7.82	7.78	7.99	7.55	7.83

NOTES:

NA: Not Applicable, Monitoring Well Not Yet Installed

NM: Not Measured

EXPLORATION DRILL HOLE LOG

HOLE No. DH-1

PROJECT GERBER PRODUCTS | DATE 04/18/87 | LOGGED BY DLS

DRILL RIG CME 55 | HOLE DIA. 8" | SAMPLER Modified California

GROUNDWATER DEPTH INITIAL 10.8' | FINAL 10.28' | HOLE ELEV. --

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY(pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
9" concrete.		1											
Gravel sub base.													
CLAY, black, damp, stiff, slightly silty.	CI	2											
		3	X	10									
		4	X										
dark brown.		5											
		6	X	13									
			X										
medium brown.		7											
		8											
		9											
		10											
		11	X	15									
			X										
SAND, brown-gray, wet, medium dense, very clayey, slightly gravelly.	SC	12											
		13											
		14											
		15											
		16	X	9									
			X										
		17											
		18											
		19											
Bottom of Drillhole @ 22.0'.		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-2

PROJECT GERBER PRODUCTS | DATE 04/18/87 | LOGGED BY DLS

DRILL RIG CME 55 | HOLE DIA. 8" | SAMPLER Modified California

GROUNDWATER DEPTH INITIAL 10.8' | FINAL 10.38' | HOLE ELEV. ___

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY(pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
7" concrete.													
gravel sub base.	CI	1											
CLAY, black, damp, stiff, silty.		2											
		3											
		4	X X	13									
slightly sandy.		5											
		6	X X	14									
medium brown, sandy.		7											
Greenish-gray, damp, silty, very clayey, SAND, firm.	SC	8											
CLAY, brown, damp, stiff, silty.	CI	9											
		10											
CLAY, gray-brown mottled, damp, stiff, silty.	CI	11	X X	14									
		12											
		13											
		14											
SAND, gray, wet, medium dense, clayey.	SC	15											
		16	X X	13									
CLAY, gray-brown mottled, damp, stiff, w/ rootholes.		17											
		18											
		19											
Bottom of Drillhole @ 23.5'.		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-3

PROJECT GERBER PRODUCTS **DATE** 04/18/87 **LOGGED BY** DLS

DRILL RIG CME 55 **HOLE DIA.** 8" **SAMPLER** Modified California

GROUNDWATER DEPTH INITIAL **FINAL** **HOLE ELEV.** --

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY (pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
7" concrete.													
SAND, brown-gray, damp, medium dense.	SP	1											
SAND, orange, damp, medium dense very clayey.	SC	2											
CLAY, black, damp, stiff, silty.	CI	3	X	2									
Bottom of Drillhole @ 4.0'. No Ground Water Encountered.		4	X										
		5											
		6											
		7											
		8											
		9											
		10											
		11											
		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-4

PROJECT GERBER PRODUCTS DATE 04/18/87 LOGGED BY DLS

DRILL RIG CME 55 HOLE DIA. 8" SAMPLER Modified California

GROUNDWATER DEPTH INITIAL 12.4' FINAL 10.84' HOLE ELEV. __

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY (pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
3" concrete.													
CLAY, brown, damp, stiff, gravelly, sandy.	CL	1											
		2											
SAND, brown-gray, damp, dense, very coarse grained.	SP	3											
CLAY, black, damp, stiff, silty.	CI	4											
		5											
		6	X X	13									
		7											
CLAY, greenish-gray, damp, stiff, silty, slightly sandy.	CI	8											
		9											
CLAY, gray-brown mottled, damp, stiff, silty.	CI	10											
		11	X X	16									
		12											
		13											
SAND, gray, wet, dense, clayey.	SC	14											
CLAY, brown-gray mottled, damp, stiff, silty.		15											
		16	X X	10									
		17											
		18											
		19											
Bottom of Drillhole @ 22.0'.		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-5

PROJECT GERBER PRODUCTS | DATE 04/18/87 | LOGGED BY DLS

DRILL RIG CME 55 | HOLE DIA. 8" | SAMPLER Modified California

GROUNDWATER DEPTH INITIAL | FINAL | HOLE ELEV. __

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY (pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
SAND/GRAVEL, brown, dry, medium dense.	SP/GP	1											
		2											
		3											
CLAY, dark brown, damp, stiff, very sandy.	CL	4											
		5											
		6	X X	18									
dark brown and black.		7											
		8											
CLAY, brown, damp, stiff, silty.	CI	9											
		10											
		11	X X	13									
Bottom of Drillhole @ 11.0' No Ground Water Encountered.		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-6

PROJECT GERBER PRODUCTS | DATE 04/18/87 | LOGGED BY DLS

DRILL RIG CME 55 | HOLE DIA. 8" | SAMPLER Modified California

GROUNDWATER DEPTH INITIAL | FINAL | HOLE ELEV. --

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY (pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
3" concrete.		1											
CLAY, brown, damp, stiff, silty, sandy, trace gravel.	CL	2											
CLAY, black, damp, stiff, silty.	CI	3											
		4											
		5											
		6	X X	14									
		7											
		8											
		9											
		10											
Bottom of Drillhole @ 10.5'. No Ground Water Encountered.		11	X X	14									
		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-7

PROJECT GERBER PRODUCTS | DATE 04/18/87 | LOGGED BY DLS

DRILL RIG CME 55 | HOLE DIA. 8" | SAMPLER Modified California

GROUNDWATER DEPTH INITIAL | FINAL | HOLE ELEV. --

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY(pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
7" concrete.													
Gravel sub base.		1											
CLAY, black, damp, stiff, silty.	CI	2											
		3											
		4	X	7									
Bottom of Drillhole @ 3.5'.			X										
No Ground Water Encountered.		5											
		6											
		7											
		8											
		9											
		10											
		11											
		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-8

PROJECT GERBER PRODUCTS DATE 04/18/87 LOGGED BY DLS

DRILL RIG CME 55 HOLE DIA. 8" SAMPLER Modified California

GROUNDWATER DEPTH INITIAL FINAL HOLE ELEV. --

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY(pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psi)
2" concrete.													
CLAY/GRAVEL, orange, damp, stiff, medium dense, sandy.	CL/GC	1											
		2											
		3											
		4	X	10									
			X										
		5											
		6	X	15									
			X										
green clay - smells like gas.		7											
		8											
CLAY, brown - gray, mottled, damp, stiff, silty - gas odor.		9											
		10											
		11	X	14									
			X										
Bottom of Drillhole @ 10.5'. No Ground Water Encountered.		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-9

PROJECT GERBER PRODUCTS | DATE 04/18/87 | LOGGED BY DLS

DRILL RIG CME 55 | HOLE DIA. 8" | SAMPLER Modified California

GROUNDWATER DEPTH INITIAL | FINAL | HOLE ELEV. --

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY (pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
8" concrete.													
Gravel, orange/brown, damp, very dense, clayey, very sandy.	GP	1	X										
		2	X										
Bottom of Drillhole @ 1.0'. No Ground Water Encountered.		3											
		4											
		5											
		6											
		7											
		8											
		9											
		10											
		11											
		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-10

PROJECT GERBER PRODUCTS | DATE 04/18/87 | LOGGED BY DLS

DRILL RIG CME 55 | HOLE DIA. 8" | SAMPLER Modified California

GROUNDWATER DEPTH INITIAL | FINAL | HOLE ELEV. --

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY (pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
7" concrete.													
GRAVEL, brown/gray, wet, very dense, slightly sandy.		1	X										
		2	X										
Bottom of Drillhole @ 1.0'. No Ground Water Encountered.		3											
		4											
		5											
		6											
		7											
		8											
		9											
		10											
		11											
		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											

EXPLORATION DRILL HOLE LOG

HOLE No. DH-11

PROJECT GERBER PRODUCTS | DATE 04/18/87 | LOGGED BY DLS

DRILL RIG CME 55 | HOLE DIA. 8" | SAMPLER Modified California

GROUNDWATER DEPTH INITIAL | FINAL | HOLE ELEV. --

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	POCKET PEN.(tsf)	TORVANE(tsf)		LIQUID LIMIT	WATER CONTENT	PLASTIC LIMIT	DRY DENSITY(pcf)	FAILURE STRAIN(%)	UNCONFINED SHEAR STRENGTH(psf)
7" concrete.													
GRAVEL, brown/orange, damp, very dense, clayey, sandy.		1	X										
		2	X										
Bottom of Drillhole @ 1.0'. No Ground Water Encountered.		3											
		4											
		5											
		6											
		7											
		8											
		9											
		10											
		11											
		12											
		13											
		14											
		15											
		16											
		17											
		18											
		19											
		20											

GROUNDWATER TECHNOLOGY, INC.

Monitoring Well 5 — Drilling Log

Project GERBER/OAKLAND — Owner GERBER PRODUCTS
Location OAKLAND, CALIFORNIA — Project Number 203-799-5049
Date Drilled 5/18/88 — Total Depth of Hole 20 FT — Diameter 7.5 IN
Surface Elevation — Water Level Initial 9 FT — 24-hour
Screen: Dia. 2 IN — Length 13 FT — Slot Size 0.020 IN
Casing: Dia. 2 IN — Length 7 FT — Type PVC
Drilling Company KVILHAUG — Drilling Method HOLLOW STEM AUGER
Driller CHRIS PRUNER — Log by BRUCE EPPLER
Geologist / Engineer — License No.

Sketch Map
SAN LEANDRO
MW5
EMPTY LOT
PAD BLD.
98th
Notes:

Depth (feet)	Well Construction	PID (ppm)	Sample Number	Graphic Log	Description/Soil Classification (Color, Texture, Structures)
0				CL	4 inches of asphalt over 6 inches base course Dark brown–black clay (Medium stiff, moist, no product odor, organic rich)
2					
4					
6		0	A 6 100 17	SC	Dark brown clay with minor fine grained sands (Stiff, no product odor)
8		3		CL	(Grades blue–grey) ▼ Encountered water 5/18/88 (1020 hours)
10		0	B 5 34.5 5	CL	Blue–grey mottled clay (Wet, product odor, stiff)
12					
14					
16		180	C 3 OK 3.5	SC	Blue–grey sandy clay (Wet, stiff, no product odor)
18					(Grades tan–brown silty clay)
20		0	D 8 50 –	CL	Tan–brown silty clay (No product odor, wet, medium stiff) End of boring, installed monitoring well (1045 hours)
22					
24					

GROUNDWATER TECHNOLOGY, INC.

Monitoring Well 6 — Drilling Log

Project GERBER/OAKLAND — Owner GERBER PRODUCTS
Location OAKLAND, CALIFORNIA — Project Number 203-799-5049
Date Drilled 5/18/88 — Total Depth of Hole 20 FT — Diameter 7.5 IN
Surface Elevation — Water Level Initial 9 FT — 24-hour
Screen: Dia. 2 IN — Length 7 FT — Slot Size 0.020 IN
Casing: Dia. 2 IN — Length 13 FT — Type PVC
Drilling Company KVILHAUG — Drilling Method HOLLOW STEM AUGER
Driller CHRIS PRUNER — Log by BRUCE EPPLER
Geologist / Engineer — License No.

Sketch Map
SAN LEANDRO
EMPTY LOT
MW6
98th
Notes:

Depth (ft)	Well Construction	PID (ppm)	Sample Number	Graphic Log	Description/Soil Classification (Color, Texture, Structures)
0					4 inches of asphalt over 6 inches base course
2				CL	Dark brown–black clay (Moist, very stiff, no product odor)
4					
6		0	A 3 7 9	CL	Dark brown clay (Moist, stiff, no product odor)
8					(Grades blue–grey clay 7 feet)
10		300	B 5 8 9	CL	▼ Encountered water 5/19/88 (1140 hours) (Grades brown) Brown–grey mottled silty clay (Strong product odor, wet, medium stiff)
12					
14					
16			C 7 7 9	SC	Tan–grey mottled silty sandy clay with minor gravel (No product odor, wet, stiff) (Grades tan)
18					
20			D 3 7 5	CL	Tan silty clay (Wet, medium stiff, no product odor) End of boring, installed monitoring well
22					
24					

6/88 REV. 0

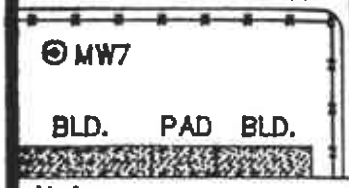
GROUNDWATER TECHNOLOGY, INC.

Monitoring Well 7

Drilling Log

Project GERBER/OAKLAND Owner GERBER PRODUCTS
Location OAKLAND, CALIFORNIA Project Number 203-798-5049
Date Drilled 5/18/88 Total Depth of Hole 20 FT Diameter 7.5 IN
Surface Elevation ____ Water Level Initial 9 FT 24-hour ____
Screen: Dia. 2 IN Length 13 FT Slot Size 0.020 IN
Casing: Dia. 2 IN Length 7 FT Type PVC
Drilling Company KVILHAUG Drilling Method HOLLOW STEM AUGER
Driller CHRIS PRUNER Log by BRUCE EPPLER
Geologist / Engineer ____ License No. ____

Sketch Map



Notes:

Depth (ft)	Well Construction	PID (ppm)	Sample Number / Blows	Graphic Log	Description/Soil Classification (Color, Texture, Structures)
0				CL	4 inches of asphalt over 6 inches base course Dark-brown-black clay (Moist, no product odor)
2					(Grades brown)
4		0	A 4 6 13		Dark brown clay (Very stiff, moist, no product odor)
6					(Color change to blue-grey clay)
8					(Grades brown) ▼ Encountered water 5/18/88 (1330 hours)
10		0	B 6 8 12	CL	Tan-brown-grey mottled silty clay with some gravel (Moist, rootlets, very stiff, no product odor) (Grades sandy gravelly)
12				SC	
14					Tan-brown mottled sandy gravel with clay (Wet, no product odor, medium dense, clast to ½")
16		0	C 6 6 12	CL	Tan silty clay (Very stiff, no product odor)
18					
20		0	D 50 +	CL	Tan-white mottled silty clay (Wet, very stiff, no product odor, some pebbles, caliche) End of boring, installed monitoring well (1340 hours)
22					
24					

8/88 REV. 0

GROUNDWATER TECHNOLOGY, INC.

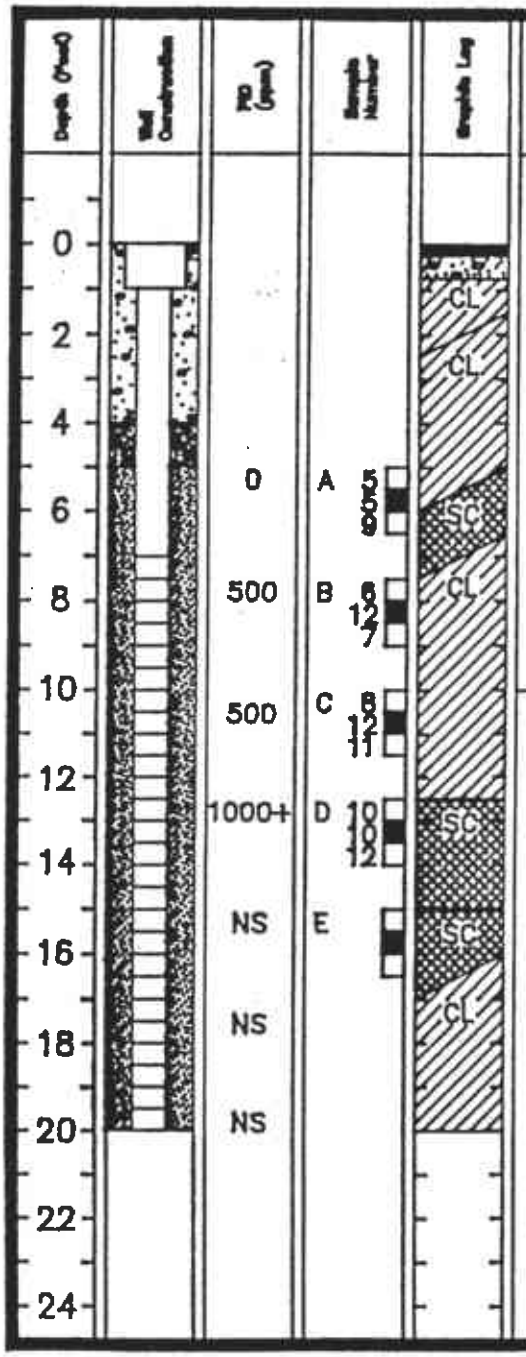
Monitoring Well 8

Drilling Log

Project GERBER/OAKLAND Owner GERBER PRODUCTS
Location OAKLAND, CALIFORNIA Project Number 203-799-5049
Date Drilled 5/19/88 Total Depth of Hole 20 FT Diameter 7.5 IN
Surface Elevation Water Level Initial 9 FT 24-hour
Screen: Dia. 2 IN Length 13 FT Slot Size 0.020 IN
Casing: Dia. 2 IN Length 7 FT Type PVC
Drilling Company KVILHAUG Drilling Method HSA
Driller CHRIS PRUNER Log by BRUCE EPPLER
Geologist / Engineer License No.

Sketch Map

Notes:



Description/Soil Classification
(Color, Texture, Structures)

4 inches of asphalt over 6 inches base course

Tan silty clay
(Moist, no product odor)
(Grades dark brown–black clay)

(Grades sandy gravelly)

7' color change to blue–grey
(Grades tan–grey mottled silty clay)
(Moist, strong product odor, very stiff)

▼ Encountered water 5/19/88 (1039 hours)
(Grades with strong product odor)

Tan–grey mottled sandy gravelly clay
(Very strong product odor, wet, medium dense)

Tan–grey mottled silty fine sandy clay
(Wet rootlets)
(Grades clayey)

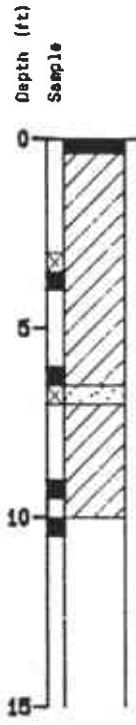
End of boring, installed monitoring well (1100 hours)

8/88 REV. 0

15920

Equipment 6" Hollow Stem Auger

Elevation 19.2 ft Date 8/3/89



Blows/ft	OVA (ppm)	
		4" asphalt
		BROWN AND BLACK MOTTLED SANDY CLAY (CL) soft, moist
		becoming black, stiff, moist
21	20	
32	30	DARK GRAY SAND (SP) medium dense, moist, medium-grained, slight hydrocarbon odor
32	700	DARK GRAY CLAY (CL) stiff, moist, slight white staining, strong hydrocarbon odor
		bottom of boring at 10.0 ft

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring SB-1
Gerber Products Company
Oakland, California

PLATE
A-1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	19459.001.02	SDS	11/89	

15921

Equipment 6" Hollow Stem Auger

Elevation 19.2 ft Date 8/3/89

Blows/Ft	OVA (ppm)	Depth (ft) / Sample	
		0	4" asphalt SANDY GRAVEL SUB-BASE (Fill) loose, dry BLACK SILTY CLAY (CL) medium stiff, moist
20			color change to dark gray and brown mottled, stiff, moist
		5	
30	1		GRAY CLAYEY SAND (SC) stiff, moist, fine- to medium-grained sand
25	200		GRAY AND BROWN MOTTLED SILTY CLAY (CL) very stiff, moist, strong hydrocarbon odor
		10	becoming wet
		15	
22	650		strong hydrocarbon odor
12			
		20	BROWN AND GRAY MOTTLED CLAYEY SILT (ML) soft, wet bottom of boring at 19.5 ft

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Log of Boring SB-2
Gerber Products Company
Oakland, California

PLATE
A-2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	19459.001.02	JDS	11/89	

15922

Equipment 6" Hollow Stem Auger

Elevation 19.2 ft Date 8/3/89

Blows/Ft	OVA (ppm)	Depth (ft)	Sample	
		0		4" asphalt BROWN AND GRAY GRAVELLY SANDY CLAY (CL)
19	400			becoming black silty clay, stiff, moist, minor 1/4" diameter gravel
		5		
35	20			GRAY SAND (SP) loose, moist, predominantly fine-grained GRAY SANDY CLAY (CL) stiff, moist, predominantly fine-grained sand
26	650			becoming gray and brown mottled silty clay
		10		
		15		
36	1			bottom of boring at 16.5 ft
		20		

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Log of Boring SB-3
Gerber Products Company
Oakland, California

PLATE
A-3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	19459.001.02	JDS	11/89	

15923

Equipment 6" Hollow Stem Auger

Elevation 19.2 ft Date 8/3/89

Blows/Ft	OVA (ppm)	Depth (ft)	Sample	
		0		4" asphalt BLACK SANDY CLAY (CL) loose, moist
				becoming black silty clay
35	400	5		color change to dark gray, very stiff, moist increasing fine-grained sand
22	1000	10		becoming brown and gray mottled sandy clay, stiff, moist, very strong hydrocarbon odor strong hydrocarbon odor
14	0	15		wet, no hydrocarbon odor
				bottom of boring at 16.5 ft
		20		

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Engineering and Environmental Services

Log of Boring SB-4
Gerber Products Company
Oakland, California

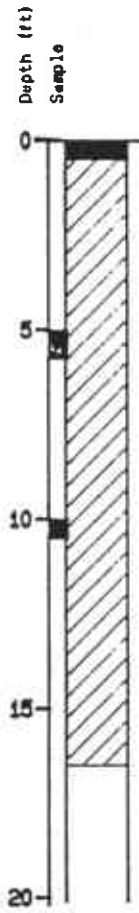
PLATE
A-4

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	19459.001.02	JPS	11/89	

15924

Equipment: 6" Hollow Stem Auger

Elevation 19.2 ft Date 8/3/89



Blows/Ft	OVA (ppm)	
		4" asphalt BLACK SANDY CLAY (CL) loose, moist
30	200	color change to gray, 20% fine- to medium-grained sand
22	400	becoming wet, 10% fine-grained sand, strong hydrocarbon odor
20	0	medium stiff, wet, no hydrocarbon odor
		bottom of boring at 16.5 ft

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring SB-5
Gerber Products Company
Oakland, California

PLATE
A-5

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	19459, 001.02	JPS	11/89	

15925

Equipment 6" Hollow Stem Auger

Elevation 19.2 ft Date 10/5/89

Blows/Ft	OVA (ppm)	Depth (ft)	Sample	
		0		4" asphalt
				BROWN SANDY CLAY (CL) loose to firm, moist, fine- to medium-grained sand
		5		decrease in sand
30	2			color change to dark brown, medium stiff to stiff, moist, trace silt
		10		becoming wet
	110			
16	300			color change to gray green and brown mottled, medium stiff, wet to saturated, strong hydrocarbon odor
		15		
12	15			
13	0			BROWN CLAYEY SILT (ML) stiff, wet, no hydrocarbon odor
	0			
		20		bottom of boring at 18.5 ft

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring SB-6
Gerber Products Company
Oakland, California

PLATE
A-6

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	19459.001.02	JDS	11/89	

15926

Top of PVC Casing
Elevation 17.60 ft

GROUND SURFACE

12 IN. DIAMETER STEEL WELL HOUSING WITH LOCKING COVER
2 in. above ground surface

BENTONITE PELLET SEAL
2 to 4 ft

11 IN. DIAMETER BORING
0 to 21 ft

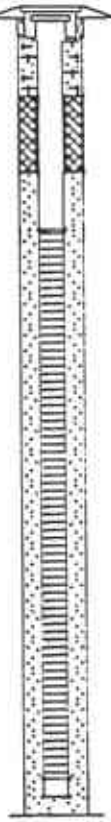
4 IN. DIAMETER SCHEDULE 40 PVC WELL CASING
0 to 20.5 ft

SAND PACK (Monterey #2/16)
4 to 21 ft
4 IN. DIAMETER SCHEDULE 40

PVC WELL SCREEN (0.010" slot size)
5.5 to 20 ft

SILT TRAP 20 to 20.5 ft

BOTTOM WELL CAP at 20.5 ft



Blows/foot	OVA (ppm)	Depth (ft)	Sample
		0	
35		5	
36		10	
45		15	
25		20	
		25	

Equipment 11" Hollow Stem Auger

Elevation 40.0 ft Date 8/4/89

6" concrete
BROWN CLAYEY GRAVEL sub-base (Fill)
BLACK CLAY (CL) 2.5Y N 2/0 medium stiff, dry, low plasticity, trace sand

no hydrocarbon odor

increasing sand, fine- to medium-grained
no hydrocarbon odors

color change to very dark grayish brown (2.5Y 3/2)

color change to dark brown tan mottled (7.5YR 4/2), stiff, moist, low plasticity, some silt, trace sand, no hydrocarbon odors

DARK BROWN CLAYEY SAND (SC) 7.5YR 4/4 medium dense, moist to wet, predominantly fine-grained sand, trace medium-grained sand, trace silt
no hydrocarbon odors

BROWN SANDY CLAY (CL) 7.5YR 2/2 stiff, saturated, low plasticity, 10% fine- to medium-grained sand, trace coarse-grained sand, no hydrocarbon odors
bottom of boring at 21.0 ft

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion Detail MW-9
Gerber Products Company
Oakland, California

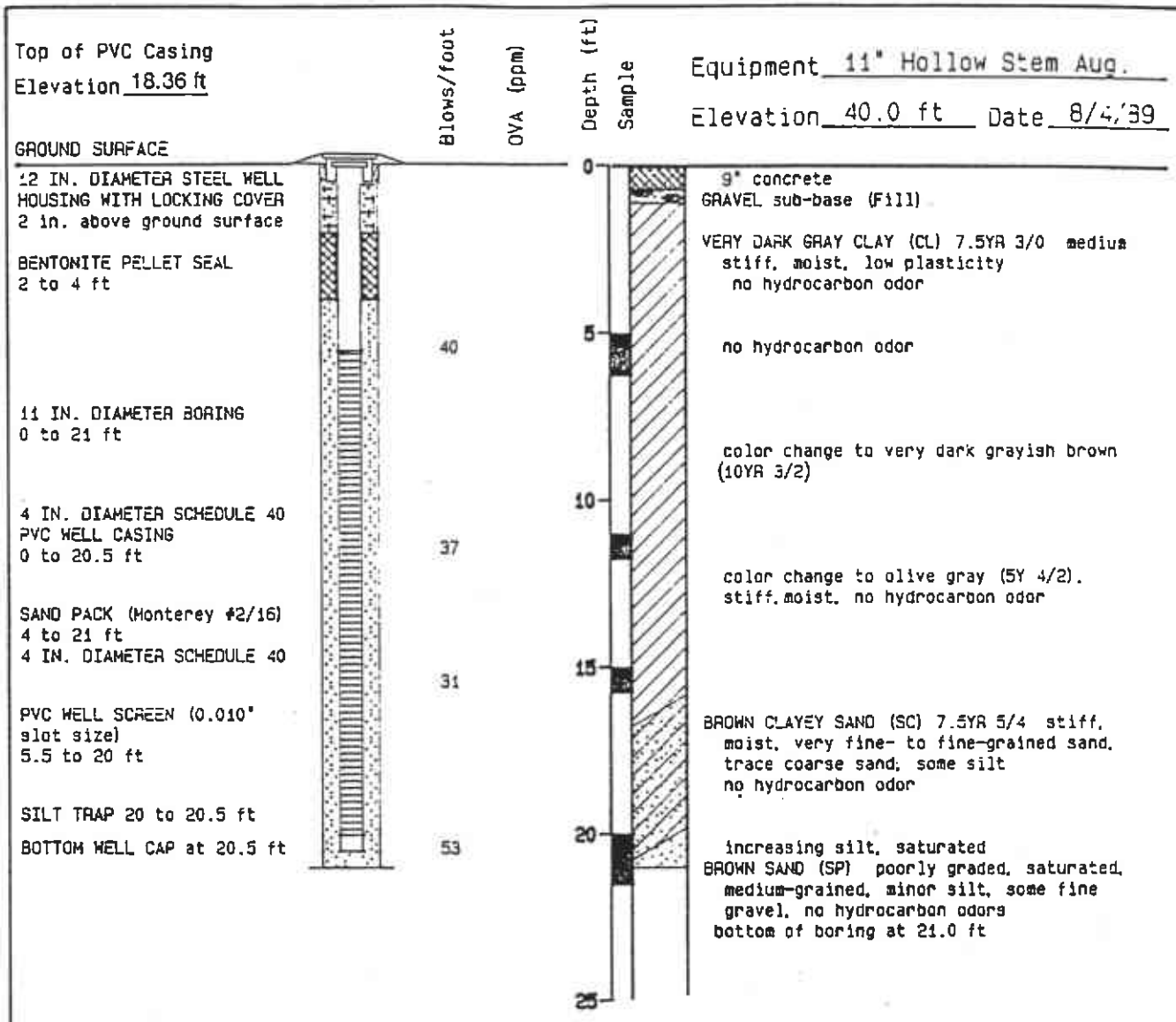
PLATE **A-7**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	19459, 001.02	JDS	11/89	

15927

Top of PVC Casing
Elevation 18.36 ft

Equipment 11" Hollow Stem Aug.
Elevation 40.0 ft Date 8/4/89



Harding Lawson Associates
Engineering and Environmental Services

Log of Boring and Well Completion Detail MW-10
Gerber Products Company
Oakland, California

PLATE **A-8**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
	19459.001.02	DPS	11/89	

CONTINGENCY PLAN

This contingency plan will ensure that the hydrocarbon plume remains in compliance with the cleanup goals for the site. The cleanup goal is maximum contaminant levels (MCLs) in ground water at the downgradient edge of the current plume. No hydrocarbons other than TPH-G and BTEX have been detected in site ground water at any time, therefore, only hydrocarbon analyses will be performed to ensure that cleanup goals are not exceeded near the downgradient boundary and compliance with cleanup goals is maintained.

Ground water collected from well MW-2 will serve as a "guard point" and well MW-9 will serve as a "boundary well" to ensure that compliance is maintained. Ground water from MW-2, MW-5, MW-6, MW-8, and MW-9 will be sampled and analyzed for hydrocarbons in the summer of 1994. After that, if cleanup goals continue to be maintained at the downgradient plume boundary, monitoring will cease.

If this ground water monitoring indicates that certain conditions have been met, a contingency plan will be triggered. These conditions and contingency plan responses are summarized in Table D-1. In general, each monitoring well is assigned a "baseline" hydrocarbons concentration which represents a typical concentration detected during the last several years, and a "trigger" concentration which represents a significant concentration increase that may lead to non-compliance with the cleanup goal. As Table D-1 shows, the baseline hydrocarbons concentration for all downgradient boundary wells is <0.5 ppb of benzene, and the trigger concentration is 2 ppb benzene. When a 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, the contingency plan will go into effect.

When triggered, the contingency plan calls for three responses:

1) The ACDEH is notified.

2) Ground water monitoring will be performed at the trigger well the next quarter.

3) If elevated concentrations are again detected, quarterly monitoring of the well will continue while an appropriate course of action is determined.

Table D-1. Contingency Plan for Maintaining Compliance, Chevron Service Station #9-1723, 9757 San Leandro Boulevard, Oakland, California, all concentrations are for benzene unless otherwise noted.

	Monitoring Well	Baseline Concentration	Trigger Concentration	Response to Trigger Concentration[1]	Additional Monitoring
Guard Points	MW-2	<100 ppb	500 ppb	1. Notify ACDEH 2. Resample well in the next quarter 3. Determine an appropriate course of action	Resample well in the next quarter
Downgradient	MW-9	<0.5 ppb	2 ppb	"	Resample both MW-9 and MW-10 in the next quarter

Footnotes:

[1] 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. Response is continued until baseline concentrations are reattained for two consecutive quarters.