GETTLER-RYAN INC.

#4249

TRANSMITTAL

00 DEC 26 AM 11:11

TO: Mr. Thomas Bauhs
Chevron Products Company
P.O. Box 6004
San Ramon, CA 94583

DATE: December 21, 2000
PROJECT #: 346473.04/DG94612C.4C01

SUBJECT: Site Conceptual Model for Former Chevron Service Station #9-4612.

FROM:
Barbara Sieminski
Project Geologist
Gettler-Ryan Inc.
6747 Sierra Court, Suite G
Dublin, California 94568

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	12/14/00	Site Conceptual Model for Former Chevron Service Station #9-4612, 3616 San Leandro Street, Oakland, California.

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment
[ ] Approved as submitted
[ ] Resubmit __ copies for approval
[X] As requested
[ ] Approved as noted
[ ] Submit __ copies for distribution
[ ] For approval
[ ] Return for corrections
[ ] Return __ corrected prints
[X] For your files

cc: Mr. James Brownell, Delta Environmental Consultants, Inc.
Ms. Bette Owen, Chevron Products Company
Mr. Barney Chan, Alameda County Health Services Agency
Mr. Terry Mc Ilraith
Mr. Jack Ratto, Ratto Land Company
GR File

COMMENTS: Attached is a copy of the report for your use. Copies of this report have been submitted to the above listed parties. Please call if you have questions.

Delta
Environmental
Consultants, Inc.

3164 Gold Camp Drive
Suite 200
Rancho Cordova, CA 95670-6021
U.S.A.
916/638-2085
FAX: 916/638-8385

SITE CONCEPTUAL MODEL

for
Former Chevron Service Station #9-4612
3616 San Leandro Street
Oakland, California

Report No. 346473.04-1

Prepared for:

Mr. Thomas Bauhs
Chevron Products Company
P.O. Box 6004
San Ramon, California 94583

Prepared by:

Delta Environmental Consultants Inc.
Network Associate
Gettler-Ryan Inc.
6747 Sierra Court, Suite G
Dublin, California 94568

REGISTERED GEOLOGIST
BARBARA SIEMINSKI
No. 6676
STATE OF CALIFORNIA

Barbara Sieminski
Project Geologist
R.G. 6676

Stephen J. Carter (916) 631-1314 Sacramento
Stephen J. Carter
Senior Geologist
R.G. 5577

December 14, 2000

TABLE OF CONTENTS

FIGURES

APPENDICES

SITE CONCEPTUAL MODEL

for
Former Chevron Service Station #9-4612
3616 San Leandro Street
Oakland, California

Report No. 346473.04-1

1.0 INTRODUCTION

At the request of Chevron Products Company (Chevron), Delta Environmental Consultants Inc./Gettler-Ryan Inc. (GR) is submitting this report presenting the site conceptual model (SCM) for the former Chevron Service Station #9-4612 located at 3616 San Leandro Street in Oakland, California. The purpose of this work was to evaluate whether the implementation of further environmental investigation and/or remediation related to soil and groundwater is warranted at the site. This report was prepared based on information supplied by Chevron, and describes site hydrogeological conditions and distribution of contaminants in space and time, identifies potential current and future receptors, and recommends the most appropriate action plan for the site.

2.0 SITE DESCRIPTION

2.1 General

The subject site is a former Chevron service station located on the northwestern corner of the intersection of San Leandro Street and 37th Avenue in Oakland, California, as shown on the Vicinity Map (Figure 1). The former station facilities included a station building, three fuel underground storage tanks (USTs), one waste oil UST, and two dispenser islands. All aboveground and underground former Chevron station structures islands have been removed in 1976. A warehouse building was constructed in the western portion of the site in 1988. Currently, the warehouse building is used by Appliance Part & Equipment Distributors. The eastern portion of the property is a fenced vacant land. The current and former site features are shown on the Site Plan (Figure 2).

The site vicinity is used for residential, commercial, and transportation purposes. The subject site is bounded by a residential property to the west, Bay Area Rapid Transit (BART) tracks to the north, 37th Avenue to the east, and San Leandro Street to the south. A residential building is situated approximately 4 feet from the western border of the subject site. A commercial building (a warehouse for Remanufactured Auto Parts East Bay Generator Co.) is located east of the site, across 37th Avenue. Commercial buildings (Smog Station Auto Repair, Favro Construction), a church, and residential buildings are located south of the subject site, across San Leandro Avenue.

2.2 Previous Environmental Work

Station Demolition and Groundwater Monitoring Well Installation

All aboveground and underground former Chevron station structures including a station building, three fuel USTs, one waste oil UST, and two dispenser islands were removed in September 1976. Soil samples were not collected during UST removal activities. In 1988, a warehouse building was constructed in the western portion of the site, over the area of the former fuel USTs. Geotechnical borings (B-1 through B-3) drilled in the warehouse area prior to building construction (in March 1988) indicated strong gasoline odor in saturated soil at depths of approximately 20 feet below ground surface (bgs). In August 1988, groundwater monitoring well VH-1 was installed to monitor groundwater condition beneath the warehouse building. Unsaturated samples were not collected for analysis from boring VH-1. Saturated samples collected from this boring at approximate depths of 20.5 and 25.5 feet bgs did not contain total petroleum hydrocarbons as gasoline (TPHg), but contained up to 0.042 parts per million (ppm) of benzene. The groundwater sample collected from well VH-1 contained 11,000 ppb of TPHg, 3,300 parts per billion (ppb) of benzene, and 3 ppb of 1,2-dichloroethane (EDC). 1,2-dibromoethane (EDB) was not detected in this sample. Soil or groundwater remediation was not performed, but the warehouse building was constructed.

Two additional on-site wells (MW-2 and MW-3) were installed in February 1993, and one off-site well (MW-4) was installed in August 1995. One on-site soil boring (SB-1) was also drilled in August 1995. Soil samples collected from borings MW-2 and MW-3 at 5 feet bgs (unsaturated samples) and 10 feet bgs (saturated samples) did not contain TPHg or benzene, toluene, ethylbenzene and xylenes (BTEX). Unsaturated soil samples from borings MW-4 and SB-1 were not collected for analysis. The saturated soil samples collected from borings SB-1 and MW-4 at 21.5 feet bgs contained 16 ppm and 2 ppm of TPHg, respectively, but did not contain benzene. A grab groundwater sample from boring SB-1 contained 21,000 ppb TPHg and 240 ppb benzene. Well and boring locations are shown on Figure 2. Tables summarizing soil and groundwater data are included in Appendices A and B, respectively.

Groundwater Monitoring and Sampling

Groundwater beneath the subject site has been monitored and sampled since August 1988. During this period of time a shallow groundwater depth has fluctuated between 5 and 15 feet bgs, however, groundwater depths exceeding 13 feet bgs have been noted only few times (in well VH-1 in September and October 1989, and in well MW-3 in November 1993). Groundwater beneath the site flowed to the northeast prior to September 1993. Since December 1993, groundwater has flowed toward well MW-2 and then southwest. The gradient has ranged from 0.01 to 0.05. Potentiometric maps are included in Appendix C.

The groundwater sampling data indicate that groundwater beneath the subject site has been impacted by hydrocarbons at concentrations up to 21,000 ppb TPHg, 2,200 ppb benzene, 590 ppb methyl tertiary butyl ether (MtBE), and 1,400 ppb total petroleum hydrocarbons as diesel (TPHd). The highest hydrocarbon concentrations have been present in groundwater in the vicinity of boring SB-1 and wells VH-1 and MW-2.

TPHg and benzene concentrations have decreased in well VH-1 since groundwater monitoring began, but MtBE concentrations in this well have not changed significantly. Hydrocarbon concentrations in wells MW-2 and MW-3 have not changed significantly (except for benzene concentration in MW-2, which has decreased). Hydrocarbon concentrations in on-site wells appear to have stabilized. During the latest monitoring event (July 2000), hydrocarbon concentrations in site wells were up to 3,000 ppb of TPHg, 76 ppb of benzene, 490 ppb of TPHd, and 130 ppb of MtBE. Off-site well MW-4 has contained hydrocarbons only on few occasions. The lateral extent of hydrocarbon impacted groundwater has not been delineated, except for benzene and MtBE to the southeast (nondetectable concentrations in MW-4). The oxygen release compound (ORC) was installed in wells VH-1, MW-2 and MW-3 in February 1999. However, the dissolved oxygen concentrations in these wells after the ORC installation were not significantly different from the concentration in downgradient background well MW-4.

Well and Underground Utility Surveys

The review of DWR's files conducted in February 1993 indicated that 36 active and 25 destroyed wells are located within the ½-mile radius of the subject site. Two of the identified active wells were water producing wells (one irrigation well and one industrial well). The nearest active well is a cathodic protection well belonging to PG&E and located approximately 500 feet northwest (upgradient) of the subject site. Both water producing wells are located approximately 1,000 feet upgradient of the subject site. The nearest active well located crossgradient or downgradient of the subject site is the monitoring well located at the BART Fruitvale station approximately 1,000 feet crossgradient of the subject site. The well locations are shown on Figure 1, and the list of the wells is included in Appendix D.

Underground utilities are present in the streets bordering the subject site. Underground utilities present in San Leandro Street include gas, sewer, and water lines and Shell fuel line. [redacted] The Shell fuel line may be a potential secondary source of hydrocarbons in the downgradient vicinity of the subject site. Underground utility location map is included in Appendix E.

Soil Vapor Survey

Vapor sampling was performed at the site in February 1999 to assess soil vapor concentrations beneath the existing warehouse building. Soil vapor samples were collected from two GeoProbe borings (VB-1 and VB-2) advanced to 3 feet bgs at the eastern ends of the former fuel USTs (just outside the warehouse building). The results of the soil vapor survey indicated the presence of: benzene (up to 2.7 parts per billion by volume [ppbv]), toluene (up to 5.8 ppbv), total xylenes (up to 3.32 ppbv), freon 12 (up to 4.8 ppbv), ethanol (up to 19 ppbv), acetone (up to 89 ppbv), 2-propanol (up to 370 ppbv), methylene chloride (0.68 ppbv), chloromethane (1.1 ppbv), trichloroethene (0.67 ppbv), styrene (1.2 ppbv), and 1,2,4-trimethylbenzene (0.79 ppbv). The detected levels of contaminants were below the permissible exposure limits (PELs) listed in the NIOSH Guide to Chemical Hazards, suggesting no apparent risk to short time volatile organic exposure for human health or the environment. Soil Vapor Chemical Analytical Data Table is included in Appendix F.

Groundwater beneath the subject site has been monitored and sampled since August 1988 through the network of four groundwater monitoring wells. During this period of time shallow groundwater fluctuated between 5 to 15 feet bgs, and flowed to the southwest. The groundwater sampling data indicate that groundwater beneath the subject site has been impacted by gasoline hydrocarbons at concentrations up to 21,000 ppb TPHg, 2,200 ppb benzene, 590 ppb MtBE, and 1,400 ppb TPHd. Hydrocarbon concentrations in on-site wells appear to have stabilized (Figures 4 through 6). Currently, hydrocarbon concentrations in groundwater beneath the site are up to 3,000 ppb TPHg, 76 ppb benzene, 490 ppb TPHd, and 130 ppb MtBE. However, as MtBE was not added to gasoline when the station was closed in 1976, the presence of MtBE in groundwater beneath the site appears to be from a secondary source. The lateral extent of hydrocarbon impacted groundwater has not been delineated, except for benzene and MtBE to the southeast (nondetectable concentrations in MW-4). T[redacted]ORC c[redacted]te.

3.2 Potential Environmental Receptors

The hydrocarbon plume extends beneath the warehouse building, the vacant land east of the warehouse building, and possibly beneath the residential building on the adjacent property (4 feet west of the warehouse building), and also possibly beneath the public street (San Leandro Street). The potential exposure receptors are current and future workers in the existing warehouse building (and potential future building in the eastern portion of the site) and in other commercial buildings in the site vicinity; current and future site visitors (Appliance Part and Equipment Distributors clients, motorist, pedestrians, etc.); future construction workers (development of the eastern portion of the site, utility maintenance); and residents of the houses in the vicinity of the site. The nearest water producing wells are located 1,000 feet upgradient of the subject site, therefore are not likely to be receptors for the Chevron plume. The nearest crossgradient well (Fruitvale station monitoring well) is located 1,000 feet of the subject site, and the nearest downgradient wells are located almost ½ mile of the subject site. Based on the distance to the subject site, these wells do not appear to be the likely receptors or vertical conduits for the Chevron plume.

The potential exposure mediums are ambient air, indoor air in commercial and residential buildings, and soil and groundwater in potential future excavation areas. The major exposure pathway is hydrocarbon volatilization from smear zone soils and groundwater to ambient and indoor air. A dermal contact with hydrocarbon impacted soil and groundwater is the potential exposure pathway for construction workers (potential future development of the eastern portion of the subject site), and utility maintenance workers (if utilities are present within the plume area).

3.3 Other Environmental Issues

The lateral extent of hydrocarbon impacted soil and groundwater has not been fully delineated, especially in the downgradient and crossgradient directions, where the residential properties are present. To adequately evaluate risks associated with the hydrocarbon plume, it is necessary to know whether the plume extends beneath the residential houses and what is the magnitude of the impact (if any).

The results of soil vapor survey indicated that hydrocarbon concentrations in soil vapors beneath the existing warehouse building do not exceed PELs. However, PELs pertain to short term exposures only. The long term exposure risk for warehouse workers was not evaluated.

Due to shallow groundwater, the utility trenches may act as the preferential pathways and conduits that could enhance contaminant migration. The Shell fuel line (unknown condition) present beneath the southern side of San Leandro Street might be a secondary source for hydrocarbons in the vicinity of the subject site. This line also appears to be a likely source of MtBE detected in groundwater beneath the subject site.

need to show

4.0 DISCUSSION AND RECOMMENDATION

Site conditions consist of petroleum impacted soil and groundwater. Hydrocarbon impacted soil appears to be present within the smear zone (5 to 15 feet bgs), however, information regarding unsaturated soil condition is limited. Concentrations of hydrocarbons in groundwater appeared to stabilize but not at low levels indicating that natural biodegradation rate is slow. The use of the ORC compound in on-site wells has had a limited success in increasing natural biodegradation rate.

The dissolved hydrocarbon plume is not fully delineated. The plume extends beneath the warehouse building, the vacant land east of the warehouse building, and may extend beneath the residential building on the adjacent property and beneath San Leandro Street. Underground utilities are present in the immediate downgradient vicinity of the subject site (in San Leandro Street), and due to shallow groundwater may act as preferential pathways and conduits that could enhance contaminant migration. However, no water producing wells (potential dissolved plume receptors) are present at the site or in its immediate vicinity.

Since the primary sources have been removed, and concentrations of dissolved hydrocarbons appear to have stabilized, natural attenuation may be the preferable approach to remediate the site. However, before this approach is considered, potential threats to human health and the environment must be evaluated. The existing site data are not sufficient to perform an appropriate risk evaluation for the identified receptors (human receptors in the current and future commercial buildings at the subject site and in the residential building at the adjacent property). Therefore, GR recommends additional environmental investigation to obtain site specific data to be used in risk evaluation:

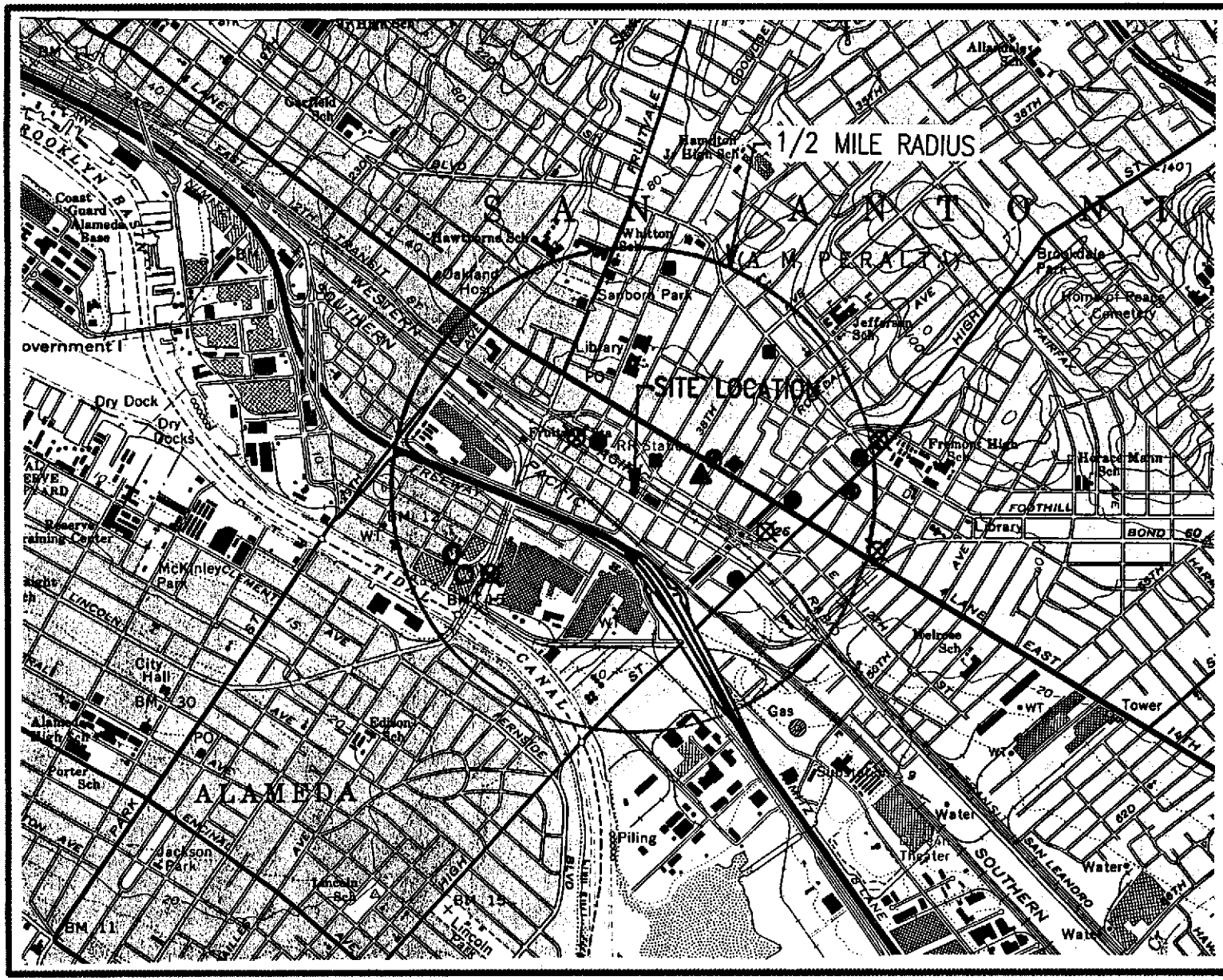
- Hand-auger two borings to groundwater (approximately 12 feet bgs) between the existing warehouse and the house to the east (Figure 2) and collect soil and grab groundwater samples from the borings for laboratory analyses to evaluate whether hydrocarbon impacted soil and groundwater extend beneath the residential property west of the subject site.

west

- Advance three off-site GeoProbe borings in San Leandro Street (Figure 2) and obtain soil and grab groundwater samples from the borings to delineate the downgradient extent of the Chevron plume and to determine if the utility trenches act as preferential pathways for plume migration.

- Advance six on-site GeoProbe soil borings (Figure 2) and collect soil and grab groundwater samples from the borings to delineate the plume to the north and east, and obtain data to be used in risk evaluation for the existing warehouse building and for the future development in the eastern portion of the site.

GR recommends conducting the Risk Based Corrective Action (RBCA) planning as described in ASTME-1739 based on the data collected from the borings to evaluate whether further evaluation and/or active remediation is required at the site. Quarterly monitoring and sampling of site wells shall be continued to confirm that the dissolved groundwater plume remains stable.



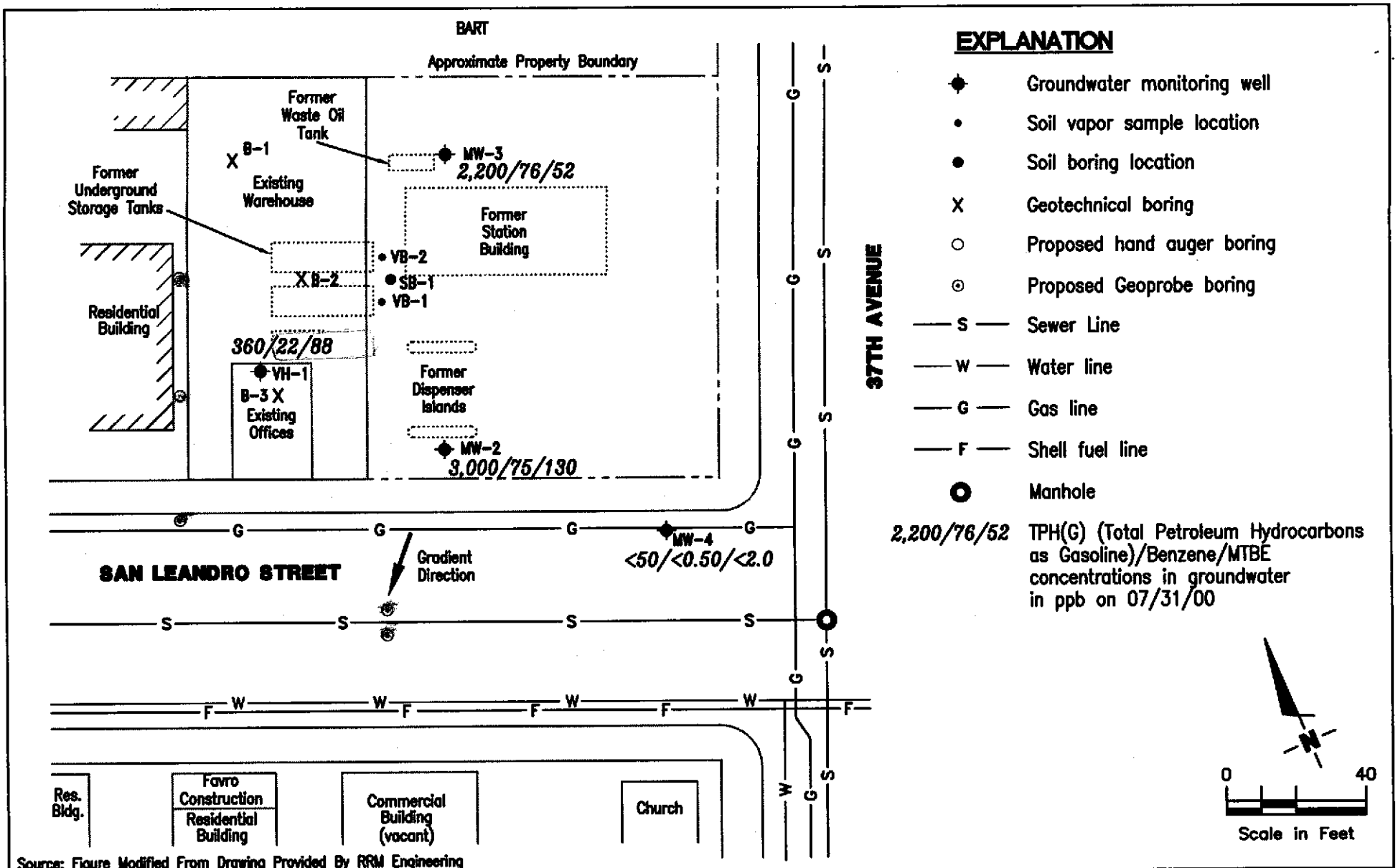
Gettler - Ryan Inc.

6747 Sierra Ct., Suite J (925) 551-7555
Dublin, CA 94568

VICINITY MAP
Former Chevron Service Station No. 9-4612
3516 San Leandro Street
Oakland, California

FIGURE 1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
346473.04			



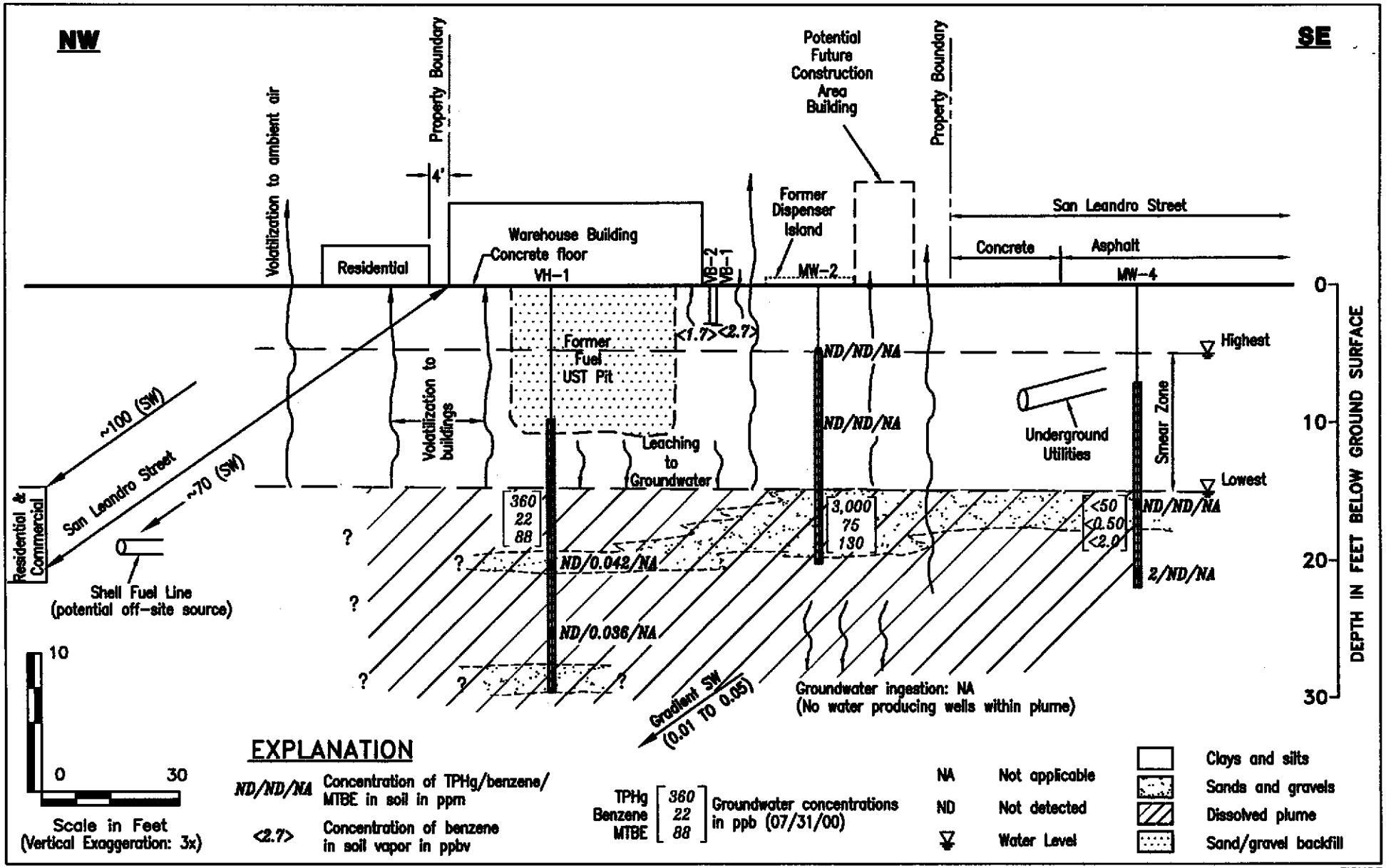
Source: Figure Modified From Drawing Provided By RRM Engineering

Gettler - Ryan Inc.
6747 Sierra Ct., Suite J (510) 551-7555
Dublin, CA 94568

SITE PLAN
Former Chevron Service Station No. 9-4612
3616 San Leandro Street
Oakland, California

FIGURE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
346473.04		12/00	

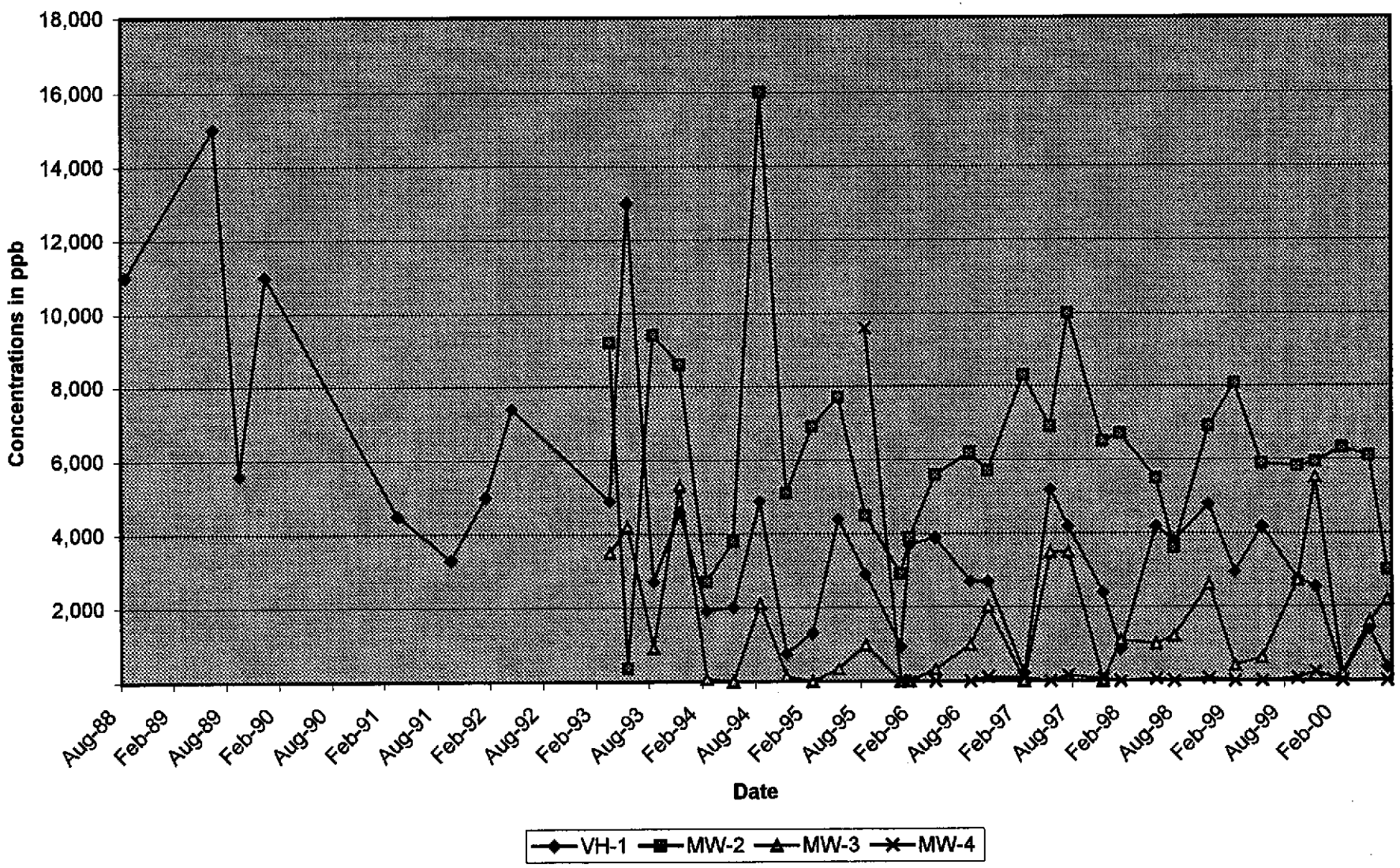


Gettler - Ryan Inc.
6747 Sierra Ct., Suite J (925) 551-7555
Dublin, CA 94568

SITE CONCEPTUAL MODEL
Former Chevron Service Station No. 9-4612
3616 San Leandro Street
Oakland, California

FIGURE **3**

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
346473.04		12/00	

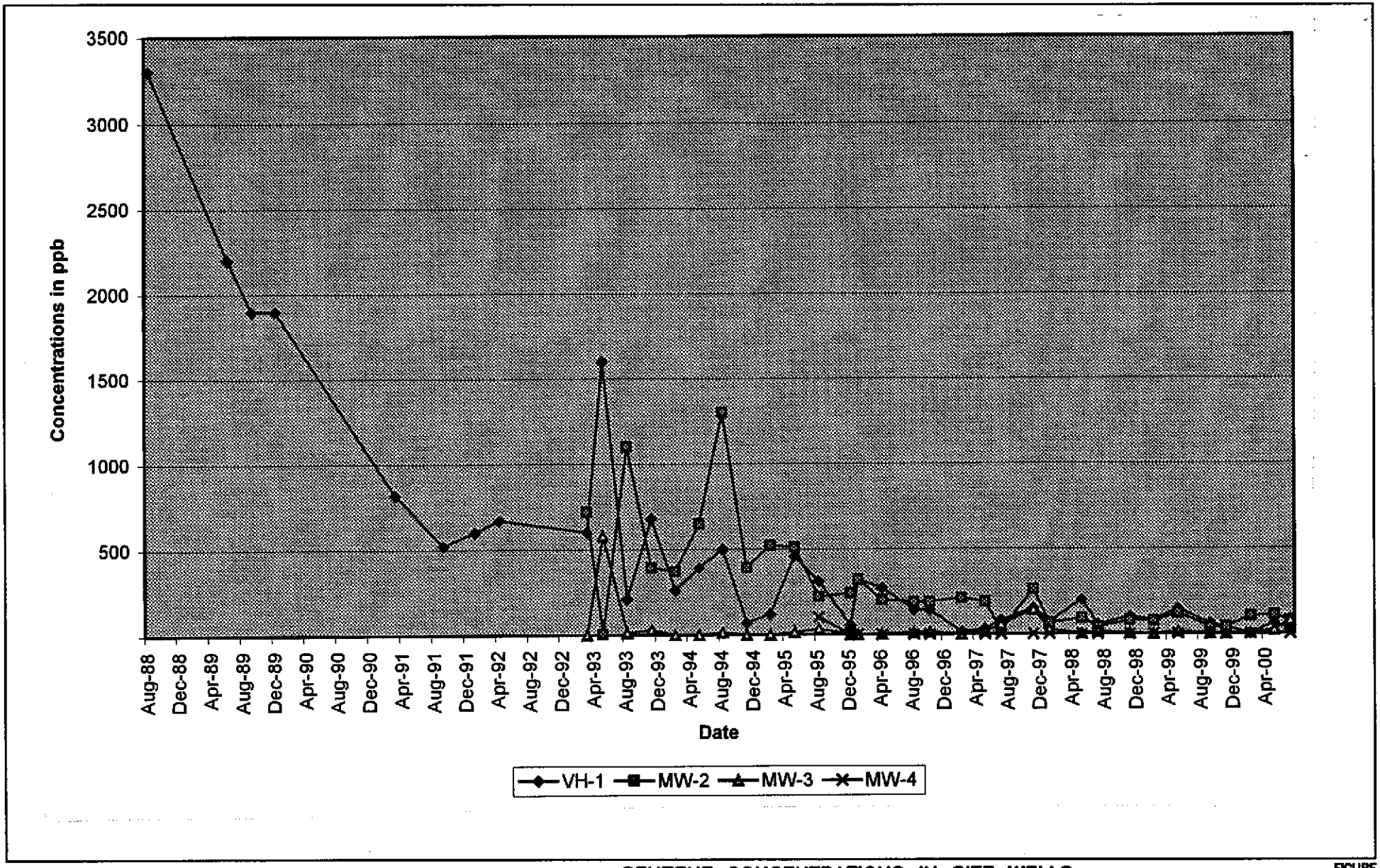


Gettler - Ryan Inc.
6747 Sierra Ct., Suite J (925) 551-7555
Dublin, CA 94568

TPHg CONCENTRATIONS IN SITE WELLS
Former Chevron Service Station No. 9-4612
3616 San Leandro Street
Oakland, California

FIGURE
4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
346473.04		12/00	



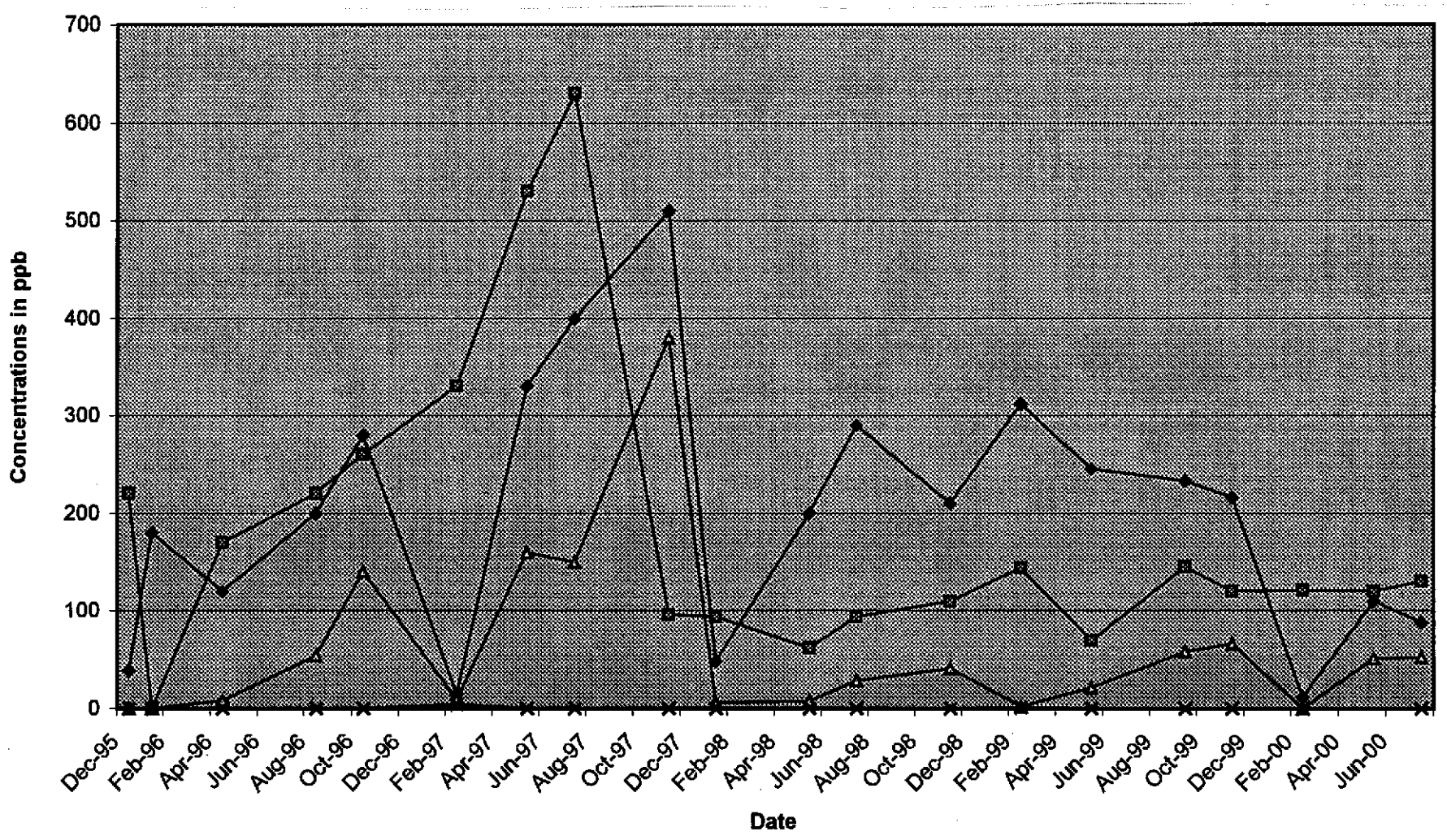
Gettler - Ryan Inc.

6747 Sierra Ct., Suite J
Dublin, CA 94568
(925) 551-7555

BENZENE CONCENTRATIONS IN SITE WELLS
Former Chevron Service Station No. 9-4612
3616 San Leandro Street
Oakland, California

FIGURE
5

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
346473.04		12/00	



Note:
MtBE was analyzed using EPA Method 8260 or 8020 (prior to 1998).

Gettler - Ryan Inc.
6747 Sierra Ct., Suite J (925) 551-7555
Dublin, CA 94568

MtBE CONCENTRATIONS IN SITE WELLS
Former Chevron Service Station No. 9-4612
3616 San Leandro Street
Oakland, California

FIGURE
6

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
346473.04		12/00	

TABLE 1
Analytical Results of Soil Samples

(Results expressed as milligrams per kilogram)

Chevron Service Station No. 9-4612
3616 San Leandro Street
Oakland, California

Date	Sample ID	Sample Depth (ft)[a]	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-g
8-15-95	MW 4-16.5	16.5	<0.005	<0.005	<0.005	<0.005	<1
8-15-95	MW 4-21.5	21.5	<0.005	0.014	0.007	0.01	2
8-15-95	SB 1-21.5	21.5	<0.005	0.12	0.21	1.1	16

TPH-g = total petroleum hydrocarbons as gasoline
[a] = feet below surface grade

TABLE 1
ANALYTICAL RESULTS FOR SOIL SAMPLES
(Concentrations in parts per million)

Date	Sample ID	Sample Depth (ft)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH-as-Gasoline	Total Lead
08/10/88	VH-1	20.5 25.5	0.042 0.036	<0.005 <0.005	<0.005 <0.005	<0.005 <0.005	<0.5 <0.5	6 6 & 7
02/01/93	MW-1	5 10	<0.005 <0.005	<0.005 <0.005	<0.005 <0.005	<0.005 <0.005	<1 <1	NA NA
02/01/93	MW-2	5 10	<0.005 <0.005	<0.005 <0.005	<0.005 <0.005	<0.005 <0.005	<1 <1	NA NA

TPH = Total petroleum hydrocarbons
NA = Not applicable
MW = Monitoring well

Data for VH-1 from Vonder Haar Hydrogeology Report, September 16, 1988.

Table 1

Groundwater Monitoring Data and Analytical Results

Former Chevron Service Station #9-4612

3616 San Leandro Street

Oakland, California

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Diesel	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE	MTBE by 8260	TOG
VH-1													
08/10/88	--	--	13.00	--	--	11,000	3300	200	520	540	--	--	--
06/01/89	--	--	10.32	--	--	15,000	2200	120	540	310	--	--	--
09/15/89	--	--	15.69	--	--	5600	1900	90	350	160	--	--	--
12/08/89	--	--	14.77	--	--	11,000	1900	69	270	99	--	--	--
03/07/91	--	--	11.26	--	--	4500	820	39	120	77	--	--	--
09/24/91	--	--	12.98	--	--	3300	520	19	39	27	--	--	--
01/08/92	--	--	13.77	--	--	5000	600	34	81	76	--	--	--
04/20/92	--	--	8.18	--	--	7400	670	60	110	140	--	--	--
03/26/93	27.85	21.14	6.71	--	--	4900	600	40	72	94	--	--	--
05/27/93	27.85	19.27	8.58	--	--	13,000	1600	120	230	220	--	--	--
08/18/93	27.85	17.39	10.46	--	--	2700	210	10	8.1	18	--	--	--
11/03/93	27.85	15.28	12.57	--	--	4600	680	42	35	68	--	--	--
02/10/94	27.85	18.77	9.08	--	--	1900	260	19	22	29	--	--	--
05/12/94	27.85	19.76	8.09	--	--	2000	390	28	3.9	29	--	--	--
08/26/94	27.85	17.10	10.75	--	--	4900	500	<5.0	23	31	--	--	--
11/14/94	27.85	18.40	9.45	--	300	760	69	<2.0	<2.0	2.2	--	--	--
02/01/95	27.85	21.88	5.97	--	--	1300	120	5.9	<0.5	13	--	--	--
05/12/95	27.85	20.14	7.71	--	--	4400	460	31	45	49	--	--	--
08/22/95	27.85	18.59	9.26	--	--	2900	310	15	28	32	--	--	--
12/19/95	27.85	19.05	8.80	--	--	930	53	<2.5	<2.5	<2.5	39	--	--
01/31/96	27.85	22.35	5.50	--	--	3700	320	<10	41	40	180	--	--
04/30/96	27.85	19.81	8.04	--	--	3900	270	<20	<20	<20	120	--	--
08/01/96	27.85	18.67	9.18	--	--	2700	140	11	18	28	200	--	--
10/30/96	27.85	18.67	10.76	--	--	2700	140	<12	<12	<12	280	--	--
02/07/97	27.85	19.75	8.10	--	--	220	13	0.6	<0.5	1.6	15	--	--
05/07/97	27.85	18.33	9.52	--	--	5200	33	12	21	26	330	--	--
07/22/97	27.85	17.43	10.42	--	--	4200	80	<10	16	24	400	--	--
11/03/97	27.85	16.85	11.00	--	--	2400	150	6.8	6.5	9.5	510	--	--
01/28/98	27.85	20.75	7.10	--	--	850	69	4.8	5.0	11	38	48	--
05/08/98	27.85	20.14	7.71	--	--	4200	200	30	40	42	310	200	--
07/29/98	27.85	18.40	9.45	--	--	3800	54	10	27	30	35	290	--
11/06/98	27.85	17.15	10.70	--	--	4800	100	20	12	23	360	210	--

Table 1

Groundwater Monitoring Data and Analytical Results

Former Chevron Service Station #9-4612

3616 San Leandro Street

Oakland, California

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Diesel	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE	MTBE by 8260	TOG
VH-1 (cont)													
02/09/99	27.85	21.87	5.98	ORC socks installed	--	2950	79.5	<10	<10	<10	435	312	--
05/13/99	27.85	19.71	8.14	--	--	4180	147	12.8	16.5	20.3	433	245	--
09/07/99	27.85	17.94	9.91	--	--	2750	57.6	<5.0	6.53	<5.0	297	233	--
11/24/99	27.85	17.36	10.49	--	--	2550	38	3.18	2.54	5.21	--	216+	--
02/25/00	27.85	21.20	6.65	--	--	120	2.7	<0.5	<0.5	<0.5	20.5	11.9	--
05/10/00	27.85	19.76	8.09	--	--	1,400[3]	63	3.3	3.1	4.9	230	110	--
07/31/00	**27.85**	**18.30**	**9.55**	**ORC in well**	**--**	**360[3]**	**22**	**2.7**	**1.6**	**3.1**	**100**	**88**	**--**
MW-2													
02/16/93	27.51	--	--	--	--	9200	720	110	250	170	--	--	--
03/26/93	27.51	19.89	7.62	--	--	--	--	--	--	--	--	--	--
05/27/93	27.51	18.04	9.47	--	--	360	5.3	2.1	1.8	2.5	--	--	--
08/18/93	27.51	16.46	11.05	--	--	9400	1100	76	110	100	--	--	--
11/03/93	27.51	14.56	12.95	--	--	8600	390	20	2.7	120	--	--	--
02/10/94	27.51	17.72	9.79	--	--	2700	370	38	44	41	--	--	--
05/12/94	27.51	18.59	8.92	--	--	3800	650	76	15	62	--	--	--
08/26/94	27.51	16.14	11.37	--	--	16,000	1300	270	28	120	--	--	--
11/14/94	27.51	17.48	10.03	--	--	5100	390	10	43	27	--	--	--
02/01/95	27.51	20.47	7.04	--	--	6900	520	82	170	110	--	--	--
05/12/95	27.51	18.76	8.75	--	--	7700	510	83	110	100	--	--	--
08/22/95	27.51	17.35	10.16	--	--	4500	220	16	61	47	--	--	--
12/19/95	27.51	18.05	9.46	--	--	2900	240	<10	19	18	220	--	--
01/31/96	27.51	21.91	5.60	--	--	3900	320	18	72	39	<25	--	--
04/30/96	27.51	18.68	8.83	--	--	5600	200	36	55	47	170	--	--
08/01/96	27.51	17.25	10.26	--	--	6200	190	15	62	59	220	--	--
10/30/96	27.51	17.25	11.48	--	--	5700	190	<25	67	36	260	--	--
02/07/97	27.51	18.11	9.40	--	--	8300	210	34	70	59	330	--	--
05/07/97	27.51	17.57	9.94	--	--	6900	190	12	38	37	530	--	--
07/22/97	27.51	16.36	11.15	--	--	10,000	18	25	62	41	630	--	--

+ Lab could not get a good ion chromatogram match for MTBE. See laboratory report.

Table 1

Groundwater Monitoring Data and Analytical Results

Former Chevron Service Station #9-4612

3616 San Leandro Street

Oakland, California

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Diesel	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE	MTBE by 8260	TOG
MW-2 (cont)													
11/03/97	27.51	15.93	11.58	--	--	6500	260	8.5	26	14	590	--	--
11/03/97	27.51	15.93	11.58	Confirmation run	--	--	--	--	--	--	--	96	--
01/28/98	27.51	19.38	8.13	--	--	6700	65	13	67	54	280	94	--
05/08/98	27.51	18.89	8.62	--	--	5500	91	38	43	61	220	62	--
07/29/98	27.51	17.06	10.45	--	--	3600	41	8.9	3.6	14	16	94	--
11/06/98	27.51	15.89	11.62	--	--	6900	77	<5.0	14	17	290	110	--
02/09/99	27.51	20.61	6.90	ORC socks installed	--	8070	75.6	<10	<10	<10	397	144	--
05/13/99	27.51	18.21	9.30	--	--	5890	120	<5.0	12.5	26.6	401	69.4	--
09/07/99	27.51	16.57	10.94	--	--	5820	41.2	<5.0	14.6	<5.0	260	145	--
11/24/99	27.51	15.98	11.53	--	--	5940	40.9	<10	10.8	<10	--	120+	--
02/25/00	27.51	21.00	6.51	--	--	6370	101	9.37	39.8	33.2	321	121	--
05/10/00	27.51	18.49	9.02	--	--	6,100[3]	110	13	27	31	560	120	--
07/31/00	**27.51**	**17.18**	**10.33**	**ORC in well**	**--**	**3,000[3]**	**75**	**14**	**28**	**28**	**200**	**130**	**--**
MW-3													
02/16/93	28.50	--	--	--	--	3500	<0.5	8.1	4.6	7.7	--	--	--
03/26/93	28.50	21.32	7.18	--	--	--	--	--	--	--	--	--	--
05/27/93	28.50	19.17	9.33	--	--	4200	580	84	150	100	--	--	--
08/18/93	28.50	16.50	12.00	--	1400	910	12	3.7	6.2	3.8	--	--	<5000
11/03/93	28.50	15.21	13.29	--	--	5300	29	1.9	0.6	27	--	--	--
02/10/94	28.50	18.87	9.63	--	<50	63	<0.5	0.7	<0.5	<0.5	--	--	--
05/12/94	28.50	19.73	8.77	--	84	<50	<0.5	0.5	<0.5	<0.5	--	--	--
08/26/94	28.50	17.08	11.42	--	--	2100	12	<0.5	5.0	0.5	--	--	--
11/14/94	28.50	18.43	10.07	--	--	140	0.78	<0.5	<0.5	<0.5	--	--	--
02/01/95	28.50	22.21	6.29	--	<50	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
05/12/95	28.50	20.43	8.07	--	540*	330	13	1.1	1.9	0.69	--	--	--
08/22/95	28.50	18.55	9.95	--	550*	980	32	<1.0	<1.0	<1.0	--	--	--

+ Lab could not get a good ion chromatogram match for MTBE. See laboratory report.

* Chromatogram pattern indicates an unidentified hydrocarbon.

Table 1

Groundwater Monitoring Data and Analytical Results

Former Chevron Service Station #9-4612

3616 San Leandro Street

Oakland, California

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Diesel	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE	MTBE by 8260	TOG
MW-3 (cont)													
12/19/95	28.50	19.10	9.40	--	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
01/31/96	28.50	23.45	5.05	--	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
04/30/96	28.50	20.10	8.40	--	240*	320	2.4	<0.5	0.75	<0.5	7.8	--	--
08/01/96	28.50	18.70	9.80	--	470*	980	9.6	<0.5	0.98	2.2	54	--	--
10/30/96	28.50	18.70	11.48	--	760*	2000	14	<10	<10	<10	140	--	--
02/07/97	28.50	19.90	8.60	--	61*	200*	<0.5	<0.5	<0.5	<0.5	8.9	--	--
05/07/97	28.50	19.49	9.01	--	550*	3500	14	3.9	3.6	8.0	160	--	--
07/22/97	28.50	17.38	11.12	--	800*	3500	55	<10	<10	<10	150	--	--
11/03/97	28.50	16.99	11.51	--	910*	4100	140	<5.0	<5.0	<5.0	380	--	--
01/28/98	28.50	21.16	7.34	--	--	1100	24	<1.2	<1.2	2.8	33	6.1	--
05/08/98	28.50	20.44	8.06	--	250*	990	3.6	7.7	0.7	2.2	37	7.5	--
07/29/98	28.50	18.25	10.25	--	290*	1200	13	<0.5	<0.5	1.4	11	28	--
11/06/98	28.50	17.11	11.39	--	390*	2600	5.3	<2.5	<2.5	3.0	91	41	--
02/09/99	28.50	22.40	6.10	ORC socks installed	184*	406	<1.0	4.03	<1.0	<1.0	17.7	1.97	--
05/13/99	28.50	19.38	9.12	--	--	615	13.8	1.05	<0.5	<0.5	43.5	21.2	--
09/07/99	28.50	17.77	10.73	--	528*	2710	<5.0	<5.0	<5.0	<5.0	96.3	57.9	--
11/24/99	28.50	17.37	11.13	--	1070*	5530	<5.0	<5.0	5.59	<5.0	--	66+	--
02/25/00	28.50	22.22	6.28	--	--	189	4.68	<0.5	<0.5	<0.5	11.9	<2.0	--
03/01/00	28.50	21.80	6.70	--	380*	--	--	--	--	--	--	--	--
05/10/00	28.50	19.90	8.60	--	830[2]	1,600[1]	22	<10	<10	<10	100	51	--
07/31/00	**28.50**	**18.43**	**10.07**	**ORC in well**	**490[2]**	**2,200[1]**	**76**	**10**	**<5.0**	**13**	**230**	**52**	**--**
MW-4													
08/22/95	27.27	18.16	9.11	--	--	9600	100	<10	<10	<10	--	--	--
12/19/95	27.27	18.97	8.30	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
01/31/96	27.27	21.67	5.60	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
04/30/96	27.27	20.27	7.00	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
08/01/96	27.27	18.12	9.15	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--

+ Lab could not get a good ion chromatogram match for MTBE. See laboratory report.

* Chromatogram pattern indicates an unidentified hydrocarbon.

Table 1

Groundwater Monitoring Data and Analytical Results

Former Chevron Service Station #9-4612

3616 San Leandro Street

Oakland, California

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Diesel	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE	MTBE by 8260	TOG
MW-4 (cont)													
10/30/96	27.27	18.12	10.74	--	--	110	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
02/07/97	27.27	19.47	7.80	--	--	80	<0.5	<0.5	<0.5	<0.5	4.1	--	--
05/07/97	27.27	21.42	5.85	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
07/22/97	27.27	17.22	10.05	--	--	150	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
11/03/97	27.27	16.55	10.72	--	--	52	0.9	<0.5	<0.5	<0.5	*	--	--
01/28/98	27.27	20.76	6.51	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	<2.0	--
05/08/98	27.27	20.25	7.02	--	--	56	<0.5	<0.5	<0.5	<0.5	<2.5	<2.0	--
07/29/98	27.27	18.32	8.95	--	--	<50	0.9	<0.5	<0.5	<0.5	<2.5	<2.0	--
11/06/98	27.27	16.68	10.59	--	--	72	<0.5	<0.5	<0.5	<0.5	<2.5	<2.0	--
02/09/99	27.27	21.41	5.86	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.0	1.1	--
05/13/99	27.27	19.32	7.95	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<2.0	--
09/07/99	27.27	17.79	9.48	--	--	70.2	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	--
11/24/99	27.27	17.22	10.05	--	--	227	<0.5	<0.5	<0.5	<0.5	--	<0.5	--
02/25/00	--	--	--	Inaccessible	--	--	--	--	--	--	--	--	--
03/01/00	27.27	21.10	6.17	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	<2.0	--
05/10/00	--	--	--	Inaccessible	--	--	--	--	--	--	--	--	--
07/31/00	**27.27**	**17.90**	**9.37**	**--**	**--**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.5**	**<2.0**	**--**

* No value for MTBE could be determined; see lab report for analyses.

Table 1

Groundwater Monitoring Data and Analytical Results

Former Chevron Service Station #9-4612

3616 San Leandro Street

Oakland, California

Vertical Measurements are in feet. Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Diesel	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylenes	MTBE	MTBE by 8260	TOG
TRIP BLANK													
05/27/93	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<1.5	--	--	--
08/18/93	--	--	--	--	1400	<50	<0.5	<0.5	<0.5	<1.5	--	--	<5000
11/03/93	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
02/10/94	--	--	--	--	<50	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
05/12/94	--	--	--	--	84	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/26/94	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
11/14/94	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
02/01/95	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
05/12/95	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/22/95	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
12/19/95	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
01/31/96	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
04/30/96	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
08/01/96	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
10/30/96	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
02/07/97	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
05/07/97	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
07/22/97	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
01/28/98	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	<2.0	--
05/08/98	--	--	--	--	--	--	--	--	--	--	--	<2.0	--
07/29/98	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	<2.0	--
11/06/98	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
02/09/99	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.0	--	--
05/13/99	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<2.0	--
09/07/99	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.0	--	--
11/24/99	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
02/25/00	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
03/01/00	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
05/10/00	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
07/31/00	--	--	--	--	--	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<2.5**	--	--

Table 1

Groundwater Monitoring Data and Analytical Results

Former Chevron Service Station #9-4612

3616 San Leandro Boulevard

Oakland, California

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to May 10, 2000, were compiled from reports prepared by Blaine Tech Services, Inc.

TPH = Total Petroleum Hydrocarbons

MTBE = Methyl tertiary butyl ether

TOG = Total Oil & Grease

-- = Not Measured/Not Analyzed

1 Laboratory report indicates gasoline C6-C12.

2 Laboratory report indicates unidentified hydrocarbons <C16.

3 Laboratory report indicates gasoline C6-C12 + unidentified hydrocarbons <C6.

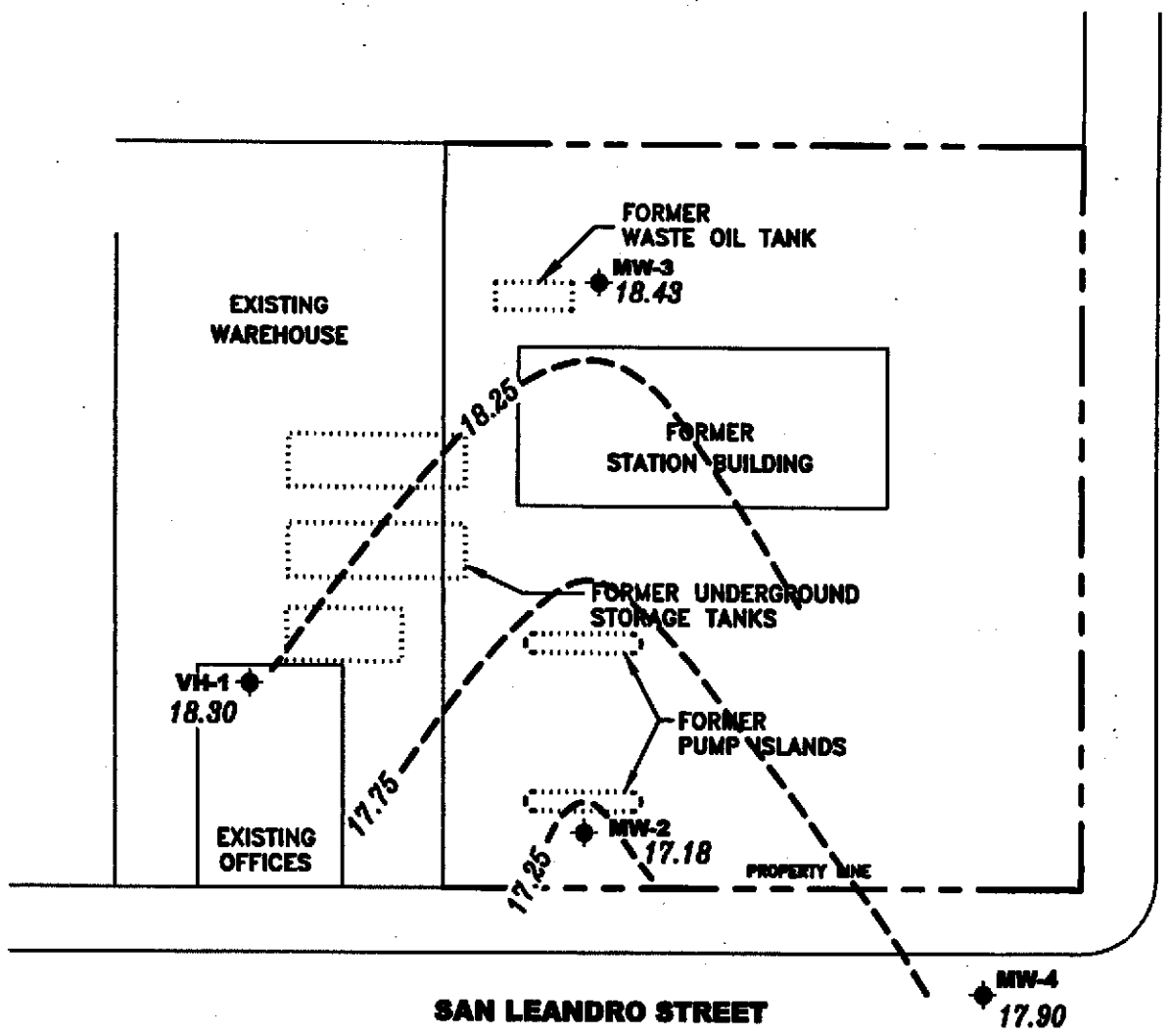
Table 2

Dissolved Oxygen Concentrations
Former Chevron Service Station #9-4612
3616 San Leandro Street
Oakland, California

WELL ID	DATE	Before Purging (mg/L)	After Purging (mg/L)
VH-1	05/10/00	0.90	--
	07/31/00	**1.25**	--
MW-2	05/10/00	0.57	--
	07/31/00	**1.26**	--
MW-3	05/10/00	1.56	--
	07/31/00	**1.46**	--
MW-4	05/10/00	Inaccessible	--
	07/31/00	**0.64**	--

EXPLANATIONS:

mg/L = milligrams per liter
-- = Not Measured



EXPLANATION

- Groundwater monitoring well
- 99.99 Groundwater elevation in feet referenced to Mean Sea Level (MSL)
- 99.99 Groundwater elevation contour, dashed where inferred.

Approximate groundwater flow direction at a gradient of 0.02 Ft./Ft.

N

0 30

Scale in Feet

Source: Figure modified from drawing provided by RRM engineering contracting firm.

Gettler - Ryan Inc.
6747 Sierra Ct., Suite J
Dublin, CA 94568 (925) 551-7555

POTENTIOMETRIC MAP
Former Chevron Service Station #9-4612
3616 San Leandro Street
Oakland, California

FIGURE 1

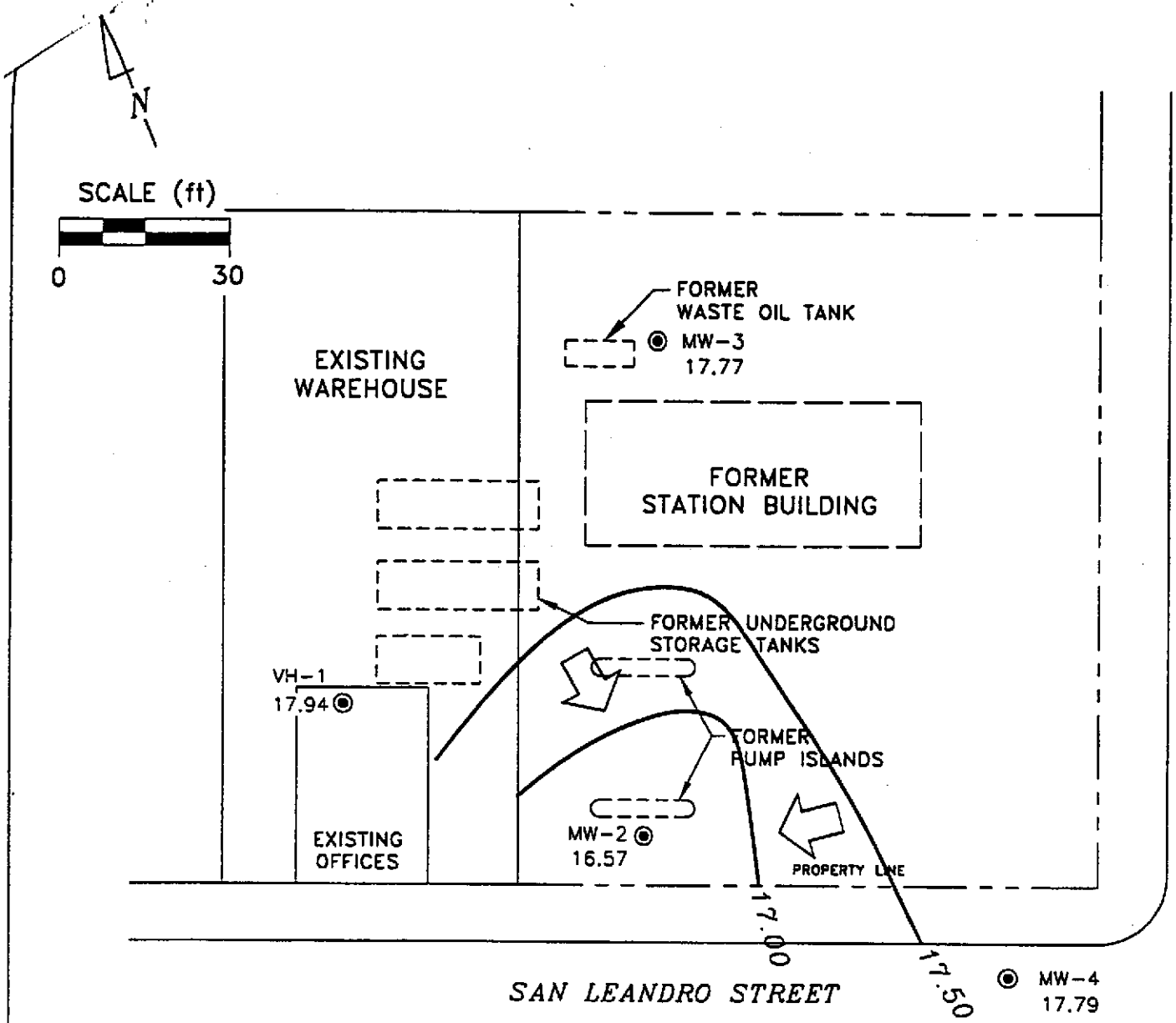
PROJECT NUMBER 386473

REVIEWED BY

DATE July 31, 2000

REVISED DATE

FILE NAME: P:\ENVIRO\CHEVRON\9-4612\000-9-4612.DWG | Layout Tab: POT3



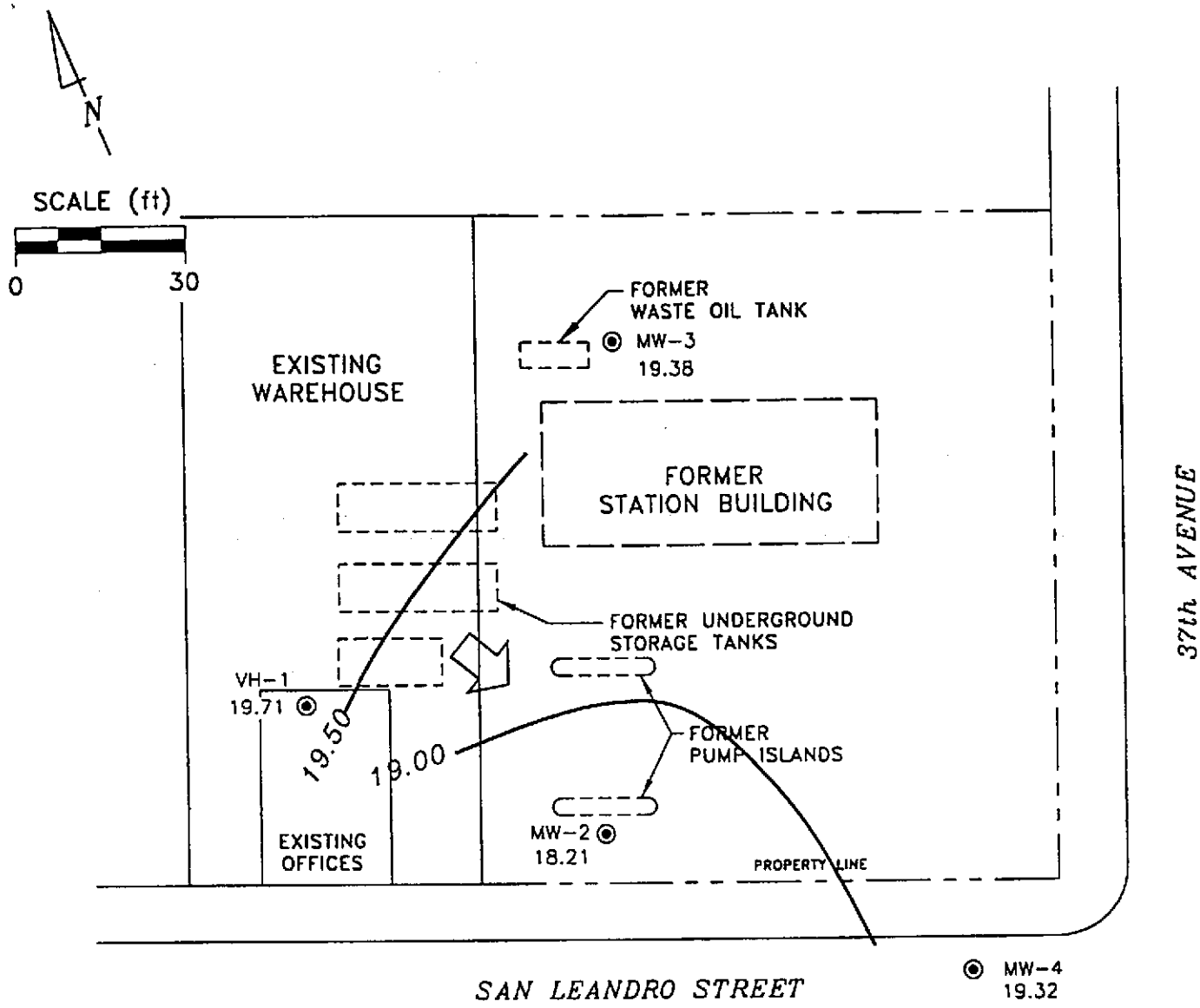
REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 4976
STATE OF CALIFORNIA

EXPLANATION

- ◉ MONITORING WELL
- 17.94 GROUNDWATER ELEVATION (FT, MSL)
- 17.00 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.03

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	**Chevron Station 9-4612** 3616 San Leandro Street Oakland, California **GROUNDWATER ELEVATION CONTOUR MAP, SEPTEMBER 7, 1999**	FIGURE: **1** PROJECT: DAC04



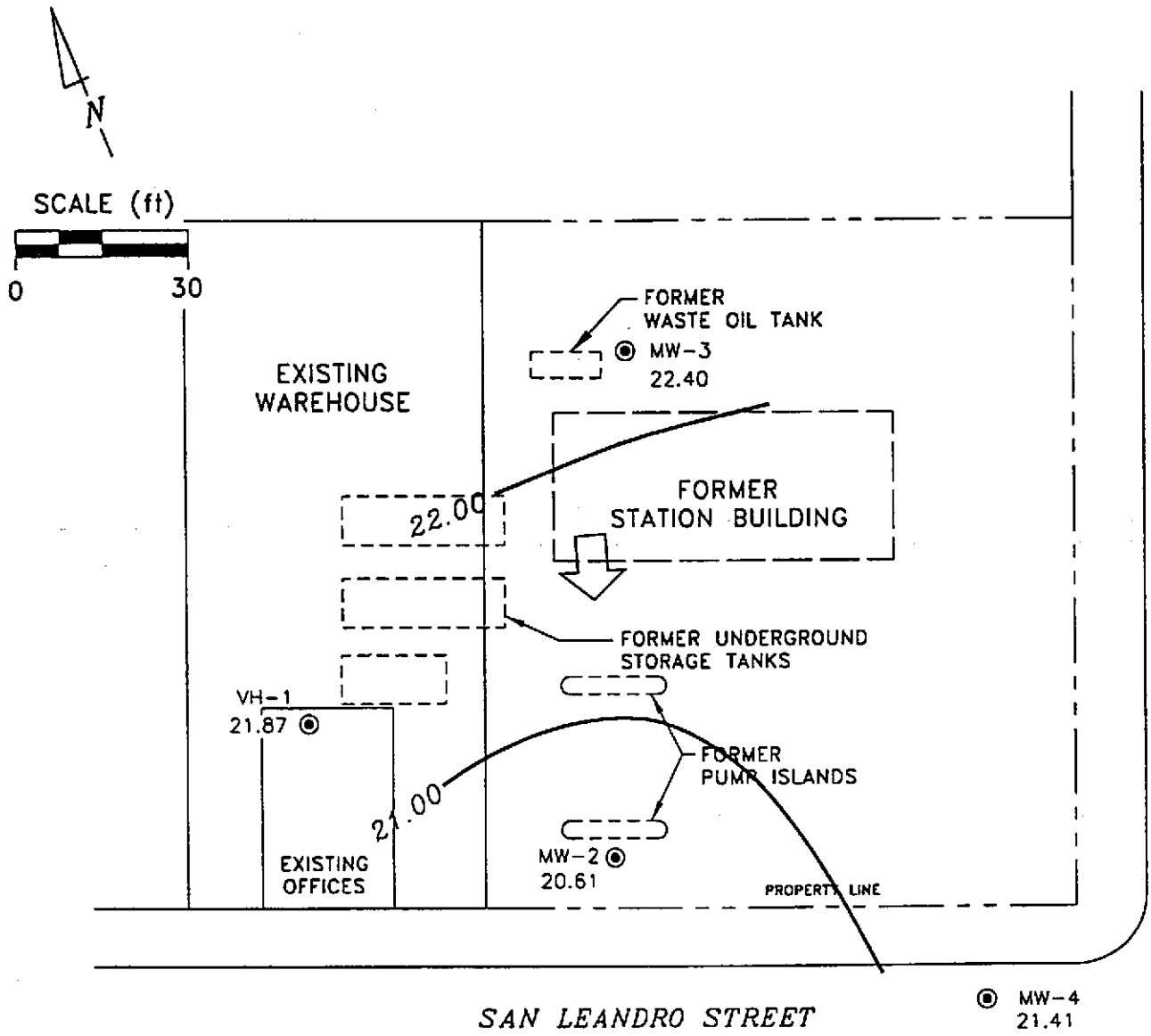
REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 1975
STATE OF CALIFORNIA

EXPLANATION

- ◉ MONITORING WELL
- 19.32 GROUNDWATER ELEVATION (FT, MSL)
- 19.50 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.03

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, MAY 13, 1999	FIGURE: 1 PROJECT: DAC04



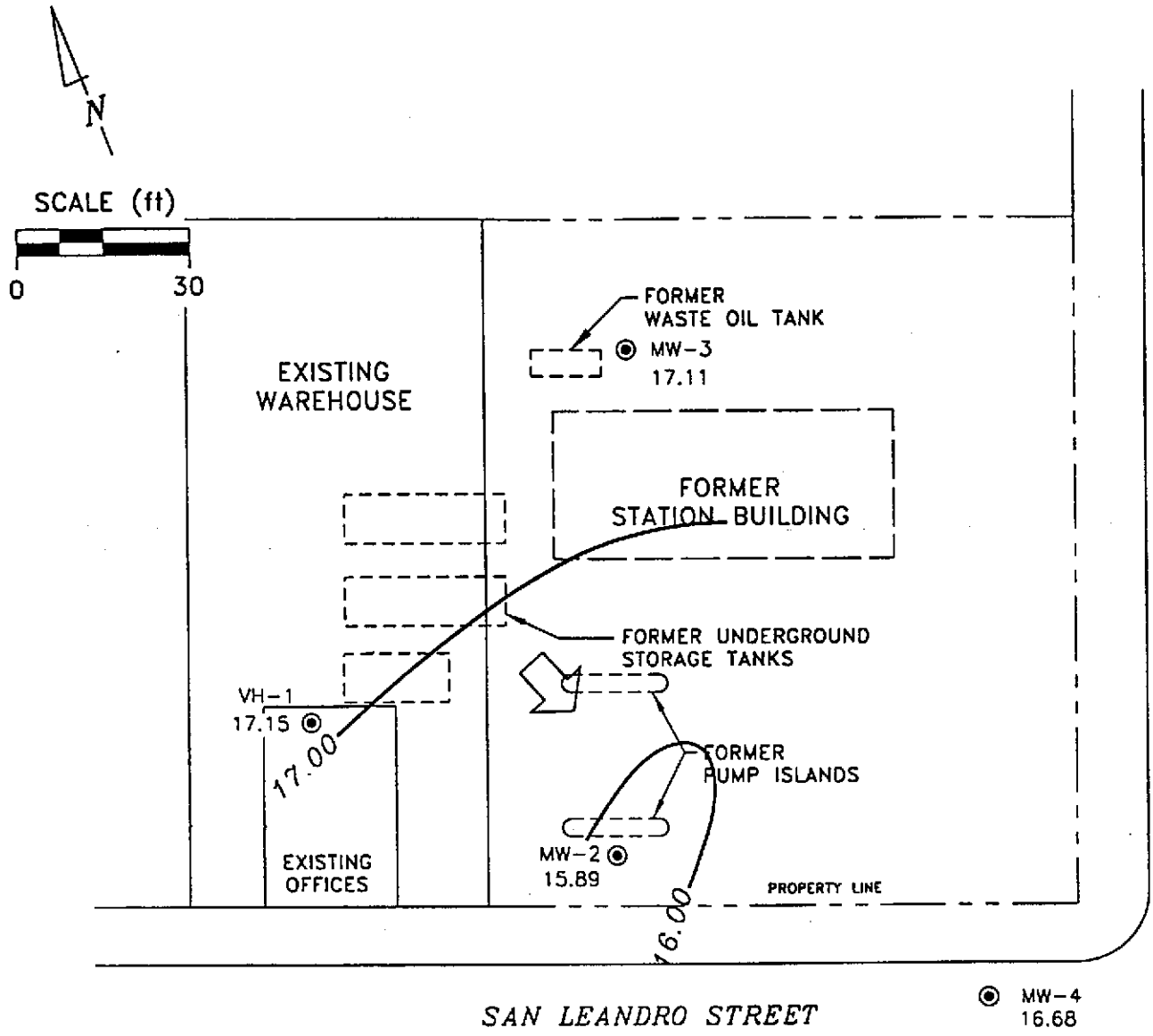
EXPLANATION

- ◉ MONITORING WELL
- 21.41 GROUNDWATER ELEVATION (FT, MSL)
- 22.00 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.02

REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 4975
09/00
STATE OF CALIFORNIA

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, FEBRUARY 9, 1999	FIGURE: 1 PROJECT: DAC04



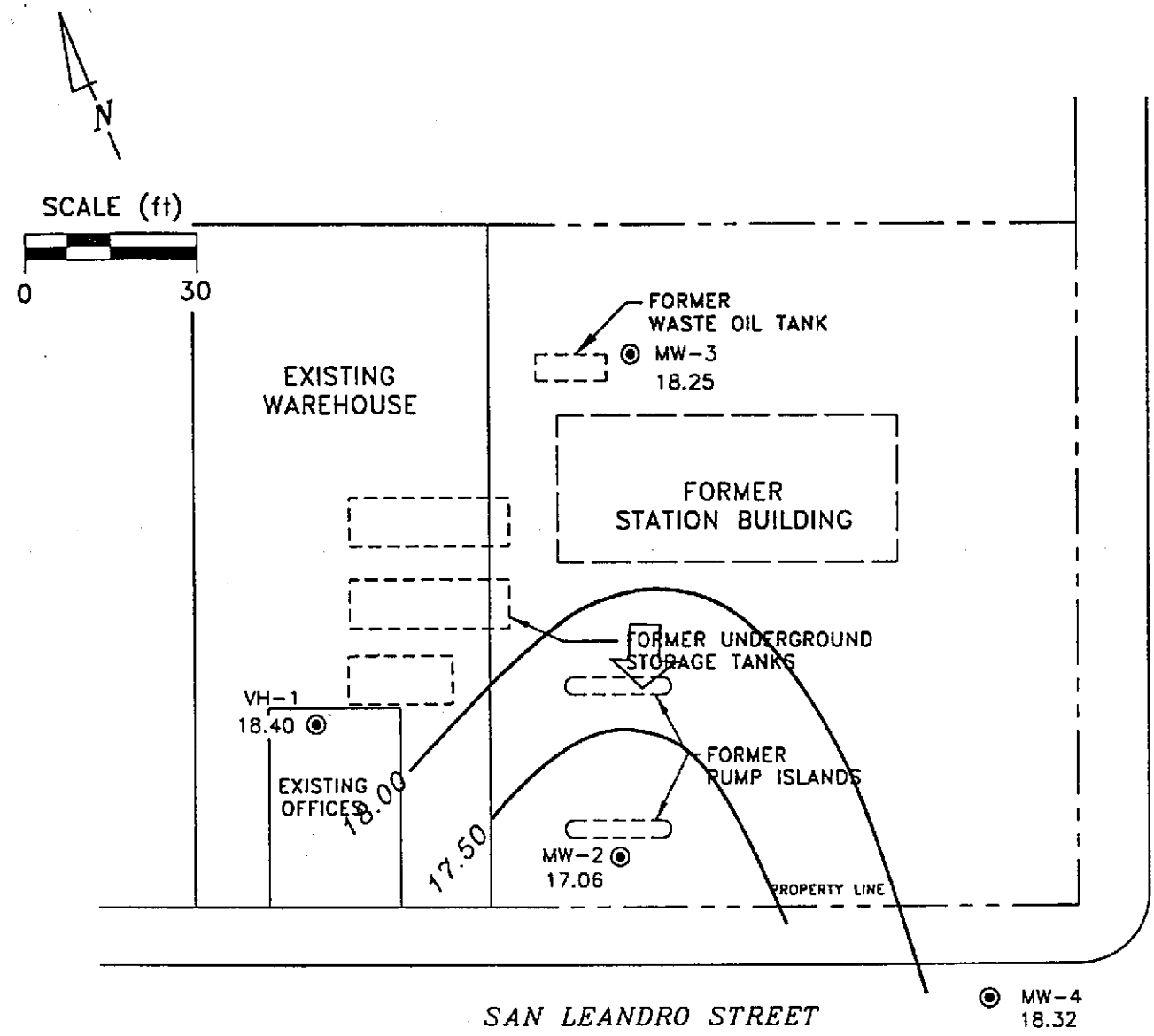
EXPLANATION

- ◉ MONITORING WELL
- 16.69 GROUNDWATER ELEVATION (FT, MSL)
- 16.00 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.01

REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 1975
STATE OF CALIFORNIA

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, NOVEMBER 6, 1998	FIGURE: 1 PROJECT: DAC04

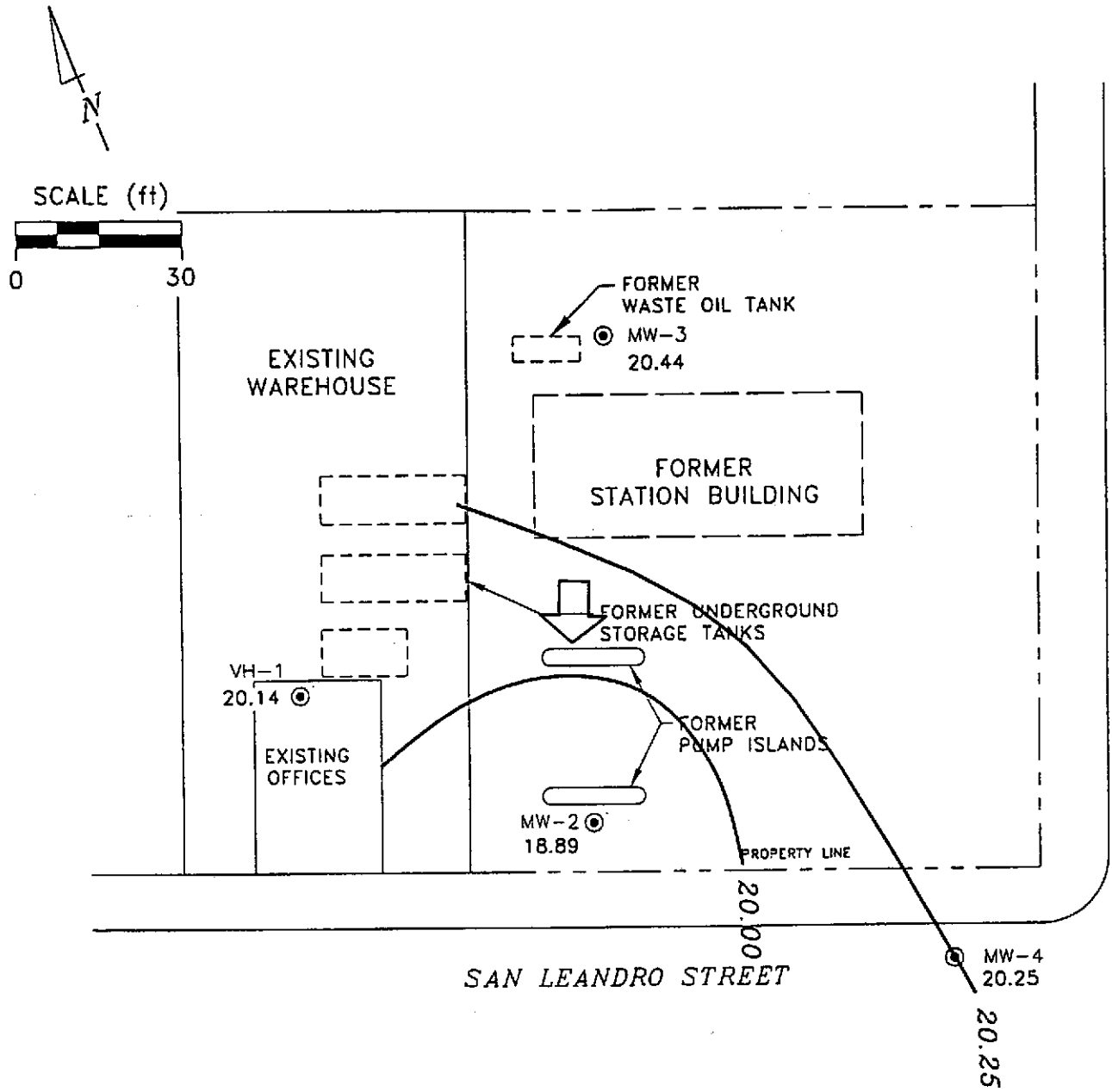


EXPLANATION

- ◉ MONITORING WELL
- 17.06 GROUNDWATER ELEVATION (FT, MSL)
- 18.00 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- ⇩ APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.02

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, JULY 29, 1998	FIGURE: PROJECT: DAC04



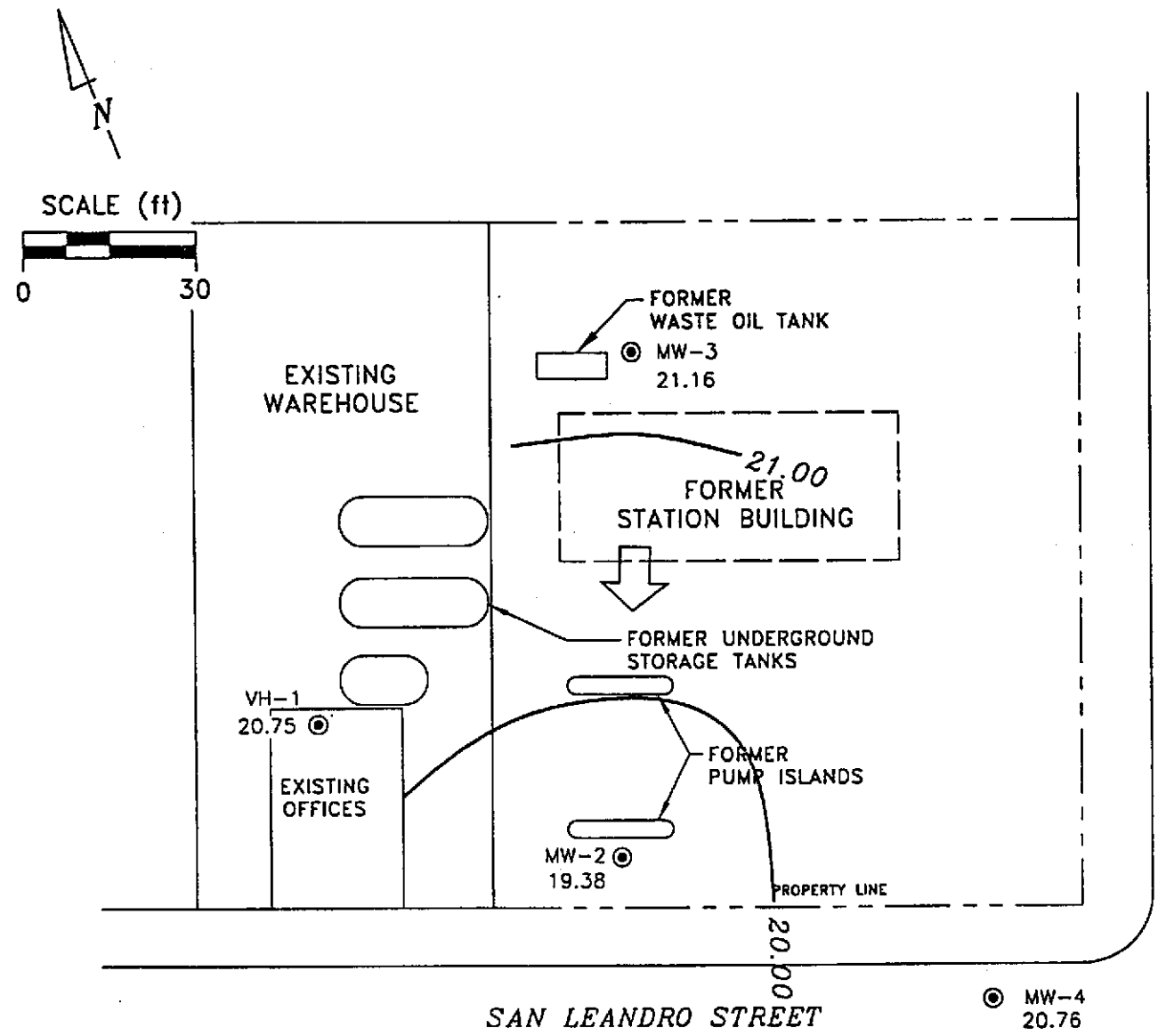
LEGEND

	EXPLANATION
⊙	MONITORING WELL
20.44	GROUNDWATER ELEVATION (FT. MSL)
20.00	GROUNDWATER ELEVATION CONTOUR (FT. MSL)
⇩	APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.02

REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 4975
STATE OF CALIFORNIA
9/98

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	Former Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, MAY 8, 1998	FIGURE: 1 PROJECT: DAC04



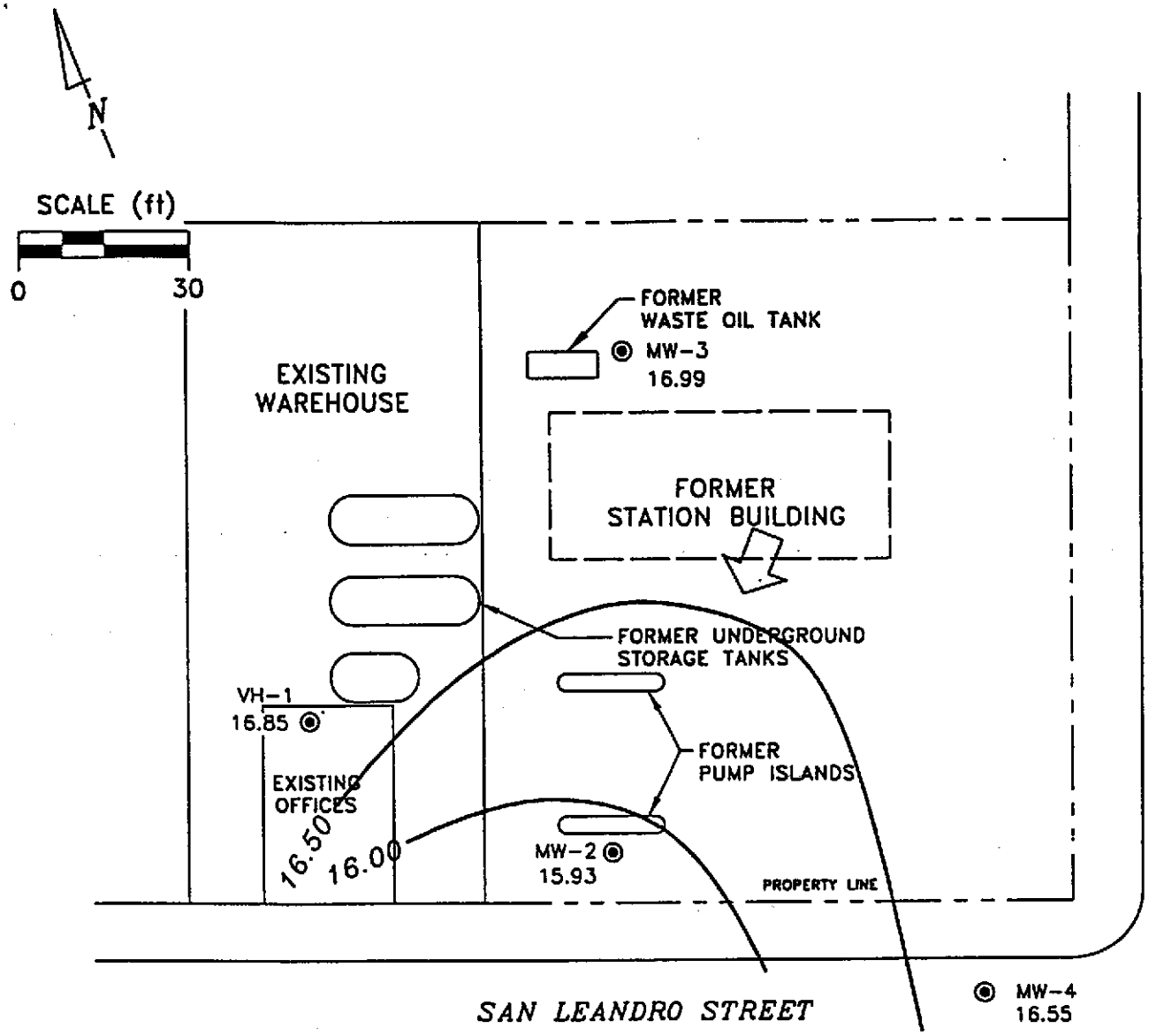
EXPLANATION

- ◉ MONITORING WELL
- 20.76 GROUNDWATER ELEVATION (FT, MSL)
- 20.00 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- ⇩ APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.02

REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 4975
STATE OF CALIFORNIA

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, JANUARY 28, 1998	FIGURE: 1 PROJECT: DAC04



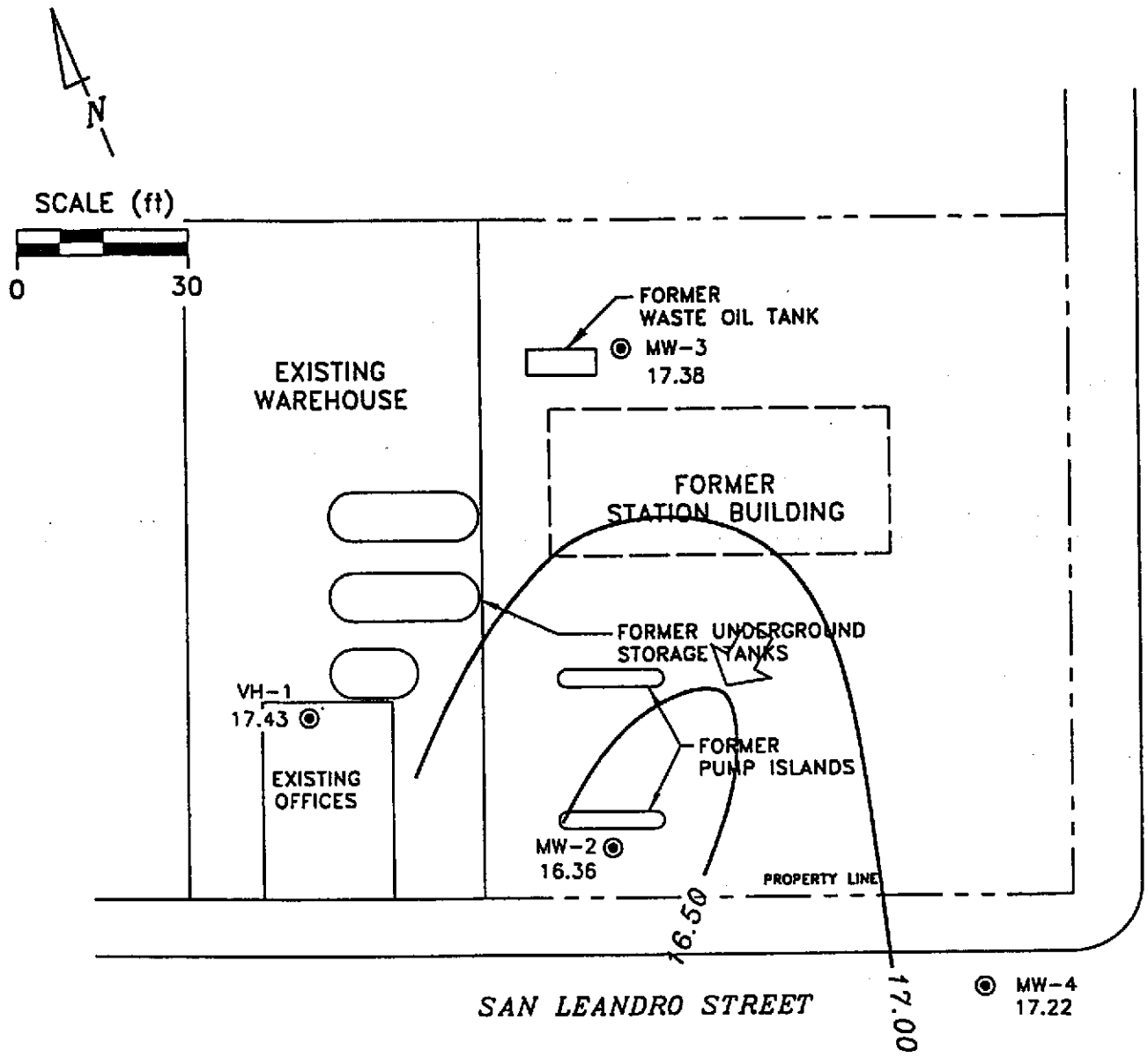
EXPLANATION

◉	MONITORING WELL
16.85	GROUNDWATER ELEVATION (FT, MSL)
16.50	GROUNDWATER ELEVATION CONTOUR (FT, MSL)
⇩	APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.01

REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 4975
9/98
STATE OF CALIFORNIA

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	**Chevron Station 9-4612** 3616 San Leandro Street Oakland, California **GROUNDWATER ELEVATION CONTOUR MAP, NOVEMBER 3, 1997**	FIGURE: 1 PROJECT: DAC04



EXPLANATION

◉	MONITORING WELL
17.43	GROUNDWATER ELEVATION (FT, MSL)
17.00	GROUNDWATER ELEVATION CONTOUR (FT, MSL)
⇩	APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.02

REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 4976
7/98
STATE OF CALIFORNIA

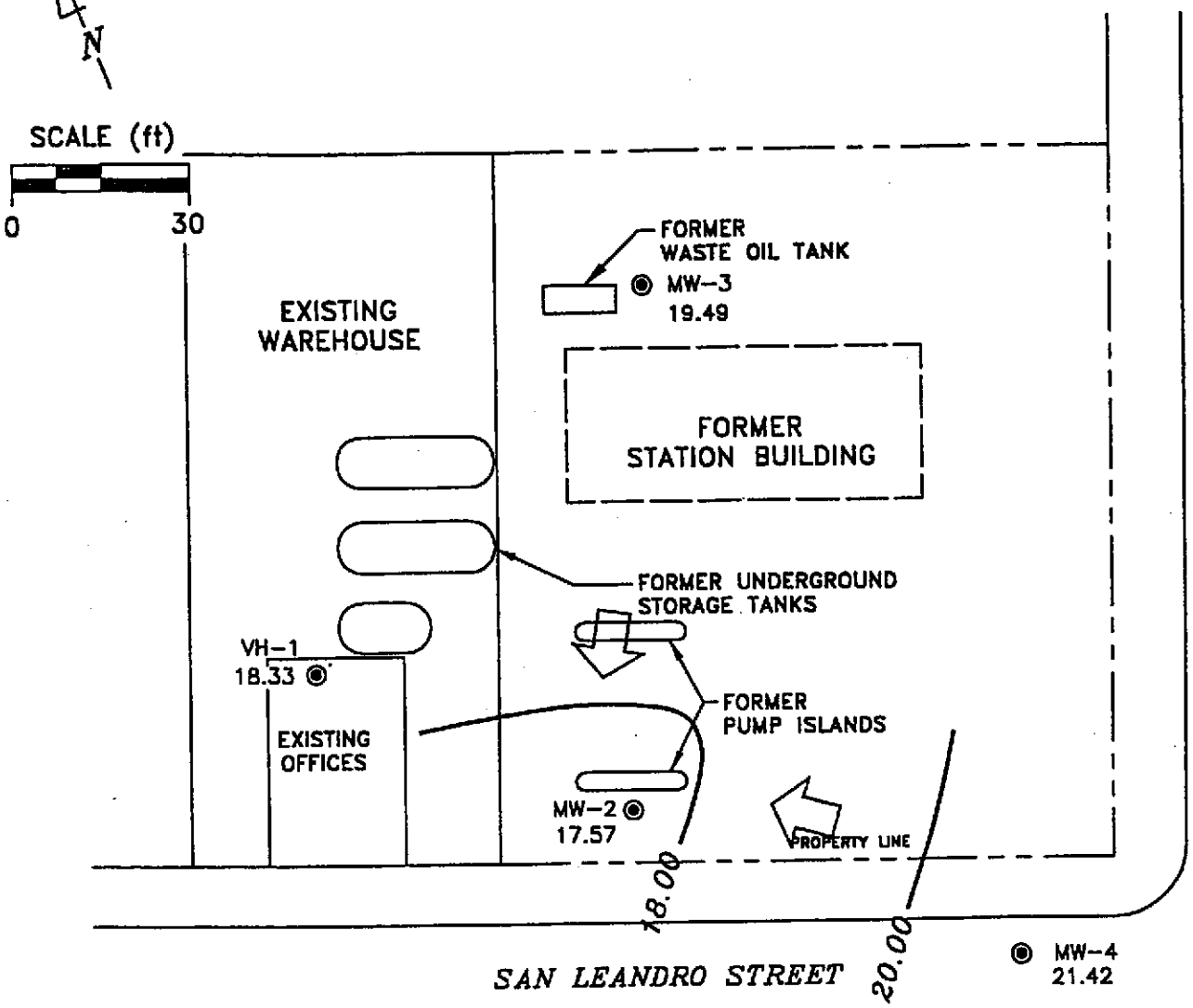
Basemap from Cambria Environmental Technology, Inc.

PREPARED BY
RRM
engineering contracting firm

Chevron Station 9-4612
3616 San Leandro Street
Oakland, California

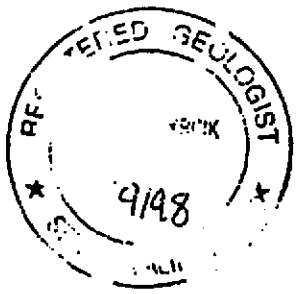
GROUNDWATER ELEVATION CONTOUR MAP,
JULY 22, 1997

FIGURE:
1
PROJECT:
DAC04



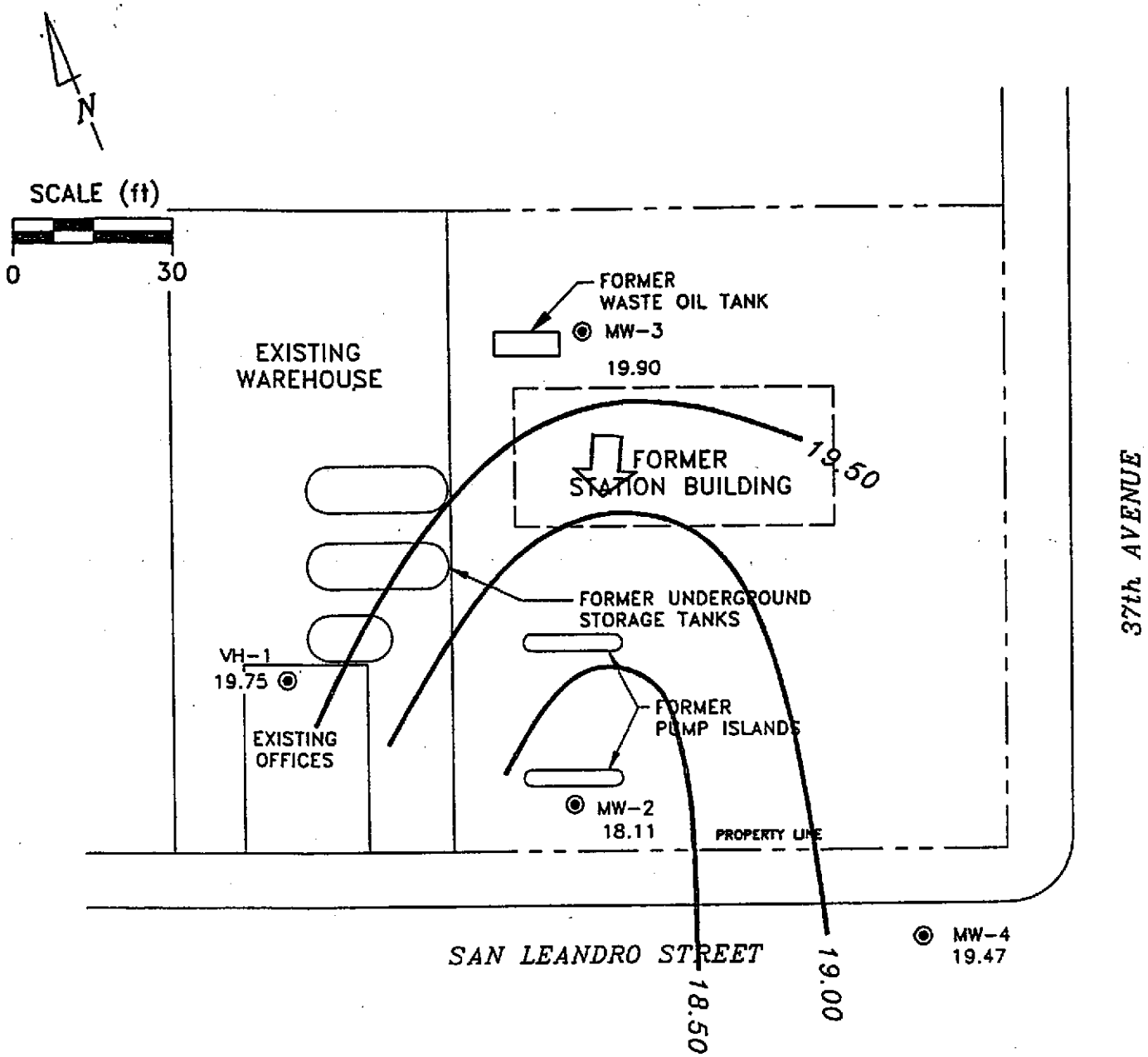
EXPLANATION

- ◉ MONITORING WELL
- 17.57 GROUNDWATER ELEVATION (FT, MSL)
- 18.00 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- ⇩ APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.05



Basemap from Cambria Environmental Technology, Inc.

PREPARED BY		
RRM engineering contracting firm	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, MAY 7, 1997	FIGURE: 1 PROJECT: DAC04



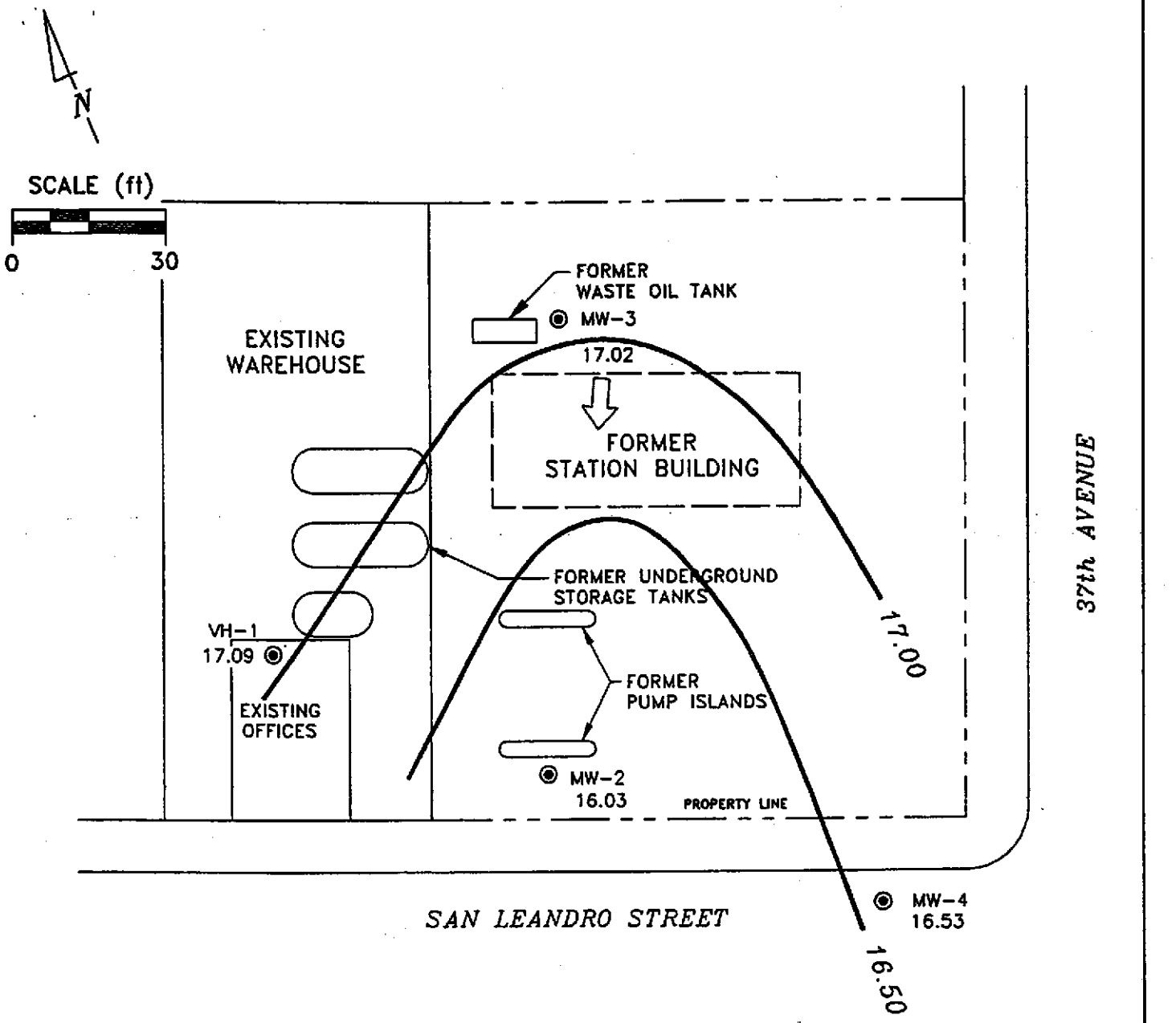
EXPLANATION

- ◉ MONITORING WELL
- 19.75 GROUNDWATER ELEVATION (FT, MSL)
- 19.00 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- ⇩ APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.02

REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 4976
4/1/98
STATE OF CALIFORNIA

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, FEBRUARY 7, 1997	FIGURE: 1 PROJECT: DAC04



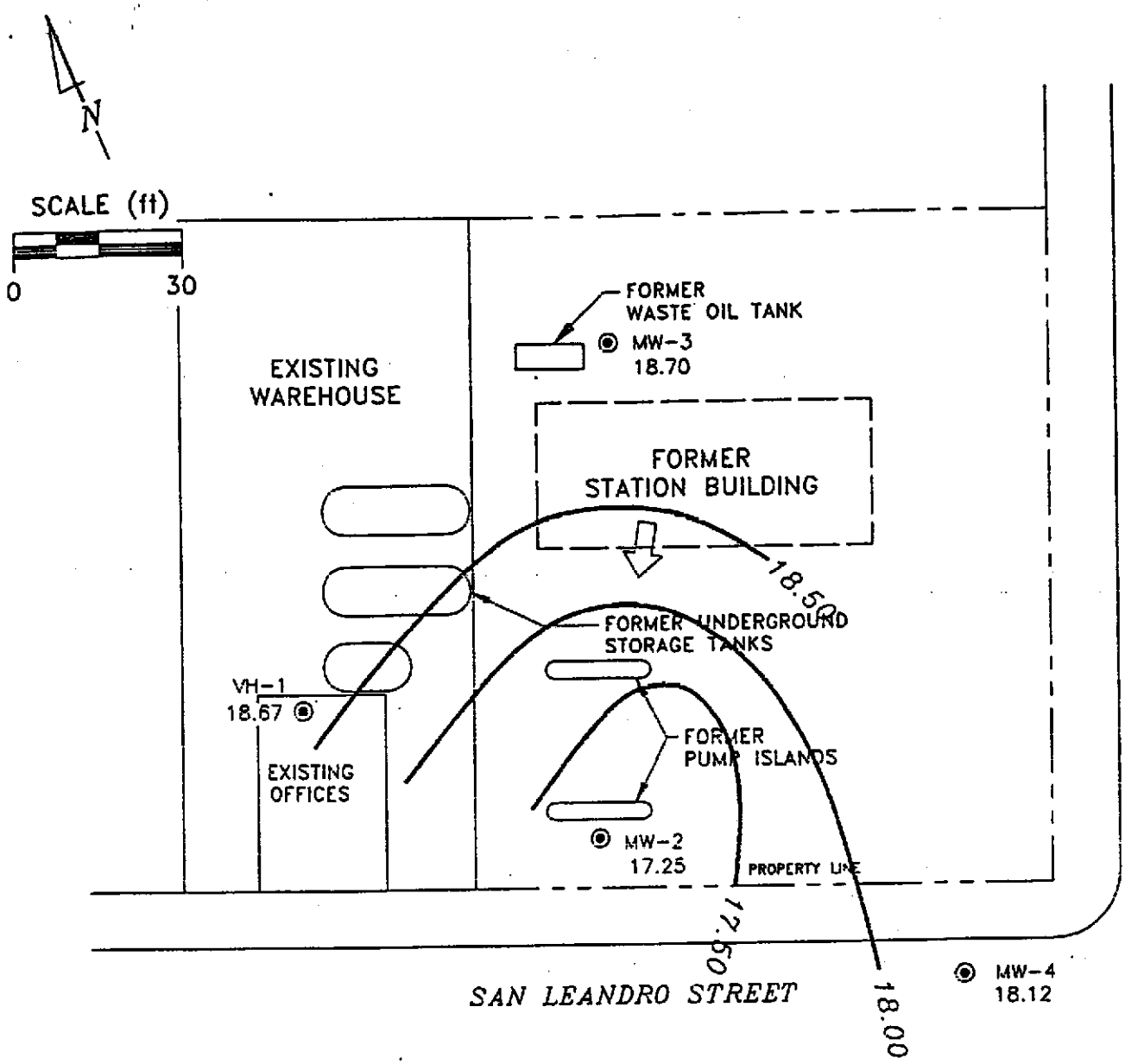
EXPLANATION

- ◉ MONITORING WELL
- 16.03 GROUNDWATER ELEVATION (FT, MSL)
- 16.50 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- ⇩ APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.02

REGISTERED GEOLOGIST
STEVEN E. KRCIK
No 3976
STATE OF CALIFORNIA

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY		
RRM INC.	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, OCTOBER 30,1996	FIGURE: 1 PROJECT: DAC04



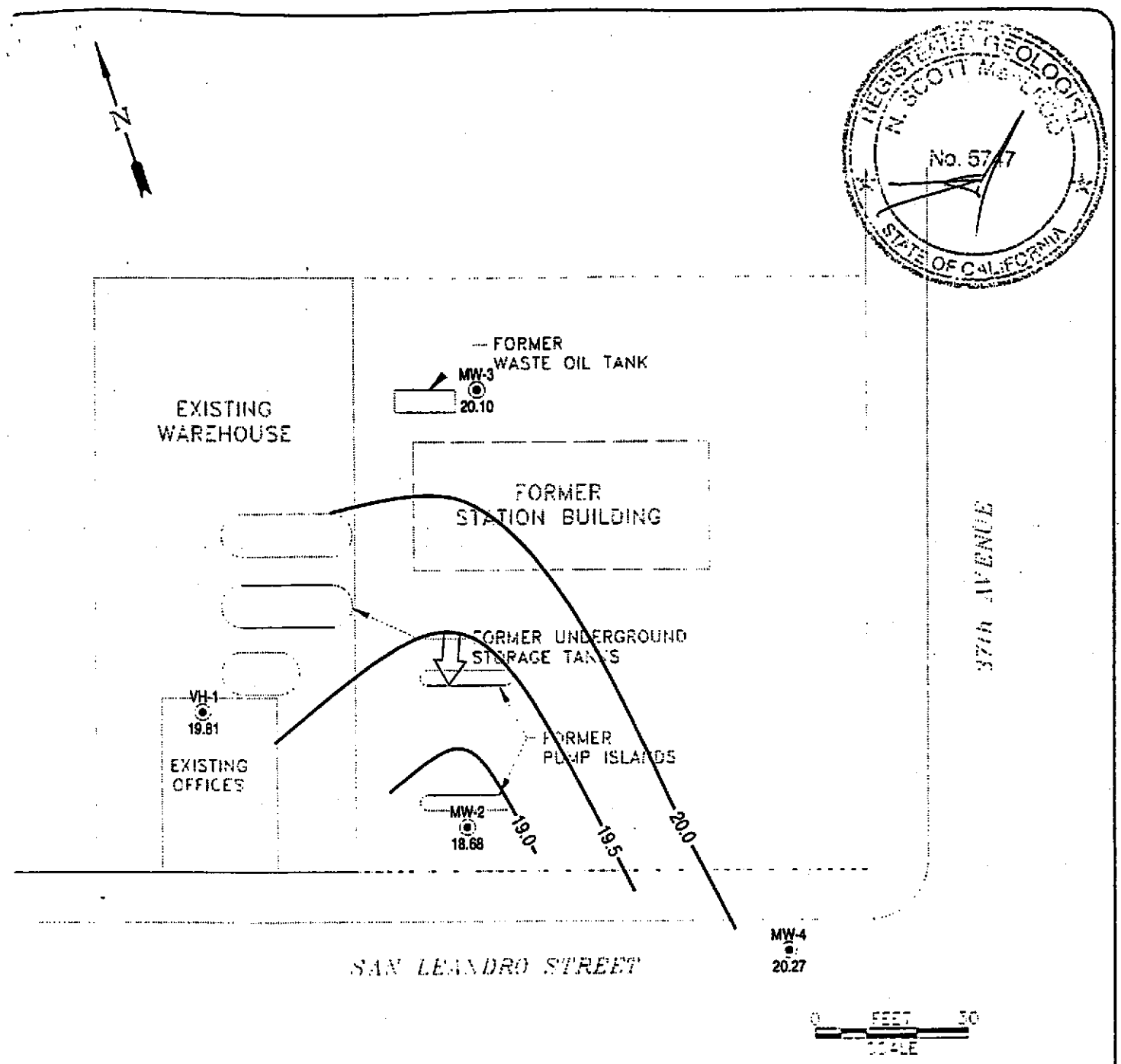
EXPLANATION

- ◉ MONITORING WELL
- 18.70 GROUNDWATER ELEVATION (FT, MSL)
- 18.50 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- ⇩ APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.2

REGISTERED GEOLOGIST
STEVEN E. KRCIK
No. 1976
STATE OF CALIFORNIA

Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM INC.	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, AUGUST 1,1996	FIGURE: 1 PROJECT: DAC04



LEGEND

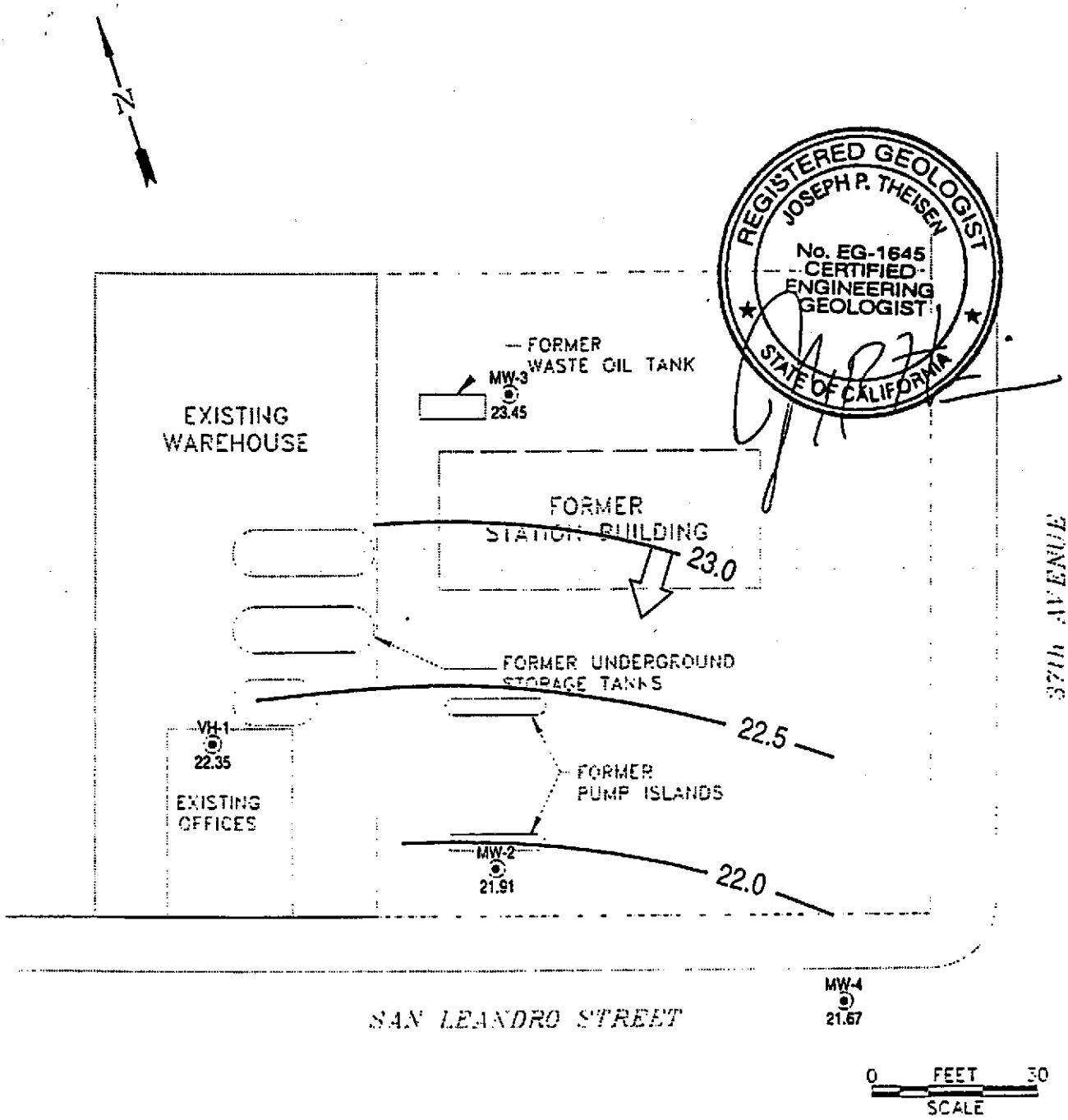
——— - - -	PROPERTY LINE
◉	MONITORING WELL
0.00	POTENTIOMETRIC SURFACE ELEVATION (FT)
⌒	POTENTIOMETRIC SURFACE CONTOUR
⇐	GROUNDWATER FLOW DIRECTION AND GRADIENT

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

Base map from Groundwater Technology, Inc.

CAMBRIA Environmental Technology, Inc.	Chevron Station 9-4612 3616 San Leandro Street Oakland, California \CHEVRON\9-4612\4612-QM.DWG	Ground Water Elevation April 30, 1996	FIGURE 1



LEGEND

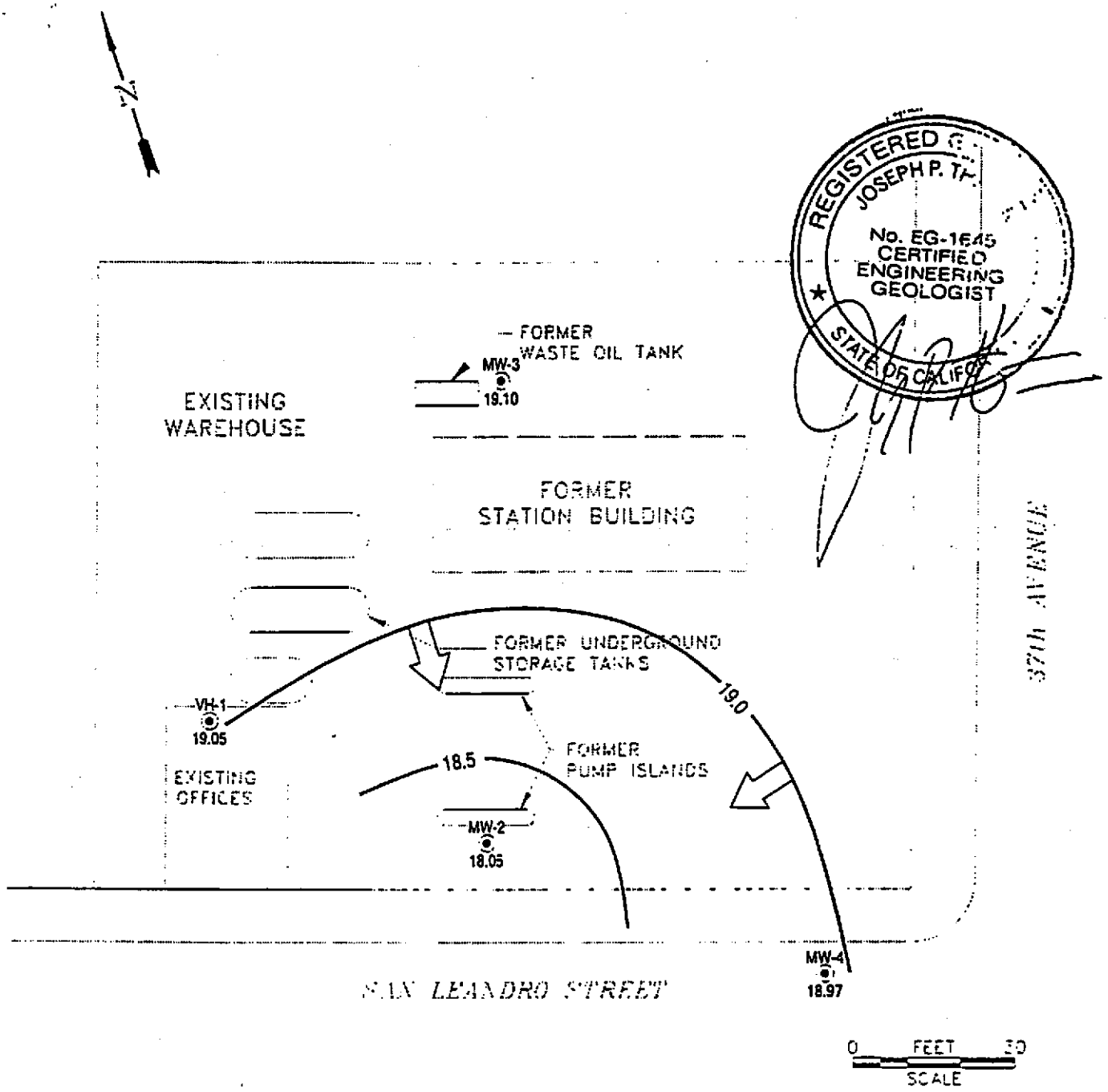
——— - - -	PROPERTY LINE
◉	MONITORING WELL
22.00	POTENTIOMETRIC SURFACE ELEVATION (FT)
⌒	POTENTIOMETRIC SURFACE CONTOUR
⇐	GROUNDWATER FLOW DIRECTION

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

Base map from Groundwater Technology, Inc.

CAMBRIA Environmental Technology, Inc.	Chevron Station 9-4612 3616 San Leandro Street Oakland, California \CHEVRON\9-4612\4612-QM.DWG	Ground Water Elevation Janruary 31,1996	FIGURE 1



LEGEND

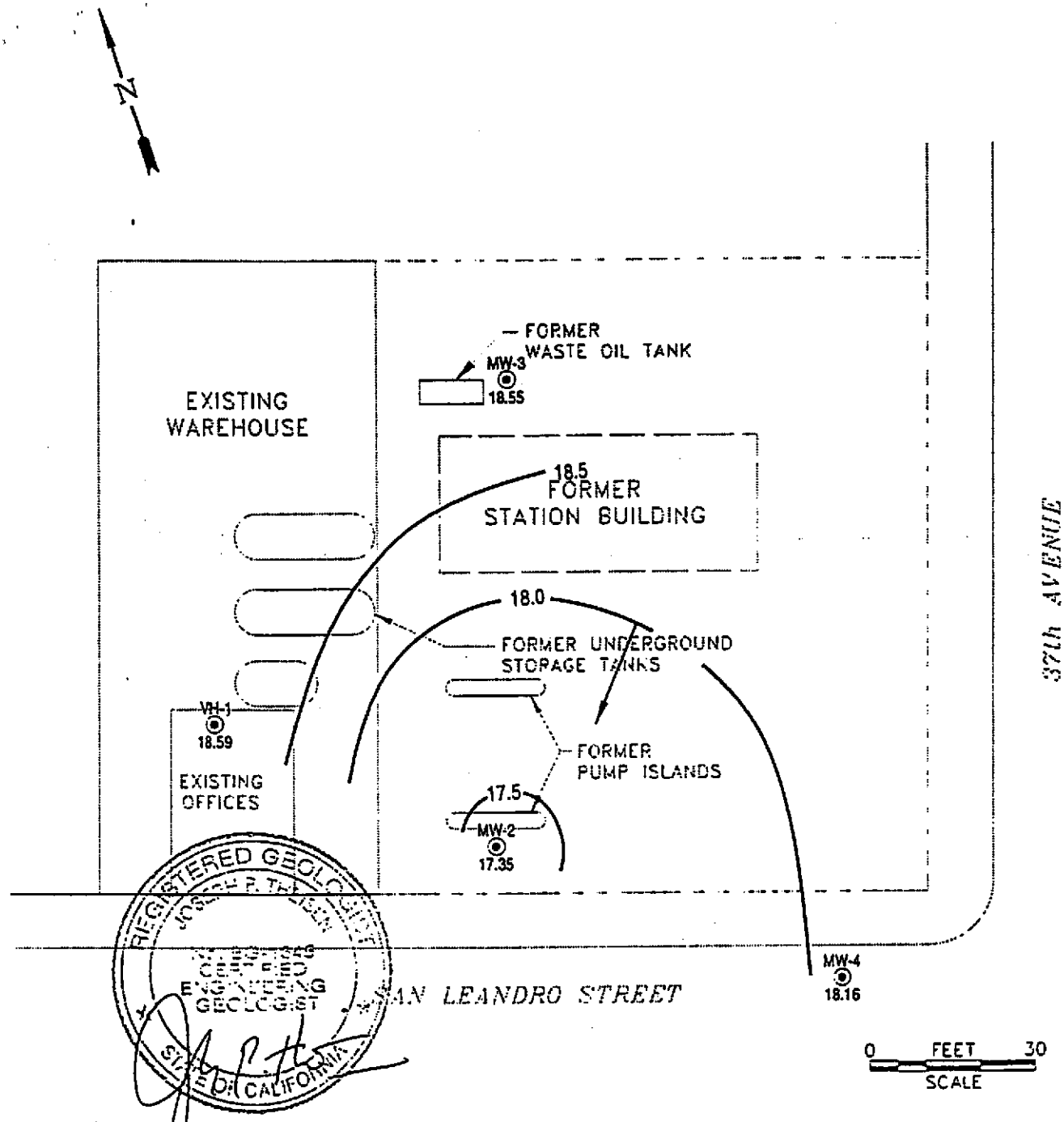
——— - - -	PROPERTY LINE
◉	MONITORING WELL
22.00	POTENTIOMETRIC SURFACE ELEVATION (FT)
	POTENTIOMETRIC SURFACE CONTOUR
	GROUNDWATER FLOW DIRECTION

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

Base map from Groundwater Technology, Inc.

CAMBRIA Environmental Technology, Inc.	Chevron Station 9-4612 3616 San Leandro Street Oakland, California \CHEVRON\9-4612\4612-QM.DWG	Ground Water Elevation December 19, 1995	FIGURE 1



LEGEND

- PROPERTY LINE
- MONITORING WELL
- 22.00 POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION AND GRADIENT

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

Base map from Groundwater Technology, Inc.

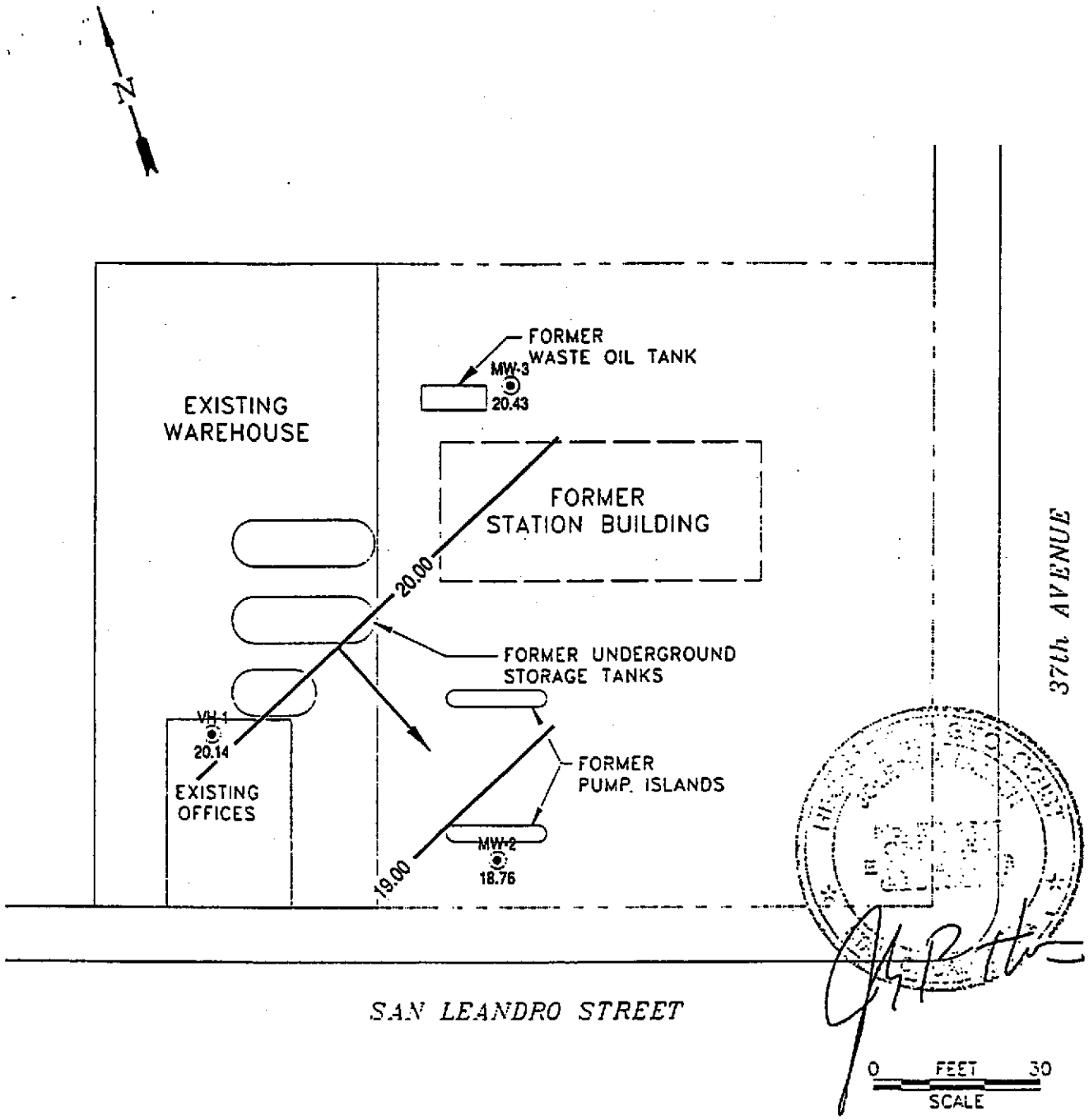
CAMBRIA
Environmental Technology, Inc.

Chevron Station 9-4612
3616 San Leandro Street
Oakland, California

\CHEVRON\9-4612\4612-GM.DWG

Ground Water Elevation
August 22, 1995

FIGURE
1



LEGEND

- PROPERTY LINE
- MONITORING WELL
- 22.00 POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION AND GRADIENT

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

Base map from Groundwater Technology, Inc.

CAMBRIA
Environmental Technology, Inc.

Chevron Station 9-4612
3616 San Leandro Street
Oakland, California

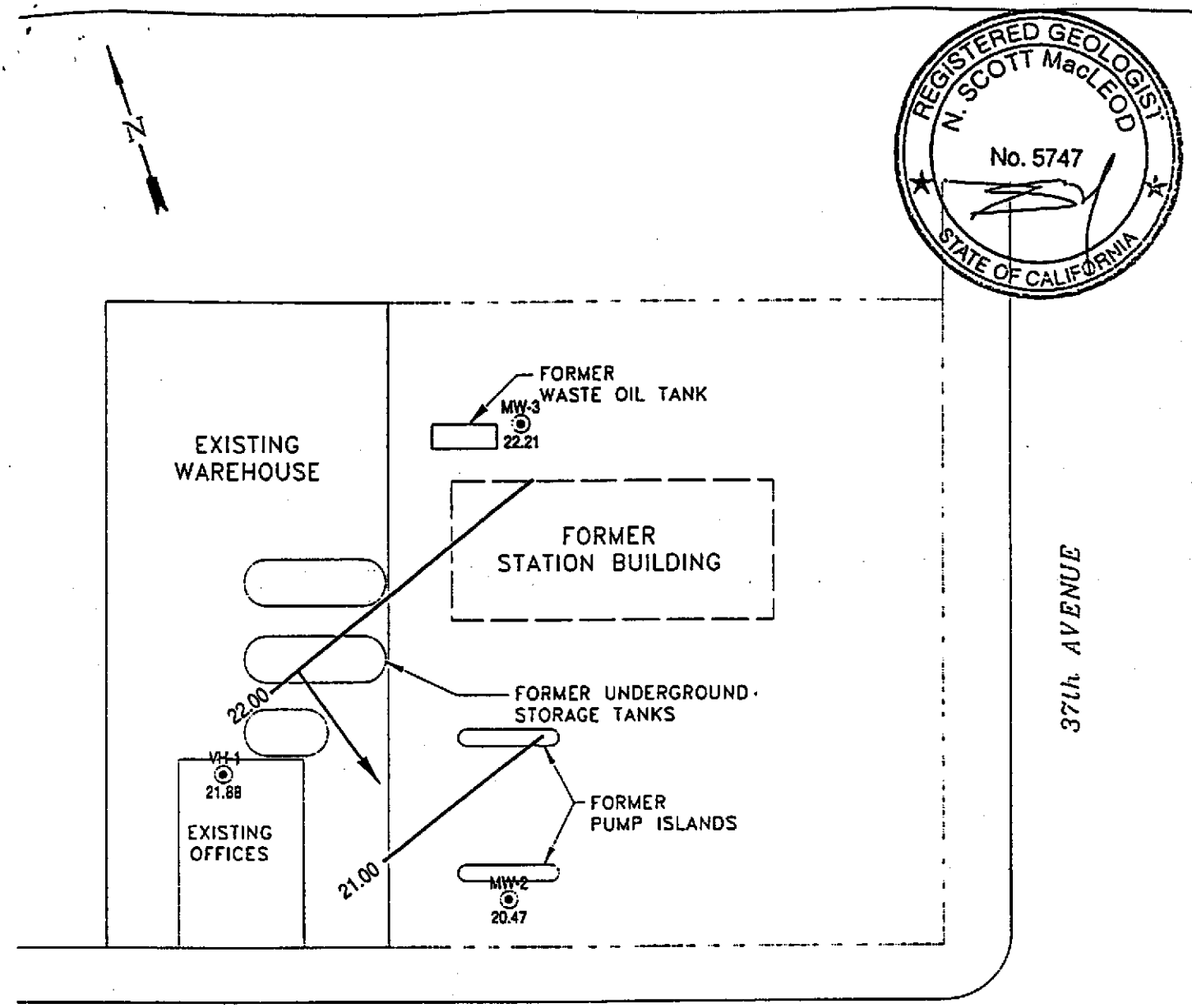
\CHEVRON\9-4612\4612-GM.DWG

Ground Water Elevation

May 12, 1995

FIGURE

1



LEGEND

- PROPERTY LINE
- MONITORING WELL
- 22.00 POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION AND GRADIENT

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

Base map from Groundwater Technology, Inc.

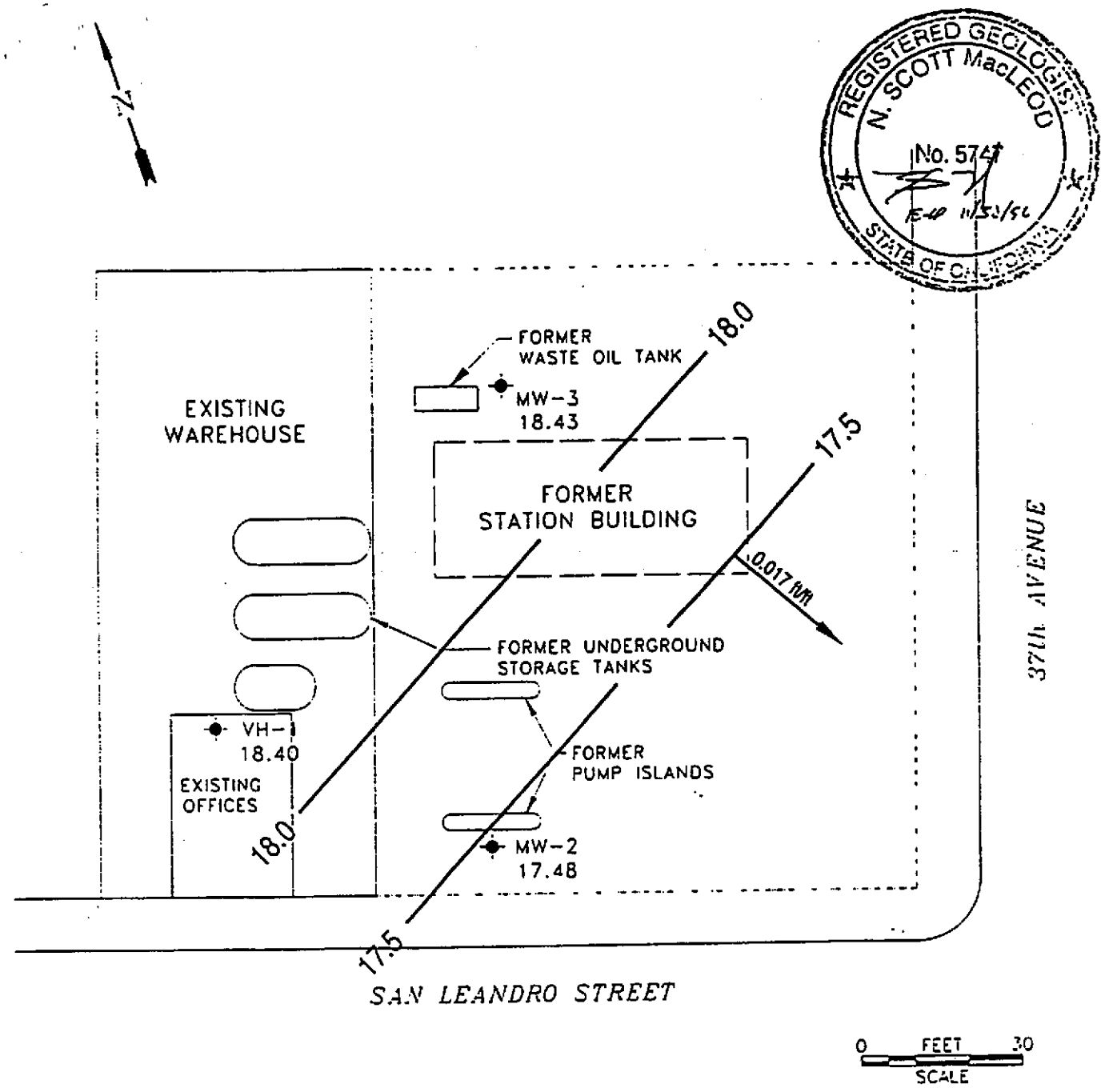
CAMBRIA
Environmental Technology, Inc.

Chevron Station 9-4612
3616 San Leandro Street
Oakland, California

\CHEVRON\9-4612\4612-GM.DWG

Ground Water Elevation
February 1, 1995

FIGURE
1



LEGEND

- PROPERTY LINE
- MONITORING WELL
- X.XX POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION AND GRADIENT

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

Base map from Groundwater Technology, Inc.

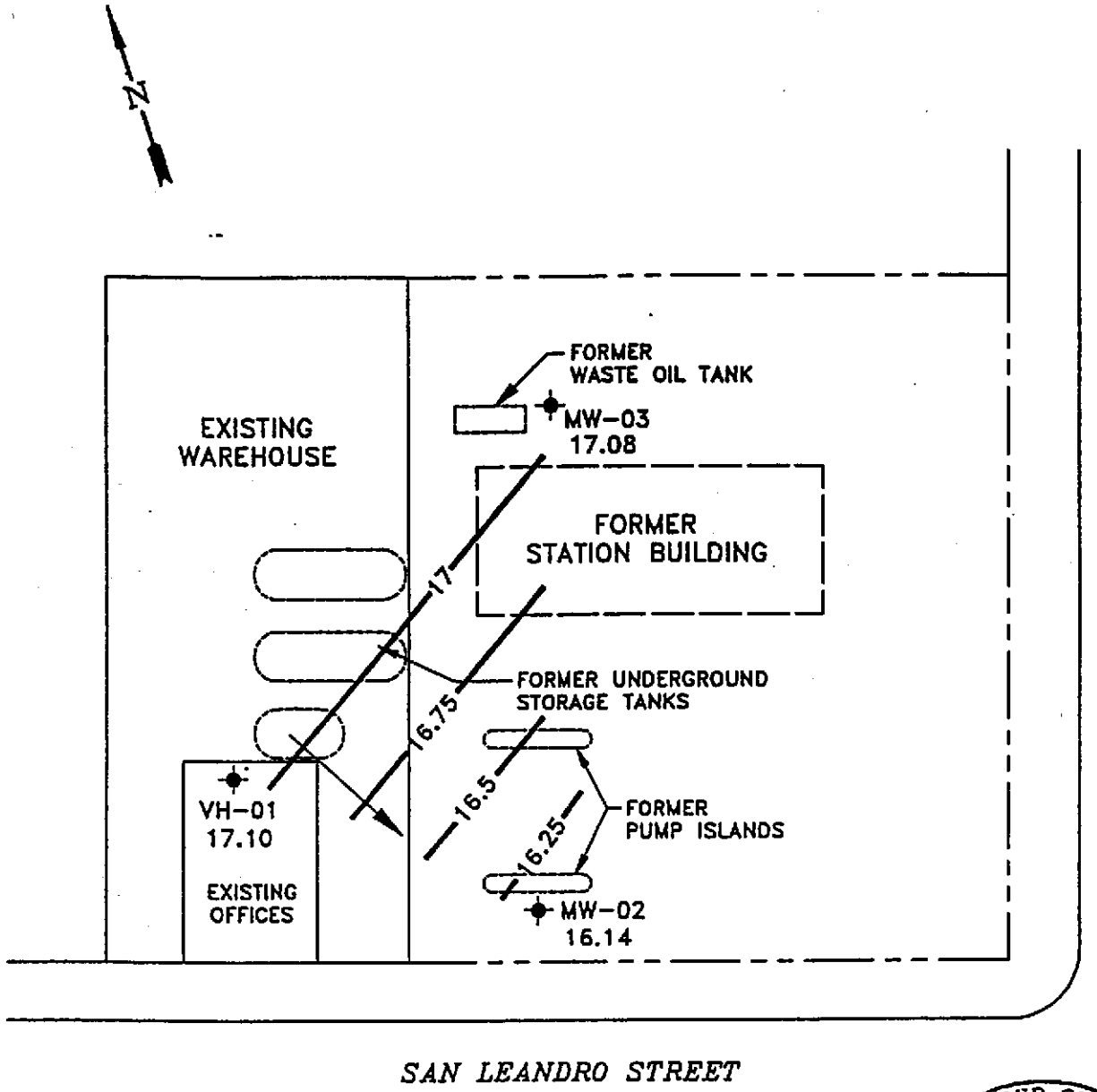
CAMBRIA
Environmental Technology, Inc.

Chevron Station 9-4612
3616 San Leandro Street
Oakland, California

I:\CHEVRON\9-4612\4612-GM(4Q94).DWG

Ground Water Elevation
November 14, 1994

FIGURE
1



LEGEND

- PROPERTY LINE
- MONITORING WELL
- X.XX — POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

REGISTERED GEOLOGIST
EDVARDAS (ED) K. SIMONIS
No. 4422
STATE OF CALIFORNIA

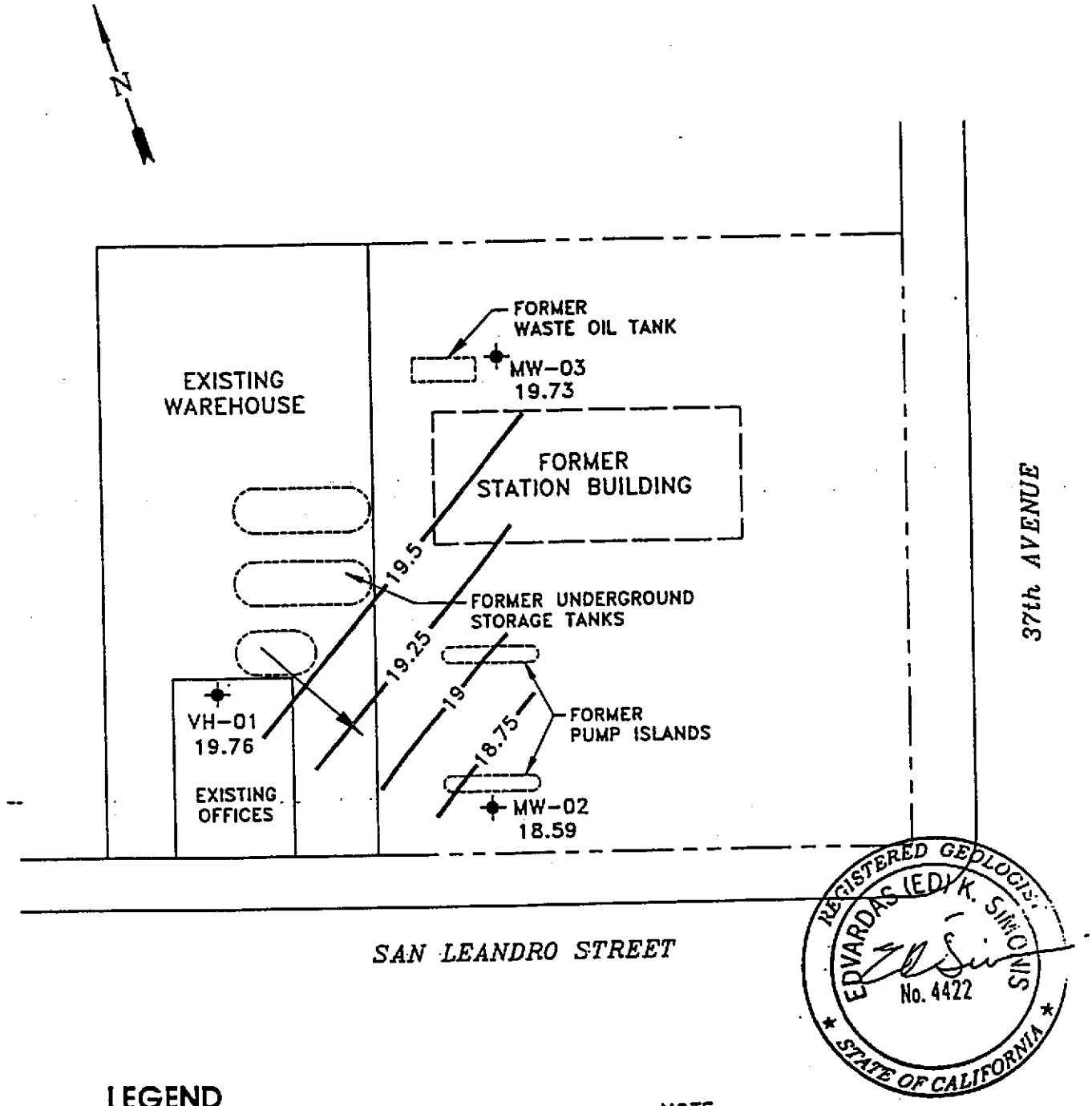
NOTE:
1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

GROUNDWATER TECHNOLOGY

0 FEET 30
SCALE

POTENTIOMETRIC SURFACE MAP (8/26/94)

CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-4612	FILE: 4099PSM, (1:30)	PROJECT NO.: 02010-4099	PM	PE/RG	
LOCATION: 3616 SAN LEANDRO STREET OAKLAND, CALIFORNIA	REV.			FIGURE: 1	
	DES. SS	DET. SS	DATE: 8/30/94		



REGISTERED GEOLOGIST
EDVARDAS (EDY) K. SIMONS
No. 4422
STATE OF CALIFORNIA

LEGEND

- PROPERTY LINE
- MONITORING WELL
- X.XX — POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

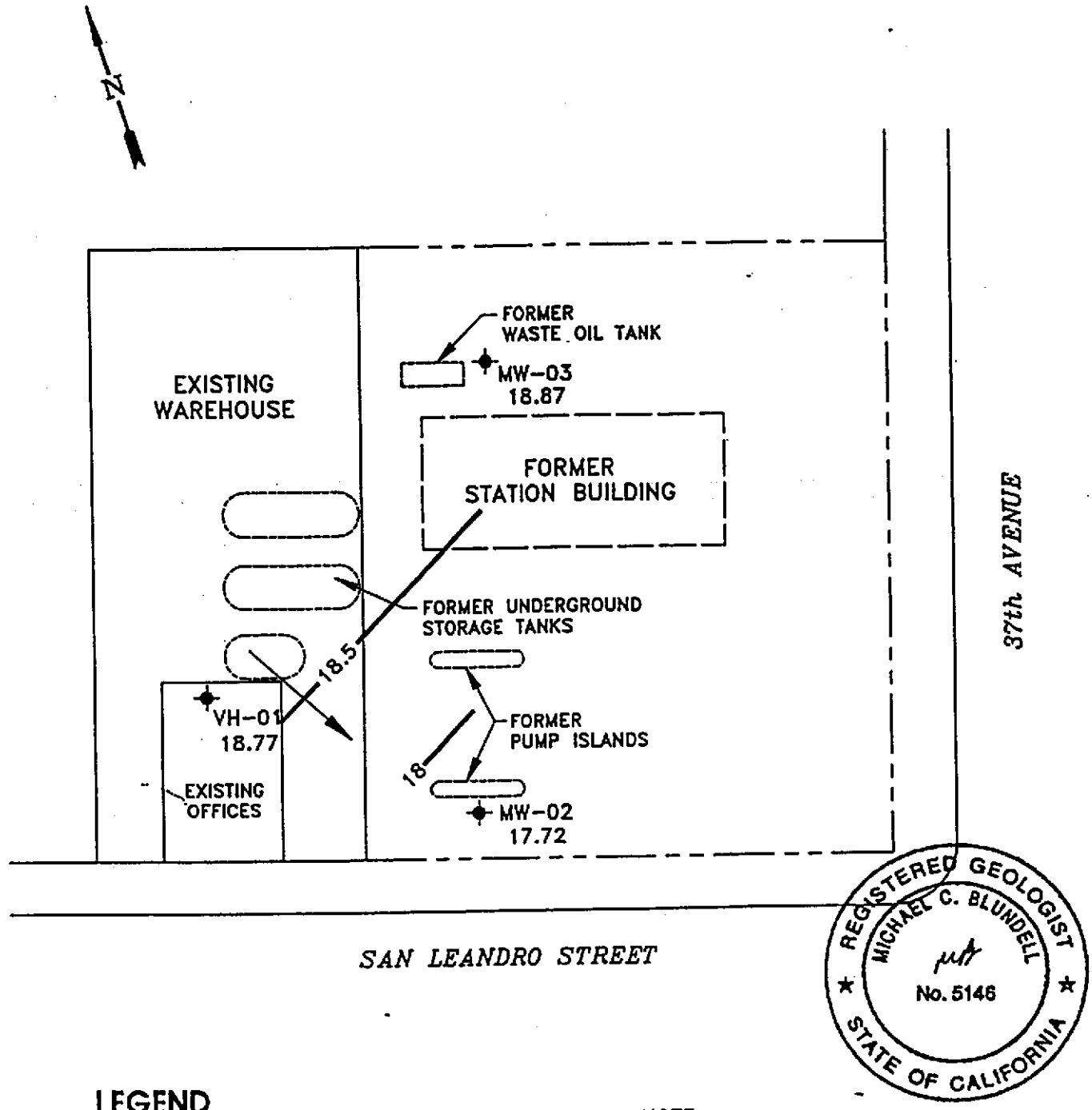
NOTE:
1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

GROUNDWATER TECHNOLOGY

0 FEET 30
SCALE

POTENTIOMETRIC SURFACE MAP (5/12/94)

CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-4612	FILE: 4099PSM, (1:30)	PROJECT NO.: 02010-4099	PM: AW	PE/RG: EJS
	REV.			FIGURE: 1
LOCATION: 3616 SAN LEANDRO STREET OAKLAND, CALIFORNIA	DES.: TW	DET.: SS	DATE: 5/19/94	



REGISTERED GEOLOGIST
MICHAEL C. BLUNDELL
No. 5146
STATE OF CALIFORNIA

LEGEND

- PROPERTY LINE
- MONITORING WELL
- X.XX — POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

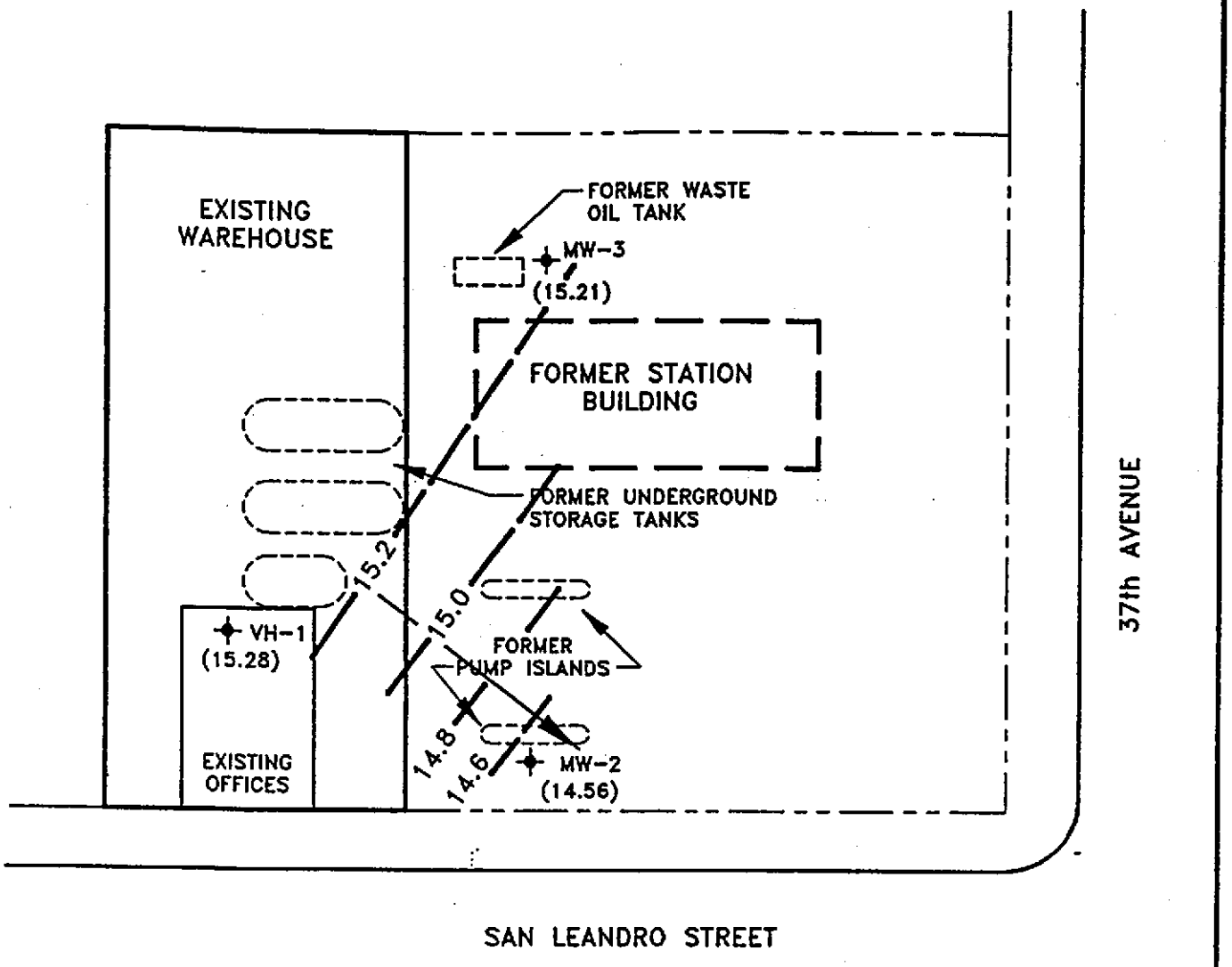
NOTE:
1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

GROUNDWATER TECHNOLOGY

0 FEET 30
SCALE

POTENTIOMETRIC SURFACE MAP (2/10/94)

CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-4612	FILE: 4099PSM, (1:30)	PROJECT NO.: 02010-4099	PM	PE/RG
LOCATION: 3616 SAN LEANDRO STREET OAKLAND, CALIFORNIA	REV.			FIGURE: 1
	DES. TW	DET. SS	DATE: 3/18/94	



N

LEGEND

- MONITORING WELL
- ( ) POTENTIOMETRIC SURFACE ELEVATION (FEET ABOVE MSL)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

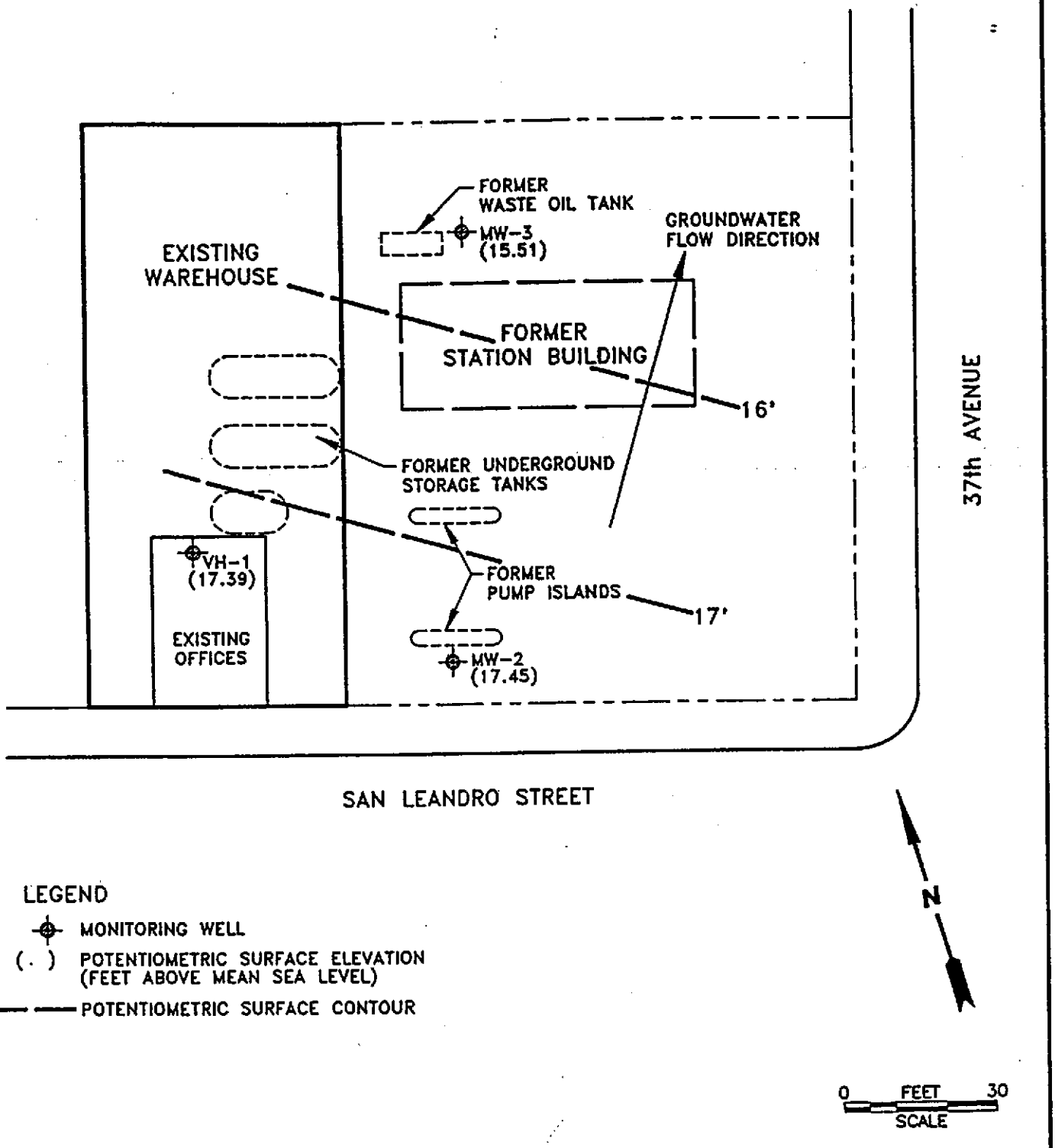
0 FEET 30
SCALE

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

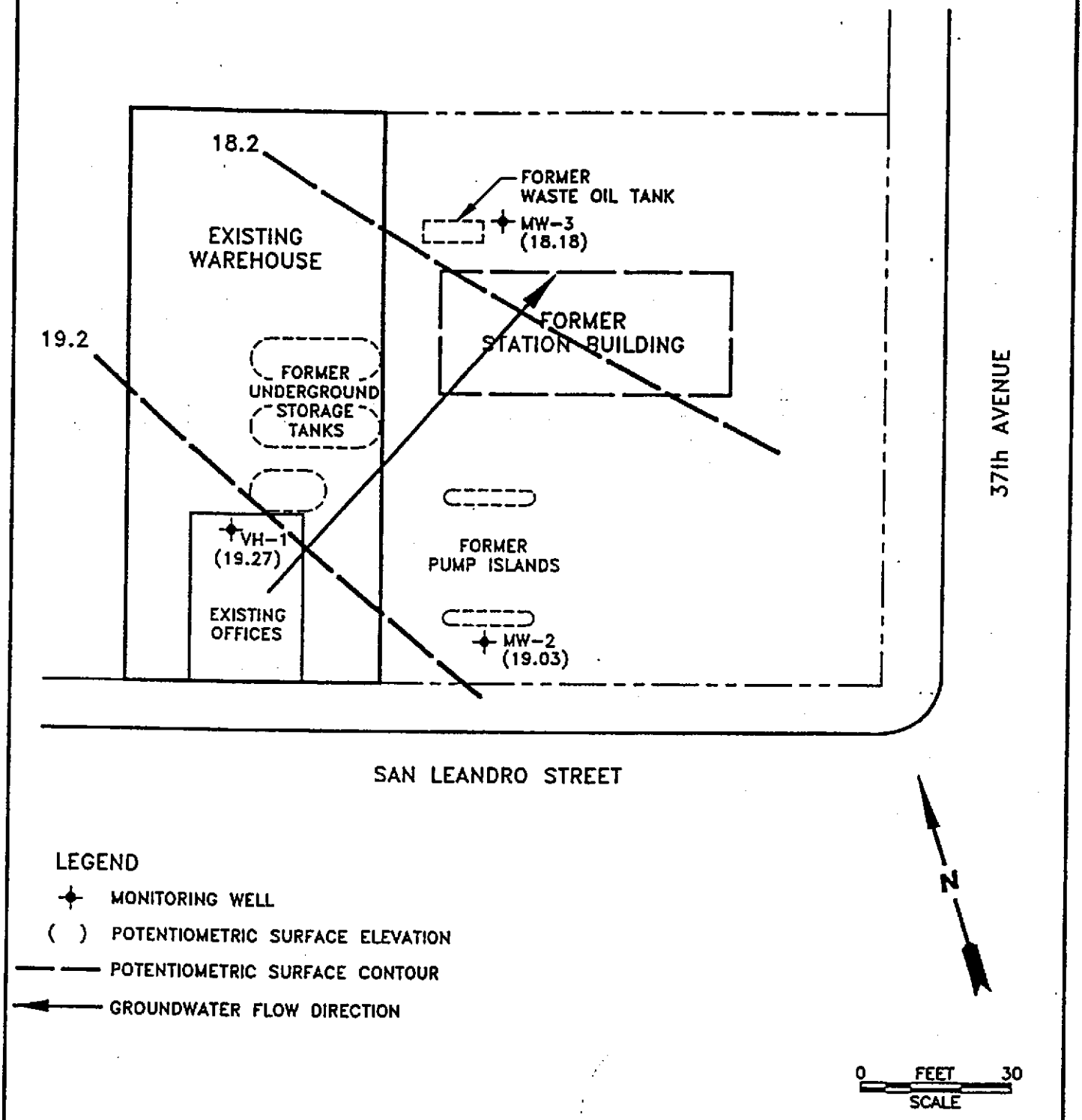
POTENTIOMETRIC SURFACE MAP (11/3/93)

CLIENT:	LOCATION:	REV. NO.:	DATE:
CHEVRON U.S.A. PRODUCTS CO SERVICE STATION NO. 9-4612	3616 SAN LEANDRO AVENUE SAN LEANDRO, CALIFORNIA	0	12/9/93

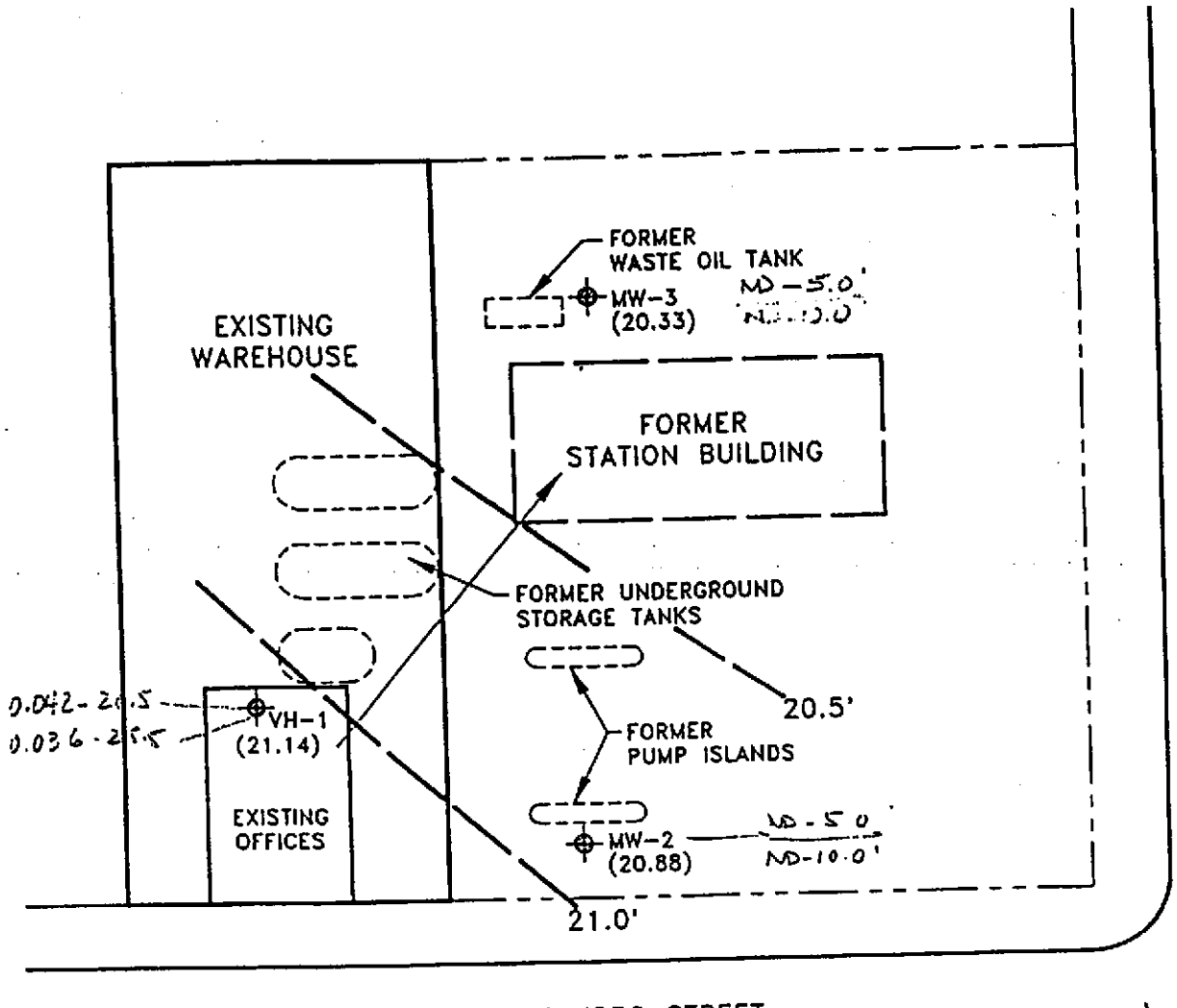
PM	PE/RG	DESIGNED	DETAILED	ACAD FILE:	PROJECT NO.:	FIGURE:
JHS	MB	TW	CY	SPD93	20202892	1



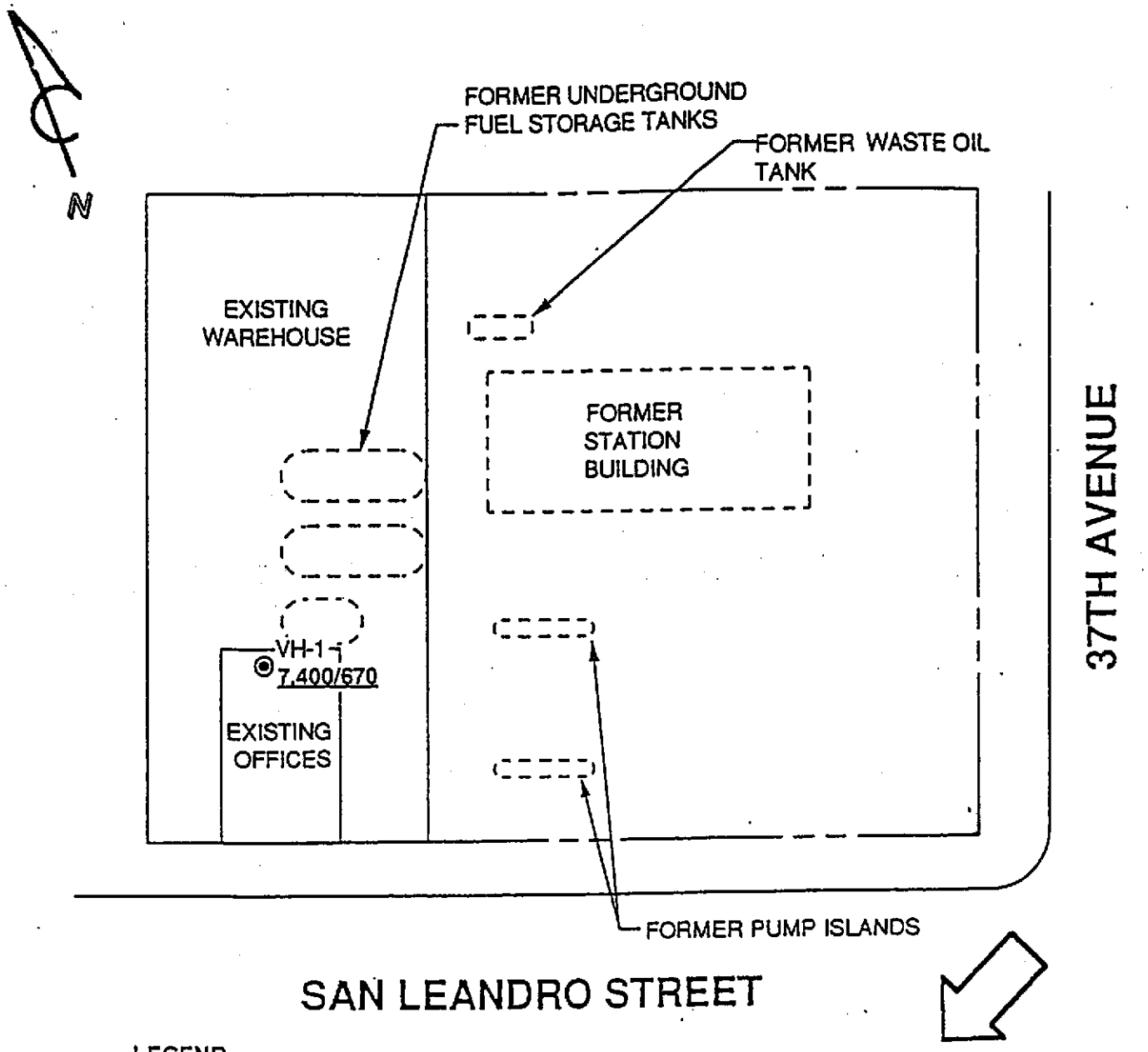
GROUNDWATER TECHNOLOGY 4057 PORT CHICAGO HWY. CONCORD, CA 94520 (510) 671-2387				POTENTIOMETRIC SURFACE MAP (8/18/93)		
CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-4612				LOCATION: 3616 SAN LEANDRO STREET OAKLAND, CALIFORNIA	REV. NO.: 0	DATE: 9/17/93
PM: JHW	PE/RG: DRK	DESIGNED: TW	DETAILED: ML	ACAD FILE: PSM81893/SP493	PROJECT NO.: 020204116	FIGURE: 1



GROUNDWATER TECHNOLOGY 4057 PORT CHICAGO HWY. CONCORD, CA 94520 (510) 671-2387				POTENTIOMETRIC SURFACE MAP (5/27/93)		
CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-4612				LOCATION: 3616 SAN LEANDRO STREET OAKLAND, CALIFORNIA	REV. NO.: 0	DATE: 7/13/93
PM	PE/RG DRK	DESIGNED TW	DETAILED CY	ACAD FILE: PSM793/SP493	PROJECT NO.: 020202892	FIGURE: 1



GROUNDWATER TECHNOLOGY 4057 PORT CHICAGO HWY. CONCORD, CA 94520 (510) 671-2387	POTENTIOMETRIC SURFACE MAP (3/26/93)		
CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-4612	LOCATION: 3616 SAN LEANDRO STREET OAKLAND, CALIFORNIA	REV. NO.: 0	DATE: 4/8/93
PM: IAW / PE/RG: DRK / DESIGNED: TW / DETAILED: ML	ACAD FILE: PSM32693/SP493	PROJECT NO.: 020202892	FIGURE: 7



ESTIMATED DIRECTION OF GROUNDWATER FLOW

LEGEND

VH-1 ⊙ GROUNDWATER MONITORING WELL DESIGNATION AND APPROXIMATE LOCATION

7,400/670 DISSOLVED GASOLINE/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 4-20-92

SCALE

0 30 60 FEET

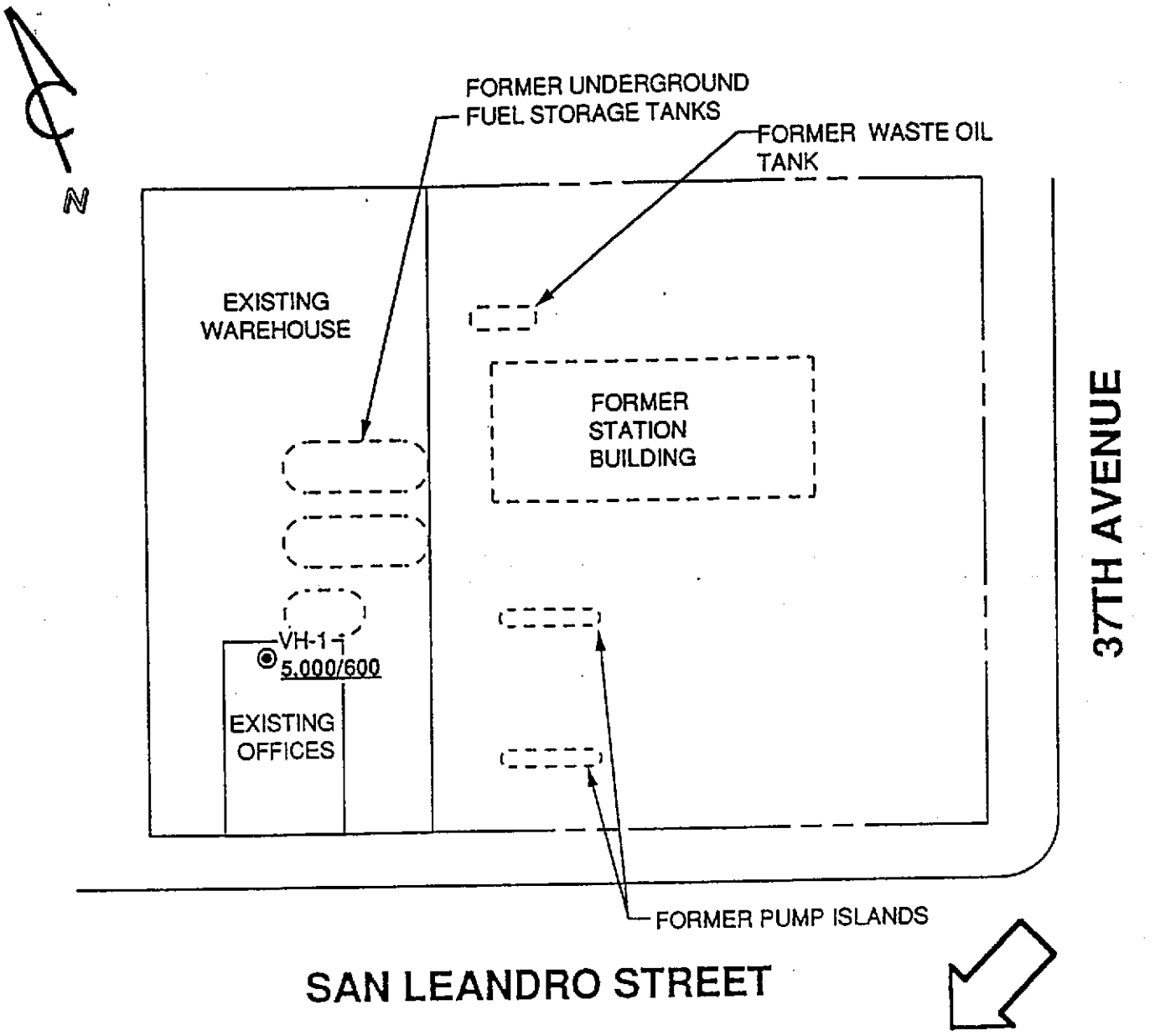
PACIFIC ENVIRONMENTAL GROUP, INC.

FORMER CHEVRON SERVICE STATION #0290
3616 San Leandro Street
Oakland, California

DISSOLVED GASOLINE/BENZENE CONCENTRATION MAP

FIGURE: 1

PROJECT: 325-15.01



ESTIMATED DIRECTION OF GROUNDWATER FLOW

LEGEND

VH-1 ◉ GROUNDWATER MONITORING WELL DESIGNATION AND APPROXIMATE LOCATION

5,000/600 DISSOLVED GASOLINE/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 1-8-92

SCALE

0 30 60 FEET

PACIFIC ENVIRONMENTAL GROUP, INC.	FORMER CHEVRON SERVICE STATION #0290 3616 San Leandro Street Oakland, California	FIGURE: 2
	DISSOLVED GASOLINE/BENZENE CONCENTRATION MAP	PROJECT: 325-15.01

CP = Cathodic Protection M = Monitoring
O = Oakland I = Irrigation
NG = Not given N = Industrial

020202892 03052
Post #1265

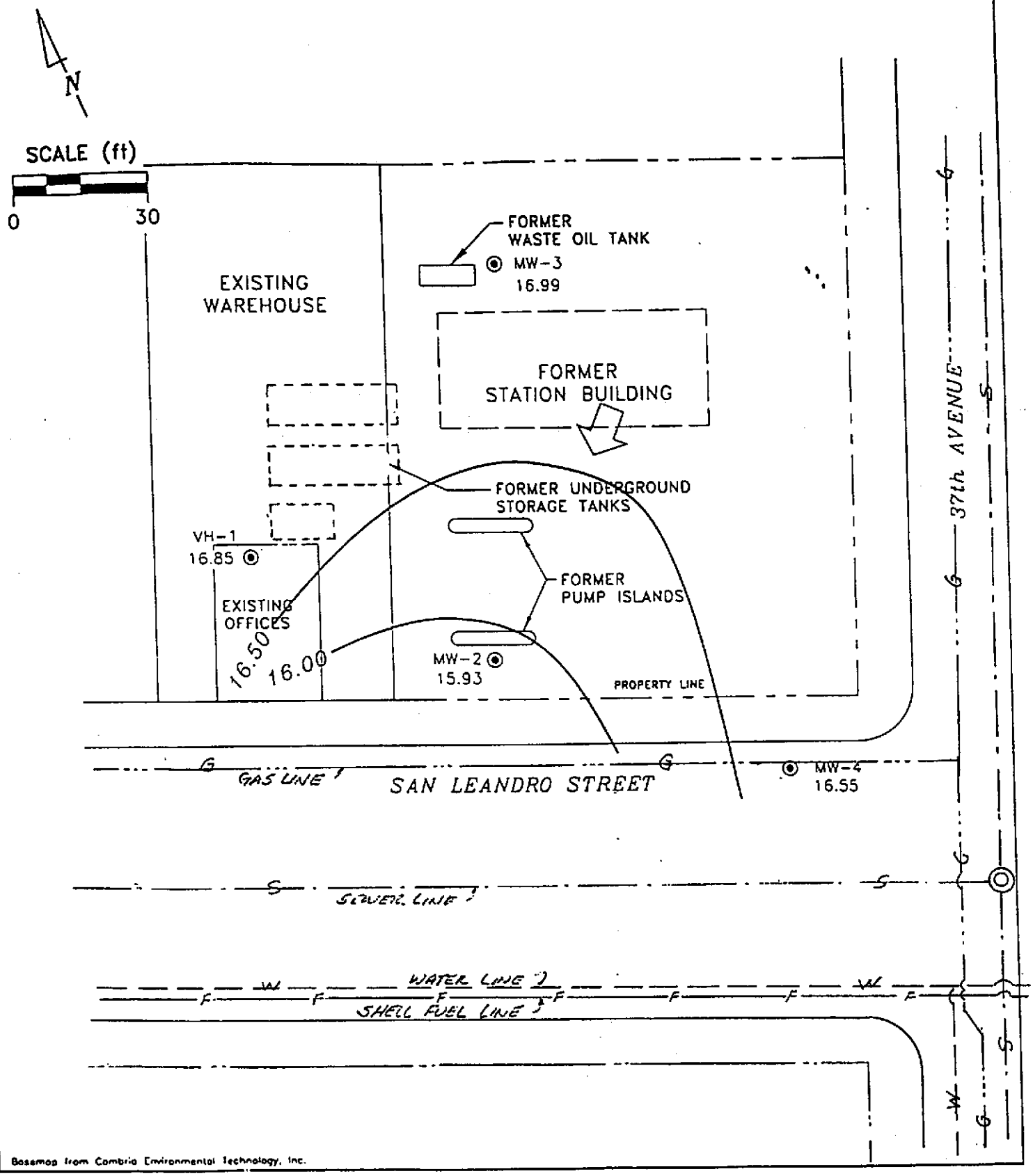
Inventory of Wells Located in Township 2S Range 3W Section 5, County Alameda

Owner	Owner's Address	Well Location	Year Drilled	Use
PG+E	4801 Oakport, Oakland	18th S/o 34th St.	76	CP
		Section 6		
There are no wells logged for subsection R				
		Section 7		
Coca Cola	3001 Chapman, O.	Subsection H	NG	NG
State Shingle	880 Fruitvale, O.	Same (3 wells)	90	other
U.S. Army Corps of Engineers	650 Capitol Mall, Sacramento	Fruitvale	87	Destroyed
Wickland Oil	1765 Challenge, Sacto	1725 Park St. (3 wells)	88	M
		Section 8		
Trust for Public Land	82 2nd St. SF	1601 39th St.	77	I
PG+E	4801 Oakport, O.	39th + Foothill	75	CP
"	"	37th N/o E. 12	73	CP
Vernon McTraith	1990 N. CA. Blvd. Walnut Creek	Bart Fruitvale Station	88	M
I.E.S.	499 High, O.	Same	87	Destroyed
Aloe Oil	PO Box 484, Anaheim	3750 E. 14th	90	M
I.E.S.	499 High, O.	Same	88	N
Mobil Oil	3880 W. Tamarack, Burbank	4280 Foothill (6 wells)	89	Test
Chevron	PO Box 5004, San Ramon	4265 Foothill (2 wells)	90	M
Unocal Corp.	2000 Crow Cyn Pl. (?) #400, San Ramon	4251 E 14th	90	M
Peterson Prop.	1939 Harrison #605, O.	1066 47th (3 wells)	89	Test

3616 San Leandro

Inventory of Wells Located in Township 2S Range 3W Section 8, County Alameda

Owner	Owner's Address	Well Location	Year Drilled	Use
Clorox	PO Box 493, Pleasanton	860 42nd (13 wells)	82	Ind
Exxon	1646 N. CA., Walnut Cr.	High St. 7 wells + 1 destroyed	87	M
Exxon	PO Box 4415, Houston, TX	720 High (15 wells)	88-90	M
Information is only as accurate as RWR's current files - 2/11/93				



Basemap from Cambria Environmental Technology, Inc.

PREPARED BY RRM engineering contracting firm	Chevron Station 9-4612 3616 San Leandro Street Oakland, California GROUNDWATER ELEVATION CONTOUR MAP, NOVEMBER 3, 1997	FIGURE: 1 PROJECT: DAC04

TABLE 1: SOIL VAPOR CHEMICAL ANALYTICAL DATA
Former Chevron Service Station #9-4612
3516 San Leandro Street
Oakland, California

Sample ID	Date Collected	Freon 12 µg/l ppbv	Methylene Chloride µg/l ppbv	Benzene µg/l ppbv	Tri-Chloroethene µg/l ppbv	Toluene µg/l ppbv	Total Xylenes µg/l ppbv	Styrene µg/l ppbv	1,2,4-Tri-methylbenzene µg/l ppbv	Acetone µg/l ppbv	2-propanol µg/l ppbv	Ethanol µg/l ppbv	Chloro-methane µg/l ppbv
VB-1[1]	2/16/99	0.022 4.3	0.002 0.68[2]	0.009 2.7[2]	0.004 0.67[2]	0.2 5.2	0.015 3.32[2]	0.005 1.2[2]	0.004 0.79[2]	0.215 89	0.924 370[3]	0.033 17	<0.001 <0.67
VB-2[1]	2/16/99	0.024 4.8	<0.003 <0.76	0.006 1.7[2]	<0.004 <0.76	0.022 5.8	0.008 1.8[2]	<0.003 <0.76	<0.004 <0.76	0.029 12	0.095 38	0.036 19	0.002 1.1[2]

	Freon 12 ppm	Methylene Chloride ppm	Benzene ppm	Tri-Chloroethene ppm	Toluene ppm	Total Xylenes ppm	Styrene ppm	1,2,4-Tri-methylbenzene ppm	Acetone ppm	2-propanol ppm	Ethanol ppm	Chloro-methane ppm
PEL	1,000	500	0.1	25	100	100	50	NA	250	200	NA	50

Explanation:
µg/l = micrograms/liter
ppbv = parts per billion by volume
µg/l = ppbv*molecular weight/24055
PELs = Permissable Exposure Limit
ppm = parts per million
NA = not available

[1] All other compounds listed in Laboratory report were less than their respective reporting limit.

[2] Estimated value.

[3] Exceeds instrument calibration range.

Analytical Laboratory
Air Toxics LTD. (ELAP #1149)

Analytical Methods
TO-14 = EPA Method TO-14

DRILL RIG Continuous Flight Auger	SURFACE ELEVATION 30 feet	LOGGED BY KS
DEPTH TO GROUNDWATER 14 feet ATOD	BORING DIAMETER 6 inches	DATE DRILLED 2/10/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY PCF	% COMPACTION
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, homogeneous, less than 2% of sample is comprised of charred fragments	Dusky yellowish brown			1 2 3 4					
CLAY, silty, charred fragments common Plasticity Data: depth 5'-6" L.L.= 55 P.I.= 37	Light olive gray	STIFF	CH	5 6	X	15*	15 15	111 108	
CLAY, sandy, mottled, increasing number of clasts with depth, transition zone	Dark yellowish brown			7 8 9 10					
CONGLOMERATE, 20-30% of matrix is very coarse grain, subangular to rounded fragments of quartzite, chert and greenstone. < 5% of sample is comprised of ½-1½" dia. angular quartzite.		VERY STIFF		11 12 13 14	X	19*	12 ATOD	108	
CLAY, silty, fine sand with occasional clast, homogeneous.	Moderate yellowish brown	FIRM		15 16 17 18 19	X	5*	27	104	
strong gasoline odor		STIFF		20	X	8*	23	100	

ROGERS/PACIFIC

EXPLORATORY BORING LOG

Lot 18 & 19 San Leandro Street
Oakland, Calif.

PROJECT NO	DATE	BORING

DRILL RIG Continuous Flight Auger	SURFACE ELEVATION	LOGGED BY KS
DEPTH TO GROUNDWATER 14 feet ATOD	BORING DIAMETER 6 inches	DATE DRILLED 2/10/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY PCF	% COMPACTION
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, sandy, silty, occasionally	Moderate yellowish brown			21	⊠	8*	23	100	
Bottom of borring 21.5 feet				22					
				23					
				24					
				25					
				26					
				27					
				28					
				29					
				30					
				31					
				32					
				33					
				34					
				35					
				36					
				37					
				38					
				39					
				40					

ROGERS/PACIFIC
PROFESSIONAL ENGINEERING CONSULTANTS

EXPLORATORY BORING LOG

Lots 18 & 19 San Leandro Street
Oakland, Calif.

PROJECT NO	DATE	BORING B-1 (cont

DRILL RIG Continuous flight Auger	SURFACE ELEVATION 30 feet	LOGGED BY KS
DEPTH TO GROUNDWATER 14 feet ATOD	BORING DIAMETER 6 inches	DATE DRILLED 2/10/88

DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE	DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY PCF	% COMPACTION
SAND, angular gravels, increases clay content with depth, fill material sieve data: % passing #200: 21%	Dark yellowish brown		SC	1–10			9		
CLAY, silty, occasional angular clasts, 20-30% of sample is comprised of subangular to rounded pebble size clasts composed of quartzite sandstone and weathered feldspars	Dark yellowish brown	STIFF		11–14	⊠	10*	11 21	109	
transition into conglomerate population of clasts, clast size, consistency, and roundness increases with depth		VERY STIFF		15–19	⊠	20*	15 31	110	
very strong gasoline odor				20					

ROGERS/PACIFIC

EXPLORATORY BORING LOG

Lot 18 & 19 San Leandro Street
Oakland, Calif.

PROJECT NO	DATE	BORING

DRILL RIG Continuous Flight Auger	SURFACE ELEVATION	LOGGED BY KS
DEPTH TO GROUNDWATER 14 feet ATOD	BORING DIAMETER 6 inches	DATE DRILLED 2/10/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT %	DRY DENSITY PCF	% COMPACTION
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CONGLOMERATE, approximately 85% of sample is comprised of greater than 1/8" rounded clasts, composed of chert, quartzite, and greenstone	Moderate yellowish brown	VERY STIFF		26	⊠	20*	13	114	
Bottom of borring 26.5 feet									

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

ROGERS/PACIFIC
PROFESSIONAL ENGINEERING CONSULTANTS

EXPLORATORY BORING LOG

Lots 18 & 19 San Leandro Street
Oakland, Calif.

PROJECT NO	DATE	BORING

DRILL RIG Continuous Flight Auger	SURFACE ELEVATION 30 Feet	LOGGED BY KS
DEPTH TO GROUNDWATER 9 feet	BORING DIAMETER 6 inches	DATE DRILLED 2/10/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY PCF	% COMPACTION
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, very plastic, minor abundance of roots	Brownish black	STIFF	CH	1					
				2					
		STIFF	CH	3	X	12*	23	101	84
				4					
				5	X	18*	12	109	
CLAY, silty, sandy	Moderate yellowish brown	VERY STIFF		6					
				7					
				8					
				9			▽		
				10					
CLAY, sandy, abundant course grain size, rounded clasts of quartzite and greenstone. ½-2" dia. clasts of angular greenstone, comprise 20% of a given sample	Moderate yellowish brown	STIFF		11	X	12*	17	113	
				12					
				13					
				14					
CLAY, silty, slightly mottled, occasional charred fragments, homogeneous	Moderate yellowish brown	STIFF		15					
				16	X	10*	22	104	
				17					
				18					
				19			31		
				20					

ROGERS/PACIFIC

PROFESSIONAL ENGINEERING

EXPLORATORY BORING LOG

Lot 18 & 19 San Leandro Street
Oakland, Calif.

PROJECT NO	DATE	BORING B-2

DRILL RIG Continuous Flight Auger	SURFACE ELEVATION 30 feet	LOGGED BY KS
DEPTH TO GROUNDWATER 9 feet ATOD	BORING DIAMETER 6 inches	DATE DRILLED 2/10/88

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	DRY DENSITY PCF	% COM-
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
CLAY, silty, sandy, subangular gravels, strong gasoline odor	Moderate yellowish brown	VERY STIFF		21	☒	24*	17	112	
BOTTOM OF BORRING 21.5 FEET				22					
				23					
				24					
				25					
				26					
				27					
				28					
				29					
				30					
				31					
				32					
				33					
				34					
				35					
				36					
				37					
				38					
				39					
				40					

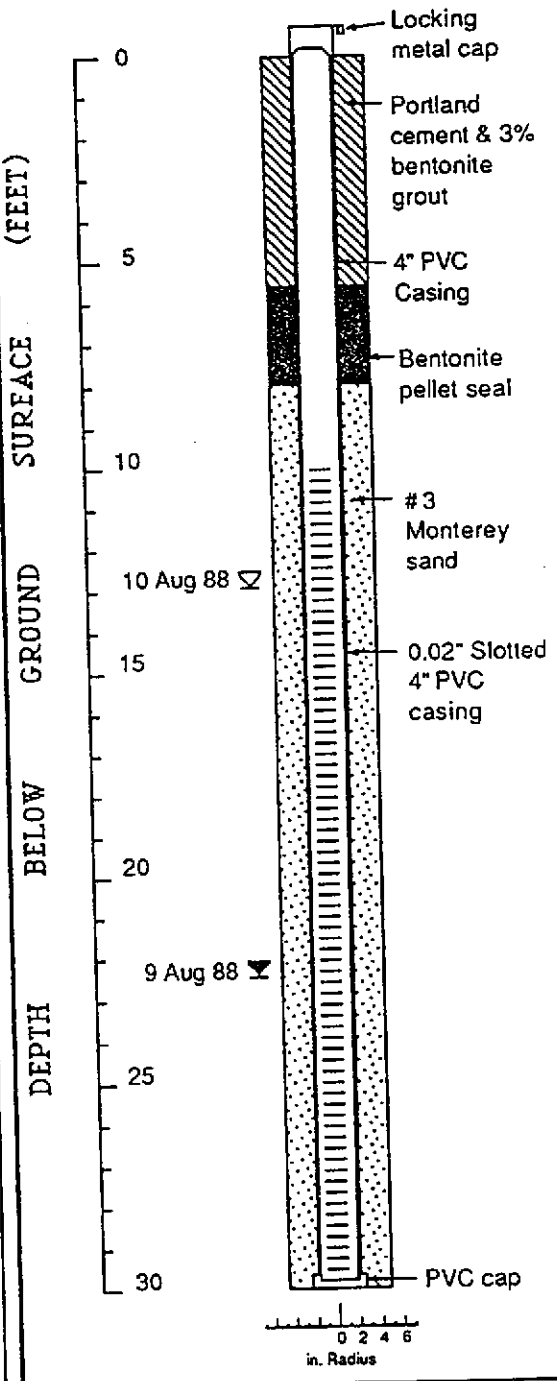
ROGERS/PACIFIC
PROFESSIONAL ENGINEERING CONSULTANTS

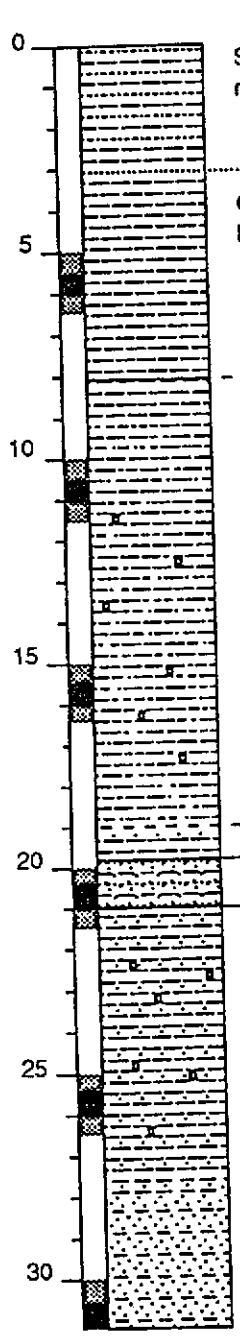
EXPLORATORY BORING LOG

Lots 18 & 19 San Leandro Street
Oakland, Calif.

PROJECT NO	DATE	BORING

WELL VH-1





DESCRIPTION

Silty CLAY (CL); dark brown; stiff; dry to moist; no odor; 20-30% silt; 5-10% fine sand

CLAY (CL); to silty clay; light brown to yellow brown; no odor

TR rounded pebbles; TR sand; no odor

CLAY (CL); to silty clay; medium to dark brown; occasional rounded pebbles

Moist to very moist CLAY (CL); no odor

Very plastic clay; some gravel

Sandy CLAY (CL); moist

Clayey silty SAND (SM)

Gravelly sandy CLAY (CL)

No odor

Sandy CLAY (CL); to clayey SAND (SM); with occasional rounded pebbles; no odor

Increase sand content to 30 ft

Clayey SAND (SM); no odor

EXPLANATION

- Water level during drilling (date)
- Water Level (date)
- Contact (dashed where approx.)
- Gradational Contact
- Location of recovered drive sample
- Location of drive sample collected for chemical analysis

Logged by: Stephen Vonder Haar
Drilling Company: Datum Drilling, Long Beach, CA
Driller: Anthony Randy
Drilling Method: Hollow stem auger
Dates Drilled: 8-9-88
Type of sampler: Split Barrel (2.0" ID)

Boring Log and Well Construction Details - Well VH-1

Chevron Facility #4612
3614 San Leandro St. Oakland, CA

Drilling Log

GROUNDWATER TECHNOLOGY

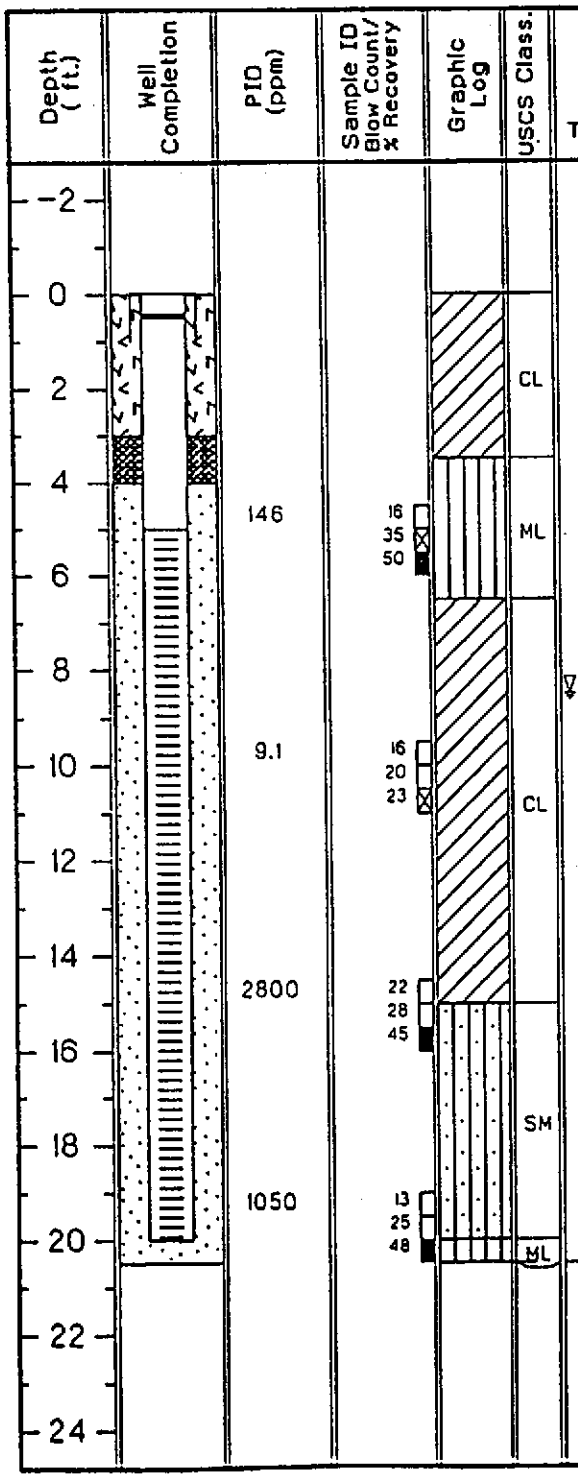
Monitoring Well MW-2

Project Chev/3616 San Leandro Street Owner Chevron U.S.A. Products Co.
Location Oakland, California Project No. 02020 2892 Date drilled 02/01/93
Surface Elev. 28.80 ft. Total Hole Depth 20.5 ft. Diameter 8.5 in.
Top of Casing 28.5 ft. Water Level Initial 8.5 ft. Static 03/26/93 7.62 ft.
Screen: Dia 2 in. Length 15 ft. Type/Size 0.020 in.
Casing: Dia 2 in. Length 5 ft. Type SCH 40 PVC
Filter Pack Material #3 sand Rig/Core Type Mobile B-53/Split Spoon
Drilling Company Kvilhaug Well Drilling Method Hollow Stem Auger Permit # 92366
Driller Rod Furlow Log By S.C. Hurley
Checked By David Kleesattel License No. RG# 5136

See Site Map For Boring Location

COMMENTS:

The well was set at approximately 20.5 feet below grade. the soil cuttings were placed on plastic and was left on site until it 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%

Surface material-grass and soil

Brown silty CLAY

Light brown clayey SILT (10% silt, slightly moist)

Static water level - 3/26/93

Encountered groundwater at 12:30PM 02/01/93

Greenish silty SAND (about 50% sand, about 35% silt, about 15% clay (saturated, strong hydrocarbon odor)

Light brown sandy SILT (10% clay, saturated, slight petroleum hydrocarbon odor)

End of boring at 20.5 feet. Installed groundwater monitoring well.

Drilling Log

GROUNDWATER TECHNOLOGY

Monitoring Well MW-3

Project Chev/3616 San Leandro St. Owner Chevron U.S.A. Products Co.
Location Oakland, California Project No. 02020 2892 Date drilled 02/01/93
Surface Elev. 28.30 ft. Total Hole Depth 20.5 ft. Diameter 8.5 in.
Top of Casing 27.51 ft. Water Level Initial 8.5 ft. Static 03/26/93 7.18 ft.
Screen: Dia 2 in. Length 15 ft. Type/Size 0.020 in.
Casing: Dia 2 in. Length 5 ft. Type SCH 40 PVC
Filter Pack Material #3 sand Rig/Core Type Mobile B-53/Split Spoon
Drilling Company Kvilhaug Well Drilling Method Hollow Stem Auger Permit # 92363
Driller Rod Furlow Log By S.C. Hurley
Checked By David Kleesattel License No. RG# 5136

See Site Map For Boring Location

COMMENTS:

The well wa set at approximately 20.5 feet below grade. The soil cuttingswere placed on plastic and was left on site until it could be analyzed and disposed of properly.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						Surface material- grass and soil
2					CL	Brown silty CLAY (moist)
4						
6		12.3	35 50		ML	Brown clayey SILT (10% fine sand, slightly moist) Static level - 3/26/93
8						*Encountered groundwater at 9:30AM 02/01/93*
10		8.6	38 50		GP	Brown sandy GRAVEL (about 75% gravel, about 20% course sand, about 5% silt, water saturated, no hydrocarbon odor).
12						
14			25 38 45			
16		186			SW	Brown silty SAND (50% coarse sand, 30% fine sand, 20% silt, saturated)
18						
20			22 25 45			No recovery End of boring at 20.5 feet. Installed groundwater monitoring well.
22						
24						

04/12/1993 kthlog-jan93

Drilling Log

GROUNDWATER TECHNOLOGY

Monitoring Well MW-4

Project Chevron - Oakland — Owner Chevron USA Products Company
Location 3616 San Leandro Street, Oakland, CA — Proj. No. 02020 4530
Surface Elev. 27.68 ft. — Total Hole Depth 21.5 ft. — Diameter 8 in.
Top of Casing 27.27 ft. — Water Level Initial 15 ft. — Static 8.76 ft.
Screen: Dia 2 in. — Length 13 ft. — Type/Size Sch 40 PVC/0.020 in.
Casing: Dia 2 in. — Length 7 ft. — Type Sch 40 PVC
Fill Material Neat Cement — Rig/Core CME-55/Modified Split-Spoon
Drill Co. SES, Inc. — Method Hollow Stem Auger/PID
Driller Morris Peterson — Log By Brian McAloon — Date 08/15/95 — Permit # 95503
Checked By Ed Simonis — License No. RG#4422 EHS

See Site Map For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0							8" concrete.
2						CL	Silty CLAY (15,85): brown, dry.
4							Pebbly sandy CLAY (20,30,50): brown, dry, no hydrocarbon odor.
6		0	MW-4 -6.5'	5 8 12		CL/SC	
8							*Static water, 08/15/95, 1400 hrs.*
10		0	MW-4 -11.5'	5 8 10		CL	Pebbly sandy CLAY (10,40,50): brown, dry, no hydrocarbon odor.
12							
14				7 14 17		SC	Pebbly silty clayey SAND (15,25,30,30): brown, moist, no hydrocarbon odor. *Encountered water (driller's call), 08/15/95, 1255 hrs.*
16			MW-4 -16.5'				
18						CL	Silty CLAY (40,60): brown, moist, slight hydrocarbon odor.
20				1 5 6		CL	Pebbly sandy silty CLAY (10,20,20,50): brown with orange and grey mottling, moist, hydrocarbon odor.
22			MW-4 -21.5'				End of boring. Installed groundwater monitoring well.
24							

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring SB-1

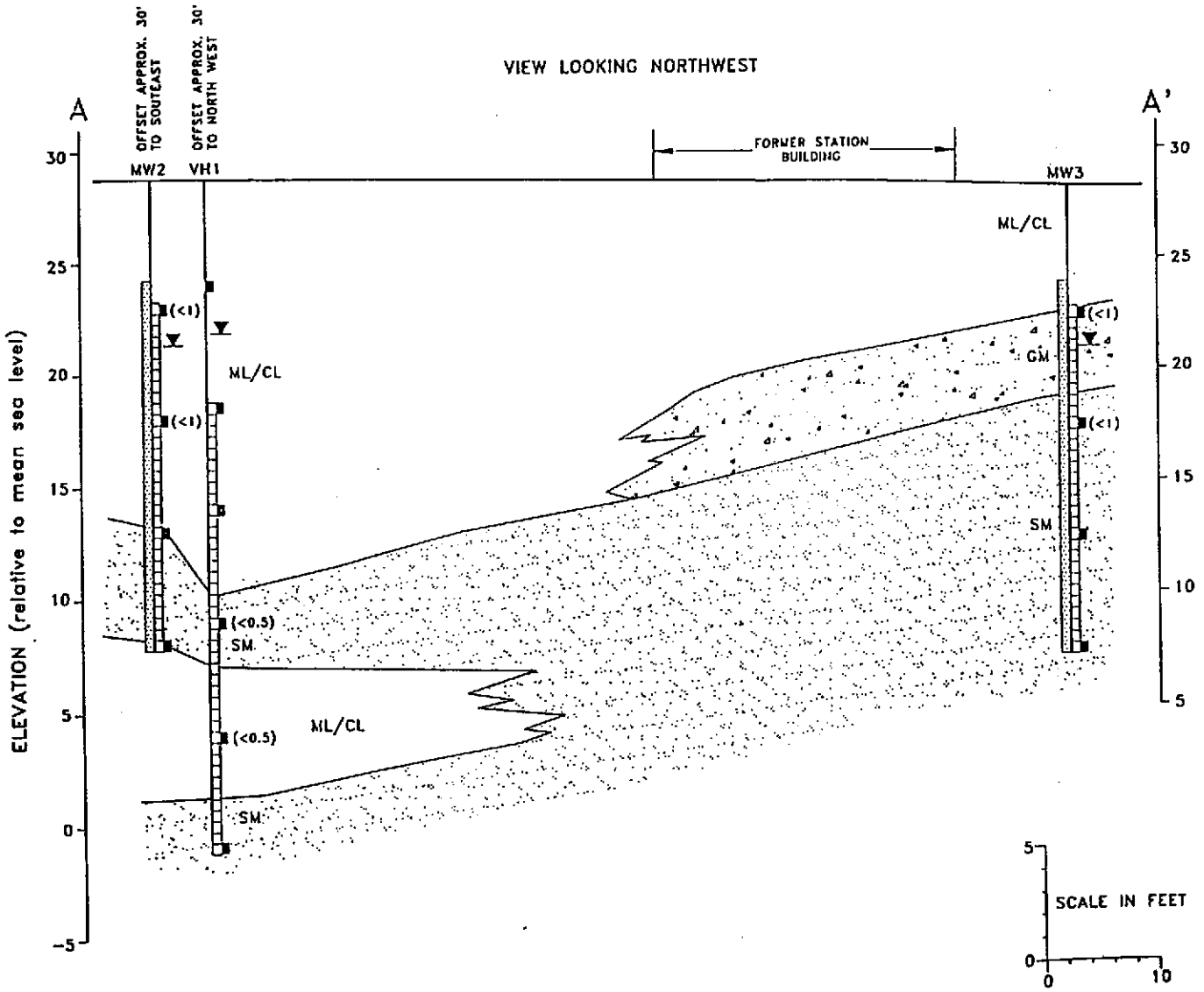
Project Chevron - Oakland — Owner Chevron USA Products Company
Location 3616 San Leandro Street, Oakland, CA — Proj. No. 02020 4530
Surface Elev. ____ — Total Hole Depth 21.5 ft. — Diameter 8 in.
Top of Casing ____ — Water Level Initial 15 ft. — Static 18.35 ft.
Screen: Dia ____ — Length ____ — Type/Size ____
Casing: Dia ____ — Length ____ — Type ____
Fill Material Neat Cement — Rig/Core CME-55/Modified Split-Spoon
Drill Co. SES, Inc. — Method Hollow Stem Auger/PID
Driller Morris Peterson — Log By Brian McAloon — Date 08/15/95 — Permit # 95503
Checked By Ed Simonis — License No. RG#4422 EJS

See Site Map For Boring Location

COMMENTS:

"GRAB" groundwater samples collected.

Depth (ft.)	PID (ppm)	Sample ID	Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) — Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0					CL	Top soil and weeds. Sandy CLAY (20,80): brown.
2						
4					CL	Pebbly sandy CLAY (5,20,75): brown, dry, no hydrocarbon odor.
6	0	SB-1 -6.5'	8 8 12			
8					SM	Clayey silty pebbly SAND (10,10,20,60): brown, damp, no hydrocarbon odor, grading to clayey sandy pebbly (up to 30mm) SILT (10,10,30,50): brown, dry to damp, no hydrocarbon odor.
10	0	SB-1 -11.5'				
12					ML	
14						
16	9	SB-1 -16.5'			SC	*Encountered water (driller's call), 08/15/95* Pebbly clayey SAND (10,30,60): brown with 5% gray staining along rootlet casts, damp to moist, no hydrocarbon odor.
18						*Static water, 08/15/95, 0953 hrs.*
20					CL	Sandy silty CLAY (10,30,60): light brown with 5% light gray mottling, moist to wet, slight hydrocarbon odor.
22	3.75 170	SB-1 -21.5'				End of boring. Backfilled with grout 08/15/95.
24						



LEGEND

- SILT AND CLAY DOMINATED LITHOLOGY (CL,ML)
- SAND DOMINATED LITHOLOGY (SM)
- GRAVEL DOMINATED LITHOLOGY (GM)
- MONITORING WELL
- FILTER PACK
- SOIL SAMPLE LOCATION
- (<1) TPH-AS-GASOLINE CONCENTRATION (ppm)
- SCREENED INTERVAL
- GROUNDWATER ELEVATION (3/26/93)

GROUNDWATER TECHNOLOGY
4057 PORT CHICAGO HWY
CONCORD, CA 94520
(510) 671-3387

REV. NO.:	DATE:	ACAD FILE:
0	4/8/93	GEOXSEC

GEOLOGIC CROSS SECTION

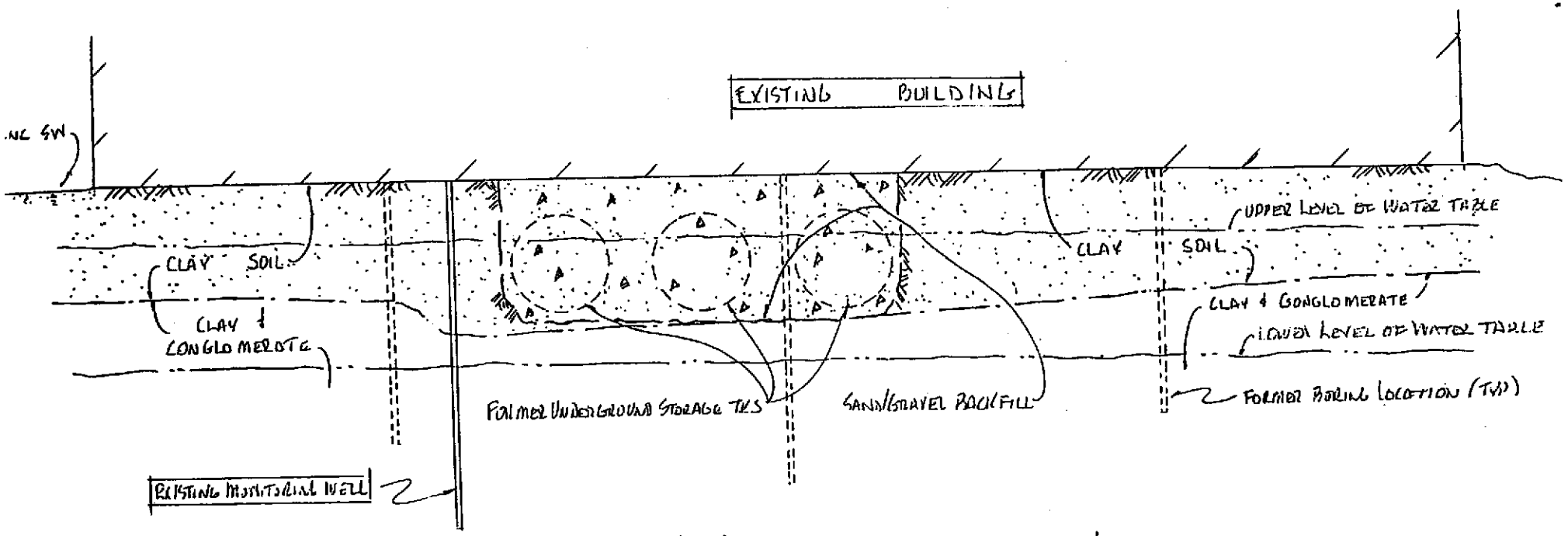
CLIENT: CHEVRON U.S.A. PRODUCTS CO.
SERVICE STATION No. 9-4612

PM: JW

LOCATION: 3616 SAN LEANDRO STREET
OAKLAND, CALIFORNIA

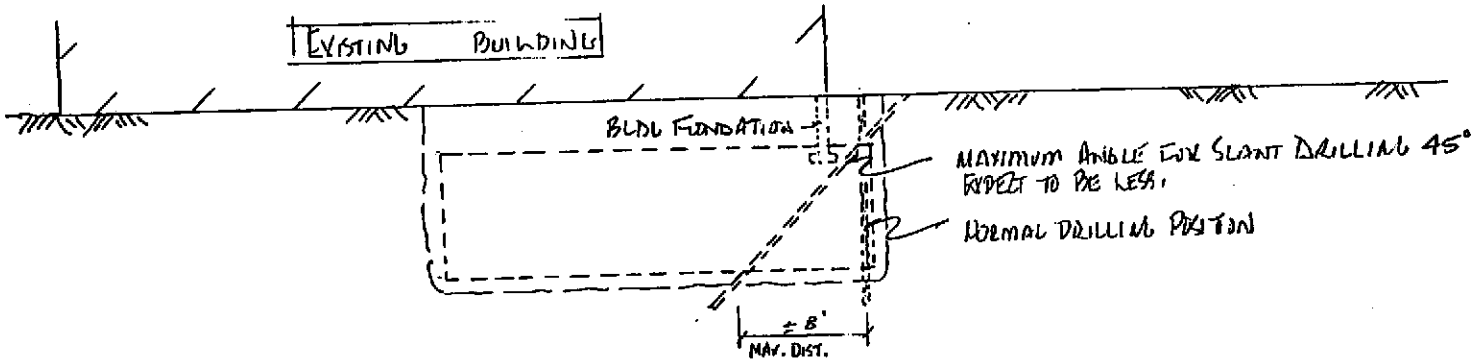
PE/RG: DKK

DESIGNED	DETAILED	PROJECT NO.:	FIGURE:
TW	ML	020202892	6



SECTION A-A

SCALE: 1" = 10'



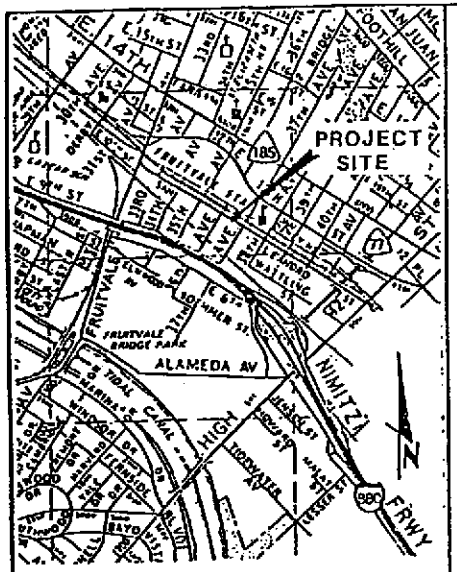
SECTION B-B

SCALE: 1" = 10'

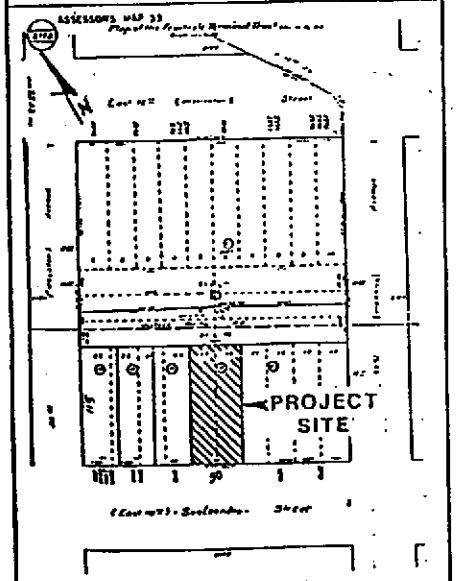
SS# 9-4612
3616 SAN LEANDRO ST.
OAKLAND, CALIFORNIA

PG 2 OF 2

8-7-96



VICINITY MAP

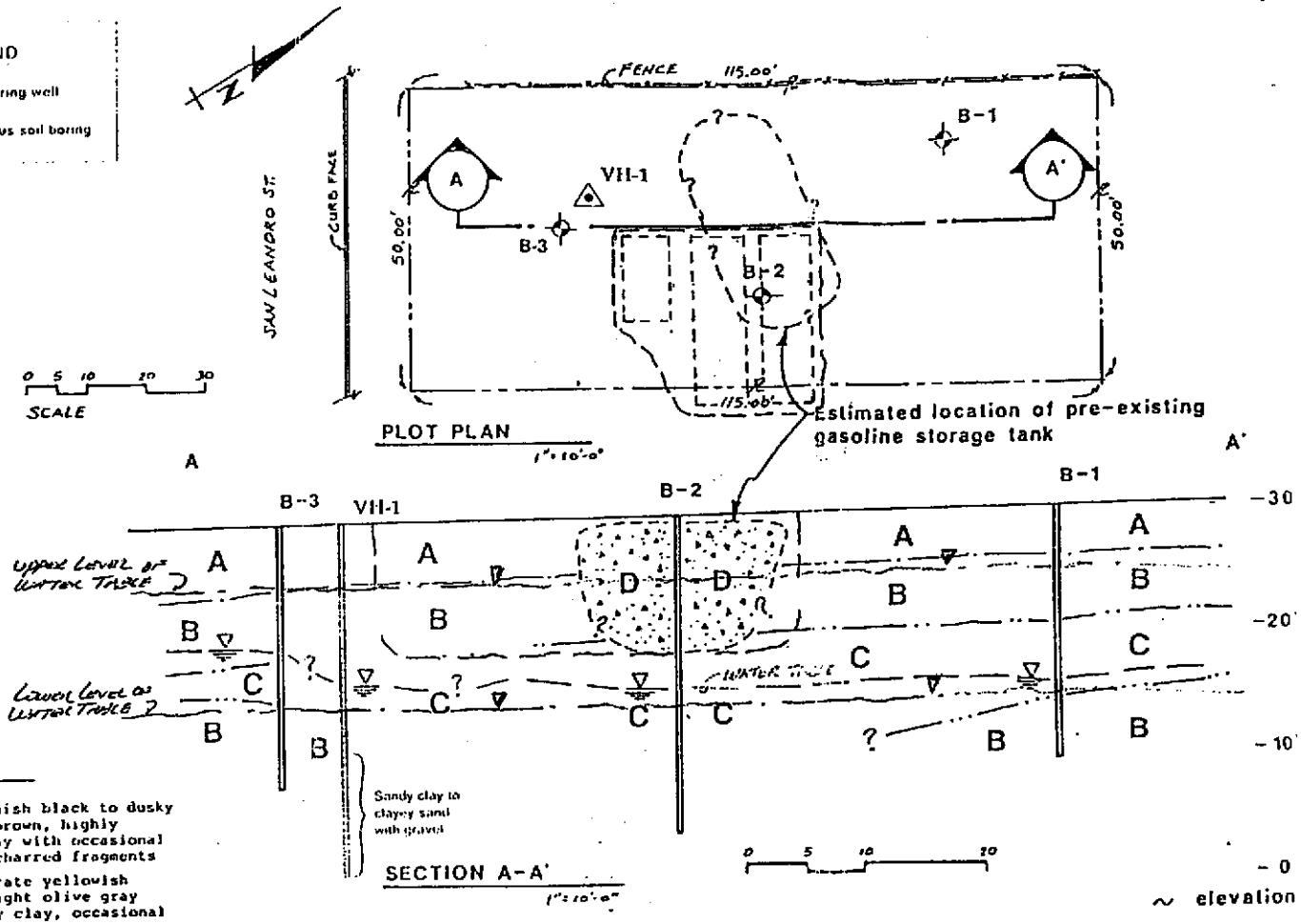


LOT LOCATION

LEGEND

VH-1 Monitoring well

B-3 Previous soil boring



SOIL LEGEND

A — CLAY, brownish black to dusky yellowish brown, highly plastic clay with occasional roots and charred fragments

B — CLAY, moderate yellowish brown to light olive gray silty sandy clay, occasional charred fragments

C — CLAY & CONGLOMERATE, dark to moderate yellowish brown clay with abundant clasts and conglomerate with clay. Clasts range from very course grain to 2" dia. and composed of sandstone, quartzite, greenstone, and chert.

D — SAND AND GRAVEL BACKFILL

Addition of monitoring well VH-1 by Vonder Haar Hydrogeology 8-18-88

ROGERS/PACIFIC
PROFESSIONAL ENGINEERING CONSULTANTS

PLOT PLAN AND CROSS-SECTION
McILRAITH WAREHOUSE FOUNDATION INVESTIGATION

Lot 18 & 19, San Leandro Street, Oakland, Calif.

SCALE: as shown	JOB NUMBER	DRAWN BY	FIGURE NUMBER
DATE: Mar. 1988	GF0362 462	PB	1