CAMBRIA

5806

May 16, 2001

Barney Chan
Alameda County Department
Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

MAY 18 2001

Re: **Risk-Based Corrective Action Report**
Former Shell Service Station
2001 Fruitvale Avenue
Oakland, California
Incident #97109122
Cambria project # 243-1296

Dear Mr. Chan:

Cambria Environmental Technology, Inc. (Cambria) prepared this risk-based corrective action (RBCA) analysis for the referenced site on behalf of Equiva Services, LLC. In an August 13, 1999 letter, the Alameda County Health Care Services Agency (ACHCSA) requested additional subsurface investigation to further characterize subsurface conditions at the site. In correspondence dated November 17, 2000, Cambria proposed performing a RBCA analysis instead of further subsurface investigation. This approach was approved by the ACHCSA in a letter dated November 30, 2000. In addition to the RBCA analysis, the ACHCSA requested a conduit study and sensitive receptor survey.

The objective of the RBCA analysis is to assess the potential health risk posed by residual chemicals in soil and groundwater underlying the site and, if necessary, to determine an appropriate remedial measure that is protective of human health and the environment.

SITE BACKGROUND

Site Description: The site is currently a paved parking lot located on the northern corner of Foothill Boulevard and Fruitvale Avenue in Oakland, California (Figures 1 and 2). It is a former Shell service station and all underground storage tanks (USTs) and service station equipment have reportedly been removed. The UST and equipment removal date is unknown.

1996 Investigation: On January 3, 1996, AllCal Property Services, Inc. (AllCal) of Hayward, California drilled five soil borings onsite (SB-1 through SB5) (Figure 2) and collected soil and groundwater samples. Soil samples collected at 21 feet below grade (fbg) beneath the former UST complex (SB-2) contained up to 830 milligrams per liter (mg/kg) total petroleum hydrocarbons as

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gasoline (TPHg) and 410 mg/kg total petroleum hydrocarbons as diesel (TPHd). No benzene, and only minor amounts of toluene, ethylbenzene and xylenes, were detected in soil.

Groundwater samples contained up to 3,400 micrograms per liter (µg/L) TPHg, 40,000 µg/L TPHd, and 9.6 µg/L benzene. The laboratory report described the TPHg and TPHd chromatographs as not matching the gasoline and diesel standards and suggested they may represent "strongly aged gasoline" and/or "Stoddard solvent."

Groundwater was encountered at depths ranging from 21.5 to 23 fbg during the investigation. Based on the investigation results, AllCal filed an Unauthorized Release Report on February 1, 1996. Soil boring locations and sample concentrations are shown on Figure 2. Soil and groundwater analytical results are summarized in Attachment A. The assessment was reported in AllCal's January 18, 1996 report entitled *Soil and Groundwater Investigation.*

1999 Investigation: On March 31, 1999 Cambria directed the advancement of three soil borings onsite (SBA, SBB, and SBC) (Figure 2) using a GeoProbe® direct-push drill rig. Groundwater was encountered at depths ranging from 16.5 to 17.2 fbg during drilling activities. Temporary well casings were installed in borings SBA through SBC, and Cambria surveyed well elevations relative to an arbitrary elevation datum. The groundwater gradient was calculated to flow toward the southeast at approximately 0.001.

The highest hydrocarbon concentrations in soil samples were from boring SBA. Maximum concentrations in soil include 61 mg/kg TPHg, 1,500 mg/kg TPHd, 11,100 mg/kg TRPH, 0.057 mg/kg benzene, and 0.26 mg/kg MTBE (by EPA Method 8020). No TPHg, benzene, toluene, ethylbenzene or xylenes (BTEX) were detected in soil samples from SBB or SBC.

Maximum concentrations in groundwater include 5,100 µg/L TPHg, 28,000 µg/L TPHd, and 13 µg/L benzene. Analyses by EPA Method 8260 confirmed the absence of MTBE in groundwater.

Soil and groundwater samples from boring SBA in the waste-oil tank area were also analyzed for halogenated volatile organic compounds (HVOCs), semi-volatile organic compounds (SVOCs) and selected metals. Detected analyte concentrations are summarized on Tables 2 and 3 in Attachment A. Soil boring locations are shown Figure 2. This investigation is summarized in Cambria's August 1999 *Site Investigation Report.*

SITE CONDITIONS

A summary of site conditions, developed from information presented in previous investigation reports is presented below.

Site Lithology: The site is underlain primarily by clay, and clayey sand to depths of 15 to 25 fbg. The clays are underlain by poorly graded sand and gravelly sand.

Groundwater Depth and Flow Direction: During the 1999 assessment, groundwater was encountered at approximately 17 fbg. Temporary casings were installed in the borings and the groundwater gradient and flow direction were subsequently calculated at approximately 0.001 in a southeasterly direction.

Hydrocarbon Distribution in Soil: The greatest hydrocarbon impact in soil is in the area of the former waste-oil UST. The highest benzene concentration detected in soil samples onsite was 0.057 mg/kg from 22.5 fbg in boring SBA.

Hydrocarbon Distribution in Groundwater: Benzene concentrations in groundwater onsite range from 1.3 to 13 parts per billion with the highest concentrations located in the areas of the former waste-oil and fuel USTs onsite.

Surrounding Properties: The properties surrounding the site are primarily commercial. Whitton School, Hawthorne School and Sanborn Park are located in the general downgradient direction from the site.

CONDUIT STUDY

Cambria obtained utility maps from the City of Oakland Engineering Department to identify underground utility conduits adjacent to the site. Conduits can serve as preferential pathways for contaminant migration within groundwater if they are situated at or below the groundwater table at the site. Based on Cambria's findings, underground utilities at this site are situated at a depth of approximately 10 fbg or less in the areas adjacent to the site. The only utilities identified in this area are part of the municipal sanitary sewer system and are buried six or more feet above the groundwater onsite. No storm drain system exists near the site and most other utilities are typically buried at depths much less than the prevailing groundwater onsite. Based on the expected groundwater depth onsite (approximately 17 fbg), it is not likely that utility conduits are acting as preferential pathways for

contaminant migration from the site. The utility conduits and elevations are shown on Figures 2 and 3.

WELL SURVEY

To further identify potential sensitive receptors in the area, Cambria performed a well survey using available well records from the California Department of Water Resources (DWR). The identified wells are shown on Figure 1 and listed on Table 1. No known drinking water wells were identified within 1,700 feet from the site. It is widely recognized that BTEX plumes in groundwater do not typically migrate far from their source. Given the relatively low BTEX and other analyte concentrations at this site, it is highly unlikely that any drinking water wells will be impacted by hydrocarbons originating from the site. Copies of DWR well information are provided as Attachment B.

A Topo!® map of the area was reviewed for any surface water bodies near the site. Topo!® derives map information from U.S.Geological Survey. The map indicates Soscal Creek is located approximately 525 feet, at its closest point, north of the site. Again, given the relatively low BTEX concentrations at this site, it is highly unlikely that Soscal Creek, or any other surface water body, will be impacted by hydrocarbons originating from the site.

The Topo!® map was also reviewed for sensitive facilities. No hospitals or churches were identified within 1,000 feet of the site. Charles Whitton School is reportedly located approximately 1,000 feet from the site.

RISK ASSESSMENT

Cambria's RBCA analysis is based on technical guidance[1]. provided by the City of Oakland (Oakland) Oakland's RBCA approach is consistent with the American Society for Testing and Materials (ASTM) Designation E 1739-95[2], United States Environmental Protection Agency (USEPA) and California Environmental Protection Agency guidance. Similar to USEPA or ASTM guidelines, Oakland has

[1] **Oakland Risk-Based Corrective Action: Technical Background Document**, May 17, 1999, prepared by Lynn R. Spence and Mark M. Gomez.

[2] **Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Site**, Designation E-1739-95, December 1996, American Society for Testing and Materials, 100 Barr Harbor Dr., West Conshohocken, PA 19428.

established "Oakland-specific" risk-based screening levels (RBSLs) and site-specific target levels (SSTLs) for contaminants based on their review of toxicological evidence and local site conditions. Cambria's risk assessment consists of an overview of the RBCA process, a discussion of Cambria's RBCA analysis, establishment of potential chemicals of concern (COCs) and complete exposure pathways, and results of a Tier 1 RBCA analysis.

Overview of RBCA Process

The RBCA process integrates risk and exposure assessment practices with site assessment activities and remedial action selection to determine a corrective action approach that is protective of human health and the environment. The RBCA process is implemented in a tiered approach, involving increasingly sophisticated levels of data collection and analysis. Upon completion of each tier, the results are evaluated and, if warranted, assumptions of the current tier are replaced with site-specific data and the analysis proceeds to the next tier.

In the first of the three tiers (Tier 1), a simple look-up table is used to develop numerical cleanup goals based on very conservative contaminant transport and exposure assumptions. If this initial conservative screening indicates acceptable risk, the site generally poses little danger to human health and typically no additional work is warranted. However, if the initial Tier 1 screening shows unacceptable risk levels, then the reviewer may proceed to a Tier 2 analysis to establish SSTLs based on more accurate, site-specific parameters. Similarly, if the Tier 2 evaluation shows unacceptable risk, the reviewer may proceed to a more sophisticated Tier 3 analysis.

Cambria's RBCA Analysis

Cambria's RBCA analysis relied primarily on Oakland's RBCA approach. Oakland's guidance document provides Tier 1 RBSLs, calculated from Oakland-specific values where appropriate, and SSTLs based on general properties of the three dominant soil types found within the City. An *Excel*® spreadsheet provided by the City was used to generate output of the calculated RBSLs for this analysis. Assumptions and default parameters used by the City in their spreadsheet are summarized in their technical guidance document referenced above. A completed checklist indicating the site is eligible for Oakland's RBCA levels is presented as Attachment C.

Oakland's RBCA approach does not include RBSLs or SSTLs for lead. Therefore, Cambria followed guidance provided by the California Department of Toxic Substances Control (DTSC) to calculate an appropriate preliminary remediation goal (PRG) for lead in soil at the site. DTSC's method "back-calculates" PRGs from a maximum acceptable blood-lead concentration using analyses of multiple exposure pathways. A discussion of technical aspects of DTSC's methodology is provided in their guidance document, *"Chapter 7, Assessment of Health Risks from Inorganic Lead in Soil"* August 1992.

COCs

For the initial Tier 1 screening, Cambria considered all chemical analytes detected during site assessments to be potential COCs. The highest detected concentration of each COC is listed in Tables A and B below. Selected samples from previous assessment were analyzed for BTEX, HVOCs, SVOCs, cadmium, chromium, lead, nickel and zinc. Analytical results are presented as Attachment A.

Exposure Pathways and Potential Receptors

Based on the results of the area well survey and conduit study, it is highly unlikely that drinking water wells will be impacted by hydrocarbons originating from the site. Therefore, ingestion of groundwater is not considered a complete exposure pathway. Similarly, no surface water bodies are likely to be affected by impacted site-soils and Oakland's "Water for Recreation" pathway is not considered complete.

The exposure pathways considered complete for this analysis include the following:

1) Ingestion, dermal exposure to, and inhalation of particulates from, impacted surficial soil;
2) Inhalation of outdoor and indoor air vapors from subsurface soil; and
3) Inhalation of outdoor and indoor air vapors from groundwater.

Tier 1 Results

Except for lead, the highest concentrations of COCs detected in soil and groundwater were compared to Oakland's Tier 1 RBSLs. The highest lead concentrations in soil was compared to a PRG calculated using DTSC's *"Lead Risk Assessment Spreadsheet"*, Version 6. The RBSLs and lead PRG and the results of the comparison are presented below in Tables A and B. None of the RBSLs or the lead PRG were exceeded by the highest onsite detected COC concentrations. Output from Oakland's spreadsheet is presented as Attachment D. Output from DTSC's spreadsheet is presented as Attachment E.

Table A. – Potential COCs in Soil

Potential COC	Highest Detected Concentration mg/kg	Oakland Tier 1 RBSL mg/kg	RBSL Exceeded?
Benzene	0.057	0.069	No
Toluene	0.41	9000	No
Ethylbenzene	0.73	5,100	No
Xylenes	4.9	54,000	No
Tetrachloroethene	0.046	0.3	No
Phenol	3.6	31,000	No
Chromium	49	74,000	No
Lead	410	581.5*	No
Nickel	82	1,500	No
Zinc	87	22,000	No

* PRG based on DTSC's Lead Risk Assessment Spreadsheet. Assumes 1) no crops will be planted and harvested onsite, 2) there will be no respirable dust originating from lead impacted soil and 3) no deliberate ingestion of lead-impacted soil will occur.

Table B. - Potential COCs in Groundwater

Potential COC	Highest Detected Concentration mg/L	Oakland Tier 1 RBSL mg/L	RBSL Exceeded?
Benzene	0.013	0.11	No
Toluene	0.025	210	No
Ethylbenzene	0.025	>Sol	No
Xylenes	52	>Sol	No
Bis(2-ethylhexyl)phthalate	0.035	>Sol	No
Butyl benzylphthalate	13	None estimated	No
1,2-Dichloroethene	0.041	35	No
2-Methylnaphthalene	0.046	>Sol	No
Naphthalene	0.068	>Sol	No
Pyrene	0.014	>Sol	No
Tetrachloroethene	0.015	0.20	No
Trichloroethene	0.0047	0.69	No
Chromium	0.035	None estimated	No
Lead	~~0.014*~~ 0.2	NA**	NA
Nickel	0.25	None estimated	No
Zinc	0.17	None estimated	No

* This analytical result is likely erroneous due to the apparent lack of filtration of suspended solid particles from water prior to sample preservation and analysis.

** An RBSL or PRG is not appropriate since groundwater ingestion is not considered a complete exposure pathway and the sample results are likely erroneous.

CONCLUSIONS

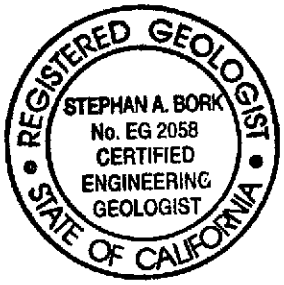
Although this risk analysis incorporates conservative assumptions and representative COC concentrations in soil and groundwater, the results indicate that residual COCs at this site do not pose a significant health risk to onsite or offsite residential and commercial occupants. Natural attenuation of the residual hydrocarbons is expected to continue over time, which will further reduce the potential health risk.

Previous site assessment has targeted former locations of all known potential sources. Therefore, available data likely illustrates worst case conditions which have been shown not to pose a significant health risk. We believe that the site has been adequately assessed and no additional investigation or corrective action is necessary. Given the fact that the contaminant sources have been removed and the site does not pose a risk to current or future occupants, we respectfully request case closure for the site.

CLOSING

We appreciate your cooperation on this case. Please call Stephan Bork at (510) 420-3344 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.



Stephan A. Bork, C.E.G., C.HG.
Associate Hydrogeologist

Figures: 1 - Area Well Survey
2 - Boring Location Map

Table: 1 - Well Survey Results

Attachments: A - Soil and Groundwater Analytical Data
B - DWR Well Information
C - Oakland RBCA Eligibility Checklist
D - Oakland RBSL Output Tables
E - DTSC Output Table

cc: Karen Petryna, Equiva Services LLC, P.O. Box 7869, Burbank, CA 91510-7869
Fidel & Dolores Casillas, 2094 Harrington Ave., Oakland, CA 94601
Ms. Lotus Monroe, 11810 Alba Road, Ben Lomond, CA 95005

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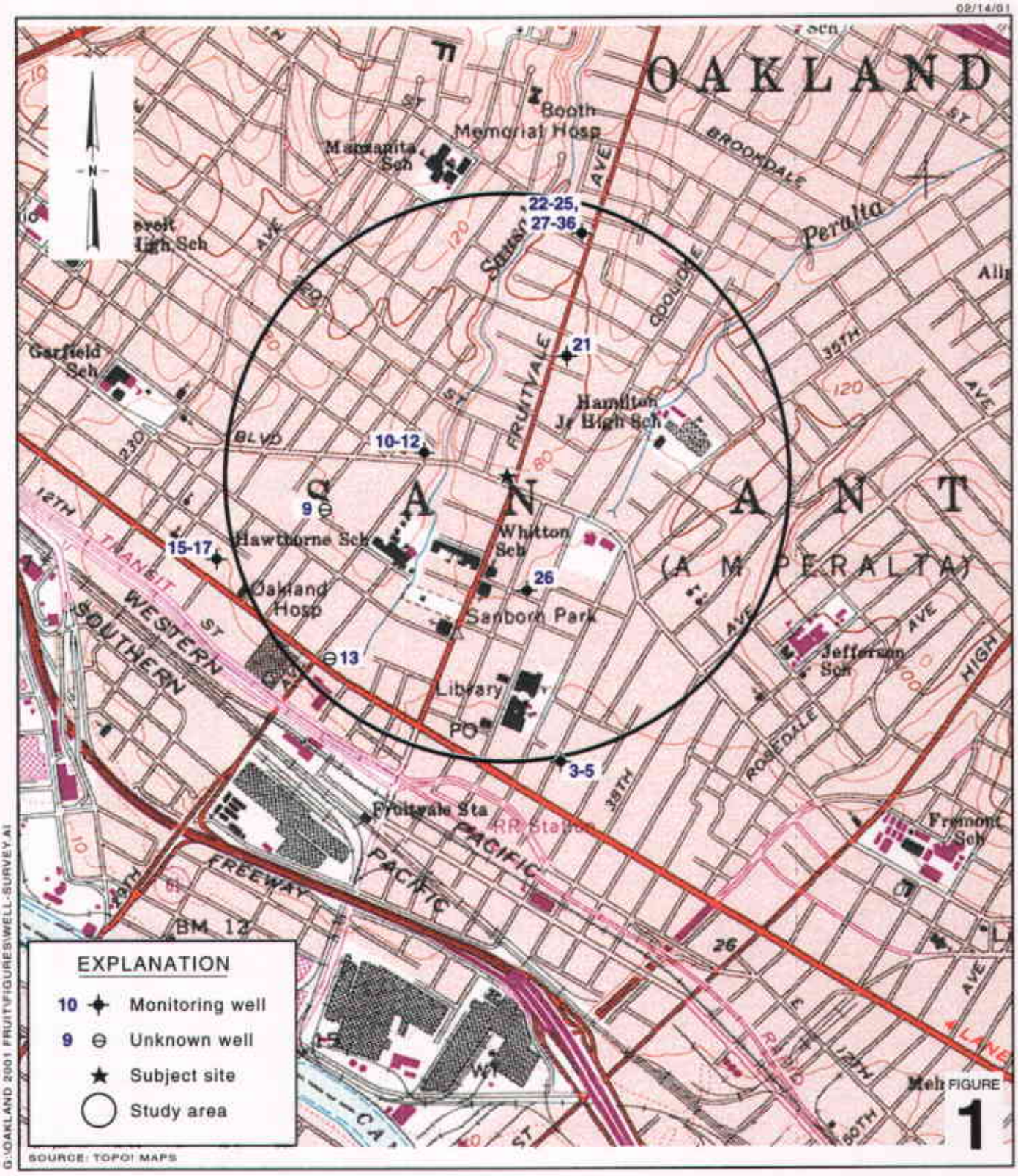


0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Shell-branded Service Station
2001 Fruitvale Avenue
Oakland, California
Incident #97109122

CAMBRIA

Area Well Survey

(1/2 Mile Radius)

05/11/01

Boring Location Map

Property Line

Former Waste Oil Tank

SB-A

SB-2

Former UST

SB-1

SB-4

Former Dispenser Island

Sidewalk

SB-B

SB-3

SB-5

Former Dispenser Island

SB-C

Sidewalk

CE = 76.1'

FL = 65.8'

CE = 70.6'

CE = 69.5'

CE = 70.5'

FL = 68.0'

FRUITVALE AVENUE

CE = 70.4'

FL = 61.3'

CE = 70.3'

FL = 60.4'

FL = 58.5'

FL = 64.5'

FL = 60.7'

FL = 60.9'

FOOTHILL BOULEVARD

FL = 60.5'

CE = 69.6'

CE = 69.3'

CE = 69.7'

CE = 69.4'

EXPLANATION

SB-A •	Soil boring location, 1999 Cambria Investigation
SB-1 •	Soil boring location, 1996 AllCal Investigation
FL = 68.0'	Flowline Elevation
CE = 70.4'	Curb Elevation
———	Sanitary Sewer Line
►	Flow Direction
○	Manhole
Boring ID	Boring Designation
depth Benz.	Depth (ft.) and Benzene concentration in soil (mg/kg)

N

0 10 20 40

Scale (ft)

FIGURE

2

Shell-branded Service Station

2001 Fruitvale Avenue

Oakland, California

Incident #97109122

CAMBRIA

G:\OAKLAND 2001 FRUITVALE\FIG\FIGURE2\BORINGLOCATION.DWG

Table 1. Well Survey Results - Shell-branded Service Station,2001 Fruitvale Avenue Oakland, California. Incident # 98996234

Location No.	Well ID/ Well No.	Owner	Address	Use	Depth (fbg)	Screened Interval (fbg)	Sealed interval (fbg)	Installation Date
1	2S/3W-8C1	Trust for Public Land	1601 39th Avenue	IRR	30.0	15-30	0-10	July 23, 1977
2	2S/3W-8C2	Pacific Gas & Electric	39th & Foothill Blvd.	UNK	120.0	Unknown	0-95	January 27, 1974
3	2S/3W-8D1	August Manufacturing	1466 36th Avenue	MON	34.5	14.5-34.5	0-13.5	March 23, 1990
4	2S/3W-8D2	August Manufacturing	1466 36th Avenue	MON	26.5	15-25	0-12.5	September 14, 1990
5	2S/3W-8D3	August Manufacturing	1466 36th Avenue	MON	26.5	15-25	0-12.5	September 14, 1990
6	2S/3W-7A1	Unknown	3132 E. 12th Street	MON	30.0	20-30	0-17	April 9, 1990
7	2S/3W-7A2	Unknown	3132 E. 12th Street	MON	30.0	20-30	0-17	April 10, 1990
8	2S/3W-7A3	Unknown	3132 E. 12th Street	IRR	30.0	20-30	0-17	April 10, 1990
9	2S/3W-6J	Mr. J. Michel	1754 27th Avenue	UNK	168.0	Unknown	Unknown	Unknown
10	2S/3W-6J1	National Convenience Stores	2710 Foothill Blvd.	MON	35.0	20-35	0-18	February 27, 1991
11	2S/3W-6J2	National Convenience Stores	2710 Foothill Blvd.	MON	40.0	20-40	0-18	February 27, 1991
12	2S/3W-6J3	National Convenience Stores	2710 Foothill Blvd.	MON	34.0	19-34	0-17	February 28, 1991
13	2S/3W-6Q	Montogomery Ward & Co.	29th Ave & E. 14th	UNK	681.0	Unknown	Unknown	Unknown
14	2S/3W-6Q1	Standard Brands Paint Co.	E 14th & 25th Ave.	MON	31.5	11.5-31.5	0-9.5	September 13, 1985
15	2S/3W-6Q2	Stark, Wells, Rahl, and Shwartz	2530 E. 14th Street	MON	19.0	9-19	0-7	March 22, 1990
16	2S/3W-6Q3	Stark, Wells, Rahl, and Shwartz	2530 E. 14th Street	MON	18.0	8-18	0-7	March 23, 1990
17	2S/3W-6Q4	Stark, Wells, Rahl, and Shwartz	2530 E. 14th Street	MON	18.0	8-18	0-7	March 23, 1990
18	2S/3W-6Q7	East Bay Asian Local Dev. Corp.	2509 E. 14th Street	MON	25.5	11-25.5	0-11	December 15, 1989
19	2S/3W-6Q5	East Bay Asian Local Dev. Corp.	2509 E. 14th Street	MON	29.0	14-29	0-12	December 5, 1989
20	2S/3W-6Q6	East Bay Asian Local Dev. Corp.	2509 E. 14th Street	MON	25.0	12-25	0-10	December 5, 1989
21	2S/3W-5E1	Quick-Stop Market	2400 Fruitvale Avenue	MON	22.0	12-22	0-10	September 13, 1985
22	2S/3W-5A	Chevron U.S.A	2681 Fruitvale Avenue	MON	21.0	11-21	0-10.5	October 8, 1991
23	2S/3W-5B	Chevron U.S.A	2681 Fruitvale Avenue	MON	22.5	12.5-22.5	0-11.5	October 8, 1991
24	2S/3W-5C	Chevron U.S.A	2681 Fruitvale Avenue	MON	24.5	14.5-24.5	0-13.5	October 9, 1991
25	2S/3W-5D	Chevron U.S.A	2681 Fruitvale Avenue	MON	26	16-26	0-15	October 9, 1991
26	2S/3W-5N1	Pacific Gas & Electric	E 18th St. & 34th Ave.	MON	120.0	Unknown	0-120	April 27, 1996
27	2S/3W-5C2	Chevron U.S.A	2681 Fruitvale Avenue	MON	20.5	10.5-20.5	0-7.5	February 16, 1989
28	2S/3W-5C3	Chevron U.S.A	2681 Fruitvale Avenue	MON	19.0	9-19	0-6	February 16, 1989
29	2S/3W-5C4	Chevron U.S.A	2681 Fruitvale Avenue	MON	26.0	16-26	0-14.5	May 23, 1989
30	2S/3W-5C5	Chevron U.S.A	2681 Fruitvale Avenue	MON	21.5	11.5-21.5	0-9.5	May 23, 1989
31	2S/3W-5C6	Chevron U.S.A	2681 Fruitvale Avenue	MON	21.5	11.5-21.5	0-9.5	May 23, 1989
32	2S/3W-5C7	Chevron U.S.A	2681 Fruitvale Avenue	MON	25.0	15-25	0-13	May 24, 1989
33	2S/3W-5C8	Chevron U.S.A	2681 Fruitvale Avenue	MON	21.5	11.5-21.5	0-9.5	May 24, 1989
34	2S/3W-5C9	Chevron U.S.A	2681 Fruitvale Avenue	MON	21.5	11.5-21.5	0-9.5	May 24, 1989
35	2S/3W-5C10	Chevron U.S.A	2681 Fruitvale Avenue	MON	25.0	10-25	0-8	July 26, 1990
36	2S/3W-5C11	Chevron U.S.A	2681 Fruitvale Avenue	MON	26.5	115.-26.5	0-8.5	July 26, 1990

Well Locations provided by the State of California Department of Water Resources

Notes and Abbreviations:

Location No. = Number refers to map location on Figure 1.
Well ID = California State well identification number as recorded by the Department of Water Resources in Sacramento, California.
IRR = Irrigation well.
UNK = Unknown use
MON = Monitoring well
fbg = feet below grade

ATTACHMENT A

Soil and Groundwater Analytical Data

McCAMPBELL ANALYTICAL INC. 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

ALLCAL Property Services 27973 High Country Drive Hayward, CA 94542-2530	Client Project ID: # 1031396; 2001 Fruitvale Ave., Oakland	Date Sampled: 01/03/96
		Date Received: 01/04/96
	Client Contact: John Mrakovich	Date Extracted: 01/04-01/10/96
	Client P.O:	Date Analyzed: 01/04-01/10/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	Benzene	Toluene	Ethylben-zene	Xylenes	% Rec. Surrogate
60073	SB-1-6.0-6.5	S	ND	ND	ND	ND	ND	107
60074	SB-1-11.0-11.5	S	ND	ND	ND	ND	ND	109
60075	SB-1-16.0-16.5	S	ND	ND	ND	ND	ND	110
60076	SB-1-21.0-21.5	S	ND	ND	ND	ND	ND	107
60077	WSB 1	W	1300,a,i	2.5	1.7	4.7	6.6	113
60078	SB-2-6.0-6.5	S	ND	ND	ND	ND	ND	111
60079	SB-2-11.0-11.5	S	ND	ND	ND	ND	0.009	107
60080	SB-2-16.0-16.5	S	170,e	ND< 0.04	ND< 0.04	ND< 0.04	0.19	110
60081	SB-2-21.0-21.5	S	830,e	ND< 0.02	0.11	0.47	4.9	102
60082	WSB 2	W	3400,e,j,i,h	9.6	3.9	ND	14	97
60083	SB-3-6.0-6.5	S	3.5,j	ND	ND	ND	0.010	104
60084	SB-3-11.0-11.5	S	ND	ND	ND	ND	ND	111
60085	SB-3-16.0-16.5	S	ND	ND	ND	ND	ND	111
60086	SB-3-21.0-21.5	S	20,j	ND	0.005	ND	0.057	94
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (Stoddard solvent?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

ALLCAL Property Services	Client Project ID: # 1031396; 2001 Fruitvale Ave., Oakland	Date Sampled: 01/03/96
27973 High Country Drive		Date Received: 01/04/96
Hayward, CA 94542-2530	Client Contact: John Mrakovich	Date Extracted: 01/04/96
	Client P.O:	Date Analyzed: 01/04-01/06/96

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	Benzene	Toluene	Ethylben-zene	Xylenes	% Rec. Surrogate
60087	SB-4-6.0-6.5	S	ND	ND	ND	ND	ND	105
60088	SB-4-11.0-11.5	S	ND	ND	ND	ND	0.011	106
60089	SB-4-16.0-16.5	S	ND	ND	ND	ND	ND	104
60090	SB-4-19.0-19.5	S	5.0,g	ND	ND	ND	0.014	104
60091	SB-5-6.0-6.5	S	ND	ND	ND	ND	ND	101
60092	SB-5-11.0-11.5	S	ND	ND	ND	ND	ND	111
60093	SB-5-16.0-16.5	S	ND	ND	ND	ND	ND	105
60094	SB-5-21.0-21.5	S	300,j	ND< 0.02	0.12	0.73	0.95	95
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

ALLCAL Property Services 27973 High Country Drive Hayward, CA 94542-2530	Client Project ID: # 1031396; 2001 Fruitvale Ave., Oakland	Date Sampled: 01/03/96
		Date Received: 01/04/96
	Client Contact: John Mrakovich	Date Extracted: 01/04-01/05/96
	Client P.O:	Date Analyzed: 01/04-01/05/96

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 3015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
60079	SB-2-11.0-11.5	S	ND	97
60080	SB-2-16.0-16.5	S	62,e,g	100
60081	SB-2-21.0-21.5	S	410,e,g	114#
60082	WSB 2	W	40,000,e,h,i	108
60088	SB-4-11.0-11.5	S	ND	98
60089	SB-4-16.0-16.5	S	ND	103
60090	SB-4-19.0-19.5	S	14,d/b	102
60092	SB-5-11.0-11.5	S	ND	102
60093	SB-5-16.0-16.5	S	ND	102
60094	SB-5-21.0-21.5	S	160,d,b	102
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	
		S	1.0 mg/kg	

* water samples are reported in ug/L, soil samples in mg/kg, and all TCLP and STLC extracts in mg/L

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (Stoddard solvent?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

ALLCAL Property Services 27973 High Country Drive Hayward, CA 94542-2550	Client Project ID: # 1031396; 2001 Fruitvale Ave., Oakland	Date Sampled: 01/03/96
		Date Received: 01/04/96
	Client Contact: John Mrakovich	Date Extracted: 01/05/96
	Client P.O:	Date Analyzed: 01/05/96

Lead*

EPA analytical methods 6010/200.7, 239.2*

Lab ID	Client ID	Matrix	Extraction°	Lead*	% Recovery Surrogate
60076	SB-1-21.0-21.5	S	TTLC	8.7	96
60077	WSB 1	W	TTLC	0.20,i	NA
60081	SB-2-21.0-21.5	S	TTLC	7.9	97
60082	WSB 2	W	TTLC	0.19,i	NA
60086	SB-3-21.0-21.5	S	TTLC	3.0	102
60090	SB-4-19.0-19.5	S	TTLC	8.3	100
60094	SB-5-21.0-21.5	S	TTLC	3.2	97

Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	S	TTLC	3.0 mg/kg
	W	TTLC	0.005 mg/L
	—	STLC,TCLP	0.2 mg/L

* soil samples are reported in mg/kg, and water samples and all STLC & TCLP extracts in mg/L

+ Lead is analysed using EPA method 6010 (ICP)for soils, STLC & TCLP extracts and method 239.2 (AA Furnace) for water samples

° EPA extraction methods 1311(TCLP), 3010/3020(water,TTLC), 3040(organic matrices,TTLC), 3050(solids,TTLC); STLC from CA Title 22

surrogate diluted out of range; N/A means surrogate not applicable to this analysis

i) liquid sample that contains greater than ~ 2 vol. % sediment; this sediment is extracted with the liquid, in accordance with EPA methodologies and can significantly effect reported metal concentrations.

DHS Certification No. 1644

Edward Hamilton, Lab Director

TABLE 2

SOIL ANALYTICAL DATA
Former Shell Service Station
2001 Fruitvale Avenue
Oakland, California
SAP Code 117941
Incident #97109122

Sample Depth (ft)	Date Sampled	TPPH (mg/kg)	TEPH (mg/kg)	TRPH (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	MTBE (mg/kg)	Primary Soil Type (Unified Soil Class)	Comments
SBA											
10.0	31-Mar-99	61	1500	11100	<0.050	<0.050	<0.050	0.21	<0.25	CL	Chromium-49 ppm, Lead-370 ppm, Nickel-82 ppm, Zinc-67 ppm, HVOCs ND except Tetrachloroethene-0.046 ppm, SVOCs ND except Phenol-3.6 ppm.
15.5	31-Mar-99	13	1100	10100	<0.0050	<0.0050	0.019	0.10	<0.025	CL	Chromium-37 ppm, Lead-410 ppm, Nickel-55 ppm, Zinc-70 ppm, HVOCs and SVOCs ND.
22.5	31-Mar-99	34	510	6840	0.057	0.41	0.16	0.45	0.26	SP	Chromium-17 ppm, Lead-14 ppm, Nickel-34 ppm, Zinc-29 ppm, HVOCs and SVOCs ND.
SBB											
6.0	31-Mar-99	<1.0	2.4	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	SC	
16.0	31-Mar-99	<1.0	1.2	NA	<0.0050	<0.0050	<0.0050	<0.0050	0.042	SC	
20.5	31-Mar-99	<1.0	1.1	NA	<0.0050	<0.0050	<0.0050	<0.0050	0.026	CL	
SBC											
5.5	31-Mar-99	<1.0	4.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	CL	
15.5	31-Mar-99	<1.0	2.1	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	CL	
20.5	31-Mar-99	<1.0	2.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	CL	

TABLE 2

SOIL ANALYTICAL DATA
Former Shell Service Station
2001 Fruitvale Avenue
Oakland, California
SAP Code 117941
Incident #97109122

Sample Depth (ft)	Date Sampled	TPPH (mg/kg)	TEPH (mg/kg)	TRPH (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	MTBE (mg/kg)	Primary Soil Type (Unified Soil Class)	Comments

Abbreviations and Notes:

NA = Not analyzed.

<x = Not detected at method detection limit of x.

TPPH = Total purgeable petroleum hydrocarbons carbon range C6 to C12 by EPA Method 8015 (Modified).

TEPH = Total extractable petroleum hydrocarbons by EPA Method 8015 (Modified).

TRPH = Total recoverable petroleum hydrocarbons by EPA Method 418.1.

BTEX = Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020.

MTBE = Methyl tertiary butyl ether by EPA Method 8020.

Cadmium, chromium, lead, nickel, and zinc by EPA Method 6010A.

HVOCs = Halogenated volatile organics by EPA Method 8010.

SVOCs = Semivolatile organics by EPA Method 8270.

TABLE 3

GROUNDWATER ANALYTICAL DATA
Former Shell Service Station
2001 Fruitvale Avenue
Oakland, California
SAP Code 117941
Incident #97109122

Sample	Date Sampled	TPPH (ug/L)	TRPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE by 8020 (ug/L)	MTBE by 8260A (ug/L)	Comments
SBA-W											
	31-Mar-99	1100	23000	28000	13	<2.5	5.1	52	<12	<2.00	Chromium-35 ppb, Lead-710 ppb, Nickel-250 ppb, Zinc-170 ppb , HVOCs ND excepticis-1,2-Dichloroethene-4.1 ppb, Tetrachloroethene-16 ppb, Trichloroethene-4.7 ppb, SVOCs ND except Bis(2-ethylhexyl)phthalate-35 ppb, Butyl benzyl phthalate-13 ppb, 2-Methylnaphthalene-46 ppb, Naphthalene-68 ppb, Pyrene-14 ppb.
SBB-W											
	31-Mar-99	5100	NA	3300	8.8	15	25	24	<25	<2.00	
SBC-W											
	31-Mar-99	2500	NA	890	1.3	25	5.8	19	8.5	<2.00	

Abbreviations:

NA = Not analyzed.

<x = Not detected at method detection limit of x.

TPPH = Total purgeable petroleum hydrocarbons carbon range C6 to C12 by EPA Method 8015 (Modified).

TPPH = Total extractable petroleum hydrocarbons by EPA Method 8015 (Modified).

TPPH = Total recoverable petroleum hydrocarbons by EPA Method 418.1.

BTEX = Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020.

MTBE = Methyl tertiary butyl ether.

Cadmium, chromium, lead, nickel, and zinc by EPA Method 200.7.

HVOCS = Halogenated volatile organics by EPA Method 8010.

SVOCS = Semivolatile organics by EPA Method 8270.

ATTACHMENT B

DWR Well Information

STATE OF CALIFORNIA - THE RESOURCES AGENCY
GRAY DAVIS, *Governor*

DEPARTMENT OF WATER RESOURCES
CENTRAL DISTRICT
3251 S STREET
SACRAMENTO, CA 95816-7017

FEB 8 2001

Mr. James Loetterle
Cambria Environmental Technology, Incorporated
1144 – 65th Street, Suite C
Oakland, California 94608

Dear Mr. Loetterle:

In response to your request, enclosed is the well location information for the sites in the following area:

One-half mile radius of 2001 Fruitvale Avenue, Oakland
Township 02 South, Range 03 West, Section 5-C, D, E, F, G, K, L, M, N, P, and Q
Township 02 South, Range 03 West, Section 6-A, G, H, J, K, Q, and R
Township 02 South, Range 03 West, Section 7-A
Township 02 South, Range 03 West, Section 8-C and D

Your data request required one hour of staff time for researching and photocopying. We located 38 well drillers reports as a result of this search. The total charge for staff time is $50. Your remittance should be made payable to the Department of Water Resources, General Accounting Office, Post Office Box 942836, Sacramento, California 94236-0001. Please show **"Invoice FEB 02-2"** on your remittance and return it with the enclosed copy of this letter to our Accounting Office.

If you need additional information or have any questions, please contact Anne Roth at (916) 227-7632 or fax (916) 227-7600.

Sincerely,

Robert L. Niblack

Robert L. Niblack, Chief
Geology and Groundwater Section

Enclosures

for DWR. 01-459Z Inv ~ Add ~

2S/3W 8D1

ZONE 7
TRANSMITTAL SLIP

TO: SHELLY SACK
FROM: Craig Mayfield

DATE: 30 May 98

Transmitting reports for:
GPO Permit No.

Project Owner/Location

90/93 August Manufacturing

1460-36th Avenue, Oakland

2S/3W 8D.

2S/3W 5D1
01-459Z

PROJECT: AUGUST MANUFACTURING, OAKLAND

MONITORING WELL # MW-1

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	WELL COMPLETION	Hammer Blow Count	REMARKS
0			locking well cover; portland cement	0	
1	clay, dk. gray black, silty 10%, sand very fine to med. 10%, highly organic, minor pea gravel, damp, (CL)				
5	clay, gray to dk. gray, sandy gravelly 20-30% gravels 1.5-2" dia., soft, moist, (CL)		2" sched 40 PVC blank	5	soil sample 4.5-6', no odors
10	clay, dk. gray mottled, sand and gravel 15-20%,. sands in "pockets" ie., bioturbated, black organic specks, moist, (CL)		bentonite pellets	10	soil sample 10-11.5', no odors
15	clay, sand, gravel, mixed, green-gray black, mottled, sand fine to coarse 20%, gravels 0.25-2" dia. 10-15%, silty 10-20%, moist, (CL)		#3 sand	15	soil sample 15-16.5', slight petroleum odor; ▽ approx. 16'
20	sand, silt, gravel, mixed, multicolored, clayey 20%, sand fine to coarse 20%, gravel 30% up to 2" dia., moist to wet, (CL)		2" sched 40 PVC, 0.01" slotted	20	soil sample, 20-21.5', mild odor turpentine sample 21.5-23'
22					

AQUA SCIENCE ENGINEERS Logged By: G. Gouvea Date Logged: 3-23-90 Figure #

25/3U8D1
01-459Z

PROJECT: AUGUST MANUFACTURING, OAKLAND

MONITORING WELL # MW-1

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	WELL COMPLETION	Hammer Blow Count	REMARKS
23					
24	sand, tan brown and blue gray, mottled, sand fine to coarse, silt and clay 10%, wet, (SW)				
25				25	soil sample, 25 -26.5', no odors
26	clay, rusty tan brown, silty 10%, sand v. fine 10%, black organic specks 5%, damp, (CL)				soil sample 26.5 -28'. no odors
27					
28	clay, tan rusty brown, sand and gravel 20-40%, wet, (CL)				soil sample 28-34.5', no odors
29					
30	sand, gravel, clay, mixed, gravel 40% 0.25 -2" dia., sand fine to coarse 30%, wet, (SW)			30	
31					
32					
33	clay, tan rusty brown, silty 10-15%, v. fine sand <10%, black organic specks few %, damp, (CL)				
34					
	Bottom of hole				
35				35	

2" sched 40 PVC, 0.01" slotted

threaded bottom cap

#3 sand

AQUA SCIENCE ENGINEERS Logged By: G. Gouvea Date Logged: 3-23-90 Figure #

01-468U
2S/3W 8D1

GROUNDWATER MONITORING WELL CONSTRUCTION AND SAMPLING AT AUGUST MANUFACTURING 1466 36TH AVE., OAKLAND, CA.

for

Mr. Ron Richmond
PCC

submitted by
Aqua Science Engineers, Inc.
San Ramon, Ca.
April 10, 1990

3S/3W 8D1

01-4680

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 1466 - 36th Ave
Oakland CA

CLIENT
Name August Manufacturing
Address 1466 - 36th Ave Phone
City Oakland Zip

APPLICANT
Name Aqua Science Eng
Address P.O. Box 535 Phone 415 - 820 9391
City San Ramon Zip 94583

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

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

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

DRILLER'S LICENSE NO. C-57 487000

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 35 ft.
Surface Seal Depth 20 ft. Number 1

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 3-23-90
ESTIMATED COMPLETION DATE 3-23-90

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

APPLICANT'S SIGNATURE [signature] Date 3-23-90

FOR OFFICE USE

PERMIT NUMBER 90193
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

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

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

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

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

E. WELL DESTRUCTION. See attached.

Approved [signature] Date 23 Mar 90
Todd N. Wendler

2S/3W 8D1
01-4680

APPENDIX A
MONITORING WELL PERMIT

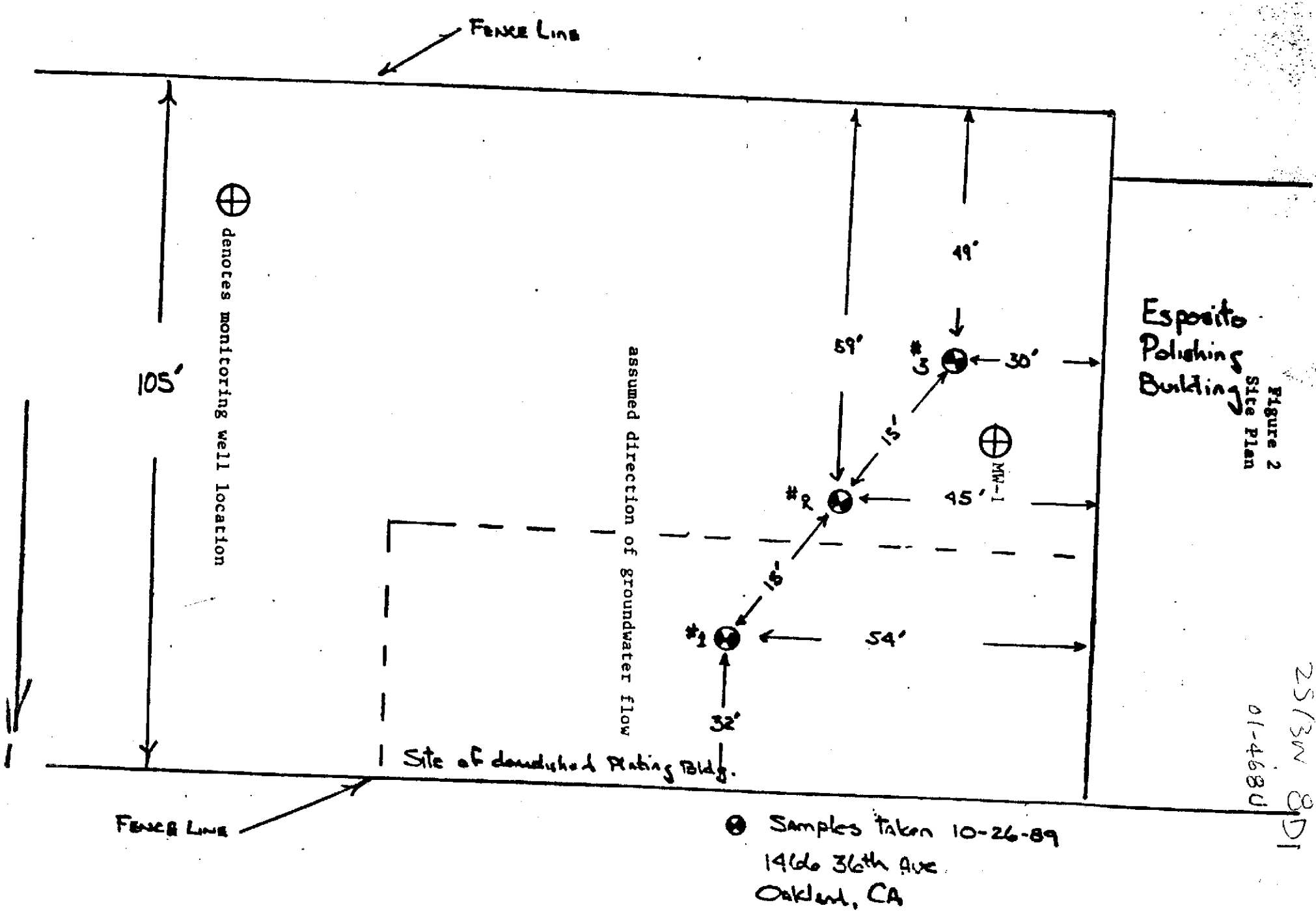


Figure 2
Site Plan

25/3W 8DI
01-4680

25/3W 8D1
01-4680

7.0 CONCLUSIONS

Soil sample analyses for metals, cyanide, and total organic carbon showed low levels of the constituents of interest. The samples were obtained during drilling of a monitoring well.

Groundwater sample analyses from a monitoring well indicated levels of metals above State or EPA Drinking Water MCL's but below STLC levels. Cyanide was found at levels below the above referenced MCL's.

The constituents of interest were found to exist at low levels at the sample point locations of Figure 2.

8.0 RECOMMENDATIONS

The well should be sampled quarterly for a period of one year to monitor the condition of the groundwater with regards to contaminant migration from soil into the groundwater. The samples should be analyzed using the same methods/protocol as earlire analyses. If future analyses show that the groundwater has not been further impacted by the constituents of interest, then perhaps periodic monitoring can be discontinued.

25/30 8D1
01-4680

4.0 SAMPLING PROCEDURES

The soil samples were collected in 2" X 6" precleaned brass tubes and sealed with plastic caps and tape. The sampler was cleaned with a TSP solution and rinsed with tap water between samplings. The samples were put into a cooler on ice and transported to a State Certified Analytical Laboratory for analysis following chain of custody procedures (Appendix B).

The completed well was developed and sampled by others. A 2" baller was used to develop the well until the water appeared clear (about 25 gallons). Five well volumews were then removed to purge the well and a water sample was obtained.

5.0 SAMPLE ANALYSIS

All soil samples obtained on March 23, 1990 were analyzed for California STLC Extraction Metals by EPA method 6010, Total cyanide by distillation and ISE, Standard Method 413E, and Total Organic Carbon (TOC) by EPA method 9060 (Appendix B). Soil samples MW-1,10' (sample Id. 8368) contained cadmium at 1.02 parts per million (ppm), .02 ppm above the Ca. STLC (soluble threshols limit concentration). Total cyanide ranged from non detectable (N.D.) in sample MW-1, 10' (8368), to 9.2 ppm in sample MW-1, 25' (8371). TOC ranged from 380 ppm in sample MW-1, 30' (8372) to 1,070 ppm in MW-1, 15' (8369).

A groundwater sample obtained March 28, 1990 was analyzed for California STLC Extraction for Metals by ICP, EPA method 6010, for Mercury by EPA 7470/7471, Selenium by EPA 7740, total cyanide by EPA 9010 Modified, and for Total organic carbon by EPA method 9060. Analytical results can be found in Appendix B. Several of the metals were above State or EPA Drinking Water Standards Maximum Contaminant Levels (MCL's) (A Compilation of Water Quality Goals, May, 1989, Staff Report of the Ca. RWQCB, Central Valley Region) (Appendix C). All metals analyzed below STLC levels. Cyanide was present at 0.08 ppm, below the drinking water standards. TOC was not detected in the sample.

6.0 SITE GEOLOGY

The soils encountered as drilling progressed were logged by an ASE geologist using the United Soil Classification System (USCS). From grade to a depth of 34.5 feet the soil is predominantly clay (CL), dk. gray to green gray to tan brown, with sand and gravel mixed in, ranging from about 15% to 50% (Appendix C). The soils are mildly layered from a few inches to 2-3 feet thickness. From about 20 feet to 25 feet the soils were predominantly sand and gravel. Shallow groundwater exists at about 16 feet below grade.

The local groundwater gradient was determined from RWQCB records of nearby sites with calculated groundwater gradients. At about 1/2 mile to the east is a Mobil Gas Station located at 4280 Foothill Blvd. Groundwater there had been calculated to be flowing in a westerly direction on Feb. 5, 1990. The Chevron Station located on the same corner, at 4265 Foothill Blvd., had a calculated groundwater flow direction towards the southwest on August 8, 1989. About 1 mile northeast at a Mobile Station located at 3201 35th Ave. the groundwater flow direction was determined to be towards the south on Feb. 15, 1989. An Exxon Station at 720 High St., about 1/2 mile south of our site, had a calculated groundwater flow direction towards the west on Aug. 5, 1989, and towards the southwest on April 25, 1989 (Regional Water Quality Control Board Files, Leaking Underground Tank

2S/3W 8D1

01-4680

1.0 INTRODUCTION

In March, 1990 Aqua Science Engineers (ASE) was contracted by Mr. Ron Richmond, representing the property owner, to construct and sample one monitoring well at 1466 36th Ave. in Oakland, Ca. The work was performed due to elevated cyanide levels detected in soil samples obtained for an earlier investigation. A permit for well construction was obtained from Alameda County Flood Control and Water Conservation District Zone 7 (Appendix A).

The site is located about 1/4 mile north of Interstate 880 and less than 1 mile north of San Leandro Bay (Figure 1). Currently, the site is used as a metal products manufacturing/fabrication shop. The site has three brick buildings on it and the surface is covered with asphalt.

In July, 1989, sampling and analysis of soils near the site of previously removed underground fuel storage tanks indicated no detectable levels of fuel contamination, though low levels of metals and cyanide were detected in the samples. At some time in the past, a metal plating shop existed on the property. Further subsurface soils investigation in the area of the plating shop occured in November, 1989, to further define the extent of metals and cyanide contamination. Levels of cyanide in those samples indicated the need to determine if groundwater has been affected.

2.0 DRILLING PROCEDURES

In March, 1990, an ASE Mobile B-61 drilling rig with 8" hollow stem augers drilled to 34.5 feet depth below grade in the southwestern portion of the property near the Esposito Polishing Building. This area was determined to be in a down gradient direction from the November, 1989 borings.

The rig was steamcleaned prior to arrival on site. Undisturbed soil samples were collected from at five foot intervals from 5-30 feet depth with a hammer driven California split spoon sampler which was also precleaned.

The boring was continuously logged by a geologist, and sample and well construction procedures were documented.

From approximately 15-23 feet slight to mild petroleum odors were noted from the boring and on soil samples. First groundwater was encountered at about 16 feet depth. From about 31 feet to 34.5 depth the soils were clay and the boring was terminated.

3.0 WELL CONSTRUCTION PROCEDURES

Upon completion of drilling, a 2" schedule 40 PVC well was installed to 31 feet total depth. Twenty feet of .010" slotted casing with a threaded bottom cap (approx. 3") was followed by 14 feet of blank casing, bringing the well to grade. The well was sanded with #3 sand through the augers, from 34 feet up to feet depth. One foot of bentonite pellets followed with water for activation of the pellets. The remainder of the boring was filled to grade with cement/bentonite grout, and a 8" street cover was installed along with a locking inner cap.

01-4680 2S/3W8D1

PROJECT: AUGUST MANUFACTURING, OAKLAND

MONITORING WELL # MW-1

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	WELL COMPLETION	Hammer Blow Count	REMARKS
23					
24	sand, tan brown and blue gray, mottled, sand fine to coarse, silt and clay 10%, wet, (SW)				
25					soil sample, 25 -26.5', no odors
26	clay, rusty tan brown, silty 10%, sand v. fine 10%, black organic specks 5%, damp, (CL)				soil sample 26.5 -28', no odors
27					
28	clay, tan rusty brown, sand and gravel 20-40%, wet, (CL)				soil sample 28-34.5', no odors
29					
30	sand, gravel, clay, mixed, gravel 40% 0.25 -2" dia., sand fine to coarse 30%, wet, (SW)				
31					
32					
33	clay, tan rusty brown, silty 10-15%, v. fine sand <10%, black organic specks few %, damp, (CL)				
34	Bottom of hole				
35					

2" sched 40 PVC, 0.01" slotted

threaded bottom cap

#3 sand

AQUA SCIENCE ENGINEERS Logged By: G. Gouvea Date Logged: 3-23-90 Figure #

01-4680 · 2S/3W 8D1

PROJECT: AUGUST MANUFACTURING, OAKLAND

MONITORING WELL # MW-1

depth ft.	SOILS DESCRIPTION	GRAPHIC SYMBOL	WELL COMPLETION	Hammer Blow Count	REMARKS
0–1	clay, dk. gray black, silty 10%, sand very fine to med. 10%, highly organic, minor pea gravel, damp, (CL)		locking well cover; portland cement		
5	clay, gray to dk. gray, sandy gravelly 20-30% gravels 1.5-2" dia., soft, moist, (CL)		2" sched 40 PVC blank		soil sample 4.5-6', no odors
10–11	clay, dk. gray mottled, sand and gravel 15-20%,. sands in "pockets" ie., bioturbated, black organic specks, moist, (CL)		bentonite pellets		soil sample 10-11.5', no odors
15–16	clay, sand, gravel, mixed, green-gray black, mottled, sand fine to coarse 20%, gravels 0.25-2" dia. 10-15%, silty 10-20%, moist, (CL)		#3 sand; 2" sched 40 PVC, 0.01" slotted		soil sample 15-16.5', slight petroleum odor; ▽ approx. 16'
20–21	sand, silt, gravel, mixed, multicolored, clayey 20%, sand fine to coarse 20%, gravel 30% up to 2" dia., moist to wet, (CL)				soil sample, 20-21.5', mild odor turpentine sample 21.5-23'

AQUA SCIENCE ENGINEERS Logged By: G. Gouvea Date Logged: 3-23-90 Figure #

23/3W 8D2
01-4850

TOP OF PVC CASING
Elevation _____

GROUND SURFACE

Blows/foot | OVA (ppm) | Depth (ft.) | Sample

Equipment 12" Hollow Stem Auger

Elevation _____ Date 9/14/90

TOP OF CASING
0.4 ft below ground level

12" DIA. BOREHOLE
0-25 ft

4" DIA. CHEUDLE 40 PVC
BLANK WELL CASING
0.4 to 15 ft

BENTONITE-CEMENT SEAL
0 to 11.25 ft

BENTONITE PELLET SEAL
11.5 to 12.5 ft

SANDPACK (RMC Lonestar #2/16)
12.5 to 25 ft

4" DIA. SCH. 40 PVC
WELL SCREEN (.010" slot size)
15 to 25 ft

BOTTOM WELL CAP
at 25 ft

HOLE CLEANED OUT
to 25 ft

BOTTOM OF BORING
at 26.5 ft

OVA (ppm)	Depth (ft.)	Sample
	0	
.25		
0	5	
0	10	
0	15	
0	20	
	25	
	30	
	35	
	40	

Asphalt

DARK REDDISH BROWN SANDY LEAN CLAY WITH GRAVEL (CL) 5YR 3/2 medium stiff, moist, 20-25% sand, 10-15% silt, 10-15% fine gravel (Fill)

REDDISH BLACK LEAN CLAY (CL) 5YR 2.5/2 15-20% silt, 15-20% sand, trace gravel

DARK YELLOWISH BROWN SANDY LEAN CLAY WITH GRAVEL (CL) 10YR 4/4 stiff, moist, 25-30% sand, 15% fine gravel, 15% silt

DARK YELLOWISH BROWN LEAN CLAY (CL) stiff, moist, 10-15% silt, trace sand and fine gravel

YELLOWISH BROWN WELL GRADED SAND WITH GRAVEL (SW) 10YR 5/6 medium dense, moist to wet, 15% fine to coarse gravel, trace silt

LIGHT YELLOWISH BROWN LEAN CLAY WITH GRAVEL (CL) 2.5Y 6/4 stiff, moist, 15-20% fine gravel, 15% sand, trace silt

YELLOWISH BROWN SILTY GRAVEL WITH SAND (GM) 10YR 5/8 medium dense, wet (saturated), fine to coarse angular to subrounded gravel, 15% silt, 15% fine to coarse sand

YELLOWISH BROWN SANDY LEAN CLAY (CL) 10YR 5/8 stiff, moist, 30% sand, trace silt and gravel

Bottom of boring at 26.5 ft

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring MW-2
August Manufacturing
1466 36th Avenue
Oakland, California

PLATE **3**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LZ	20143.001.02		10/90	

25/3W 8D3
01-4850

TOP OF PVC CASING
Elevation _____

GROUND SURFACE

Equipment 8" Hollow Stem Auger

Elevation _____ Date 9/14/90

Blows/foot	OVA (ppm)	Depth (ft.)	Sample	
		0		Asphalt YELLOWISH BROWN SILTY SAND WITH GRAVEL (SM) 10YR 5/6 medium dense, moist, fine to coarse sand, 25-30% fine to coarse gravel, 15-20% silt (Fill)
	0			
		5		VERY DARK GRAY LEAN CLAY (CL) 5YR 3/1 stiff, moist, 15-20% silt, trace gravel and sand
	.25			BROWN SILTY SAND WITH GRAVEL (SM) 7.5 YR 4/4 medium dense, moist, 15-20% fine to coarse gravel, 15% silt
		10		BROWN SANDY LEAN CLAY (CL) 7.5YR 4/4 stiff, moist, 25-30% sand, 10-15% silt, trace fine gravel
	0	15		OLIVE LEAN CLAY (CL) 5Y 6/3 stiff, moist, 10-15% sand, 10-15% silt
	0	20		BROWNISH YELLOW SILTY GRAVEL WITH SAND (GM) 10YR 6/8 medium dense, wet (saturated), fine to coarse angular to subrounded gravel, 20-30% fine to coarse snad, 15-20% silt, trace clay
				OLIVE LEAN CLAY (CL) 5Y 6/3 stiff, moist, 15-20% silt, trace sand
	0	25		LIGHT OLIVE-BROWN WELL GRADED SANDWITH SILT AND GRAVEL (SW-SM) 2.5Y 5/6 loose, wet, fine to coarse sand, 15% fine gravel, 10% silt
				LIGHT OLIVE-BROWN SANDY LEAN CLAY (CL) 2.5Y 5/6 stiff, moist, 30% sand, trace clay and gravel
		30		Bottom of boring at 26.5 ft
		35		
		40		

TOP OF CASING
0.5 ft below ground level

8" DIA. BOREHOLE
0-25.5 ft

4" DIA. CHEUDLE 40 PVC BLANK WELL CASING
0.5 to 15 ft

BENTONITE-CEMENT SEAL
1 to 10 ft

BENTONITE PELLET SEAL
10 to 12 ft

SANDPACK (RMC Lonestar #2/16)
12.5 to 25.5 ft

4" DIA. SCH. 40 PVC WELL SCREEN (.010" slot size)
15 to 25 ft

BOTTOM WELL CAP
at 25 ft

HOLE CLEANED OUT
to 25.5 ft

BOTTOM OF BORING
at 26.5 ft

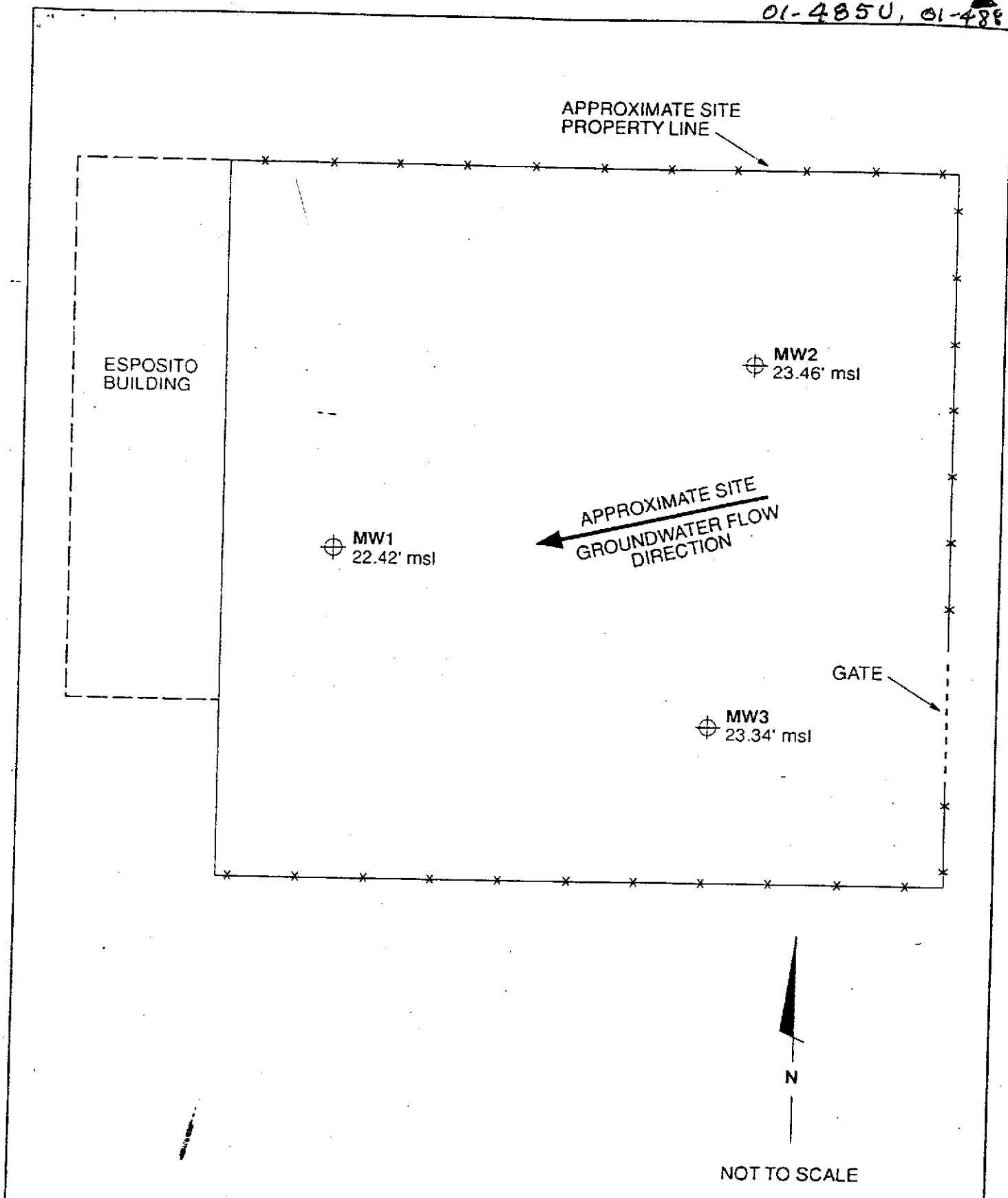
Harding Lawson Associates
Engineering and Environmental Services

Log of Boring MW-3
August Manufacturing
1466 36th Avenue
Oakland, California

PLATE
4

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LZ	20143.001.02		10/90	

2S13W 8D2-8
01-485U, 01-488



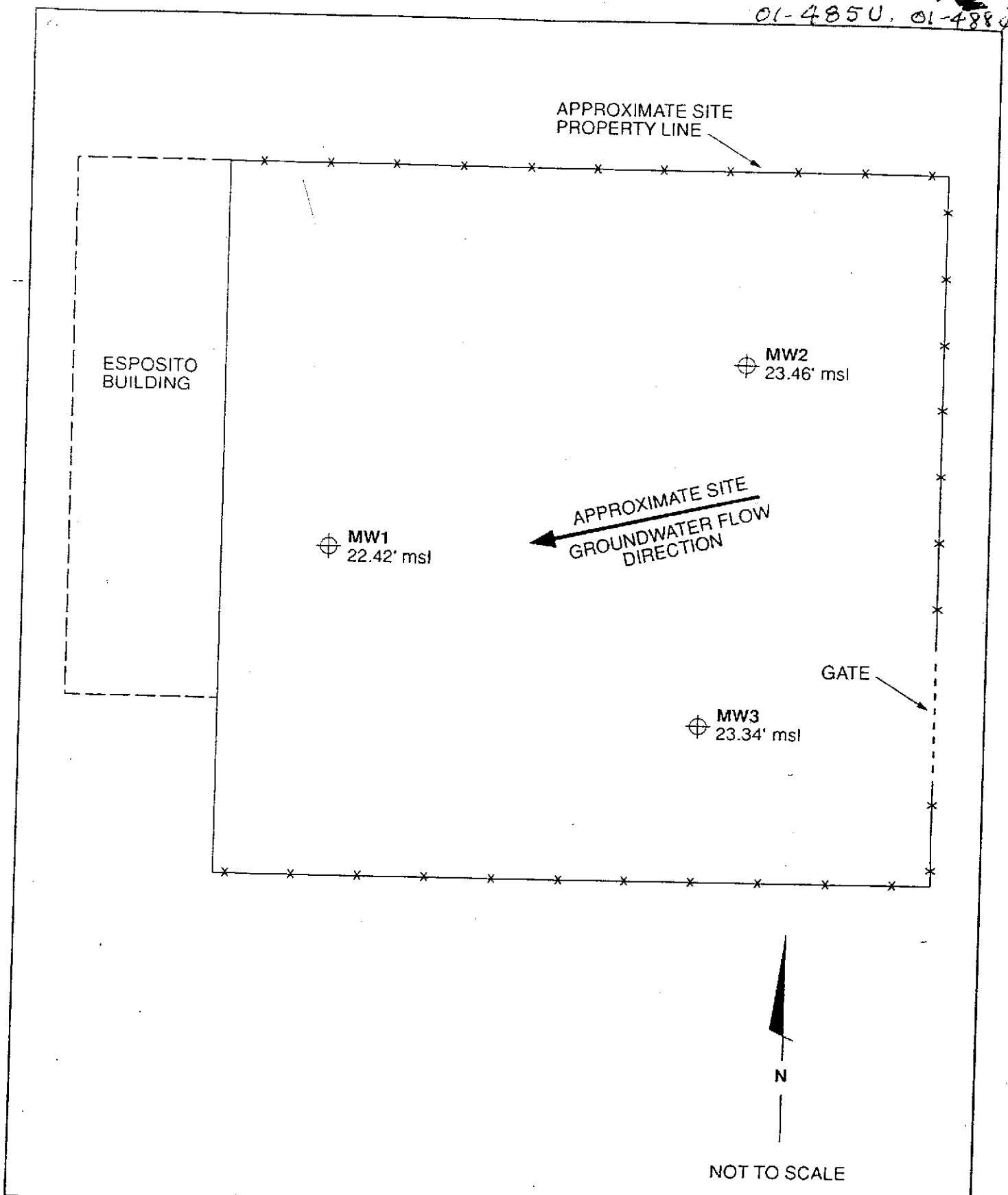
Harding Lawson Associates
Engineering and
Environmental Services

Approximate Monitoring Well Locations and Groundwater Flow Direction
August Manufacturing
1466 36th Avenue
Oakland, California

PLATE
2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LZc	20143,001.02		10/90	

2S/3W 8D2-3
01-485U, 01-488U



Harding Lawson Associates
Engineering and
Environmental Services

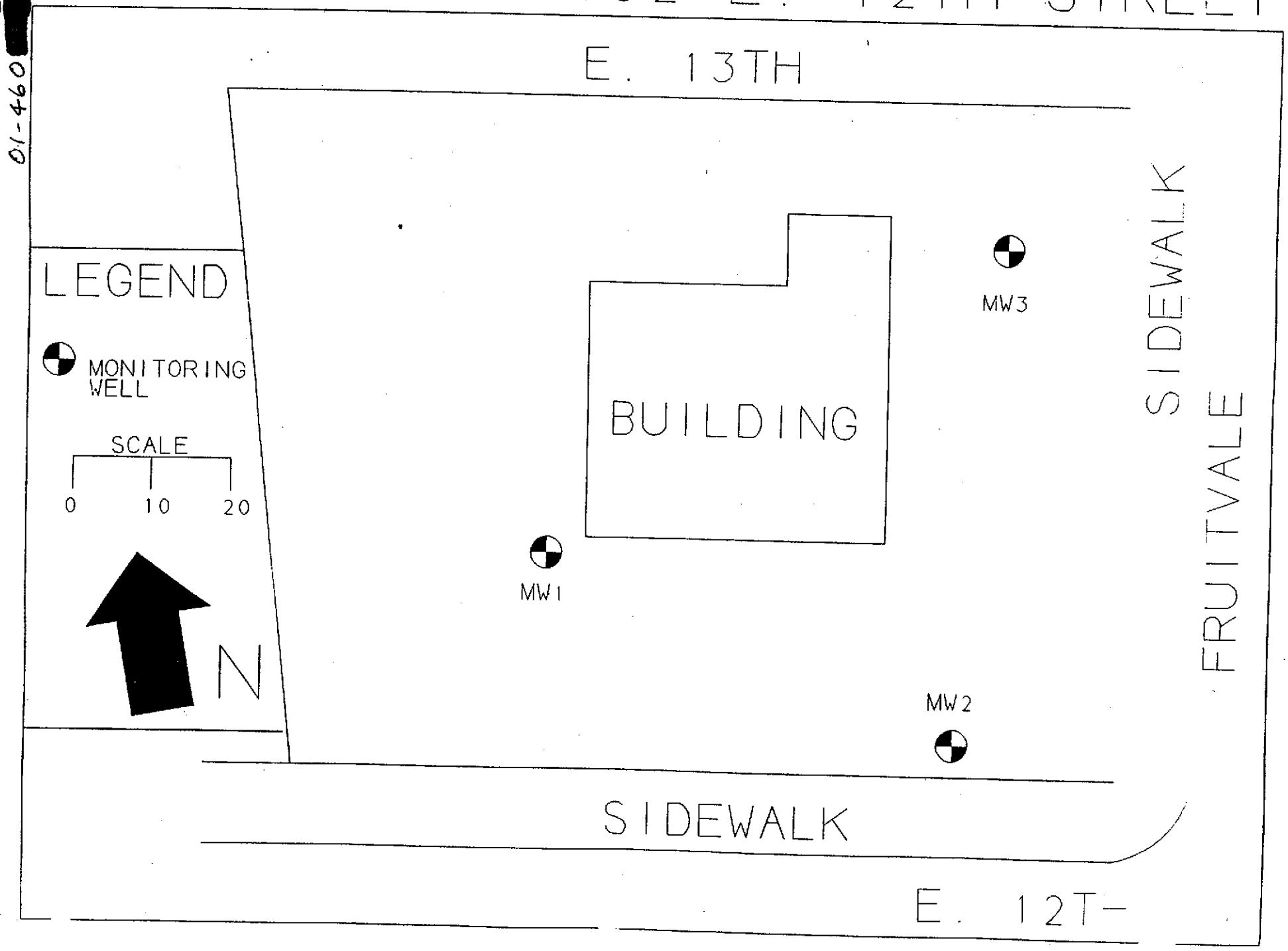
Approximate Monitoring Well Locations and Groundwater Flow Direction
August Manufacturing
1466 36th Avenue
Oakland, California

PLATE
2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
LZc	20143,001.02		10/90	

SITE PLAN - 3132 E. 12TH STREET

2S/3W 7A1-3
01-4460



Owner: Ralph B. Pahlmeyer Family Trust

01-460T

25/3W 7 A1

BORING LOG

3132 East 12th Street Oakland

PROJECT NO: 89-1015	PROJECT NAME: FRUITVALE	BORING NO: MW1
LOCATION: E. 12TH AND FRUITVALE		DATE: 4/9/90
GEOLOGIST: REINHARD RUHMKE		PAGE 1 OF 1
GROUND WATER DEPTH: 23 FEET		DRILLER: HEW
DRILLING METHODS: 12" HOLLOW STEM AUGER		

DEPTH	SAMPLE	RECOVERY	BLOWS	DESCRIPTION	USCS	GRAPHIC SYMBOL	WELL CONSTRUCTION
0				2" ASPHALT; 10" BASEROCK			4" PVC
5	MW1-5	18"	6 4 6	GRAYISH BLACK SILTY CLAY; STIFF; DRY; SLIGHTLY PLASTIC.			NEAT CEMENT
10	MW1-10	18"	4 11 18	OLIVE-GRAY SILTY CLAY.	CL		
15	MW1-15	18"	9 16 19	YELLOWISH-BROWN SILTY CLAY.			BENT-NITE
20	MW1-20	18"	3 6 8	YELLOWISH-BROWN VERY FINE SANDY SILTY CLAY.			#2/12 SAND
23	MW1-23	10"	NA	YELLOWISH-BROWN SILTY CLAY.			.01 SCREEN
				LIGHT BROWN FINE SAND.	SP		
				UNSORTED GRAVEL. MEDIUM SAND. SILT MIX; CHERT PEBBLES.	GM		
30				SANDY CLAY-END OF BORING			

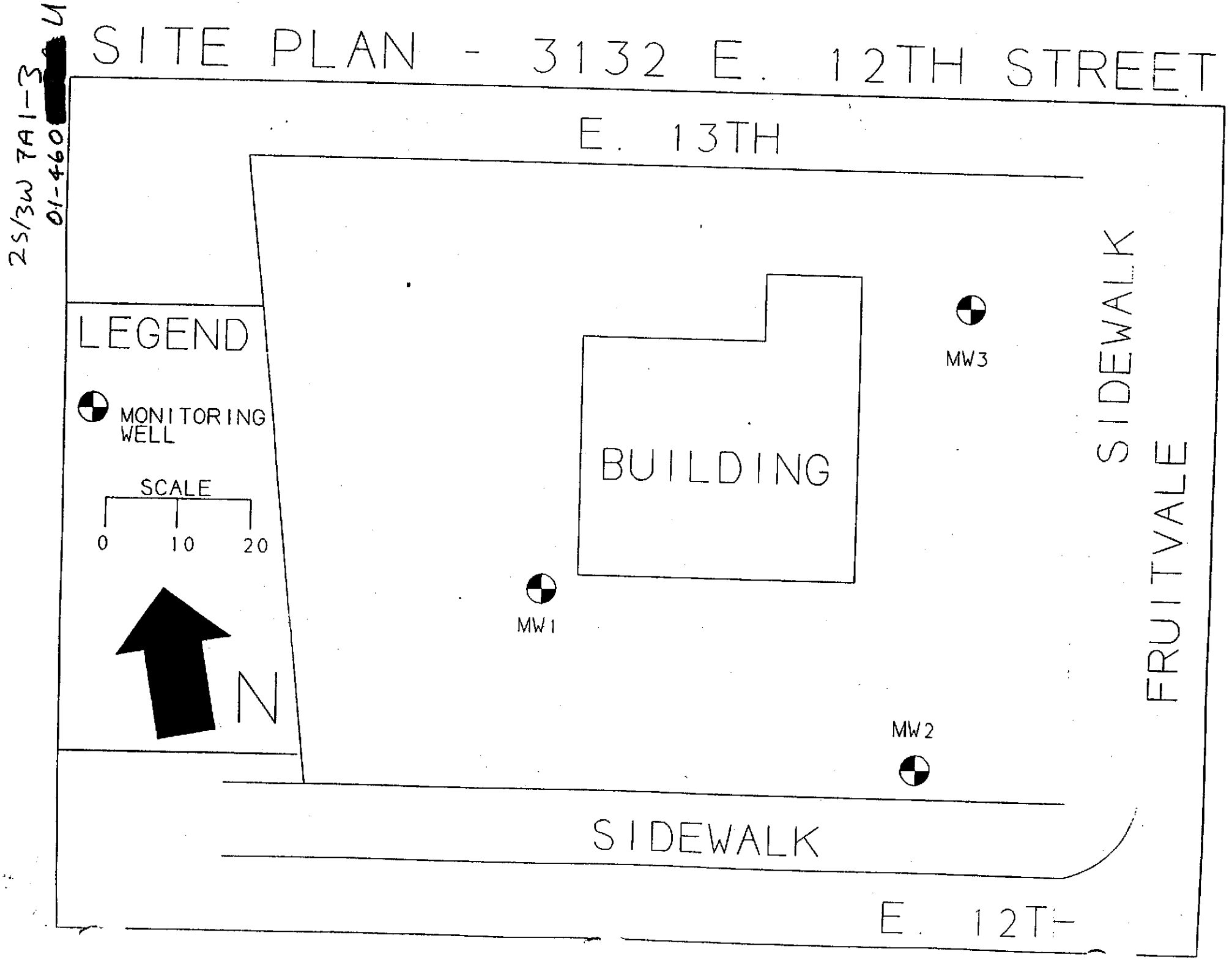
REMARKS

Lic #C57-384167

MILLER ENVIRONMENTAL COMPANY
RICHMOND, CA

SITE PLAN - 3132 E. 12TH STREET

[redacted] U
01-460
2S/3W 7A1-3

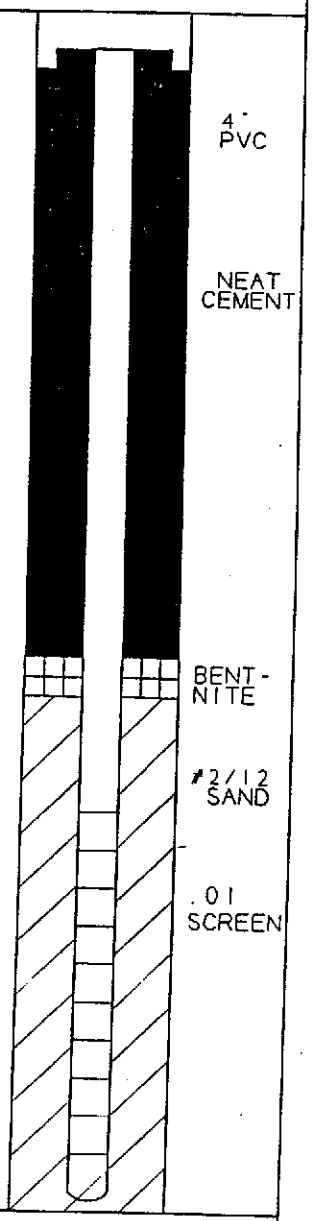


01-4600
25/3W7A2

BORING LOG

PROJECT NO: 89-1015	PROJECT NAME: FRUITVALE	BORING NO: MW2
LOCATION: E. 12TH AND FRUITVALE		DATE: 4/10/90
GEOLOGIST: REINHARD RUHMKE		PAGE 1 OF 1
GROUND WATER DEPTH: 23 FEET		DRILLER: HEW
DRILLING METHODS: 12" HOLLOW STEM AUGER		

DEPTH	SAMPLE	RECOVERY	BLOWS	DESCRIPTION	USCS	GRAPHIC SYMBOL	WELL CONSTRUCTION
0				4" ASPHALT; 14" BASEROCK			
1							
2							
3				BLACK SILTY CLAY; STIFF; DRY;			
4				SLIGHTLY PLASTIC.			
5	MW2 5	18"	7 17 21				
6							
7				OLIVE-GRAY SILTY CLAY.			
8							
9				GREENISH-GRAY SILTY CLAY.	CL		
10	MW2 10	18"	6 16 23				
11				LITTLE FINE SAND.			
12							
13							
14							
15	MW2 15	18"	8 12 12				
16							
17							
18							
19				YELLOWISH-BROWN SILTY CLAY.			
20	MW2 20	18"	4 8 11				
21							
22				YELLOWISH-BROWN GRAVELLY CLAYEY MEDIUM SAND.	SW		
23							
24				GRAYISH BLACK SILTY CLAY.			
25					CL		
26				BROWN GRAVELLY SANDY CLAY.			
27							
28							
29							
30				—END OF BORING—			

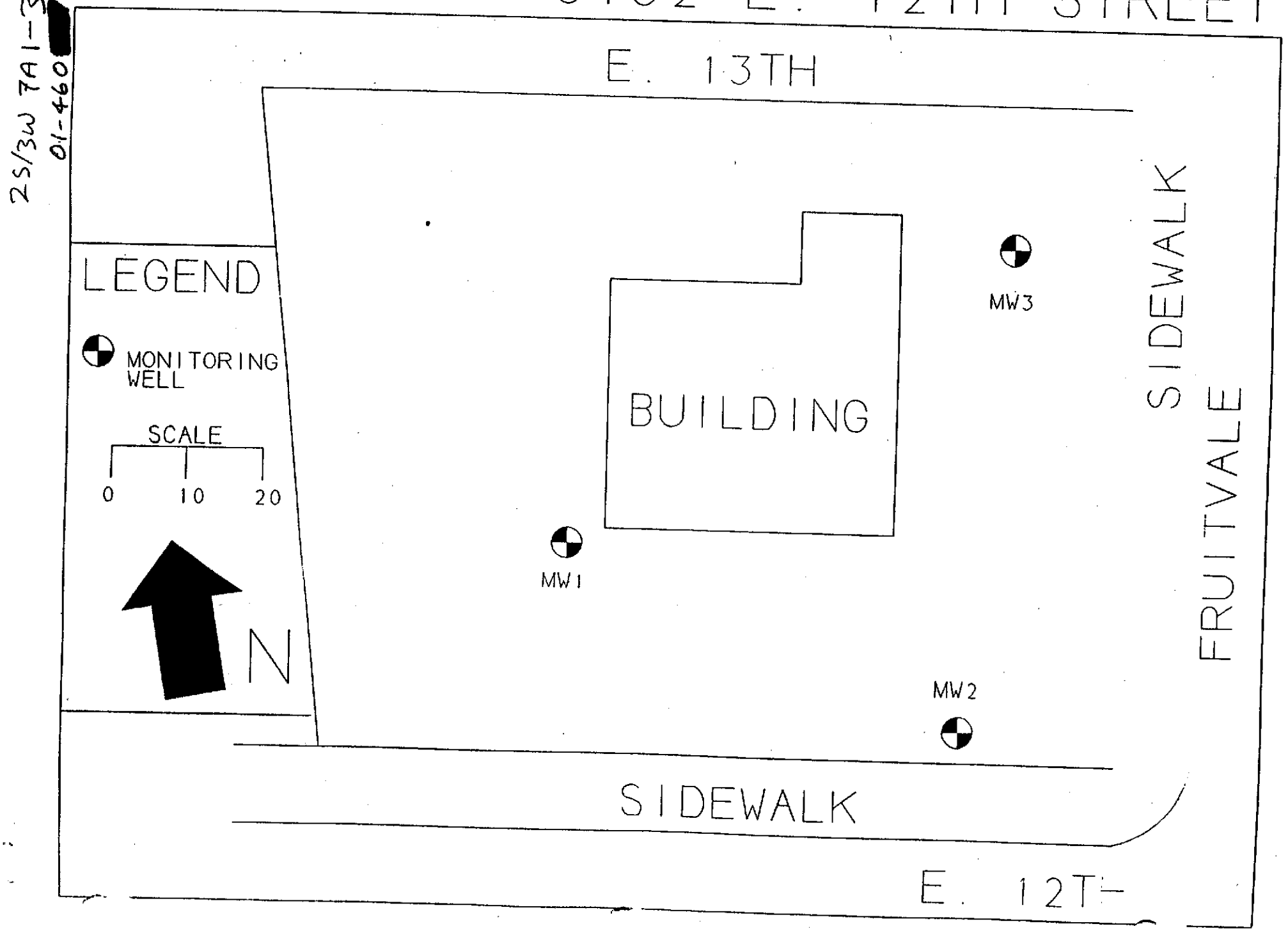


REMARKS

MILLER ENVIRONMENTAL COMPANY
RICHMOND, CA

SITE PLAN - 3132 E. 12TH STREET

2S/3W 7A 1-3
01-460



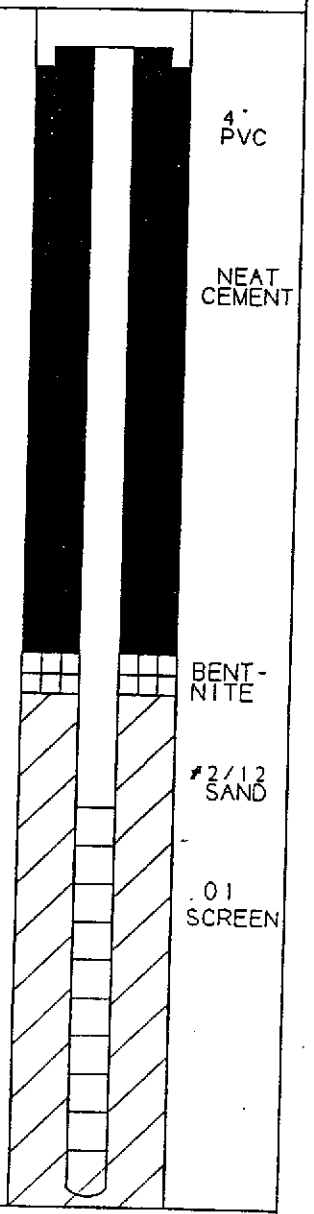
01-460V
2S/3W 7A3

BORING LOG

PROJECT NO: 89-1015	PROJECT NAME: FRUITVALE	BORING NO: MW3
LOCATION: E. 12TH AND FRUITVALE		DATE: 4/10/90
GEOLOGIST: REINHARD RUHMKE		PAGE 1 OF 1
GROUND WATER DEPTH: 23 FEET		DRILLER: HEW
DRILLING METHODS: 12" HOLLOW STEM AUGER		

DEPTH	SAMPLE	RECOVERY	BLOWS	DESCRIPTION	USCS	GRAPHIC SYMBOL
0				4" ASPHALT; 14" BASEROCK		
2				BLACK SILTY CLAY; STIFF; DRY; SLIGHTLY PLASTIC.		
5	MW3-5	10"	3, 7, 10			
7				OLIVE-GRAY SILTY CLAY.		
9				GREENISH-GRAY SILTY CLAY.	CL	
10	MW3-10	18"	6, 18, 31	SOME GRAVEL		
14				OLIVE-GRAY SILTY CLAY.		
15	MW3-15	18"	3, 9, 12			
18				YELLOWISH-BROWN SILTY CLAY.		
20	MW3-20	18"	5, 11, 25			
23				YELLOWISH-BROWN GRAVELLY CLAYEY MEDIUM SAND; WET.	SW	
28				YELLOWISH-BROWN SILTY CLAY.	CL	
30				END OF BORING		

WELL CONSTRUCTION



REMARKS

MILLER ENVIRONMENTAL COMPANY
RICHMOND, CA

25/3W-6J

01-1295

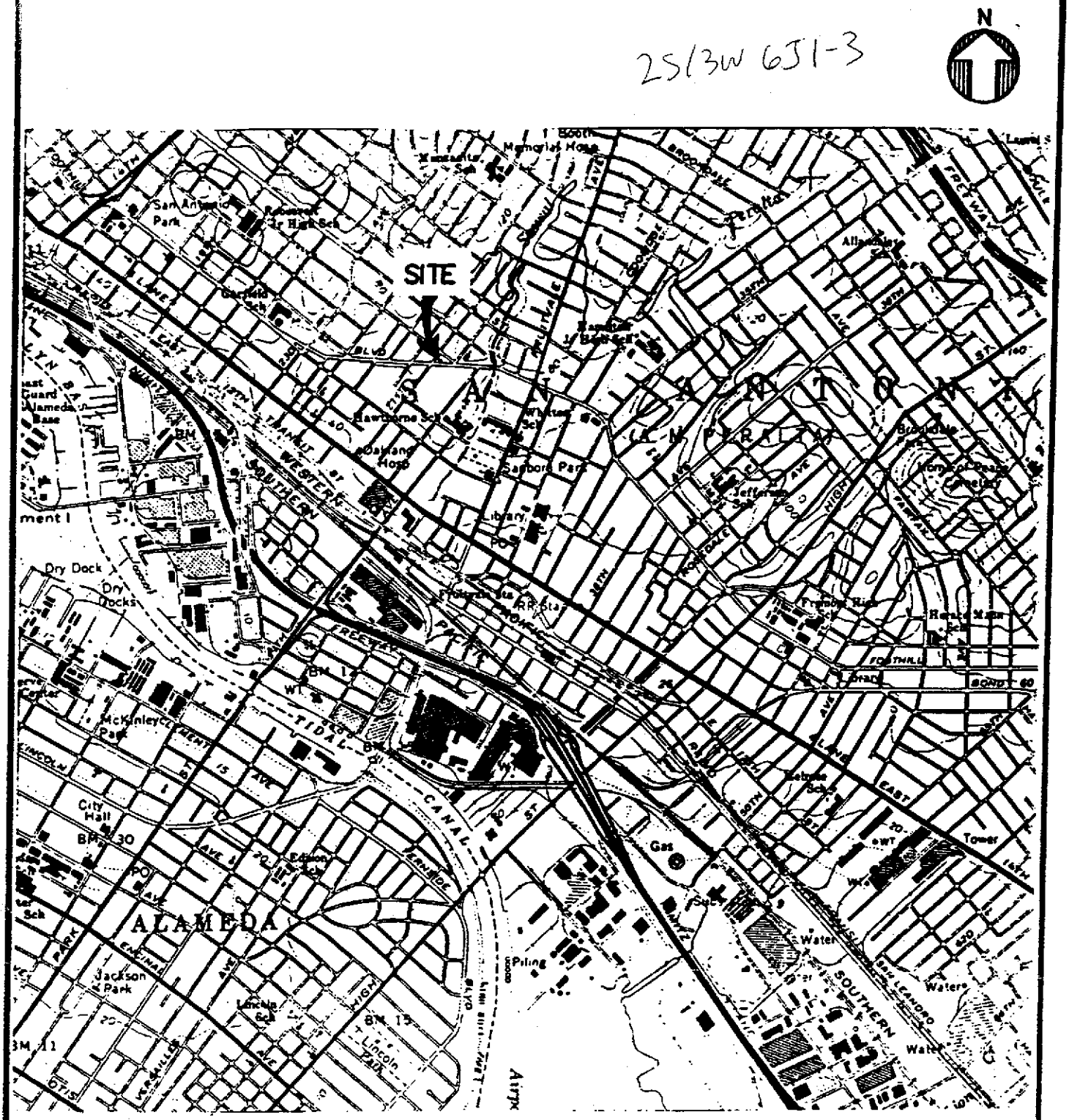
Job # 1804. Mr. J.Michel,1754 - 27th. Ave.

LOG OF WELL.

Black soil				1 foot.
Soft gra, clay	1	to	3	feet
Hard yellow clay	3	"	9	"
Hard cement clay	9	"	23	"
Hard clay & gravel mixed in it	23	"	40	"
Hard cement gravel	40	"	69	"
Hard yellow sandy	69	"	78	"
Hard yellow clay	78	"	85	"
Soft yellow sand	85	"	88	"
Hard yellow clay	88	"	124	"
Hard yellow cement gravel	124	"	126	"
Hard yellow sandy clay	126	"	150	"
Soft gray sandy clay	150	"	159	"
Hard brown sand	159	"	183	"
Brown sand little gravel in it	183	"	185	"
Hard yellow sandy clay	185	"	186	"

165 feet 8" no. 14 B. H. Collar Casing

2S/3W 6J1-3



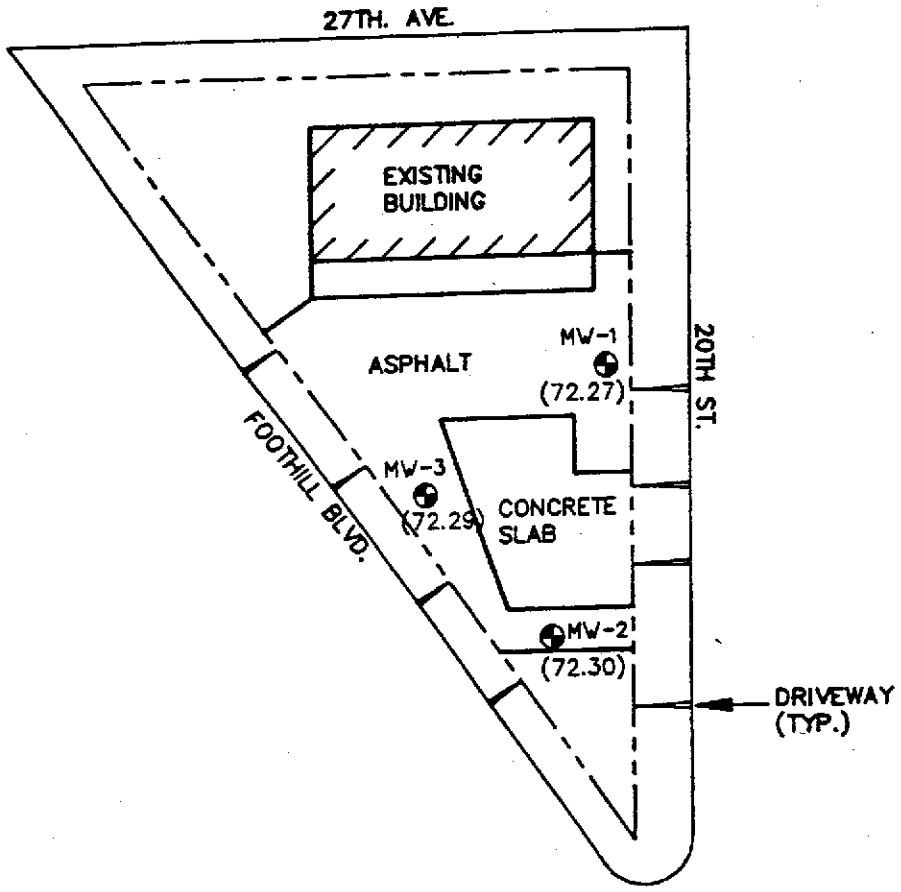
SOURCE: USGS 7.5' TOPOGRAPHIC MAP
OAKLAND EAST QUADRANGLE
(1959, PHOTOREVISED 1980)

0 2000
APPROXIMATE SCALE IN FEET

NATIONAL CONVENIENCE STORES STORE #1006 2710 FOOTHILL BLVD. OAKLAND, CALIFORNIA	LAW ENVIRONMENTAL, INC.	SITE LOCATION MAP JOB NO. 31-0524 FIGURE 1

01-494W-Y

2S/3W 6J1-3



LEGEND

MW-3 ●	NUMBER AND APPROXIMATE LOCATION OF MONITORING WELL
(72.29)	GROUND-WATER ELEVATION; ASSUMED BENCHMARK ELEVATION OF 100.00 FEET.
— — — —	PROPERTY LINE

0 50
APPROXIMATE SCALE IN FEET

SOURCE: FIELD SKETCH BY LAW ENVIRONMENTAL INC.

NATIONAL CONVENIENCE STORES
STORE #1006
2710 FOOTHILL BLVD.
OAKLAND, CALIFORNIA

LAW ENVIRONMENTAL, INC.

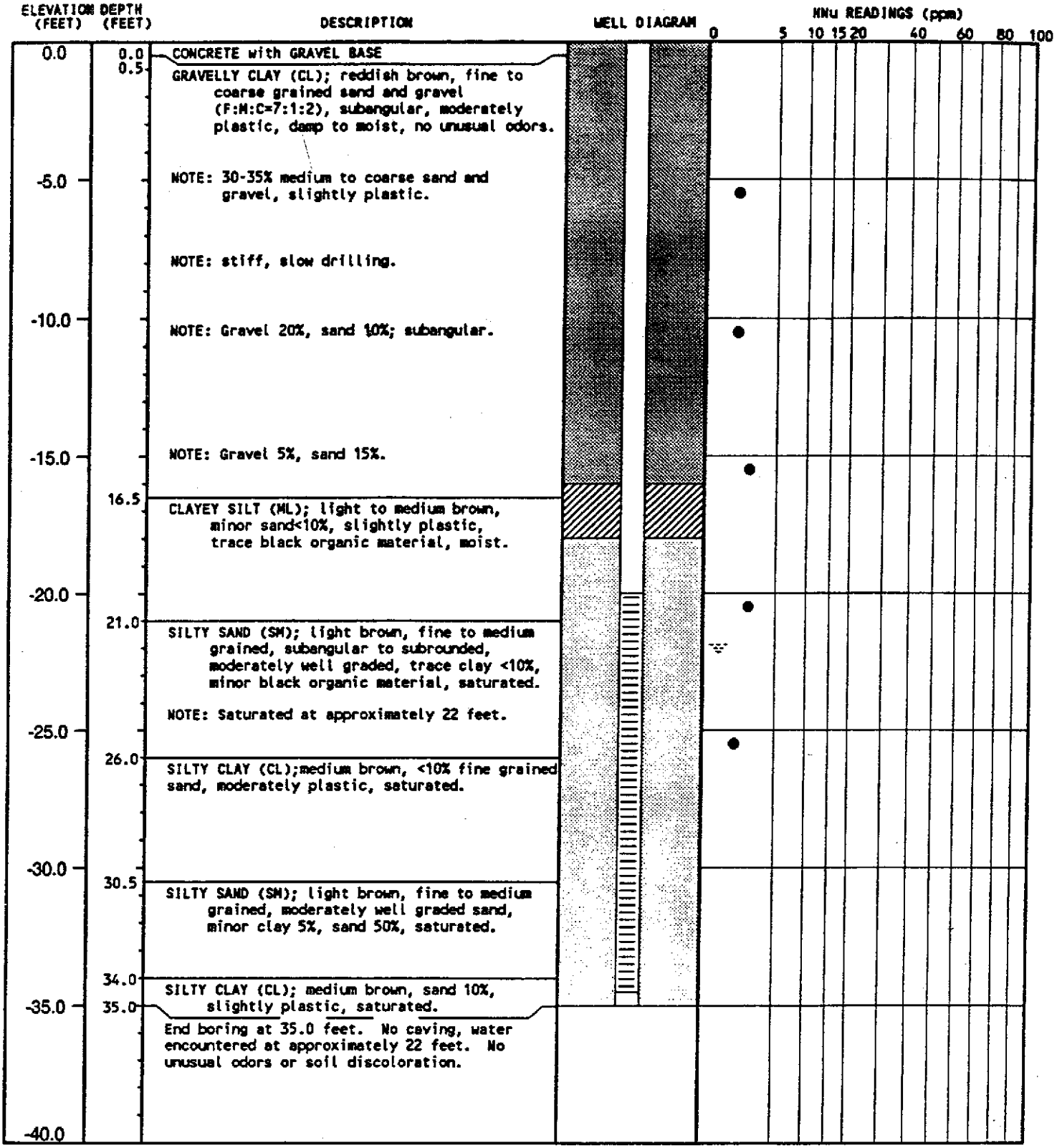
SITE PLAN

JOB NO. 31-0524 FIGURE 2

S-4147 23/3W 6J 1

MONITORING WELL RECORD

DATUM ELEVATION: 0.00Ft.
HEIGHT OF RISER: 0.00Ft.



REMARKS:

1) 4-inch well installed through 10-inch hollow stem augers.

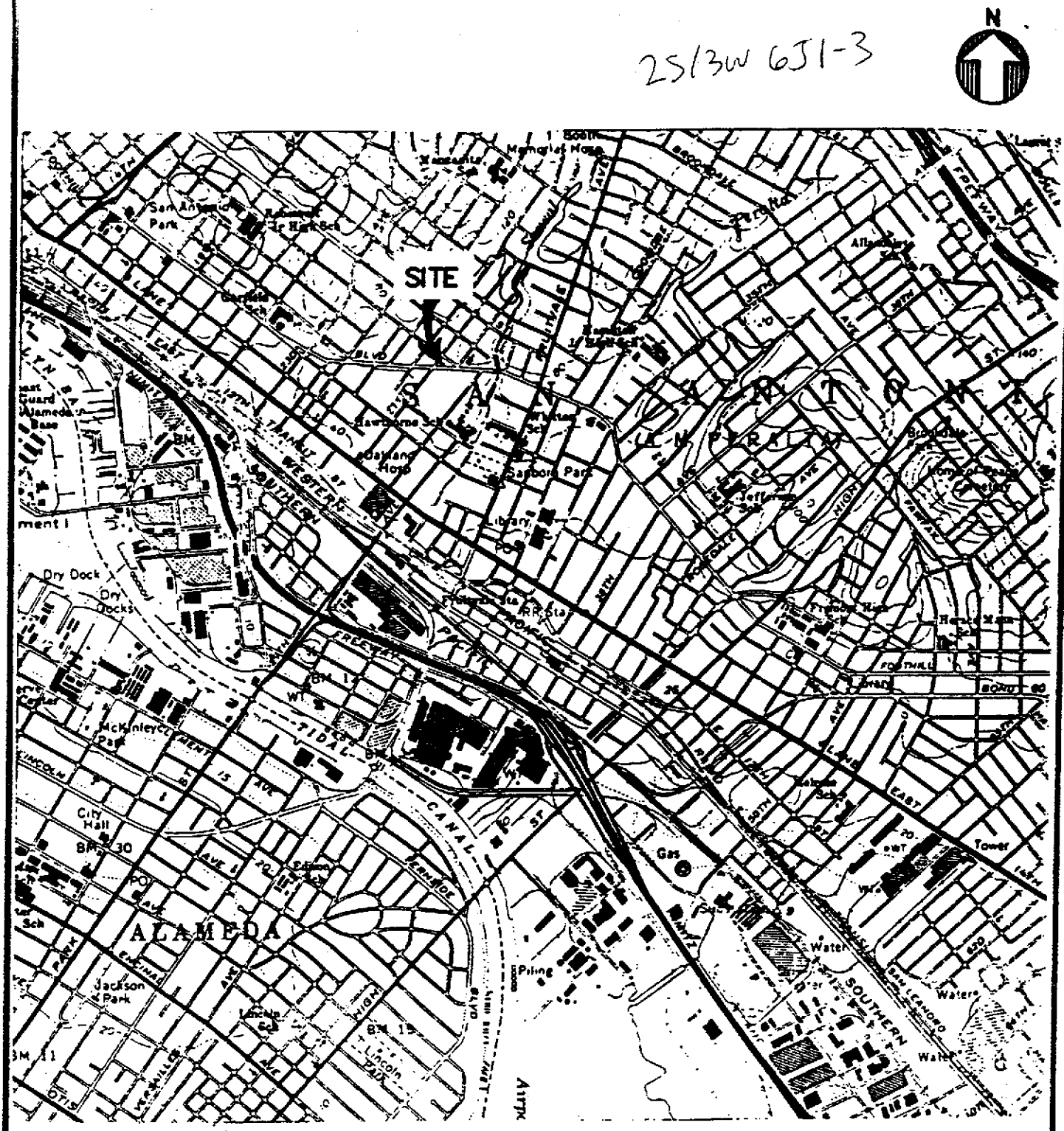
2) Well was developed by bailing on 3/7/91.

DRILLED BY	EXCEL	MONITORING WELL	MW-1
LOGGED BY	MIM	DATE STARTED	2/27/91
CHECKED BY	WGI	DATE COMPLETED	2/27/91
		JOB NUMBER	31-0524

ic# C57-596545
phone: 415-499-1422
PERMIT 91078

Law Environmental

25/3W 6J1-3

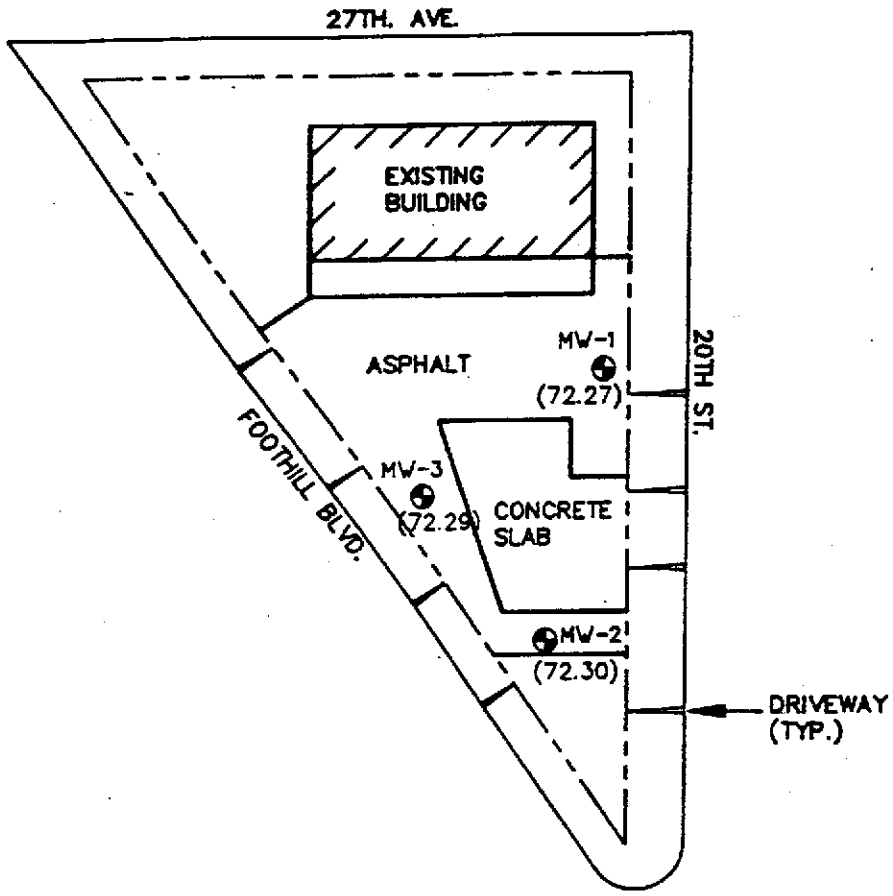


SOURCE: USGS 7.5' TOPOGRAPHIC MAP
OAKLAND EAST QUADRANGLE
(1959, PHOTOREVISED 1980)

NATIONAL CONVENIENCE STORES STORE #1006 2710 FOOTHILL BLVD. OAKLAND, CALIFORNIA	LAW ENVIRONMENTAL, INC.	SITE LOCATION MAP JOB NO. 31-0524 FIGURE 1

01-494W-Y

2S/3W 6J1-3



LEGEND

MW-3 — NUMBER AND APPROXIMATE LOCATION OF MONITORING WELL.

(72.29) — GROUND-WATER ELEVATION; ASSUMED BENCHMARK ELEVATION OF 100.00 FEET.

— — — — PROPERTY LINE

SOURCE: FIELD SKETCH BY LAW ENVIRONMENTAL INC.

0 50
APPROXIMATE SCALE IN FEET

NATIONAL CONVENIENCE STORES
STORE #1006
2710 FOOTHILL BLVD.
OAKLAND, CALIFORNIA

LAW ENVIRONMENTAL, INC.

SITE PLAN

JOB NO. 31-0524 FIGURE 2

01-444X 22/3N 65 2

TEST BORING RECORD

DATUM ELEVATION: 0.00Ft.
HEIGHT OF RISER: 0.00Ft.

ELEVATION (FEET)	DEPTH (FEET)	DESCRIPTION
0.0	0.0	CONCRETE with GRAVEL BASE.
	0.5	SANDY CLAY (CL); yellowish to medium brown, coarse sand and gravel (F:M:C: = 4:0:1), subangular, moderately plastic, damp to moist, no unusual odors.
-5.0		NOTE: Increase in gravel content to 35%
-10.0		NOTE: Sand and gravel at 20%.
-15.0		NOTE: Gravel 15%, 1/8" to 1" diameter, angular.
		NOTE: Decrease in sand and gravel to 10%, possible slight hydrocarbon odor.
	18.0	SILTY CLAY (CH); light to medium brown, trace fine grained sand <10%, highly plastic, firm, trace black organic material, moist no unusual odor.
-20.0		
	23.0	SANDY CLAYEY SILT (ML); light brown, slightly plastic, fine grained sand, trace black organic material, stiff, moist, no unusual odors.
-25.0		
		NOTE: Saturated at approximately 28 feet.
	29.0	SILTY SAND (SM); light brown, fine to coarse grained (F:M:C = 1:1:3), subangular to subrounded, moderately well graded, saturated, no unusual odors.
-30.0		
-35.0		
	35.5	SILTY CLAY (CH); medium brown, trace fine to medium grained sand <10%, moderately plastic, saturated.
		NOTE: End boring at 40.0 feet. No caving, water encountered at approximately 28', rises to 26'. No unusual odors except at approximately 18'.
-40.0		

WELL DIAGRAM

HNu READINGS (ppm)

0 5 10 15 20 40 60 80 100

REMARKS:

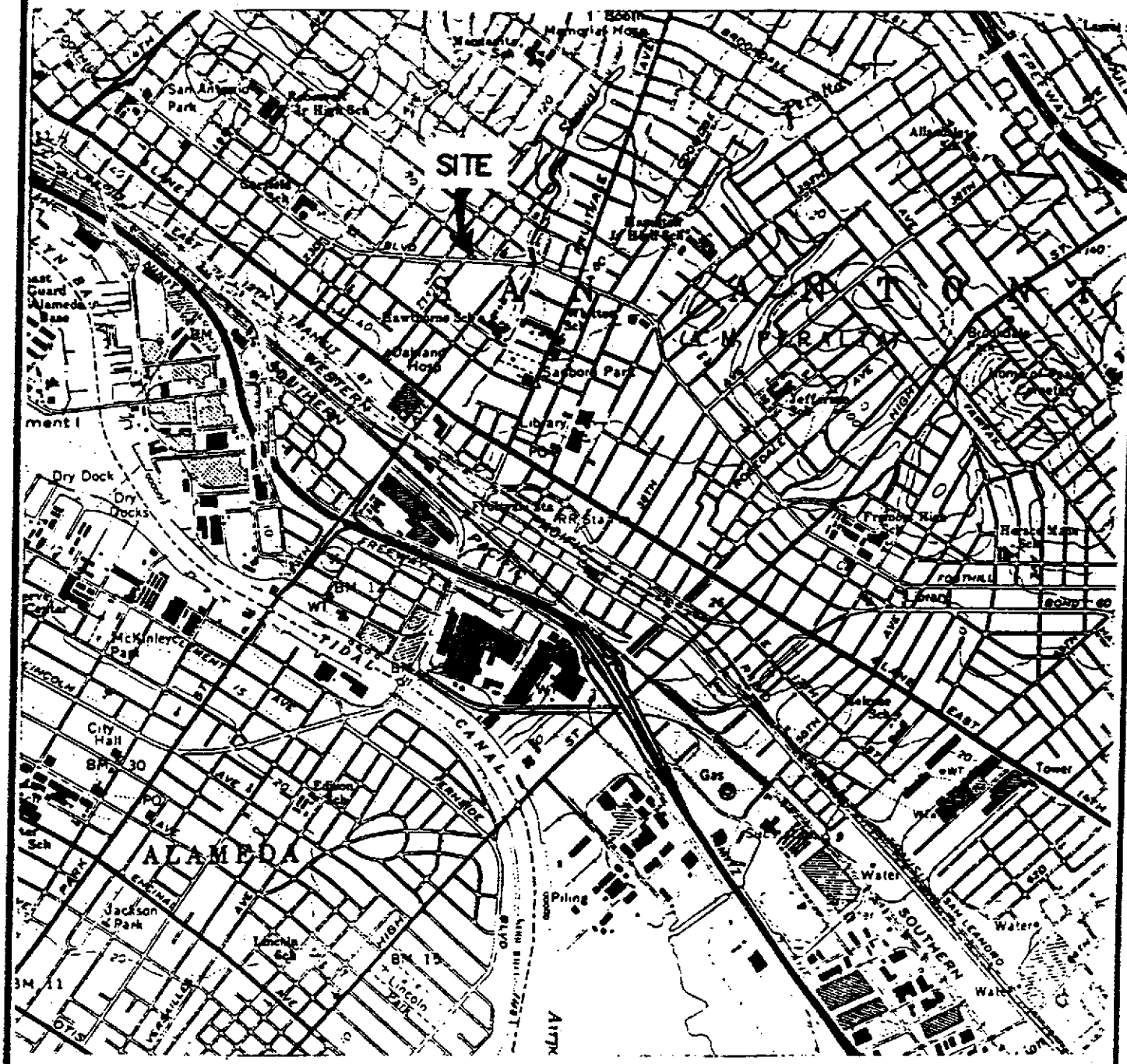
1) 4-inch well installed through 10-inch hollow stem augers.

2) Well was developed by surging and bailing on 3/7/91.

DRILLED BY	EXCEL	MONITORING WELL	MW-2
LOGGED BY	MIM	DATE STARTED	2/27/91
CHECKED BY	WGI	DATE COMPLETED	2/27/91
		JOB NUMBER	31-0524

Law Environmental

25/3W 6J1-3



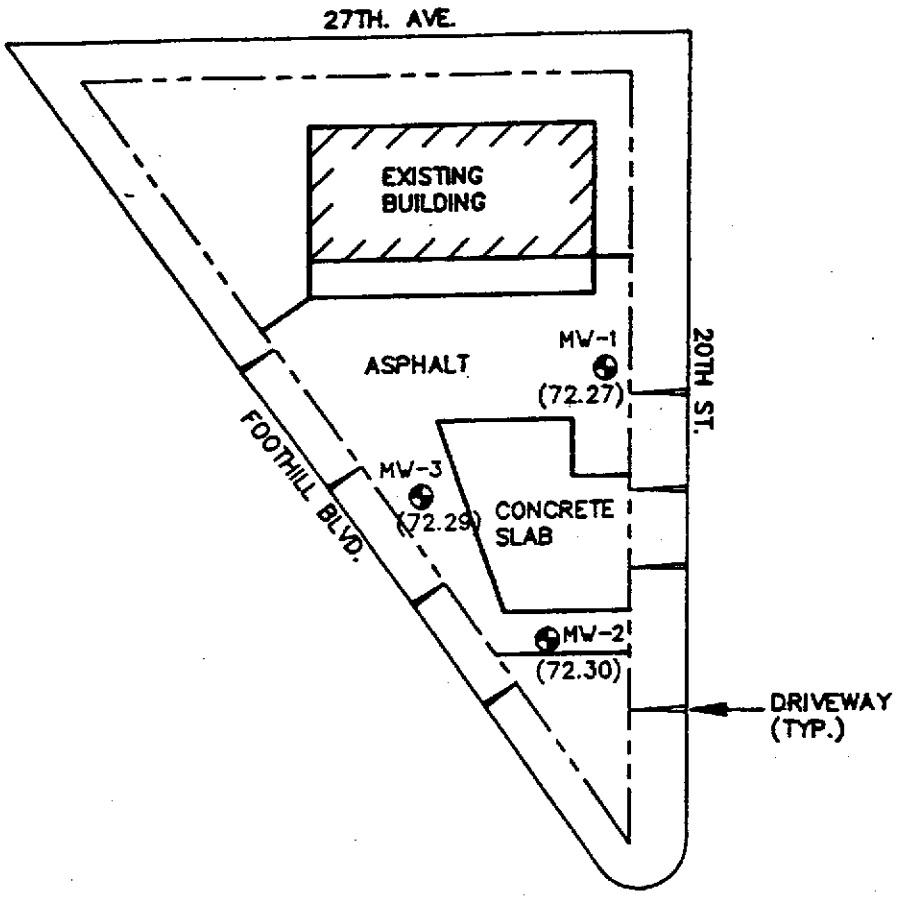
SOURCE: USGS 7.5' TOPOGRAPHIC MAP
OAKLAND EAST QUADRANGLE
(1959, PHOTOREVISED 1980)

0 2000
APPROXIMATE SCALE IN FEET

NATIONAL CONVENIENCE STORES STORE #1006 2710 FOOTHILL BLVD. OAKLAND, CALIFORNIA	LAW ENVIRONMENTAL, INC.	SITE LOCATION MAP JOB NO. 31-0524 FIGURE 1

01-494W-Y

2S/3W 6J1-3



LEGEND

MW-3 — NUMBER AND APPROXIMATE LOCATION OF MONITORING WELL

(72.29) — GROUND-WATER ELEVATION; ASSUMED BENCHMARK ELEVATION OF 100.00 FEET.

PROPERTY LINE

SOURCE: FIELD SKETCH BY LAW ENVIRONMENTAL INC.

0 50
APPROXIMATE SCALE IN FEET

NATIONAL CONVENIENCE STORES
STORE #1006
2710 FOOTHILL BLVD.
OAKLAND, CALIFORNIA

LAW ENVIRONMENTAL, INC.

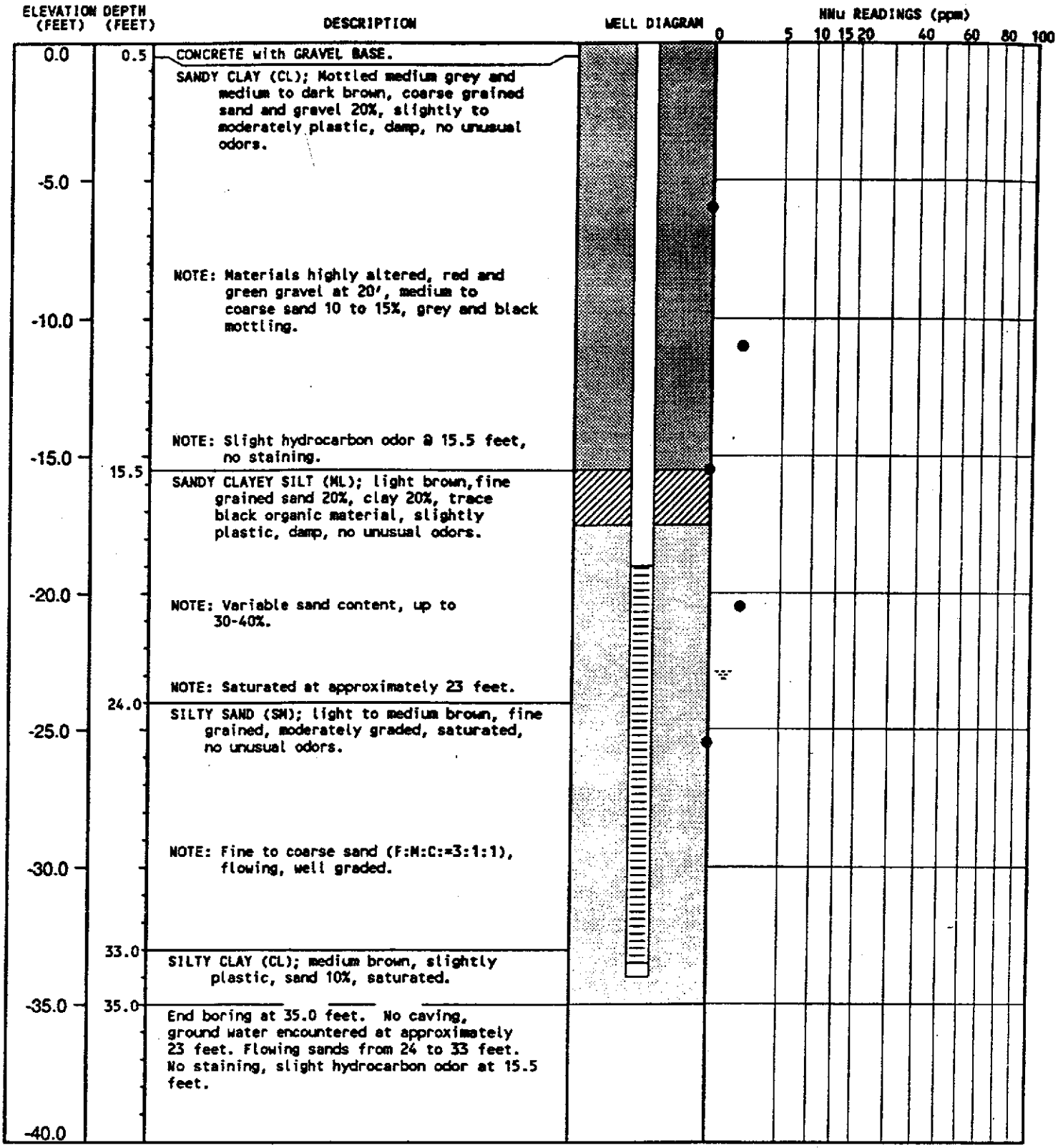
SITE PLAN

JOB NO. 31-0524 FIGURE 2

21-4947 2S/3W 6D3

TEST BORING RECORD

DATUM ELEVATION: 0.00Ft.
HEIGHT OF RISER: 0.00Ft.



REMARKS:

1) 4-inch well installed through 10-inch hollow stem augers.

2) Well was developed by surging and bailing on 3/7/91.

DRILLED BY	EXCEL	MONITORING WELL	MW-3
LOGGED BY	MIM	DATE STARTED	2/28/91
CHECKED BY	WGI	DATE COMPLETED	2/28/91
		JOB NUMBER	31-0524

Law Environmental

Montgomery Ward & Co. - Oakland.

LOG OF WELL.

Clay	1	to	21	feet
Gravel	21	"	26	"
Yellow clay	26	"	134	"
Sandy clay	134	"	150	"
Yellow clay	150	"	230	"
Cement gravel	230	"	238	"
Sandy clay	238	"	280	"
Cement gravel	280	"	288	"
Creek gravel	288	"	300	"
Yellow sandy clay	300	"	360	"
Blue clay	360	"	435	"
Yellow clay	435	"	458	"
Cement gravel	458	"	498	"
Sandy clay	498	"	550	"
Cement gravel	550	"	560	"
Yellow clay	560	"	597	"
Sandy clay	597	"	608	"
Water gravel	608	"	612	"
Yellow clay	612	"	632	"
Cement gravel and water gravel	632	"	639	"
Yellow clay	639	"	643	"
Gravel, water	643	"	650	"
Sandy clay	650	"	658	"
Blue water sand	658	"	664	"
Yellow clay and lime stone	664	"	681	"

Casing.

16" - 104 ft.
12" - 299 ft.
10" - 584 ft.
8" - 681 ft.

Made out and signed by "John Reiber"
2236 - 40th. Avenue, Oakland, Calif.

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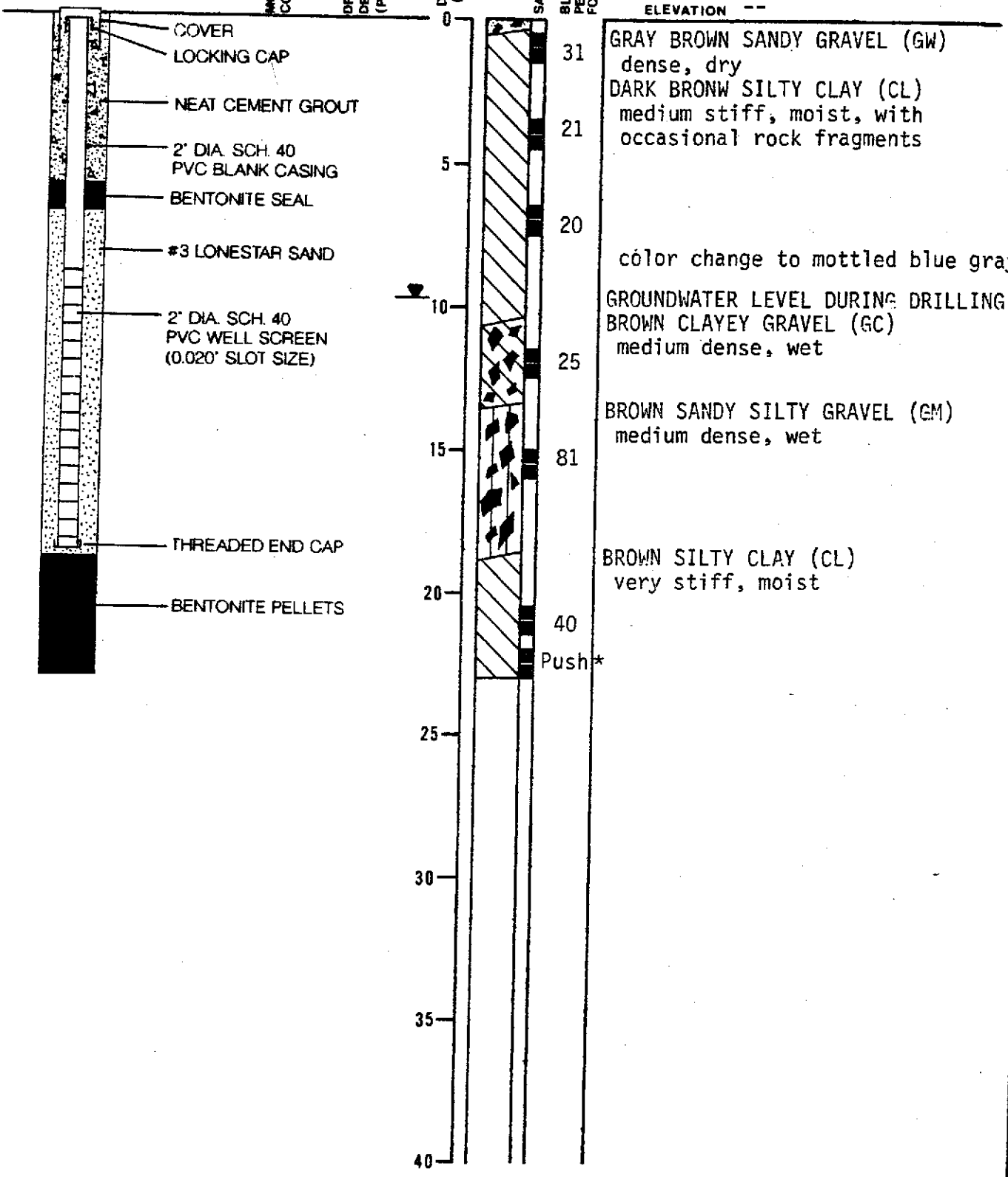
STATE OF CALIFORNIA·DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

260145

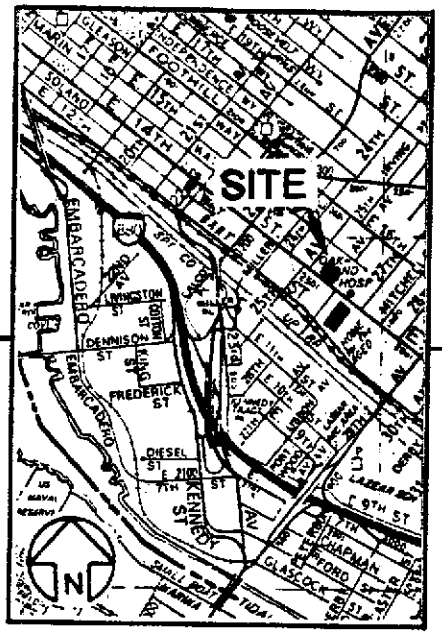
LOG OF TEST BORING 12

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/22/90
ELEVATION --



Subsurface Consultants	2530 E. 14TH STREET - OAKLAND, CA			PLATE
	JOB NUMBER 586.001	DATE 4/9/90	APPROVED	4

26145



VICINITY MAP

TEST BORING

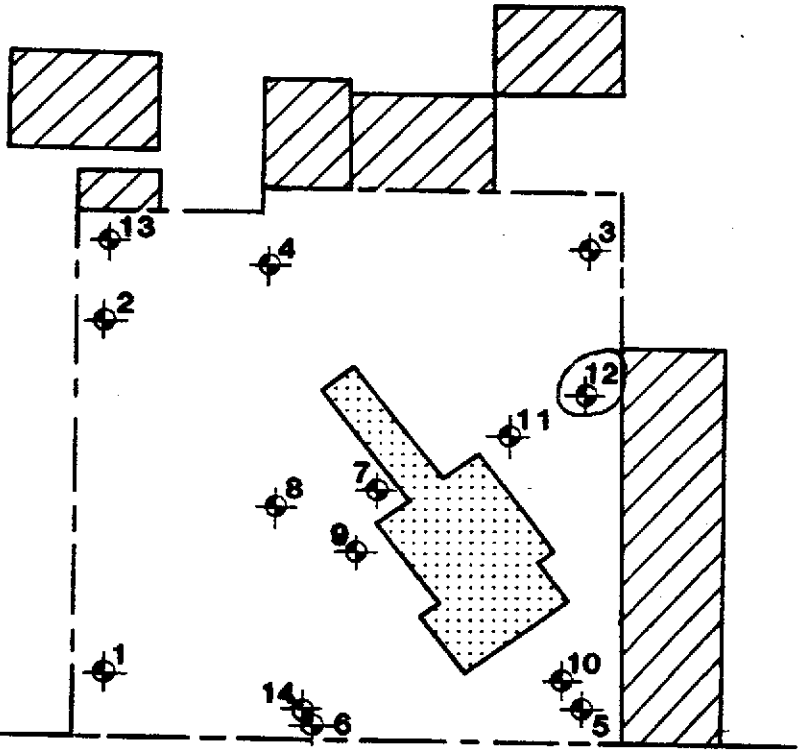
PROPERTY BOUNDARY

ADJACENT AND NEARBY STRUCTURES

EXISTING EXCAVATION

EAST 15TH STREET

25TH AVENUE



EAST 14TH STREET

PLAN NORTH

TRUE NORTH

APPROXIMATE SCALE (feet)

0 60 120

SITE PLAN

Subsurface Consultants

2530 EAST 14TH STREET, OAKLAND, CA

JOB NUMBER	DATE	APPROVED
586.001	10/17/89	

PLATE 1

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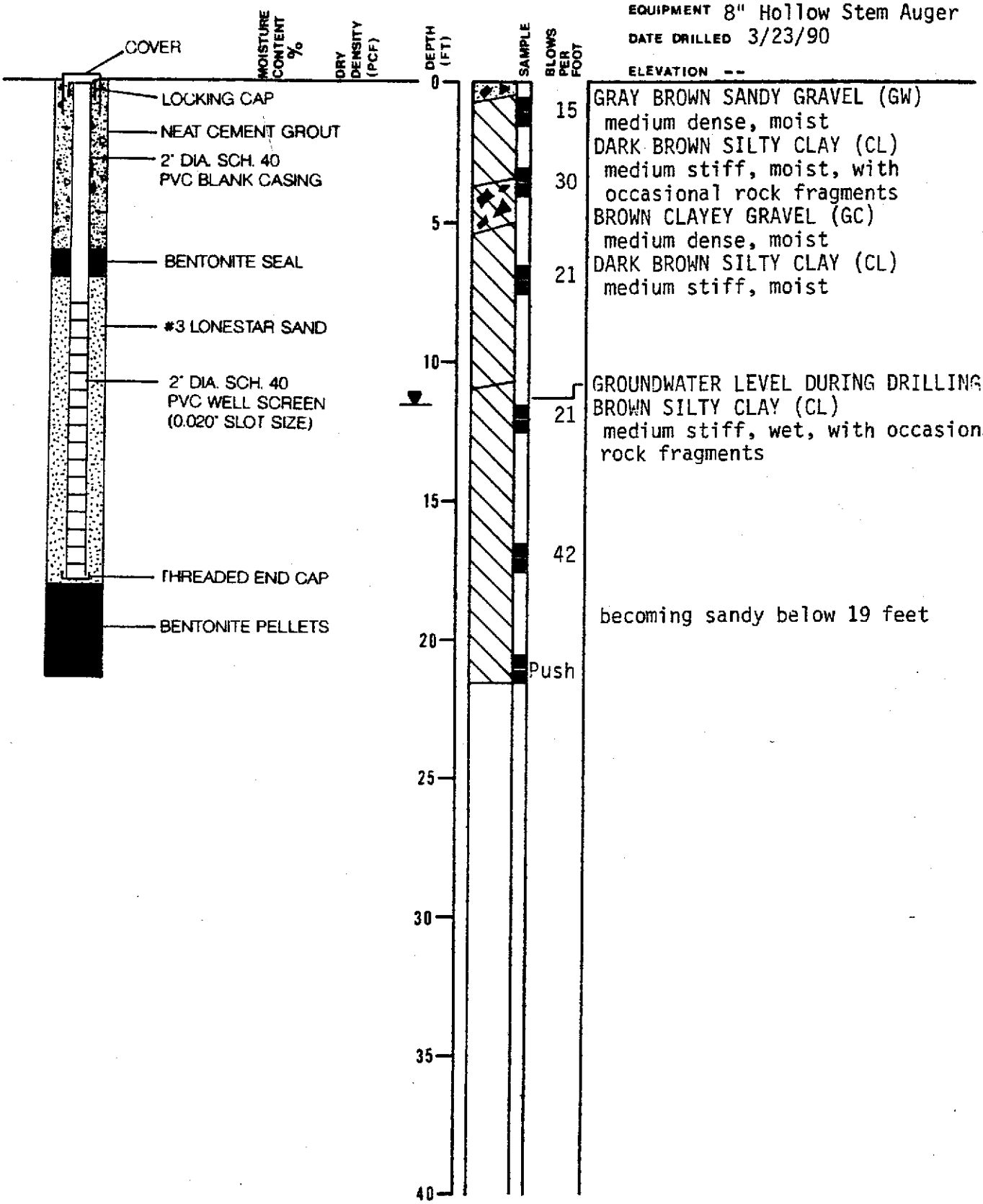
STATE OF CALIFORNIA·DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

260146

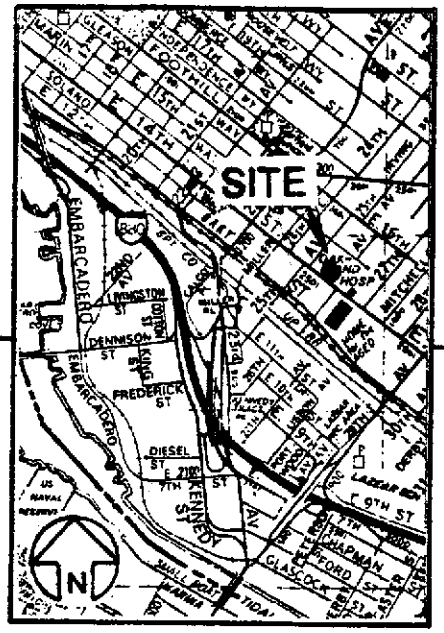
LOG OF TEST BORING 13

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/23/90
ELEVATION --



Subsurface Consultants	2530 E. 14TH STREET - OAKLAND, CA			PLATE
	JOB NUMBER	DATE	APPROVED	5
	586.001	4/9/90		

260146



VICINITY MAP

TEST BORING

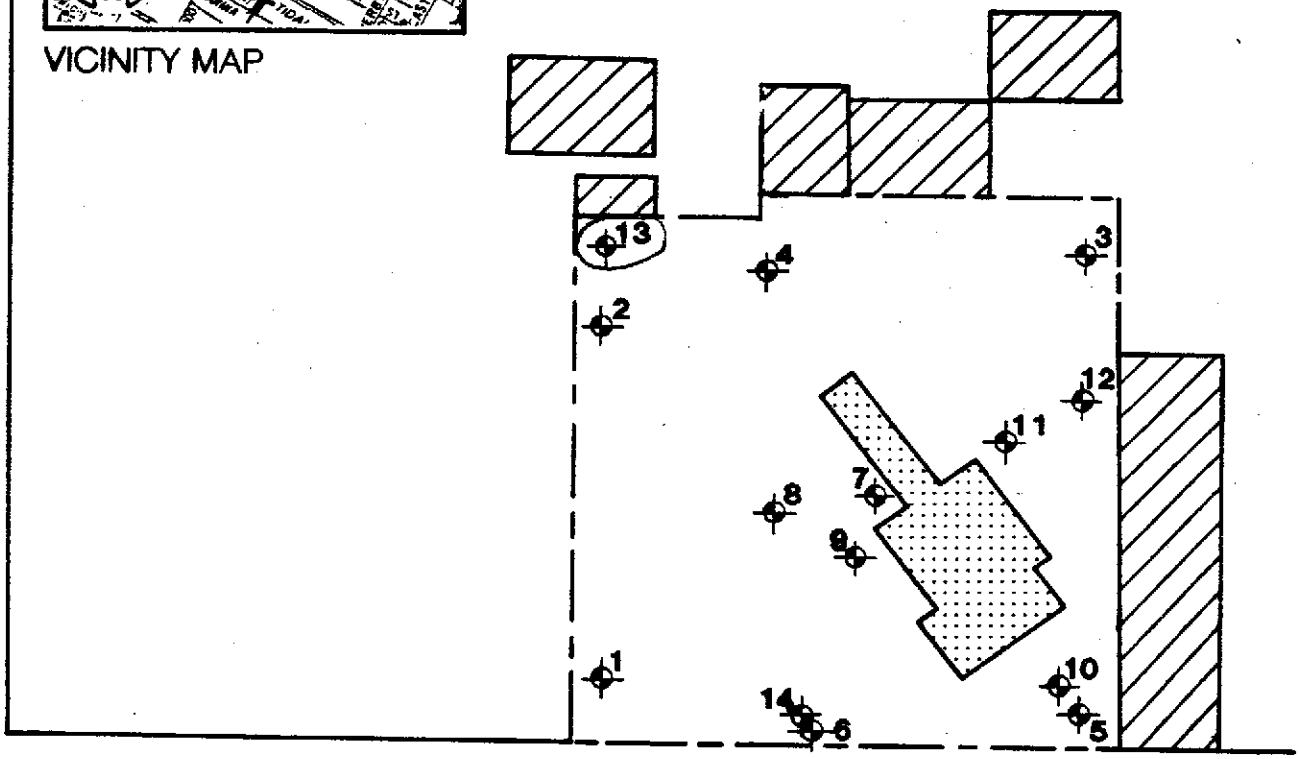
PROPERTY BOUNDARY

ADJACENT AND NEARBY STRUCTURES

EXISTING EXCAVATION

EAST 15TH STREET

25TH AVENUE



EAST 14TH STREET

PLAN NORTH

TRUE NORTH

APPROXIMATE SCALE (feet)

0 60 120

SITE PLAN

Subsurface Consultants

2530 EAST 14TH STREET, OAKLAND, CA

JOB NUMBER	DATE	APPROVED
586.001	10/17/89	

PLATE 1

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STATE OF CALIFORNIA·DWR
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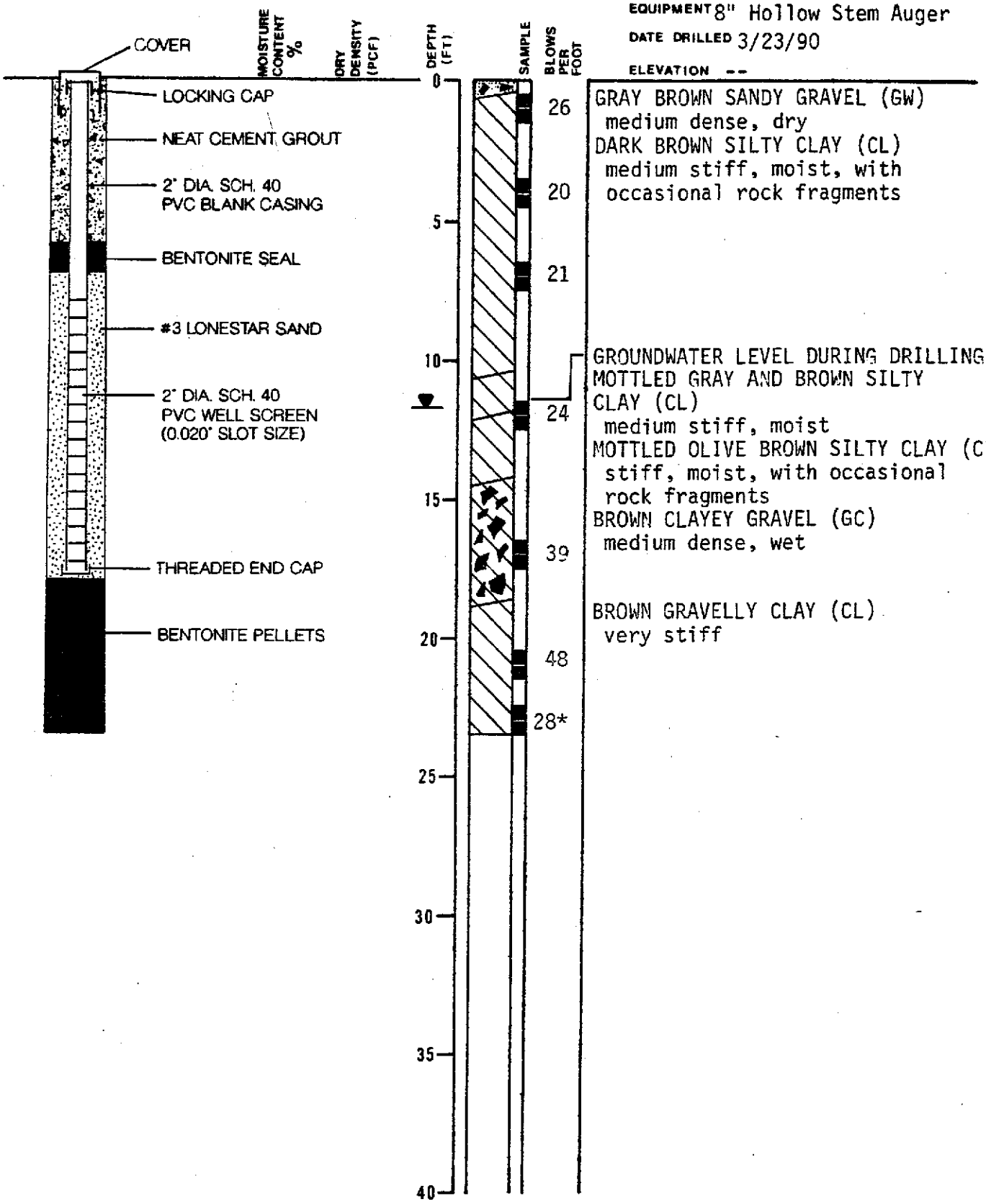
(WELL LOGS)

REMOVED

260147

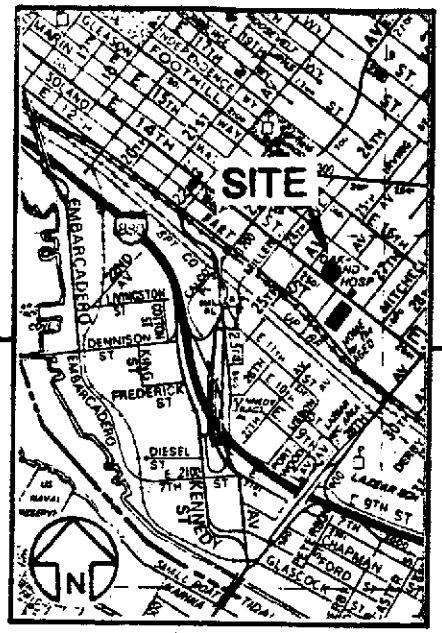
LOG OF TEST BORING 14

EQUIPMENT 8" Hollow Stem Auger
DATE DRILLED 3/23/90
ELEVATION --



Subsurface Consultants	2530 E. 14TH STREET - OAKLAND, CA			PLATE 6
	JOB NUMBER 586.001	DATE 4/9/90	APPROVED	

260147

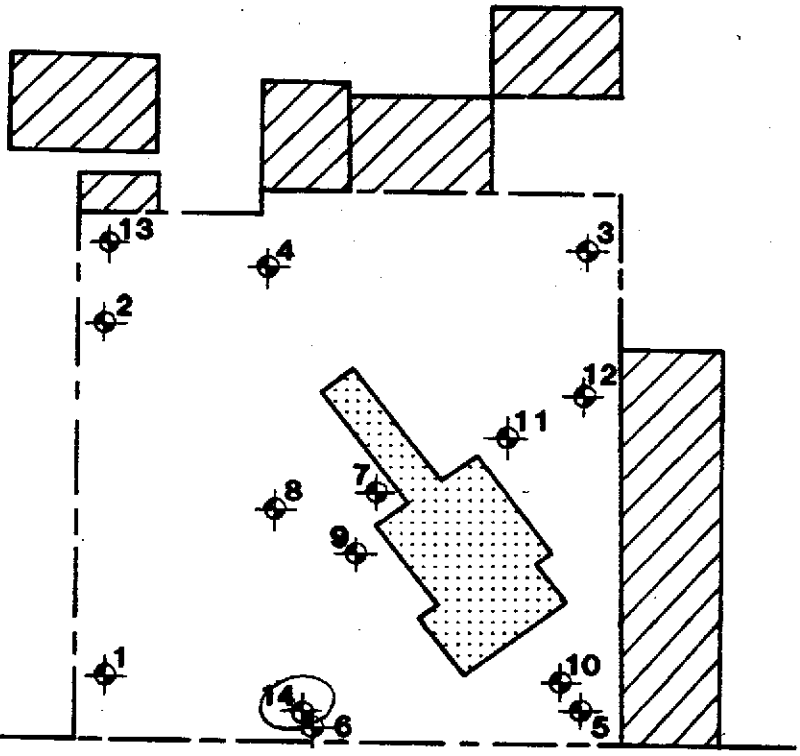


VICINITY MAP

TEST BORING
PROPERTY BOUNDARY
ADJACENT AND NEARBY STRUCTURES
EXISTING EXCAVATION

EAST 15TH STREET

25TH AVENUE



EAST 14TH STREET

PLAN NORTH

TRUE NORTH

APPROXIMATE SCALE (feet)
0 60 120

SITE PLAN

Subsurface Consultants

2530 EAST 14TH STREET, OAKLAND, CA

JOB NUMBER	DATE	APPROVED
586.001	10/17/89	

PLATE 1

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STATE OF CALIFORNIA·DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

01-143 A-D INV ✓ ADD ✓

FLEMING CORPORATION

Peralta Hacienda

SITEPLAN

A1.2

OWNER : PERALTA HACIENDA
FRUITVALE AVE/DAVIS ST. 25/30 : 5C ✓ ph 4-6
OAKLAND, CA. (4 BORINGS)

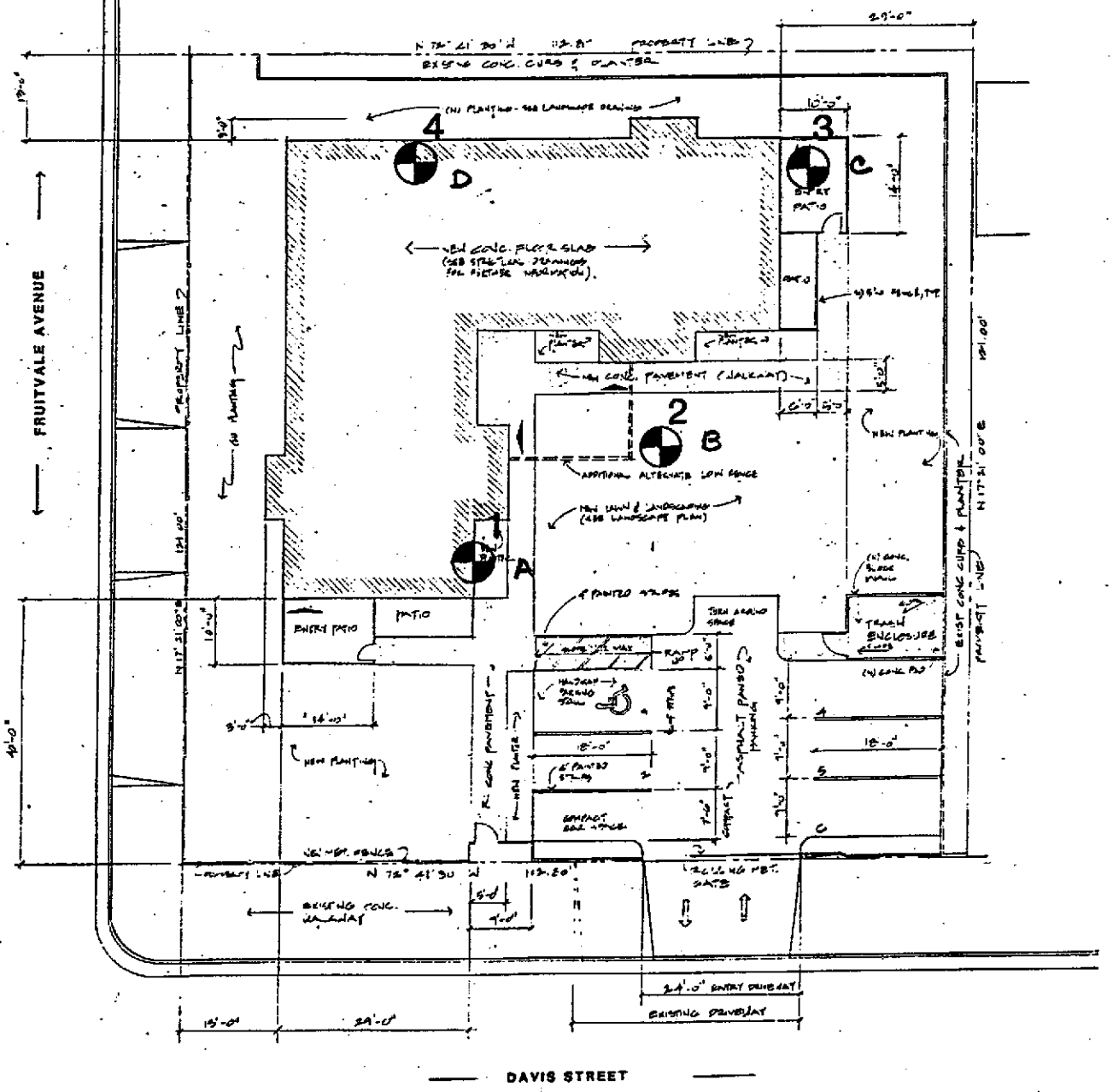
8/5/97

REVISIONS BY DATE

FILE 1081-c of City of Oakland

BY DATE

CHECKED BY



N

0 20 40 60
SCALE FEET

SITE PLAN

Boring Location

TransPacific Geotechnical Engineers, Inc.

DRILLER: JOHN CARVER

01-143A

BORING 1
DATE DRILLED 10/19/85
SURFACE ELEVATION 103±

DEPTH IN FEET	LABORATORY TEST DATA: TYPE OF STRENGTH TEST	LABORATORY TEST DATA: NORMAL OR CONFINING PRESSURE, PSF	LABORATORY TEST DATA: SHEAR STRENGTH, PSF	LABORATORY TEST DATA: MOISTURE CONTENT, %	LABORATORY TEST DATA: DRY DENSITY, PCF	SAMPLING: TYPE OF SAMPLER	SAMPLING: SAMPLING RESISTANCE	SAMPLES	SYMBOLS	DESCRIPTION
0										2 inches asphaltic concrete over 4 inches aggregate base
	P	–	4000	19	105	U	20		CL	Dark brown silty clay (stiff)
5										
	P	–	2300	19	107	U	19		CL	Brown sandy silty clay (stiff)
									CL	Greenish brown gravelly clay with gasoline odor (stiff)
10	P	–	4500+	15	117	U	27			
									CL	Mottled orange and grayish brown sandy silty clay (stiff)
15	P	–	3550	20	109	U	26			
										▽ (Encountered water, 10/19/85)
20				22	101	U	16		SC	Brown clayey sand with traces of gravel (loose)

NOTE: SAMPLING RESISTANCE FOR U SAMPLER ARE MEASURED IN NUMBER OF BLOWS REQUIRED TO DRIVE SAMPLER 12 INCHES. BLOW COUNTS ARE FOR THE LAST 12 INCHES (OR PORTION THEREOF) OF A TOTAL OF THE LAST 18 INCHES PENETRATION OF THE SAMPLER.

1081-01-01 City of Oakland

LOG OF BORING

TransPacific Geotechnical Engineers, Inc.

Plate 3-A

06-143B

BORING 2
DATE DRILLED 10/19/85
SURFACE ELEVATION 104±

DEPTH IN FEET	LABORATORY TEST DATA: TYPE OF STRENGTH TEST	LABORATORY TEST DATA: NORMAL OR CONFINING PRESSURE, PSF	LABORATORY TEST DATA: SHEAR STRENGTH, PSF	LABORATORY TEST DATA: MOISTURE CONTENT, %	LABORATORY TEST DATA: DRY DENSITY, PCF	SAMPLING: TYPE OF SAMPLER	SAMPLING: SAMPLING RESISTANCE	SAMPLES	SYMBOLS	DESCRIPTION
0									AC	2 inches asphaltic concrete over 6 inches aggregate base
	P	-	4500	19	105	U	18	■	CL	Orange brown and dark brown gravelly clay (stiff) (fill)
5	P	-	3700	19	105	U	16	■		Brown silty clay (stiff) (grading grayish brown and more silty with depth)
				18	111	U	23	■	CL	Grayish brown gravelly clay with traces of sand (stiff)
10									CL	Mottled gray and brown sandy silty clay (stiff)
	P	-	2550	23	106	U	29	■		
15										(Encountered water, 10/19/85)
						U	29		SC	Brown clayey sand (medium dense) (no recovery)
20										

NOTE: See Plate 2-A

1081-01-01 City of Oakland

LOG OF BORING

TransPacific Geotechnical Engineers, Inc.

Plate 3-B

BORING 3
DATE DRILLED 10/19/85
SURFACE ELEVATION 105±

LABORATORY TEST DATA					SAMPLING		SAMPLES	SYMBOLS	DESCRIPTION
STRENGTH TEST DATA			MOISTURE CONTENT, %	DRY DENSITY, PCF	TYPE OF SAMPLER	SAMPLING RESISTANCE			
TYPE OF STRENGTH TEST	NORMAL OR CONFINING PRESSURE, PSF	SHEAR STRENGTH, PSF							
			8	111	U	23		CL	2 inches asphaltic concrete over 4 inches aggregate base Brown and grayish brown sandy and silty clay with traces of gravel (stiff) (fill)
P	-	3530	20	101	U	15		CL	Brown and dark brown silty clay with traces of sand and gravel (stiff) (grading more silty with depth)
			10	111	U	36		SP	Brown gravelly sand with traces of clay (medium dense)
P	-	3510	23	104	U	27		CL	Mottled orange and grayish brown silty clay (stiff)
									(Encountered water, 10/19/85)
			9	137	U	66		SP	Brown gravelly sand with traces of clay (dense)

DEPTH IN FEET: 0, 5, 10, 15, 20

NOTE: See Plate 2-A

1081-01-01 City of Oakland

LOG OF BORING

TransPacific Geotechnical Engineers, Inc.

Plate 3-C

01-143D

BORING 4
DATE DRILLED 10/19/85
SURFACE ELEVATION 104±

DEPTH IN FEET	LABORATORY TEST DATA: TYPE OF STRENGTH TEST	LABORATORY TEST DATA: NORMAL OR CONFINING PRESSURE, PSF	LABORATORY TEST DATA: SHEAR STRENGTH, PSF	LABORATORY TEST DATA: MOISTURE CONTENT, %	LABORATORY TEST DATA: DRY DENSITY, PCF	SAMPLING: TYPE OF SAMPLER	SAMPLING: SAMPLING RESISTANCE	SAMPLES	SYMBOLS	DESCRIPTION
0										2 inches asphaltic concrete over 5 inches aggregate base
	DSCU	500	720	17	100	U	15		CL	Brown and dark brown gravelly clay (stiff) (fill)
	DSCU	1000	1370	18	104					
				19	100	U	20		CL	Brown silty clay with traces of gravel (stiff)
5									SC	Brown clayey fine sand with traces of gravel (loose to medium dense)
										(½-hour after completed drilling)
10				9	114	U	10		SC	Greenish brown clayey sand with some gravel (loose)
										(Encountered water, 10/19/85)
									SP	Brown gravelly sand (loose)
15				19	98	U	14			
									CL	Brown and gray sandy clay (stiff)
20						U	10			

(Strong gasoline odor between 4 to 15 feet)

NOTE: See Plate 2-A

1081-01-01 City of Oakland

LOG OF BORING

TransPacific Geotechnical Engineers, Inc.

Plate 3-D

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WELL COMPLETION REPORT
(WELL LOGS)

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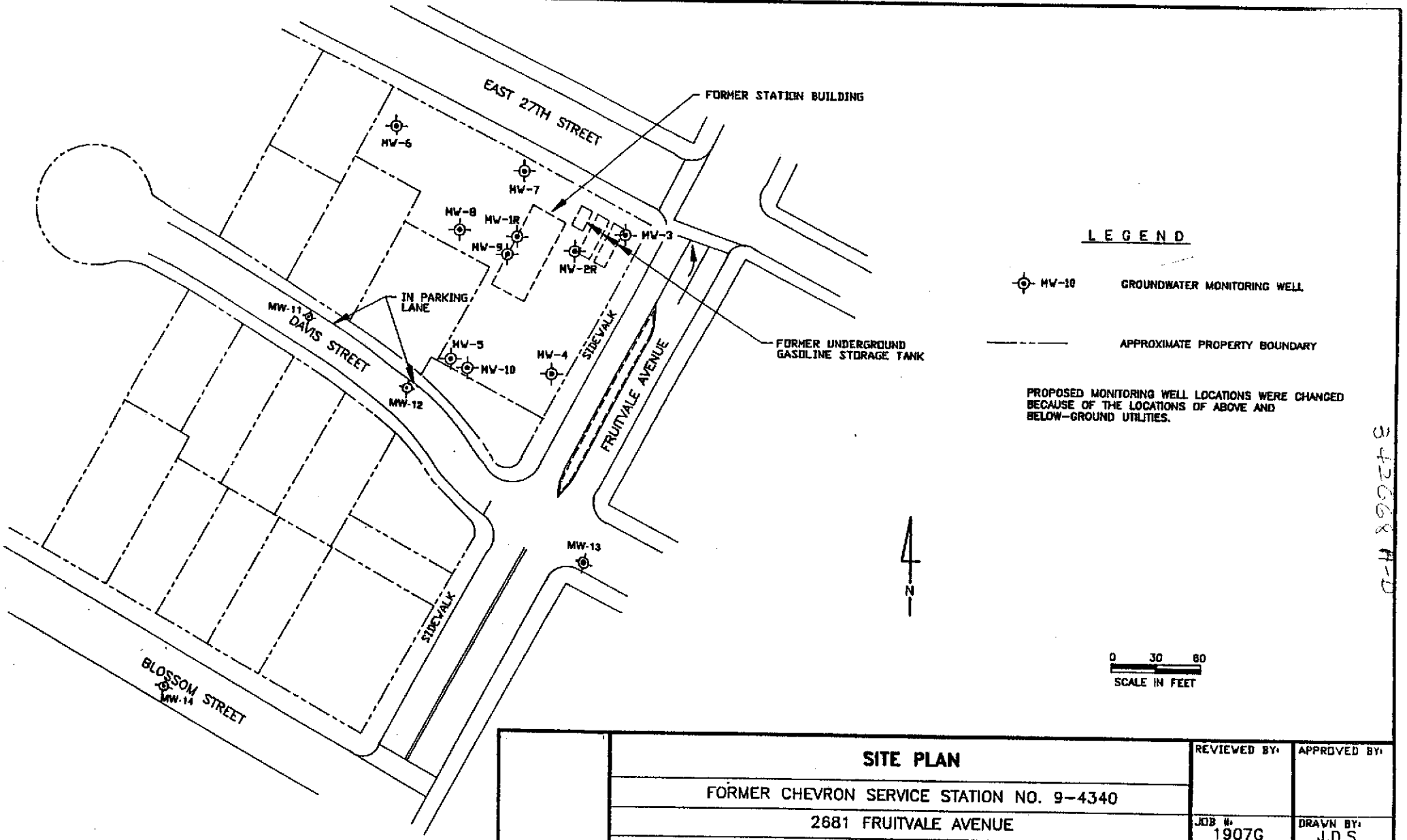


	SITE PLAN	REVIEWED BY:	APPROVED BY:
	FORMER CHEVRON SERVICE STATION NO. 9-4340		
	2681 FRUITVALE AVENUE	JOB #: 1907G	DRAWN BY: J.D.S.
	OAKLAND, CALIFORNIA	DATE: 5/29/91	DRAWING #: FIG. 2

342668A

02S03W05C12

RESNA EXPLORATORY BORING LOG

Project Name: Former Chevron Station 9-4340, Oakland, California

Boring No. MW-11

Date Drilled: 10/8/91

Project Number: 1907-3G

Logged By: BVT

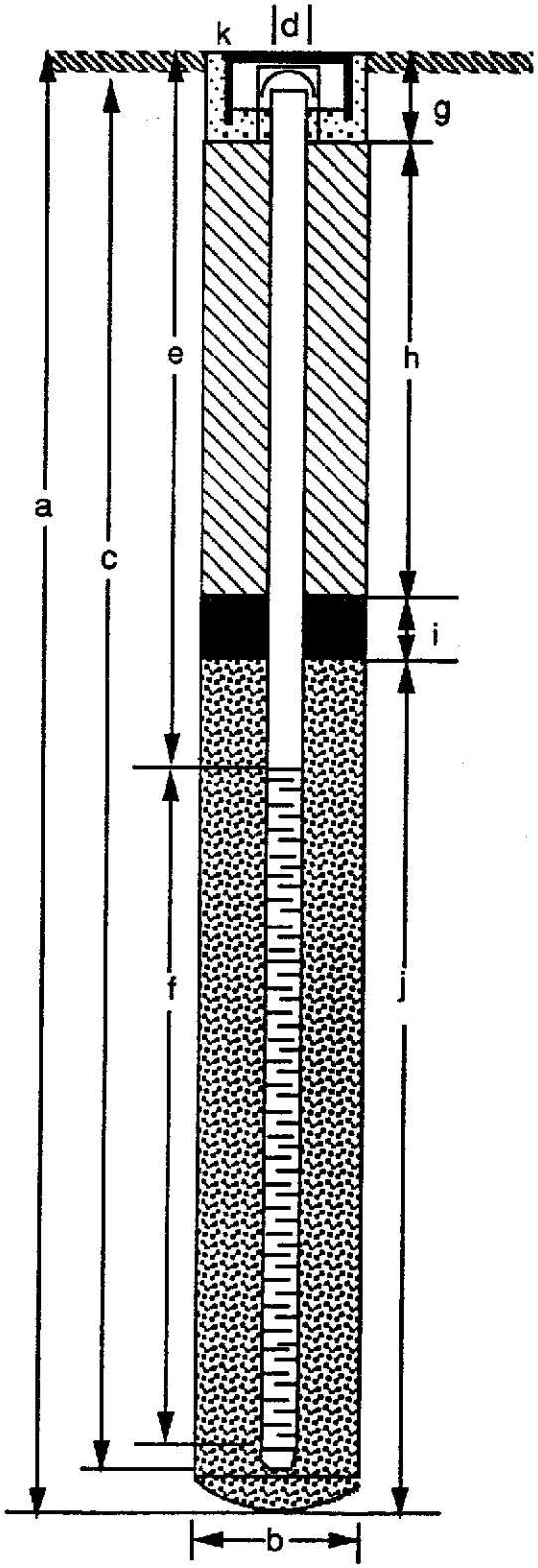
Depth (ft.)	Sample No.	Blows/Foot	Unified Soil Classification	SOIL DESCRIPTION	Water Level	PID Reading (ppm)	Well Construction
				Asphalt: 3" Baserock: 2"			
1–6		23	ML	SILT, dark reddish brown (5YR 2.5/2), 80-90% silt, 5-15% clay, 5-10% very fine- to fine-grained sand, <5% medium- to coarse-grained sand, low plasticity, stiff, moist At approximately 4 feet, color change to dark brown (7.5YR 3/4), increase in coarse-grained sand to fine gravel content (5-10%) At approximately 7 feet, driller indicated presence of gravels. Thickness apparently <1 foot		0	
10–11		10	SM	SILTY SAND, brown to dark brown (7.5YR 4/4) 60-70% fine- to medium-grained sand, 20-30% silt, 5-15% coarse-grained sand to fine gravel, minor clay binder, poorly sorted, loose to medium dense, very moist to wet		0	
13					11/7/91 08:45 ▼		
15–16					10/8/91 09:47 ▽	0	
16–19		12	SW-SM	GRAVELLY SAND, dark grayish brown (10YR 4/2), 70-80% fine- to coarse-grained sand, 10-20% fine-medium gravel, 10-20% silt, poorly sorted, medium dense, saturated			
20–21		38	ML	SILT, brown (10YR 5/3), low plasticity, very stiff, damp Bottom of boring = 21.5 feet			

REVIEWED BY R.G./C.E.G.

RESNA

MONITORING WELL DETAIL

Project Number	1907-3G	**Boring/Well No.**	MW-11
Project Name	Former Chevron Station 9-4340	**Top of Casing Elev.**	101.98
County	Alameda	**Ground Surface Elev.**	102.62
Well Permit No.	91545	**Datum**	Mean Sea Level



EXPLORATORY BORING

a.	**Total depth**	21.5	ft.
b.	**Diameter**	8	in.
	Drilling method	Hollow Stem Auger	

WELL CONSTRUCTION

c.	**Casing length**	21	ft.
	Material	Schedule 40 PVC	
d.	**Diameter**	2	in.
e.	**Depth to top perforations**	11	ft.
f.	**Perforated length**	10	ft.
	Perforated interval from	11 to 21	ft.
	Perforation type	Machine Slot	
	Perforation size	0.020	in.
g.	**Surface seal**	1	ft.
	Seal material	Concrete (10"), Asphalt (2")	
h.	**Backfill**	8.5	ft.
	Backfill material	Cement Grout	
i.	**Seal**	1	ft.
	Seal material	Bentonite	
j.	**Gravel pack**	11.5	ft.
	Pack material	2/12 Monterey Type Sand	
k.	Traffic-rated watertight vault box with locking PVC expansion cap		

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WELL COMPLETION REPORT
(WELL LOGS)

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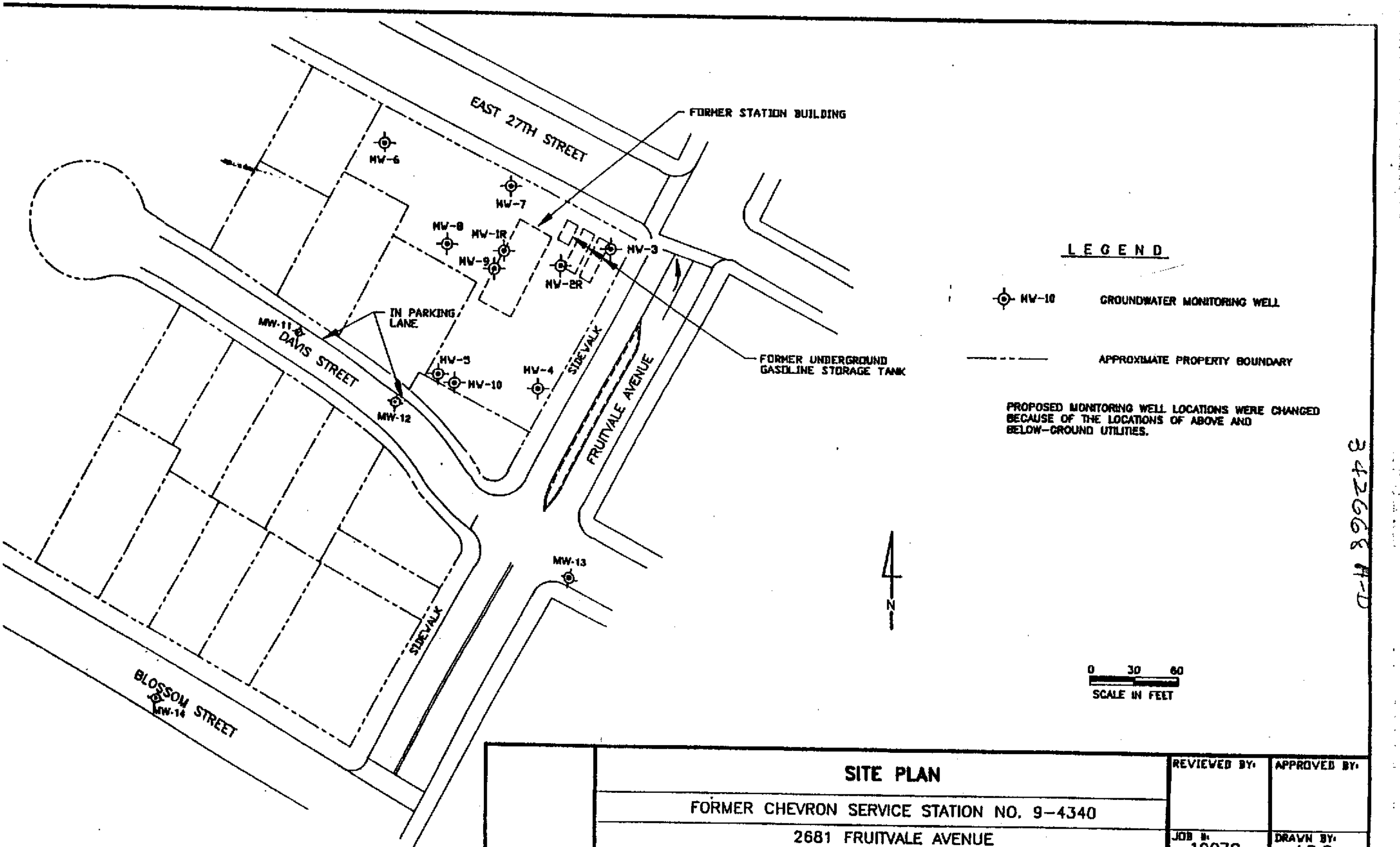


SITE PLAN	REVIEWED BY:	APPROVED BY:
FORMER CHEVRON SERVICE STATION NO. 9-4340		
2681 FRUITVALE AVENUE	JOB #: 1907G	DRAWN BY: J.D.S.
OAKLAND, CALIFORNIA	DATE: 5/29/91	DRAWING #: FIG. 2

342668

02503W05CL3

RESNA EXPLORATORY BORING LOG

Project Name: Former Chevron Station 9-4340
Oakland, California

Project Number: 1907-3G

Boring No. MW-12
Date Drilled: 10/8/91
Logged By: BVT

Depth (ft.)	Sample No.	Blows/Foot	Unified Soil Classification	SOIL DESCRIPTION	Water Level	PID Reading (ppm)	Well Construction
				Asphalt: 3" Baserock: 2"			
1-8		39	ML	SILT, dark reddish brown (5YR 2.5/2), 80-90% silt, 5-15% clay, 5-10% very fine- to fine-grained sand, <5% medium- to coarse-grained sand, low plasticity, stiff, moist At approximately 4 feet, color change to dark brown (7.5YR 3/4), increase in coarse-grained sand to fine gravel content (5-15%)		0	
9-11		15	ML	SANDY SILT, brown to dark brown (7.5YR 4/4), 60-70% silt, 35-45% fine- to medium-grained sand, trace coarse-grained sand, low plasticity, stiff, very moist		0	
12-18		7	SM	SILTY SAND, dark yellowish brown (10YR 4/4), 85-95% fine- to medium-grained sand, 15-25% silt, well sorted, loose, very moist to saturated	11/7/91 09:15 10/8/91 12:33		
19			ML	SILT, brown (10YR 5/3), low plasticity, very stiff, damp to moist			
20-21		42	GW-GM	SANDY GRAVEL, dark yellowish brown (10YR 3/4), 65-75% fine to coarse gravel, 35-45% fine- to coarse-grained sand, 5-15% fines, poorly sorted, dense, saturated			

REVIEWED BY R.G./C.E.G.

342668

RESNA EXPLORATORY BORING LOG

Project Name: Former Chevron Station 9-4340
Oakland, California

Boring No. MW-12

Date Drilled: 10/8/91

Project Number: 1907-3G

Logged By: BVT

Depth (ft.)	Sample No.	Blows/Foot	Unified Soil Classification	SOIL DESCRIPTION	Water Level	PID Reading (ppm)	Well Construction
22		8		At 22 feet, color change to dark bluish gray (5B 4/1)			
23				Bottom of boring = 22.5 feet			
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							

REVIEWED BY R.G./C.E.G.

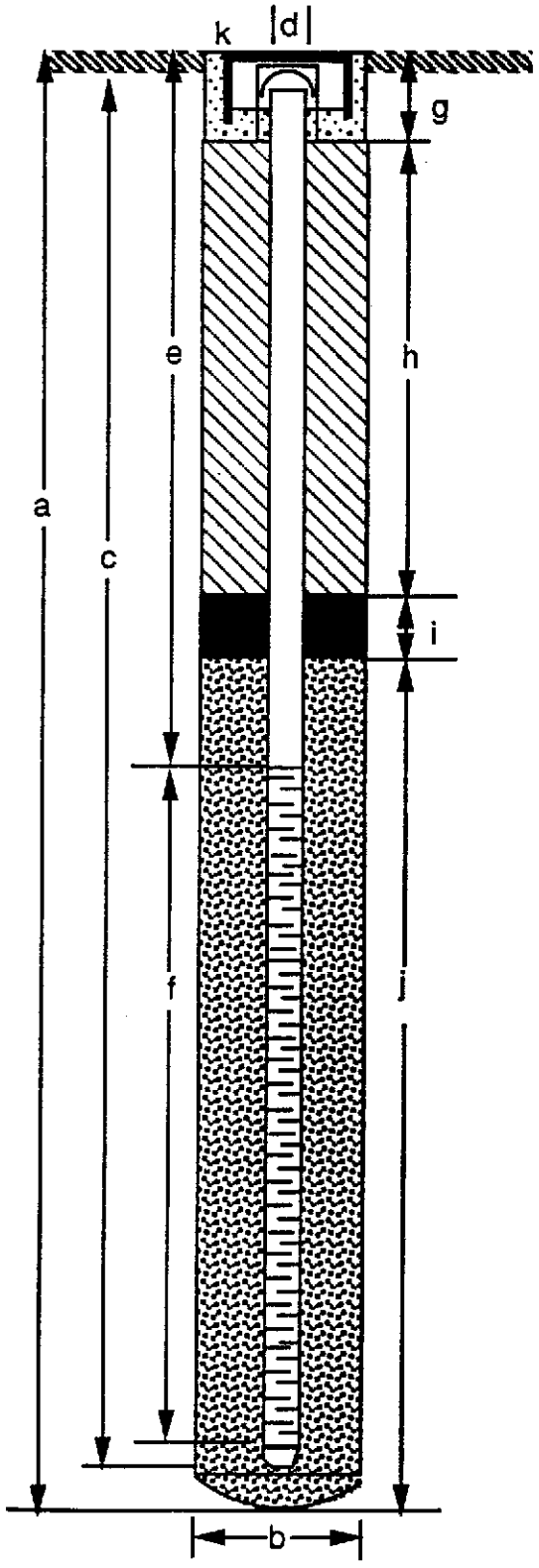
RESNA

3426658

MONITORING WELL DETAIL

02503D05CL3

Project Number	1907-3G	**Boring/Well No.**	MW-12
Project Name	Former Chevron Station 9-4340	**Top of Casing Elev.**	102.16
County	Alameda	**Ground Surface Elev.**	102.69
Well Permit No.	91545	**Datum**	Mean Sea Level



EXPLORATORY BORING

a. **Total depth** 22.5 ft.

b. **Diameter** 8 in.

Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. **Casing length** 22.5 ft.

Material Schedule 40 PVC

d. **Diameter** 2 in.

e. **Depth to top perforations** 12.5 ft.

f. **Perforated length** 10 ft.

Perforated interval from 12.5 to 22.5 ft.

Perforation type Machine Slot

Perforation size 0.020 in.

g. **Surface seal** 1 ft.

Seal material Concrete (10"), Asphalt (2")

h. **Backfill** 9.5 ft.

Backfill material Cement Grout

i. **Seal** 1 ft.

Seal material Bentonite

j. **Gravel pack** 11 ft.

Pack material 2/12 Monterey Type Sand

k. Traffic-rated watertight vault box with locking PVC expansion cap

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WELL COMPLETION REPORT
(WELL LOGS)

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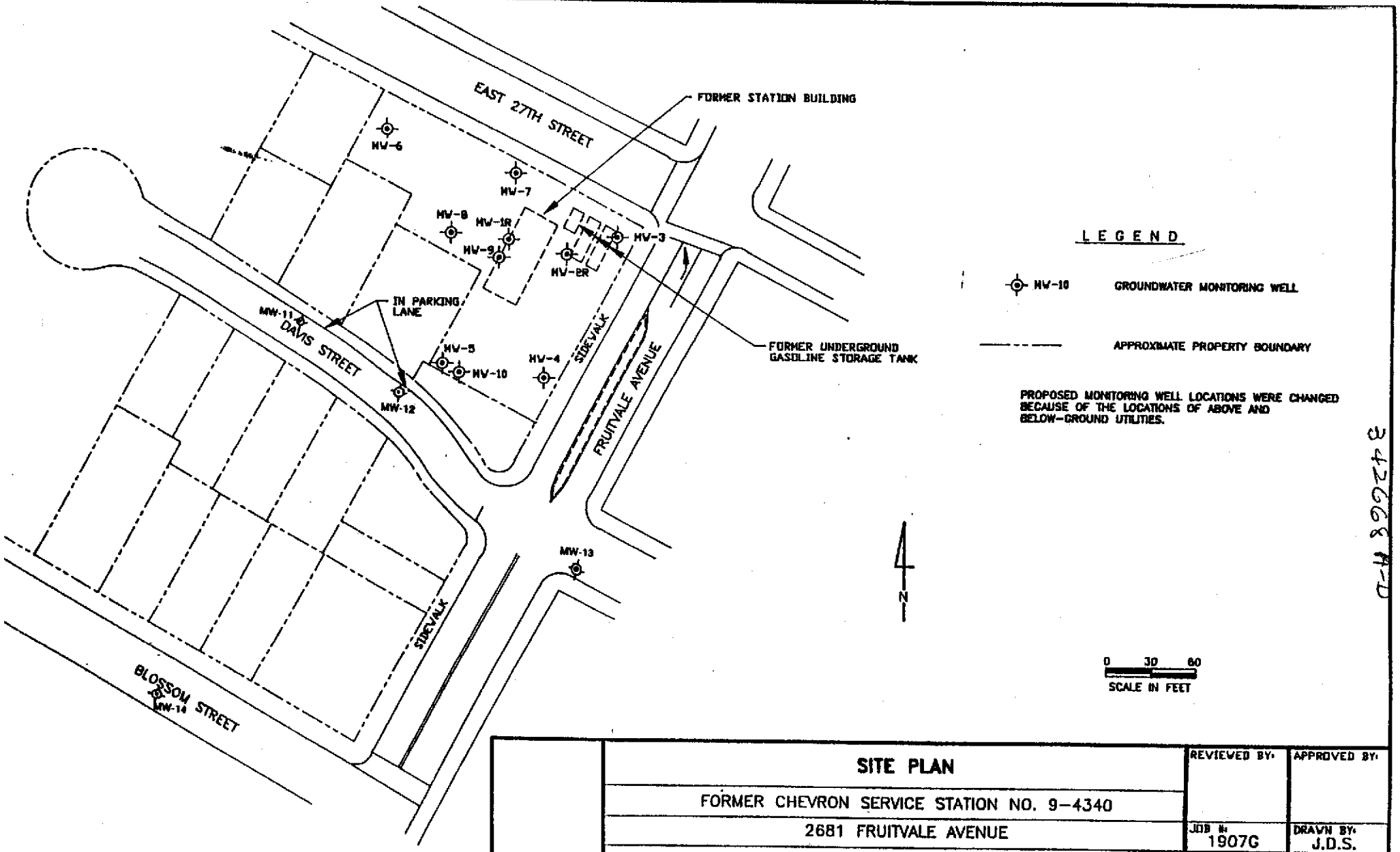


	SITE PLAN	REVIEWED BY:	APPROVED BY:
	FORMER CHEVRON SERVICE STATION NO. 9-4340		
	2681 FRUITVALE AVENUE	JOB #: 1907G	DRAWN BY: J.D.S.
	OAKLAND, CALIFORNIA	DATE: 5/29/91	DRAWING #: FIG. 2

2426 8 H-D

342668C

02S03W05C4

RESNA EXPLORATORY BORING LOG

Project Name: Former Chevron Station 9-4340
Oakland, California

Project Number: 1907-3G

Boring No. MW-13
Date Drilled: 10/9/91
Logged By: BVT

Depth (ft.)	Sample No.	Blows/Foot	Unified Soil Classification	SOIL DESCRIPTION	Water Level	PID Reading (ppm)	Well Construction
0				Asphalt: 4" Baserock: 3"			
5	13-1	24	ML	SILT, dark brown (7.5YR 3/4), 80-90% silt, 5-15% fine-grained sand, clay binder, trace coarse-grained sand, 1-2% rootholes, low to medium plasticity, very stiff, moist		100	
10	13-2	19		SILT, mottled dark yellowish brown (10YR 4/4) with greenish gray (5BG 5/1), 80-90% silt, clay binder, 1-3% fine- to medium-grained sand, low-medium plasticity, very stiff, moist	11/7/91 09:21	607	
13							
15	13-3	11	CL	SILTY CLAY, mottled dark yellowish brown (10YR 4/4) with greenish gray (5BG 5/1), 65-75% clay, 35-45% silt, 3-5% fine- to medium-grained sand, 3-5% rootholes, medium plasticity, very moist (wet in rootholes)		0	
17					10/9/91 09:25		
19			SP-SM	SAND, dark greenish gray (5BG 4/1), 90-95% sand, 5-10% silt, 1-3% roots, well sorted, loose, saturated			
20		6					
21							

REVIEWED BY R.G./C.E.G.

342668C

RESNA EXPLORATORY BORING LOG

Project Name: Former Chevron Station 9-4340
Oakland, California

Boring No. MW-13
Date Drilled: 10/9/91
Logged By: BVT

Project Number: 1907-3G

Depth (ft.)	Sample No.	Blows/Foot	Unified Soil Classification	SOIL DESCRIPTION	Water Level	PID Reading (ppm)	Well Construction
22			SP-SM	SAND as above			
23			GW-GM	SANDY GRAVEL, dark yellowish brown (10YR 3/4), 65-75% fine to coarse gravel, 35-45% fine- to coarse-grained sand, 5-15% fines, poorly sorted, dense, saturated			
24							
25		33	ML	SILT, light yellowish brown (2.5YR 5/3), 95-100% silt, 5-10% fine-grained sand, low plasticity, stiff, moist			
26				Bottom of boring = 25 feet			
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							

REVIEWED BY R.G./C.E.G.

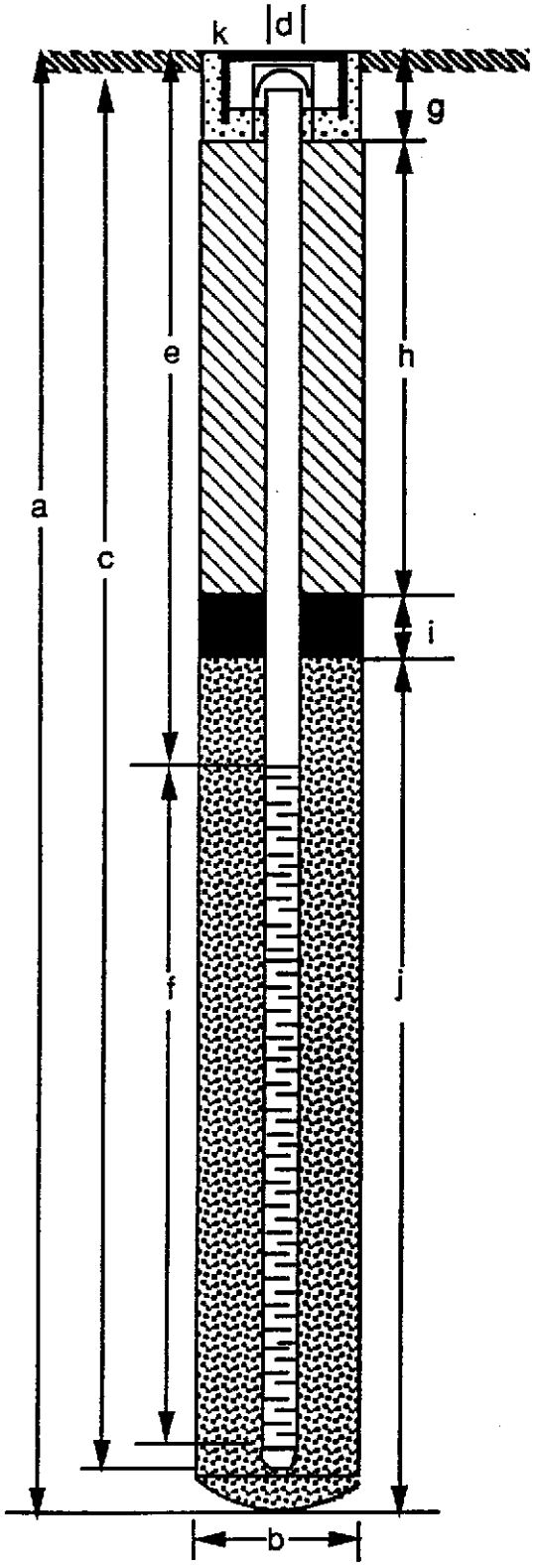
3-3368C

02503J05C14

RESNA

MONITORING WELL DETAIL

Project Number	1907-3G	**Boring/Well No.**	MW-13
Project Name	Former Chevron Station 9-4340	**Top of Casing Elev.**	101.20
County	Alameda	**Ground Surface Elev.**	101.43
Well Permit No.	91545	**Datum**	Mean Sea Level



EXPLORATORY BORING

a. **Total depth** 25 ft.

b. **Diameter** 8 in.

Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. **Casing length** 24.5 ft.

Material Schedule 40 PVC

d. **Diameter** 2 in.

e. **Depth to top perforations** 14.5 ft.

f. **Perforated length** 10 ft.

Perforated interval from 14.5 **to** 24.5 ft.

Perforation type Machine Slot

Perforation size 0.020 in.

g. **Surface seal** 1 ft.

Seal material Concrete (10"), Asphalt (2")

h. **Backfill** 11.5 ft.

Backfill material Sand/Cement Slurry

i. **Seal** 1 ft.

Seal material Bentonite

j. **Gravel pack** 11.5 ft.

Pack material 2/12 Monterey Type Sand

k. Traffic-rated watertight vault box with locking PVC expansion cap

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WELL COMPLETION REPORT
(WELL LOGS)

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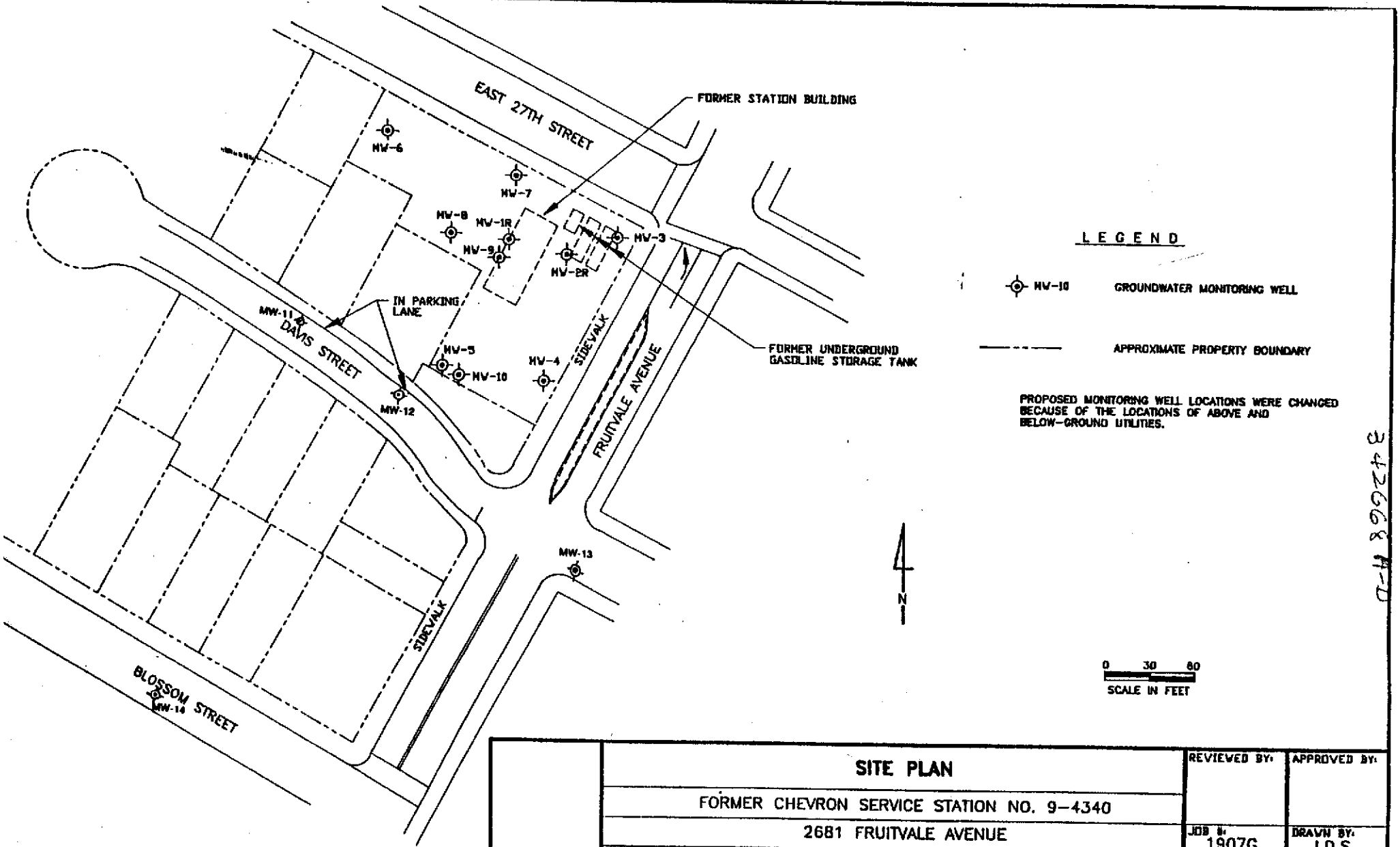


SITE PLAN

FORMER CHEVRON SERVICE STATION NO. 9-4340

2681 FRUITVALE AVENUE

OAKLAND, CALIFORNIA

REVIEWED BY:	APPROVED BY:
JOB #: 1907G	DRAWN BY: J.D.S.
DATE: 5/29/91	DRAWING #: FIG. 2

3426684 H-D

342669.2

025 03W 05C 4S

RESNA EXPLORATORY BORING LOG

Project Name: Former Chevron Station 9-4340
Oakland, California

Boring No. MW-14
Date Drilled: 10/9/91
Logged By: BVT

Project Number: 1907-3G

Depth (ft.)	Sample No.	Blows/Foot	Unified Soil Classification	SOIL DESCRIPTION	Water Level	PID Reading (ppm)	Well Construction
1				Asphalt: 3" Baserock: 6"			
2–5			ML	GRAVELLY SILT, very dark grayish brown (10YR 3/2), 60-70% silt, 20-30% fine to medium gravel, 10-20% fine- to coarse-grained sand, clay binder, low plasticity, very stiff, moist			
6		25				0	
7–8							
8–10			ML	SANDY SILT, dark yellowish brown (10YR 4/4), 70-80% silt, 20-30% fine-grained sand, clay binder, low to medium plasticity, moist to very moist			
11		13	SM	SILTY SAND, yellowish brown (10YR 4/4), 60-70% fine- to coarse-grained sand, 25-35% silt, 15-25% fine to coarse gravel, poorly sorted, medium dense, very moist to wet		0	
12					11/7/91 08:25 ▼		
13–14							
14–15			ML	SANDY SILT, mottled yellowish brown (10YR 5/4) with strong brown (7.5YR 5/6), 55-65% silt, 40-50% fine- to medium-grained sand, 3-5% coarse-grained sand to fine gravel, 3-5% rootholes, low plasticity, very moist to saturated (wet in rootholes)			
16		9				0	
17–18							
18					10/9/91 15:40 ▽		
19–20				At approximately 19.5 to 20.5 feet, gradational color change to dark greenish gray (5GY 4/1)			
21		8	SM	SILTY SAND			

REVIEWED BY R.G./C.E.G.

34 2668 D

EXPLORATORY BORING LOG

Project Name: Former Chevron Station 9-4340, Oakland, California

Boring No. MW-14

Date Drilled: 10/9/91

Project Number: 1907-3G

Logged By: BVT

Depth (ft.)	Sample No.	Blows/Foot	Unified Soil Classification	SOIL DESCRIPTION	Water Level	PID Reading (ppm)	Well Construction
22			SM	SILTY SAND, mottled dark bluish gray (5B 4/1) with olive brown (2.5Y 4/3), 75-85% fine- to medium-grained sand, 25-35% silt, well sorted, loose, saturated			
23–25			SW-SM	GRAVELLY SAND, dark greenish gray (5GY 4/1), 70-80% fine- to coarse-grained sand, 20-30% fine-coarse gravel, 5-15% fines, poorly sorted, medium dense, saturated			
26		27	ML	SILT, light yellowish brown (2.5Y 5/3), low plasticity, very stiff, moist			
27				Bottom of boring = 26.5 feet			

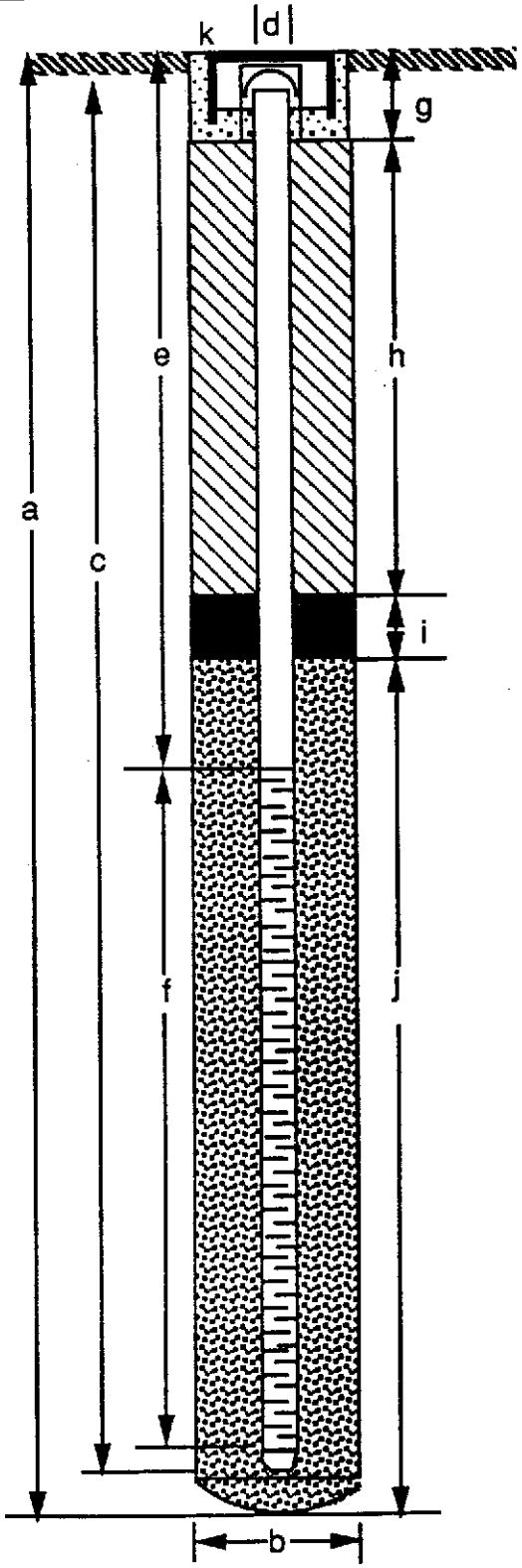
Depth scale: 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42

REVIEWED BY R.G./C.E.G.

RESNA

MONITORING WELL DETAIL

Project Number	1907-3G	**Boring/Well No.**	MW-14
Project Name	Former Chevron Station 9-4340	**Top of Casing Elev.**	98.26
County	Alameda	**Ground Surface Elev.**	98.56
Well Permit No.	91545	**Datum**	Mean Sea Level



EXPLORATORY BORING

a. **Total depth** 26.5 ft.

b. **Diameter** 8 in.

Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. **Casing length** 26 ft.

Material Schedule 40 PVC

d. **Diameter** 2 in.

e. **Depth to top perforations** 16 ft.

f. **Perforated length** 10 ft.

Perforated interval from 16 **to** 26 ft.

Perforation type Machine Slot

Perforation size 0.020 in.

g. **Surface seal** 1 ft.

Seal material Concrete (10"), Asphalt (2")

h. **Backfill** 13 ft.

Backfill material Sand/Cement Slurry

i. **Seal** 1 ft.

Seal material Bentonite

j. **Gravel pack** 11.5 ft.

Pack material 2/12 Monterey Type Sand

k. Traffic-rated watertight vault box with locking PVC expansion cap

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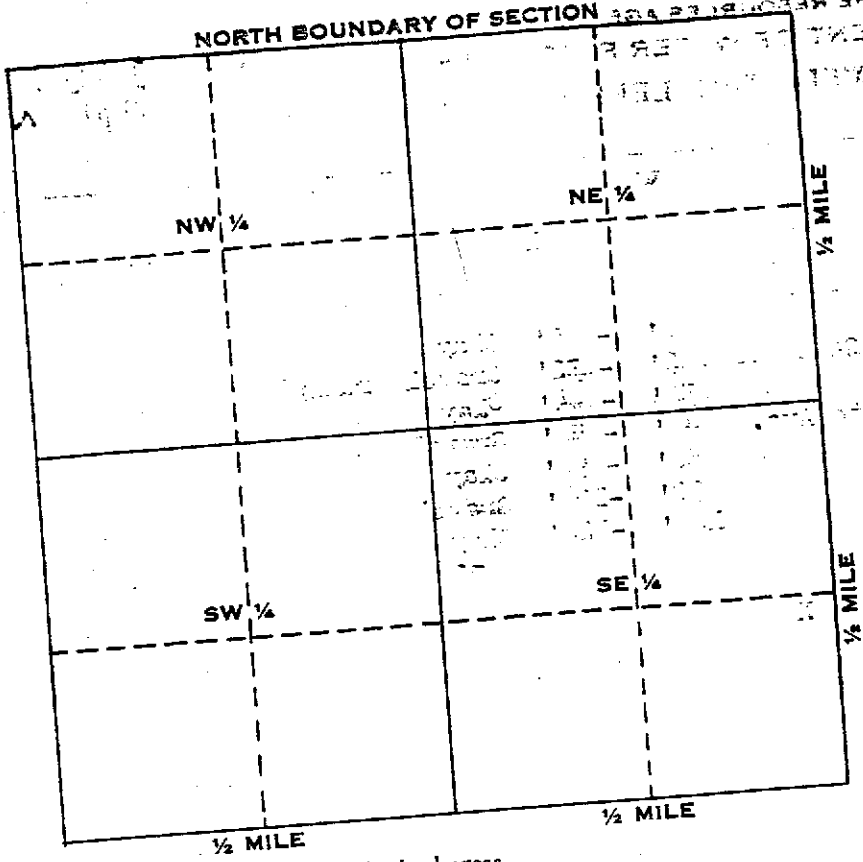
WELL LOCATION SKETCH

140322

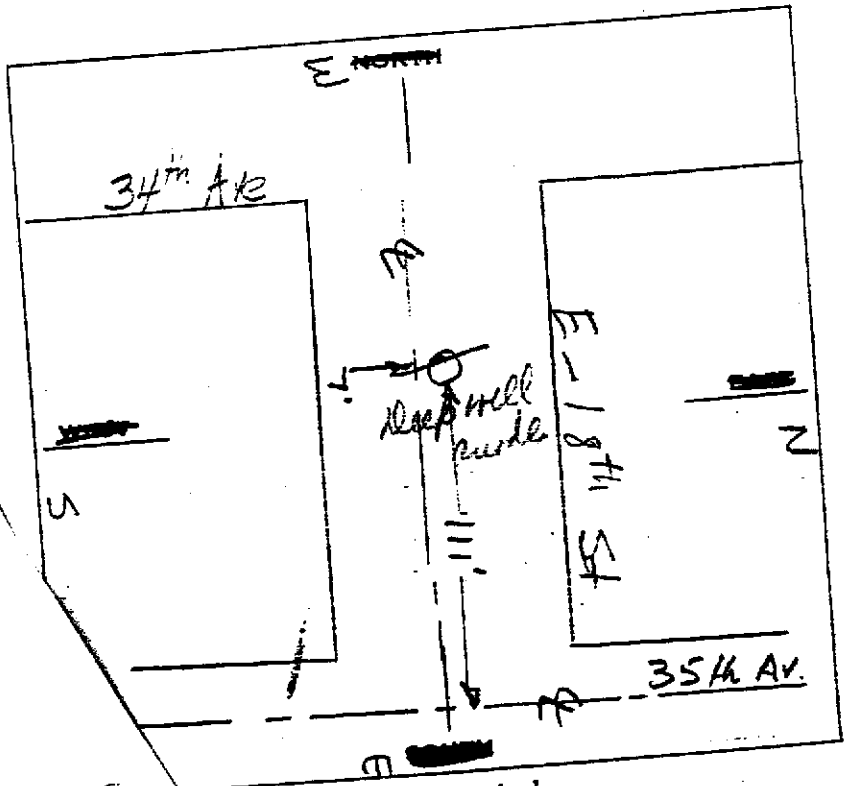


Township 2 N S

Range 3 E W

Section No. 5N 80

A. Location of well in sectionized areas.
Sketch roads, railroads, streams, or other features as necessary.



B. Location of well in areas not sectionized.
Sketch roads, railroads, streams, or other features as necessary.
Show distances.

1976 SEP 2 PM 1 28

BELLEVUE WATER DEPARTMENT

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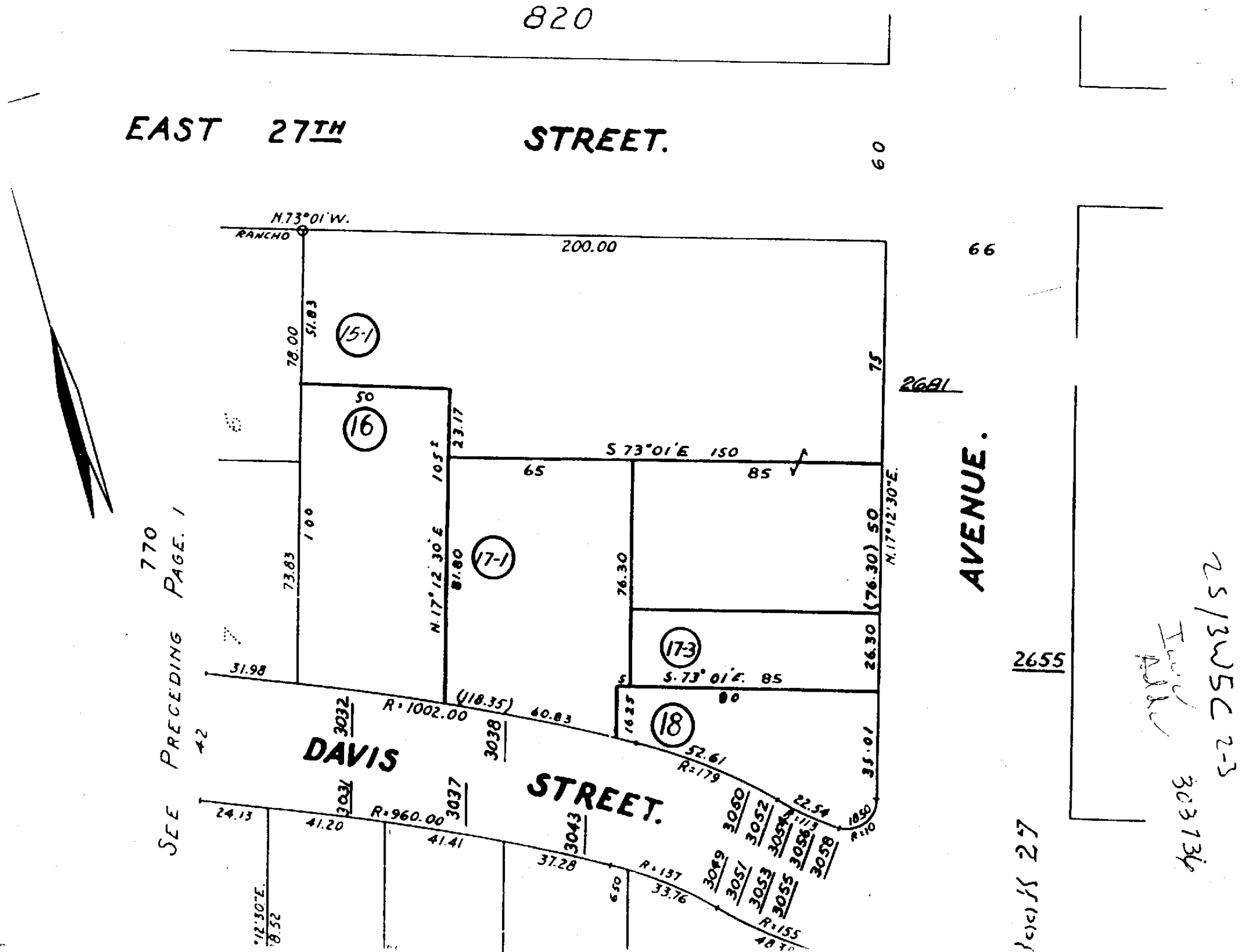
820
EAST 27TH STREET.
60
N.73°01'W.
RANCHO
200.00
66
15-1
16
17-1
17-3
18
51.83
78.00
50
75
2681
23.17
105±
S 73°01'E 150
65
85
100
73.83
N.17°12'30"E.
81.80
76.30
(76.30) 50
N.17°12'30"E.
AVENUE.
26.30
S.73°01'E. 85
80
16.25
35.01
2655
770
SEE PRECEDING PAGE 1
31.98
R=1002.00
(118.35)
60.83
52.61
R=179
22.54
R=113
18.50
R=10
DAVIS STREET.
3032
3038
3031
3037
3043
3050
3052
3054
3056
3058
3049
3051
3053
3055
42
24.13
41.20
R=960.00
41.41
37.28
R=137
33.76
R=155
650
25/3W5C 2-3
30373

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(WELL LOGS)

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2S/3W-32J10

LOG OF EXPLORATORY BORING 340327

PROJECT NUMBER 1207 — BORING NO. MW-9

PROJECT NAME Former Chevron Service Station No. 9-4340 — PAGE 1 OF 2

BY K. Flory — DATE 7/26/90 — SURFACE ELEV. ~100 ft.

PID (ppm)	RECOVERY (in/in)	BLOW CNT. (blws/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL, very dark grayish brown (10YR,3/2); 60-70% low plasticity fines; 30-40% fine to medium gravel; very dry; no product odor.	
0	18/18	13 17 20		5			@5': dark brown (7.5YR,3/2); 40-50% low plasticity fines; 20% fine to coarse sand; 30-40% fine to coarse gravel; hard; very dry; no product odor.	
0	18/18	6 11 5		10			CLAY (CH), dark brown (7.5YR,3/2); 85-90% high plasticity fines; 5-10% fine sand; trace fine gravel; firm; damp; slight product odor.	
			7/26/90 ▽ ▼					
1453	18/18	5 3 2	7/26/90	15			SANDY GRAVEL (GW), dark gray (7.5YR,4/2); trace high plasticity fines; 30-40% fine to coarse sand; 55-65% fine to coarse gravel; loose; wet; strong product odor.	
				20			CLAYEY SILT (ML), dark brown (7.5YR,3/2); 80-90% low plasticity fines; 10-20% fine to coarse sand; stiff, moist; no product odor.	

REMARKS

Boring was drilled using 8-inch outside-diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A monitor well was installed using 2-inch diameter PVC casing.

25/30-05C10

LOG OF EXPLORATORY BORING 340327

PROJECT NUMBER 1207 — BORING NO. MW-9

PROJECT NAME Former Chevron Service Station No. 9-4340 — PAGE 2 OF 2

BY K. Flory — DATE 7/26/90 — SURFACE ELEV. ~100 ft.

PID (ppm)	RECOVERY (in/in)	BLOW CNT. (blws/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
0	18/18	2 3 4					CLAYEY SILT (ML), continued. SANDY SILT (SM), very dark gray (7.5YR,2/0); 90-95% low plasticity fines; 5-10% fine sand; firm; very moist; no product odor. GRAVEL (GW).	
0	12/18	5 8 10		25			SILTY SAND (SM), dark gray (7.5YR,4/0); 5-15% low plasticity fines; 85-95% fine sand; medium dense; wet; no product odor. SILT (ML), gray (7.5YR,5/0); 95-100% low plasticity fines; trace fine sand; soft; dry; no product odor. @26.2': olive brown (2.5YR,4/4). BORING TERMINATED AT 26.5 FEET.	
				30				
				35				
				40				

REMARKS

Boring was drilled using 8-inch outside-diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A monitor well was installed using 2-inch diameter PVC casing.

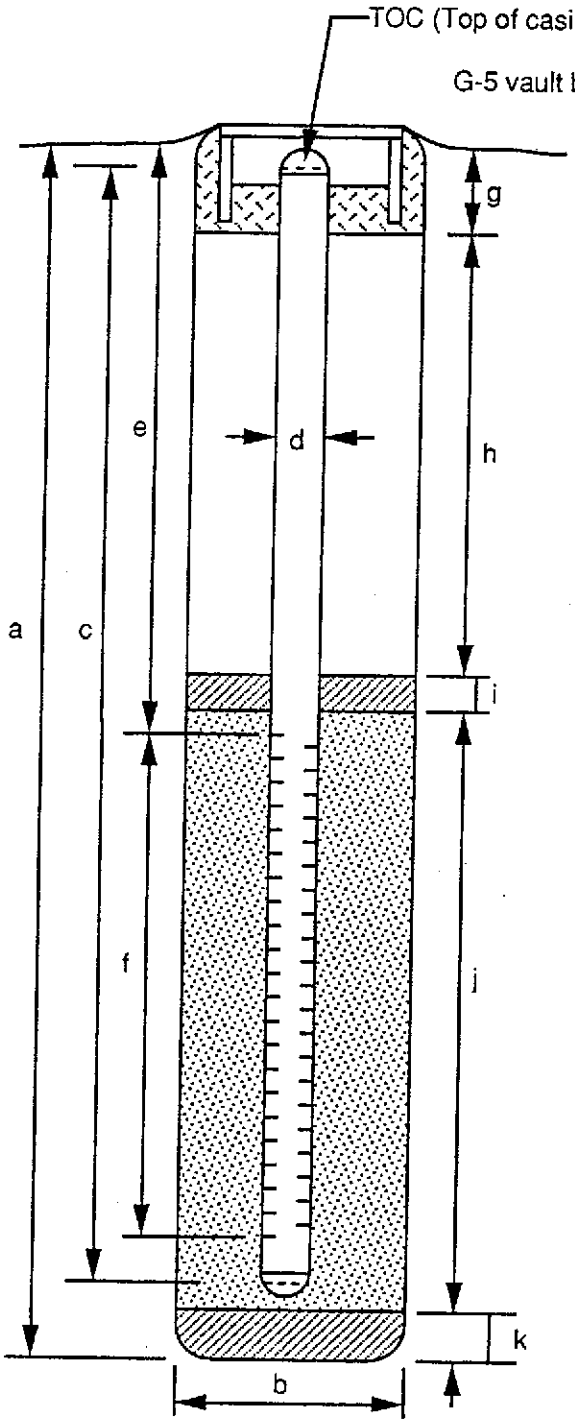
25/30-5 J10

WELL DETAILS

340327

PROJECT NUMBER 1207
PROJECT NAME Former Chevron SS No. 9-4340
LOCATION 2681 Fruitvale Ave., Oakland, CA
WELL PERMIT NO. 90406

BORING / WELL NO. MW-9
TOP OF CASING ELEV. _____
GROUND SURFACE ELEV. ~100'
DATUM MSL
INSTALLATION DATE 7/26/90



EXPLORATORY BORING

a. Total depth 26.5 ft.
b. Diameter 8 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION

c. Total casing length 24.5 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 10 ft.
f. Perforated length 15 ft.
Perforated interval from 10 to 25 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1 ft.
Material Concrete
h. Backfill 5 ft.
Material Bentonite-Cement Grout
i. Seal 2 ft.
Material Bentonite
j. Gravel pack 17 ft.
Gravel pack interval from 7.5 to 24.5 ft.
Material # 3 Sand
k. Bottom seal/fill 1.5 ft.
Material slough

Form prepared by KRR

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(WELL LOGS)

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25/3W-5E11

LOG OF EXPLORATORY BORING 340328

PROJECT NUMBER 1207 — BORING NO. MW-10

PROJECT NAME Former Chevron Service Station No. 9-4340 — PAGE 1 OF 2

BY K. Flory — DATE 7/26/90 — SURFACE ELEV. ~100 ft.

PID (ppm)	RECOVERY (in/in)	BLOW CNT. (blws/ft)	DESCRIPTION
			FILL, dark brown (10YR,3/3); 80-90% low plasticity fines; 10-20% fine to coarse gravel; stiff; dry; no product odor.
0	13/18	5 9 11	**SANDY CLAY (SC)**, dark brown (7.5YR,3/2); 60-70% high plasticity fines; 15-25% fine to coarse sand; 15-20% fine to coarse gravel; very stiff; dry; no product odor.
0	12/18	5 5 8	**GRAVELLY SAND (SW)**, strong brown (7.5YR,4/6); 60-70% fine to coarse sand; 30-40% fine to coarse gravel; medium dense; dry; no product odor.
			CLAYEY SAND (SC), dark yellowish brown (10YR,3/4); 30-40% high plasticity fines; 55-65% fine to medium sand; trace fine gravel; medium dense; moist; no product odor.
0	18/18	3 3 5	**CLAY (CH)**, mottled gray (10YR,5/1) and brown (10YR,5/3); 95-100% high plasticity fines; trace fine sand; stiff; damp, vertical gray seams with minor water; no product odor.
			SAND (SW).

GROUND WATER LEVELS: 7/26/90 (▼), 7/26/90 (▽)

DEPTH IN FT.: 5, 10, 15, 20

SAMPLES

LITHOGRAPHIC COLUMN

WELL DETAIL

REMARKS

Boring was drilled using 8-inch outside-diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A monitor well was installed using 2-inch diameter PVC casing.

25/30-S11

LOG OF EXPLORATORY BORING

340328

PROJECT NUMBER 1207 — BORING NO. MW-10

PROJECT NAME Former Chevron Service Station No. 9-4340 — PAGE 2 OF 2

BY K. Flory — DATE 7/26/90 — SURFACE ELEV. ~100 ft.

PID (ppm)	RECOVERY (in/in)	BLOW CNT. (blws/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
0	4/18	4 5 11					SAND (SW), mottled gray (10YR,5/2) and yellowish brown (10YR,5/4); trace high plasticity fines; 75-85% fine to coarse sand; 10-15% fine gravel; trace coal; medium dense; wet; no product odor.	
							GRAVEL (GW), dark brown (10YR,3/3); 10-20% fine to coarse sand; 80-90% fine to coarse gravel; wet; no product odor.	
0	12/18	9 11 12		25			@25': dark grayish brown (10YR,4/2); trace high plasticity fines; 15-25% fine to coarse sand; 70-80% fine to coarse gravel; medium dense; wet; no product odor.	
							SANDY CLAY (SC), dark grayish brown (10YR,4/2); 60-70% low plasticity fines; 30-40% fine to coarse sand; very stiff; wet; no product odor.	
				30			GRAVEL (GW), dark grayish brown (10YR,4/2); trace low plasticity fines; 10-20% fine to coarse sand; 75-85% fine to coarse gravel; medium dense; wet; no product odor.	
							BORING TERMINATED AT 26.5 FEET.	
				35				
				40				

REMARKS

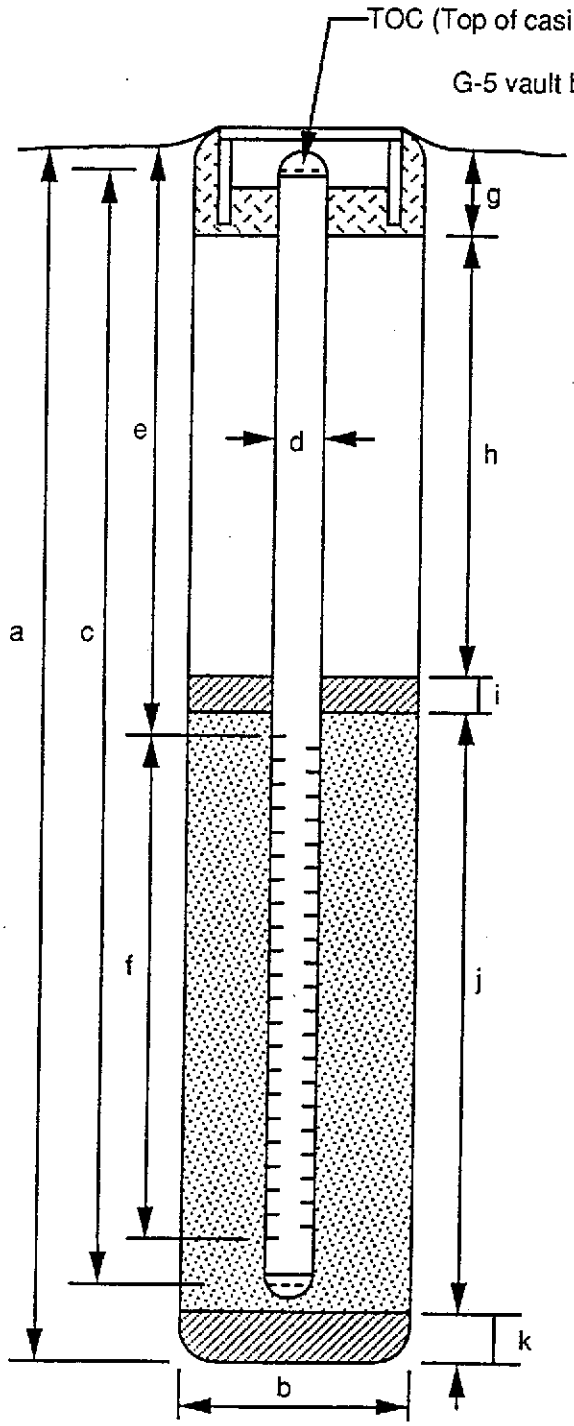
Boring was drilled using 8-inch outside-diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A monitor well was installed using 2-inch diameter PVC casing.

WELL DETAILS

340328

PROJECT NUMBER 1207
PROJECT NAME Former Chevron SS No. 9-4340
LOCATION 2681 Fruitvale Ave., Oakland, CA
WELL PERMIT NO. 90406

BORING / WELL NO. MW-10
TOP OF CASING ELEV. _____
GROUND SURFACE ELEV. ~100'
DATUM MSL
INSTALLATION DATE 7/26/90



EXPLORATORY BORING

a. Total depth 26.5 ft.
b. Diameter 8 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION

c. Total casing length 26 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 11.5 ft.
f. Perforated length 15 ft.
Perforated interval from 11.5 to 26.5 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1 ft.
Material Concrete
h. Backfill 6.5 ft.
Material Bentonite-Cement Grout
i. Seal 2 ft.
Material Bentonite
j. Gravel pack 17 ft.
Gravel pack interval from 9.5 to 26.5 ft.
Material # 3 Sand
k. Bottom seal/fill n/a ft.
Material n/a

Form prepared by KRR

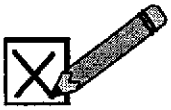
ATTACHMENT C

Oakland RBCA Eligibility Checklist

ATTACHMENT D

Oakland RBSL Output Tables

Oakland RBCA Eligibility Checklist



The Oakland Tier 1 RBSLs and Tier 2 SSTLs are intended to address human health and environmental concerns at the majority of small to medium-sized sites in Oakland where commonly-found contaminants are present. Large and/or complicated sites—especially those with continuing releases, special ecological concerns or unusual subsurface conditions—will likely require a Tier 3 analysis. The following checklist is designed to assist you in determining your site's eligibility for the Oakland RBCA levels.

CRITERIA	YES	NO
Source:		
Is there a continuing, *primary* source of a chemical of concern, such as a leaking container, tank or pipe? (This does *not* include secondary/residual sources.)	☐	☒
Is there any mobile or potentially-mobile free product?	☐	☒
Are there more than five chemicals of concern at the site, each of which is at a concentration greater than the lowest applicable Oakland RBCA level?	☐	☒
Pathways:		
Are there any preferential migration pathways—such as sand or gravel channels, or utility corridors—that are potential conduits for the migration, on-site or off-site, of a chemical of concern?	☐	☒
Is there a chemical of concern at the site within 20 feet of a surface water body?	☐	☒
If groundwater ingestion is *not* an exposure pathway of concern (i.e., MCLs will *not* figure in the risk analysis), does groundwater at the site both (a) exist at depths less than 10 feet *and* (b) contain volatile chemicals of concern? (If groundwater ingestion *is* an exposure pathway of concern, this criterion may be disregarded because the MCL-based Oakland RBCA levels will be protective for all potential groundwater-related exposure scenarios.)	☐	☒
Are there any existing structures, either on site or off site, that (a) are intended for future use *and* (b) are adjacent to volatile chemicals of concern *and* (c) have foundations or basement walls that are less than 15 cm (6 inches) thick (i.e., do not meet Uniform Building Code standards)?	☐	☒
Receptors:		
Are there any immediate health risks to humans (i.e., explosive levels of a chemical or vapor concentrations that could cause acute health effects) as a result of contamination at the site?	☐	☒
Are there any complete pathways to nearby ecological receptors, such as endangered species, wildlife refuge areas, wetlands or protected areas?	☐	☒

If you answer "no" to all questions, your site is eligible for the Oakland RBCA levels. If you answer "yes" to any of the questions, your site is *not* eligible for the Oakland Tier 1 or Tier 2 RBCA levels.

Oakland RBSLs
Tier 1

Medium	Exposure Pathway	Land Use	Type of Risk	Acenaph-thene	Acenaph-thylene	Acetone	Anthra-cene	Arsenic	Barium	Benz(a)-anthracene	Benzene	Benzo(a)-pyrene
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic					3.2E-01		2.5E-01	2.7E+00	2.5E-02
			Hazard	3.1E+03	3.1E+03	4.8E+03	1.6E+04	2.0E+01	5.2E+03		8.1E+01	
		Commercial/ Industrial	Carcinogenic					1.5E+00		7.9E-01	8.5E+00	7.9E-02
			Hazard	2.0E+04	2.0E+04	3.0E+04	1.0E+05	2.5E+02	9.4E+04		5.1E+02	
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							SAT	1.9E-01	SAT
			Hazard	SAT	SAT	5.0E+03	SAT				7.6E+00	
		Commercial/ Industrial	Carcinogenic							SAT	7.3E-01	SAT
			Hazard	SAT	SAT	2.9E+04	SAT				4.4E+01	
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							SAT	6.9E-02	SAT
			Hazard	SAT	SAT	1.5E+03	SAT				2.3E+00	
		Commercial/ Industrial	Carcinogenic							SAT	1.1E+00	SAT
			Hazard	SAT	SAT	4.4E+04	SAT				6.6E+01	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic					*4.4E+00*	*1.2E+02*	6.8E-01	*2.1E-03*	*6.2E+00*
			Hazard	2.0E+02	1.4E+02	3.6E-01	SAT	*4.4E+00*	*1.2E+02*		*2.1E-03*	*6.2E+00*
		Commercial/ Industrial	Carcinogenic					*4.4E+00*	*1.2E+02*	2.9E+00	*2.1E-03*	*6.2E+00*
			Hazard	SAT	SAT	2.4E+00	SAT	*4.4E+00*	*1.2E+02*		*2.1E-03*	*6.2E+00*
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic					*5.0E-02*	*1.0E+00*	5.6E-05	*1.0E-03*	*2.0E-04*
			Hazard	9.4E-01	9.4E-01	1.6E+00	>Sol	*5.0E-02*	*1.0E+00*		*1.0E-03*	*2.0E-04*
		Commercial/ Industrial	Carcinogenic					*5.0E-02*	*1.0E+00*	2.4E-04	*1.0E-03*	*2.0E-04*
			Hazard	>Sol	>Sol	1.0E+01	>Sol	*5.0E-02*	*1.0E+00*		*1.0E-03*	*2.0E-04*
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic							>Sol	1.1E-01	>Sol
			Hazard	>Sol	>Sol	2.0E+04	>Sol				3.7E+00	
		Commercial/ Industrial	Carcinogenic							>Sol	1.8E+00	>Sol
			Hazard	>Sol	>Sol	5.8E+05	>Sol				1.1E+02	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic							>Sol	5.6E+00	>Sol
			Hazard	>Sol	>Sol	2.1E+05	>Sol				2.2E+02	
		Commercial/ Industrial	Carcinogenic							>Sol	2.1E+01	>Sol
			Hazard	>Sol	>Sol	>Sol	>Sol				1.3E+03	
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic					2.0E-03		1.6E-05	6.3E-03	1.1E-06
			Hazard	1.1E+00	1.7E+00	4.2E+01	>Sol	1.2E-01	2.8E+01		1.8E-01	

*Italicized concentrations based on California MCLs
SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

Medium	Exposure Pathway	Land Use	Type of Risk	Benzo(b)-fluoranthene	Benzo(g,h,l)-perylene	Benzo(k)-fluoranthene	Beryllium	Bis(2-ethylhexyl)-phthalate	Butyl benzyl phthalate	Cadmium	Carbon Disulfide
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.5E-01		2.5E-01	4.5E+03	3.6E+01		2.1E+03	
			Hazard		2.1E+02		3.7E+02	1.0E+03	1.0E+04	3.7E+01	1.2E+03
		Commercial/ Industrial	Carcinogenic	7.9E-01		7.9E-01	1.7E+04	1.1E+02		7.9E+03	
			Hazard		1.4E+03		6.8E+03	6.8E+03	6.8E+04	6.8E+02	6.4E+03
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	SAT		SAT		SAT			
			Hazard		SAT			SAT			3.8E+00
		Commercial/ Industrial	Carcinogenic	SAT		SAT		SAT			
			Hazard		SAT			SAT			2.2E+01
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	SAT		SAT		SAT			
			Hazard		SAT			SAT			1.1E+00
		Commercial/ Industrial	Carcinogenic	SAT		SAT		SAT			
			Hazard		SAT			SAT			3.3E+01
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	2.1E+00		2.1E+00	9.6E+00	3.7E+03		*1.1E+00*	
			Hazard		SAT		9.6E+00	SAT	SAT	*1.1E+00*	2.9E+00
		Commercial/ Industrial	Carcinogenic	8.9E+00		8.9E+00	9.6E+00	1.6E+04		*1.1E+00*	
			Hazard		SAT		9.6E+00	SAT	SAT	*1.1E+00*	1.9E+01
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic	5.6E-05		5.6E-05	4.0E-03	8.0E-03		*5.0E-03*	
			Hazard		>Sol		4.0E-03	3.1E-01	>Sol	*5.0E-03*	1.6E+00
		Commercial/ Industrial	Carcinogenic	2.4E-04		2.4E-04	4.0E-03	3.4E-02		*5.0E-03*	
			Hazard		>Sol		4.0E-03	>Sol	>Sol	*5.0E-03*	1.0E+01
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	>Sol		>Sol		>Sol			
			Hazard		>Sol			>Sol			2.1E+00
		Commercial/ Industrial	Carcinogenic	>Sol		>Sol		>Sol			
			Hazard		>Sol			>Sol			6.2E+01
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>Sol		>Sol		>Sol			
			Hazard		>Sol			>Sol			1.7E+02
		Commercial/ Industrial	Carcinogenic	>Sol		>Sol		>Sol			
			Hazard		>Sol			>Sol			9.6E+02
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	1.1E-05		1.2E-05		5.1E-02			
			Hazard		>Sol		2.0E+00	>Sol	>Sol	2.0E-01	9.4E+00

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SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

Medium	Exposure Pathway	Land Use	Type of Risk	Carbon Tetrachloride	Chloro-benzene	Chloroform	Chromium (III)	Chromium (VI)	Chrysene	Copper	Cresol(-m)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	1.8E+00		9.1E+00		1.3E+00	2.5E+00		
			Hazard	3.3E+01	7.9E+02	4.8E+02	7.4E+04	3.7E+02		2.8E+03	2.6E+03
		Commercial/ Industrial	Carcinogenic	5.6E+00		2.9E+01		8.7E+00	7.9E+00		
			Hazard	2.1E+02	4.7E+03	3.0E+03	1.4E+06	6.8E+03		5.0E+04	1.7E+04
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	7.6E-02		9.2E-01			SAT		
			Hazard	1.5E+00	2.1E+00	4.1E+01					SAT
		Commercial/ Industrial	Carcinogenic	2.9E-01		3.5E+00			SAT		
			Hazard	8.8E+00	1.2E+01	2.4E+02					SAT
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	2.7E-02		3.3E-01			SAT		
			Hazard	4.6E-01	6.2E-01	1.2E+01					SAT
		Commercial/ Industrial	Carcinogenic	4.3E-01		5.2E+00			SAT		
			Hazard	1.3E+01	1.8E+01	3.5E+02					SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*3.0E-03*	*6.6E-02*	*1.5E-01*		2.9E+00	SAT	*2.8E-01*	
			Hazard	*3.0E-03*	*6.6E-02*	*1.5E-01*	8.5E+07	2.9E+00		*2.8E-01*	2.2E+00
		Commercial/ Industrial	Carcinogenic	*3.0E-03*	*6.6E-02*	*1.5E-01*		2.9E+00	SAT	*2.8E-01*	
			Hazard	*3.0E-03*	*6.6E-02*	*1.5E-01*	5.6E+08	2.9E+00		*2.8E-01*	1.5E+01
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic	*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02	5.6E-04	*1.3E+00*	
			Hazard	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.6E+01	5.0E-02		*1.3E+00*	7.8E-01
		Commercial/ Industrial	Carcinogenic	*5.0E-04*	*7.0E-02*	*1.0E-01*		5.0E-02	>Sol	*1.3E+00*	
			Hazard	*5.0E-04*	*7.0E-02*	*1.0E-01*	1.0E+02	5.0E-02		*1.3E+00*	5.1E+00
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.6E-02		7.5E-01			>Sol		
			Hazard	2.7E-01	2.4E+00	2.8E+01					>Sol
		Commercial/ Industrial	Carcinogenic	2.6E-01		1.2E+01			>Sol		
			Hazard	7.8E+00	6.9E+01	8.0E+02					>Sol
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	1.1E+00		3.4E+01			>Sol		
			Hazard	2.2E+01	2.0E+02	1.5E+03					>Sol
		Commercial/ Industrial	Carcinogenic	4.2E+00		1.3E+02			>Sol		
			Hazard	1.3E+02	>Sol	>Sol					>Sol
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic	4.1E-03		3.9E-02		6.8E-03	1.6E-04		
			Hazard	7.1E-02	1.2E+00	1.9E+00	3.8E+02	1.9E+00		1.5E+01	6.7E+00

*Italicized concentrations based on California MCLs
SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

Medium	Exposure Pathway	Land Use	Type of Risk	Cresol(-o)	Cresol(-p)	Cyanide	Dibenz(a,h)-anthracene	Dichloro ethane (1,1-)	Dichloro ethane (1,2-) (EDC)	Dichloro ethylene (1,1-)	Dichloro ethylene (cis 1,2-)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic				7.4E-02	4.7E+01	3.9E+00	4.9E-01	
			Hazard	2.6E+03	2.6E+02	3.0E+03		4.9E+03	1.4E+02	4.3E+02	4.8E+02
		Commercial/ Industrial	Carcinogenic				2.3E-01	1.5E+02	1.2E+01	1.5E+00	
			Hazard	1.7E+04	1.7E+03	5.5E+04		3.1E+04	8.8E+02	2.7E+03	3.0E+03
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				SAT	2.4E+00	4.8E-01	2.6E-02	
			Hazard	SAT	SAT			4.5E+02	2.3E+01	9.9E+00	4.7E+01
		Commercial/ Industrial	Carcinogenic				SAT	9.1E+00	1.8E+00	1.0E-01	
			Hazard	SAT	SAT			SAT	1.3E+02	5.8E+01	2.8E+02
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				SAT	8.6E-01	1.7E-01	9.4E-03	
			Hazard	SAT	SAT			1.3E+02	6.8E+00	3.0E+00	1.4E+01
		Commercial/ Industrial	Carcinogenic				SAT	1.4E+01	2.7E+00	1.5E-01	
			Hazard	SAT	SAT			SAT	2.0E+02	8.7E+01	4.1E+02
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic			6.0E+00	1.9E+00	6.4E-03	*3.8E-04*	*1.5E-02*	*8.2E-03*
			Hazard	2.3E+00	2.1E-01	6.0E+00		6.4E-03	*3.8E-04*	*1.5E-02*	*8.2E-03*
		Commercial/ Industrial	Carcinogenic			6.0E+00	8.0E+00	6.4E-03	*3.8E-04*	*1.5E-02*	*8.2E-03*
			Hazard	1.5E+01	1.4E+00	6.0E+00		6.4E-03	*3.8E-04*	*1.5E-02*	*8.2E-03*
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic			2.0E-01	1.6E-05	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*
			Hazard	7.8E-01	7.8E-02	2.0E-01		5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*
		Commercial/ Industrial	Carcinogenic			2.0E-01	7.0E-05	5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*
			Hazard	5.1E+00	5.1E-01	2.0E-01		5.0E-03	*5.0E-04*	*6.0E-03*	*6.0E-03*
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic				>Sol	2.3E+00	7.2E-01	1.4E-02	
			Hazard	>Sol	>Sol			3.6E+02	2.9E+01	4.3E+00	3.5E+01
		Commercial/ Industrial	Carcinogenic				>Sol	3.6E+01	1.1E+01	2.2E-01	
			Hazard	>Sol	>Sol			>Sol	8.3E+02	1.2E+02	1.0E+03
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic				>Sol	1.1E+02	1.8E+01	9.3E-01	
			Hazard	>Sol	>Sol			>Sol	8.6E+02	3.5E+02	1.6E+03
		Commercial/ Industrial	Carcinogenic				>Sol	4.0E+02	6.9E+01	3.5E+00	
			Hazard	>Sol	>Sol			>Sol	5.0E+03	2.0E+03	>Sol
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic				1.4E-06	2.1E-01	2.4E-02	1.3E-03	
			Hazard	6.4E+00	5.9E-01	7.0E+00		1.9E+01	7.2E-01	1.2E+00	1.8E+00

*Italicized concentrations based on California MCLs
SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

Medium	Exposure Pathway	Land Use	Type of Risk	Dichloro ethene (trans 1,2)	Dimethyl-benza(a) anthracene (7,12)	Dimethyl phenol (2,4)	di-n-Butyl-phthalate	di-n-octyl phthalate	Dinitro toluene (2,4)	Dioxane (1,4)	Ethyl-benzene	Ethylene Dibromide
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic						9.7E-01	1.0E+01		8.4E-02
			Hazard	9.5E+02	1.6E+03	1.0E+03	5.2E+03	1.0E+03			5.1E+03	2.7E+00
		Commercial/ Industrial	Carcinogenic						3.0E+00	3.1E+01		2.6E-01
			Hazard	6.1E+03	1.0E+04	6.7E+03	3.4E+04	6.8E+03			3.3E+04	1.7E+01
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic						SAT	SAT		7.9E-01
			Hazard	6.2E+01		SAT	SAT	SAT			SAT	2.6E+00
		Commercial/ Industrial	Carcinogenic						SAT	SAT		3.0E+00
			Hazard	3.6E+02		SAT	SAT	SAT			SAT	1.5E+01
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic						SAT	SAT		2.8E-01
			Hazard	1.9E+01		SAT	SAT	SAT			SAT	7.8E-01
		Commercial/ Industrial	Carcinogenic						SAT	SAT		4.5E+00
			Hazard	5.4E+02		SAT	SAT	SAT			SAT	2.3E+01
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*2.0E-02*					6.7E-04	1.8E-03	*8.0E+00*	*7.8E-05*
			Hazard	*2.0E-02*	SAT	2.0E+00	3.9E+06	SAT			*8.0E+00*	*7.8E-05*
		Commercial/ Industrial	Carcinogenic	*2.0E-02*					2.9E-03	SAT	*8.0E+00*	*7.8E-05*
			Hazard	*2.0E-02*	SAT	1.3E+01	SAT	SAT			*8.0E+00*	*7.8E-05*
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-02*					2.2E-04	2.5E-03	*7.0E-01*	*5.0E-05*
			Hazard	*1.0E-02*	>Sol	3.1E-01	1.6E+00	>Sol			*7.0E-01*	*5.0E-05*
		Commercial/ Industrial	Carcinogenic	*1.0E-02*					9.2E-04	1.1E-02	*7.0E-01*	*5.0E-05*
			Hazard	*1.0E-02*	>Sol	2.0E+00	1.0E+01	>Sol			*7.0E-01*	*5.0E-05*
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic						>Sol	>Sol		5.7E-01
			Hazard	3.2E+01		>Sol	>Sol	>Sol			>Sol	1.6E+00
		Commercial/ Industrial	Carcinogenic						>Sol	>Sol		9.0E+00
			Hazard	9.4E+02		>Sol	>Sol	>Sol			>Sol	4.6E+01
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic						>Sol	>Sol		8.7E+00
			Hazard	2.0E+03		>Sol	>Sol	>Sol			>Sol	2.9E+01
		Commercial/ Industrial	Carcinogenic						>Sol	>Sol		3.3E+01
			Hazard	>Sol		>Sol	>Sol	>Sol			>Sol	1.7E+02
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic						6.4E-03	>Sol		5.9E-04
			Hazard	3.5E+00	>Sol	2.7E+00	7.3E+00	2.1E-03			3.6E+00	1.7E-02

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SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

Medium	Exposure Pathway	Land Use	Type of Risk	Flouran-thene	Fluorene	Indeno-(1,2,3-CD) pyrene	Mercury	Methanol	Methyl ethyl ketone	Methylene Chloride	Methyl-napthalene (2-)	MTBE
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic			2.5E-01				2.1E+01		
			Hazard	2.1E+03	2.1E+03		4.7E+00	2.4E+04	2.6E+04	3.1E+03	2.0E+03	2.6E+02
		Commercial/ Industrial	Carcinogenic			7.9E-01				6.6E+01		
			Hazard	1.4E+04	1.4E+04		3.0E+01	1.5E+05	1.6E+05	2.0E+04	1.3E+04	1.7E+03
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			SAT				3.5E+00		
			Hazard	SAT	SAT		4.0E+01	SAT	2.3E+04	2.5E+03	SAT	SAT
		Commercial/ Industrial	Carcinogenic			SAT				1.3E+01		
			Hazard	SAT	SAT		2.3E+02	SAT	SAT	SAT	SAT	SAT
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			SAT				1.3E+00		
			Hazard	SAT	SAT		1.2E+01	4.5E+04	6.9E+03	7.4E+02	SAT	4.4E+03
		Commercial/ Industrial	Carcinogenic			SAT				2.0E+01		
			Hazard	SAT	SAT			SAT	SAT	SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic			SAT	*3.2E-01*			3.1E-03		*7.6E-03*
			Hazard	SAT	2.6E+02		*3.2E-01*	1.7E+00	3.3E+00	3.1E-03	1.6E+02	*7.6E-03*
		Commercial/ Industrial	Carcinogenic			SAT	*3.2E-01*			3.1E-03		*7.6E-03*
			Hazard	SAT	SAT		*3.2E-01*	1.1E+01	2.2E+01	3.1E-03	1.1E+03	*7.6E-03*
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic			>Sol	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	>Sol	6.3E-01		*2.0E-03*	7.8E+00	9.4E+00	5.0E-03	6.3E-01	*1.3E-02*
		Commercial/ Industrial	Carcinogenic			>Sol	*2.0E-03*			5.0E-03		*1.3E-02*
			Hazard	>Sol	>Sol		*2.0E-03*	5.1E+01	6.1E+01	5.0E-03	4.1E+00	*1.3E-02*
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			>Sol				6.7E+00		
			Hazard	>Sol	>Sol		2.6E-01	6.5E+05	6.0E+04	4.0E+03	>Sol	2.4E+04
		Commercial/ Industrial	Carcinogenic			>Sol				1.1E+02		
			Hazard	>Sol	>Sol		7.6E+00	>Sol	>Sol	>Sol	>Sol	>Sol
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			>Sol				2.3E+02		
			Hazard	>Sol	>Sol		1.6E+01	>Sol	>Sol	>Sol	>Sol	>Sol
		Commercial/ Industrial	Carcinogenic			>Sol				8.7E+02		
			Hazard	>Sol	>Sol		9.5E+01	>Sol	>Sol	>Sol	>Sol	>Sol
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			7.0E-06				1.3E-01		
			Hazard	>Sol	3.1E-01		3.6E-02	2.2E+02	1.5E+02	1.6E+01	6.1E-01	1.5E+00

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Medium	Exposure Pathway	Land Use	Type of Risk	Naphthalene	Nickel	Nitro benzene	PCBs	Phenan-threne	Phenol	Pyrene	Pyridine	Selenium	Silver
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		3.4E+04	5.5E+02	5.0E-02				2.8E+02		
			Hazard	2.0E+03	1.5E+03		1.2E+00	1.6E+04	3.1E+04	1.6E+03		3.7E+02	3.7E+02
		Commercial/ Industrial	Carcinogenic		1.3E+05	1.7E+03	1.8E-01				8.9E+02		
			Hazard	1.3E+04	2.7E+04		1.0E+01	1.0E+05	2.0E+05	1.0E+04		6.8E+03	6.8E+03
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			SAT	1.9E+02				8.1E+03		
			Hazard	SAT			SAT	SAT	SAT	SAT			
		Commercial/ Industrial	Carcinogenic			SAT	7.3E+02				3.1E+04		
			Hazard	SAT			SAT	SAT	SAT	SAT			
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			SAT	6.9E+01				2.9E+03		
			Hazard	SAT			SAT	SAT	SAT	SAT			
		Commercial/ Industrial	Carcinogenic			SAT	1.1E+03				4.6E+04		
			Hazard	SAT			SAT	SAT	SAT	SAT			
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*1.2E+00*	*2.0E+01*	2.9E-01	*4.7E+00*				1.2E-01	*7.7E-01*	*2.5E+00*
			Hazard	*1.2E+00*	*2.0E+01*		*4.7E+00*	SAT	1.0E+01	SAT		*7.7E-01*	*2.5E+00*
		Commercial/ Industrial	Carcinogenic	*1.2E+00*	*2.0E+01*	1.2E+00	*4.7E+00*				5.3E-01	*7.7E-01*	*2.5E+00*
			Hazard	*1.2E+00*	*2.0E+01*		*4.7E+00*	SAT	6.7E+01	SAT		*7.7E-01*	*2.5E+00*
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic	*2.0E-02*	*1.0E-01*	1.3E-01	*5.0E-04*				6.7E-02	*5.0E-02*	*1.0E-01*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>Sol	9.4E+00	>Sol		*5.0E-02*	*1.0E-01*
		Commercial/ Industrial	Carcinogenic	*2.0E-02*	*1.0E-01*	5.7E-01	*5.0E-04*				2.9E-01	*5.0E-02*	*1.0E-01*
			Hazard	*2.0E-02*	*1.0E-01*		*5.0E-04*	>Sol	6.1E+01	>Sol		*5.0E-02*	*1.0E-01*
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic			>Sol	2.3E-02				4.8E+03		
			Hazard	>Sol			>Sol	>Sol	>Sol	>Sol			
		Commercial/ Industrial	Carcinogenic			>Sol	3.6E-01				7.7E+04		
			Hazard	>Sol			>Sol	>Sol	>Sol	>Sol			
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic			>Sol	3.2E-01				4.1E+04		
			Hazard	>Sol			>Sol	>Sol	>Sol	>Sol			
		Commercial/ Industrial	Carcinogenic			>Sol	>Sol				1.5E+05		
			Hazard	>Sol			>Sol	>Sol	>Sol	>Sol			
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic			2.8E+00	1.6E-06				2.6E+00		
			Hazard	1.5E+00	7.9E+00		4.4E-05	>Sol	1.5E+02	>Sol		2.0E+00	2.1E+00

*Italicized concentrations based on California MCLs
SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

Medium	Exposure Pathway	Land Use	Type of Risk	Stryene	Tetrachloro ethane (1,1,2,2 -)	Tetrachloro-ethylene (PCE)	Tetraethyl Lead	Toluene	Trichloro ethane (1,1,1-)	Trichloro ethane (1,1,2-)	Trichloro-ethylene (TCE)
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		1.0E+00	5.7E+00				3.8E+00	1.9E+01
			Hazard	9.8E+03	1.2E+03	4.8E+02	5.2E-03	9.0E+03	1.8E+03	1.9E+02	2.9E+02
		Commercial/ Industrial	Carcinogenic		3.1E+00	1.8E+01				1.2E+01	5.9E+01
			Hazard	6.3E+04	7.9E+03	3.0E+03	3.4E-02	5.6E+04	1.2E+04	1.2E+03	1.8E+03
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		2.1E+00	8.4E-01				1.5E+00	3.0E+00
			Hazard	SAT	SAT	4.1E+01		SAT	8.7E+02	1.0E+02	4.2E+01
		Commercial/ Industrial	Carcinogenic		7.8E+00	3.2E+00				5.8E+00	1.1E+01
			Hazard	SAT	SAT	2.4E+02		SAT	SAT	5.9E+02	2.4E+02
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		7.4E-01	3.0E-01				5.4E-01	1.1E+00
			Hazard	SAT	1.0E+03	1.2E+01		3.6E+02	2.6E+02	3.1E+01	1.3E+01
		Commercial/ Industrial	Carcinogenic		1.2E+01	4.8E+00				8.7E+00	1.7E+01
			Hazard	SAT	SAT	SAT		SAT	SAT	8.9E+02	3.6E+02
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*2.4E+00*	3.0E-03	*2.6E-02*	*2.4E+00*	*8.8E-01*	*7.8E-01*	*8.8E-03*	*2.7E-02*
			Hazard	*2.4E+00*	3.0E-03	*2.6E-02*	*2.4E+00*	*8.8E-01*	*7.8E-01*	*8.8E-03*	*2.7E-02*
		Commercial/ Industrial	Carcinogenic	*2.4E+00*	3.0E-03	*2.6E-02*	*2.4E+00*	*8.8E-01*	*7.8E-01*	*8.8E-03*	*2.7E-02*
			Hazard	*2.4E+00*	3.0E-03	*2.6E-02*	*2.4E+00*	*8.8E-01*	*7.8E-01*	*8.8E-03*	*2.7E-02*
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*	*5.0E-03*
			Hazard	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*	*5.0E-03*
		Commercial/ Industrial	Carcinogenic	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*	*5.0E-03*
			Hazard	*1.0E-01*	1.0E-03	*5.0E-03*	*1.5E-02*	*1.5E-01*	*2.0E-01*	*5.0E-03*	*5.0E-03*
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		7.5E-01	2.0E-01				9.9E-01	6.9E-01
			Hazard	>Sol	1.0E+03	8.4E+00		2.1E+02	2.4E+02	5.6E+01	8.1E+00
		Commercial/ Industrial	Carcinogenic		1.2E+01	3.3E+00				1.6E+01	1.1E+01
			Hazard	>Sol	>Sol	>Sol		>Sol	>Sol	1.6E+03	2.3E+02
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		1.1E+01	1.3E+01				2.2E+01	4.1E+01
			Hazard	>Sol	>Sol	>Sol		>Sol	>Sol	1.5E+03	5.7E+02
		Commercial/ Industrial	Carcinogenic		4.1E+01	5.1E+01				8.4E+01	1.5E+02
			Hazard	>Sol	>Sol	>Sol		>Sol	>Sol	>Sol	>Sol
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic		4.5E-03	6.0E-03				1.8E-02	4.6E-03
			Hazard	9.3E+00	4.9E+00	5.3E-01	6.7E-06	1.1E+01	4.3E+00	7.8E-01	7.2E-02

*Italicized concentrations based on California MCLs
SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

Medium	Exposure Pathway	Land Use	Type of Risk	Vanadium	Vinyl Chloride	Xylenes	Zinc
Surficial Soil [mg/kg]	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic		5.0E-01		
			Hazard	5.2E+02		5.4E+04	2.2E+04
		Commercial/ Industrial	Carcinogenic		1.6E+00		
			Hazard	9.5E+03		3.0E+05	4.1E+05
Subsurface Soil [mg/kg]	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		3.7E-03		
			Hazard			SAT	
		Commercial/ Industrial	Carcinogenic		1.4E-02		
			Hazard			SAT	
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		1.3E-03		
			Hazard			SAT	
		Commercial/ Industrial	Carcinogenic		2.1E-02		
			Hazard			SAT	
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic		*6.5E-04*	*1.3E+01*	
			Hazard	3.3E+02	*6.5E-04*	*1.3E+01*	8.8E+02
		Commercial/ Industrial	Carcinogenic		*6.5E-04*	*1.3E+01*	
			Hazard	2.2E+03	*6.5E-04*	*1.3E+01*	5.8E+03
Groundwater [mg/l]	Ingestion of Groundwater	Residential	Carcinogenic		*5.0E-04*	*1.8E+00*	
			Hazard	1.1E-01	*5.0E-04*	*1.8E+00*	4.7E+00
		Commercial/ Industrial	Carcinogenic		*5.0E-04*	*1.8E+00*	
			Hazard	7.2E-01	*5.0E-04*	*1.8E+00*	3.1E+01
	Inhalation of Indoor Air Vapors	Residential	Carcinogenic		3.7E-03		
			Hazard			>Sol	
		Commercial/ Industrial	Carcinogenic		5.9E-02		
			Hazard			>Sol	
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic		2.5E-01		
			Hazard			>Sol	
		Commercial/ Industrial	Carcinogenic		9.6E-01		
			Hazard			>Sol	
Water for Recreation [mg/l]	Ingestion/ Dermal	Residential	Carcinogenic		2.6E-03		
			Hazard	2.8E+00		6.6E+01	1.2E+02

*Italicized concentrations based on California MCLs
SAT = RBSL exceeds saturated soil concentration of chemical
>SOL = RBSL exceeds solubility of chemical in water

ATTACHMENT E

DTSC Output Table

LEAD RISK ASSESSMENT SPREADSHEET

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

INPUT | **OUTPUT**

MEDIUM	LEVEL
LEAD IN AIR (ug/m^3)	0
LEAD IN SOIL (ug/g)	370.0
LEAD IN WATER (ug/l)	0
PLANT UPTAKE? 1=YES 0=N(	0
RESPIRABLE DUST (ug/m^3)	0

	percentiles					PRG-99
	50th	90th	95th	98th	99th	(ug/g)
BLOOD Pb, ADULT (ug/dl)	1.1	1.7	2.0	2.3	2.5	5567.6
BLOOD Pb, CHILD (ug/dl)	3.6	5.6	6.3	7.3	8.1	581.5
BLOOD Pb, PICA CHILD (ug/dl)	22.7	35.6	40.4	46.7	51.4	41.9
BLOOD Pb, INDUSTRIAL (ug/dl)	1.1	1.7	1.9	2.2	2.4	6636.4

EXPOSURE PARAMETERS

	units	residential adults	residential children	residential children with pica	industrial adults
General					
Days per week	days/wk	7	7	7	5
Dermal Contact					
Skin area	cm^2	3700	2800	2800	5800
Soil adherence	mg/cm^2	0.5	0.5	0.5	0.5
Route-specific constant	(ug/dl)/(ug/day)	0.00011	0.00011	0.00011	0.00011
Soil ingestion					
Soil ingestion	mg/day	25	55	790	25
Route-specific constant	(ug/dl)/(ug/day)	0.0176	0.0704	0.0704	0.0176
Inhalation					
Breathing rate	m^3/day	20	10	10	20
Route-specific constant	(ug/dl)/(ug/day)	0.082	0.192	0.192	0.082
Water ingestion					
Water ingestion	l/day	1.4	0.4	0.4	1.4
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Food ingestion					
Food ingestion	kg/day	2.2	1.3	1.3	2.2
Route-specific constant	(ug/dl)/(ug/day)	0.04	0.16	0.16	0.04
Dietary concentration	ug/kg	10.0	10.0	10.0	10.0
Lead in produce	ug/kg	10.0	10.0	10.0	

PATHWAYS, ADULTS

Pathway	Residential Blood Pb ug/dl	Residential percent of total	Industrial Blood Pb ug/dl	Industrial percent of total	Concentration in medium
SOIL CONTACT:	0.07	6%	0.08	8%	370 ug/g
SOIL INGESTION:	0.16	15%	0.12	11%	370 ug/g
INHALATION:	0.00	0%	0.00	0%	0.00 ug/m^3
WATER INGESTION:	0.00	0%	0.00	0%	0 ug/l
FOOD INGESTION:	0.88	79%	0.88	82%	10.0 ug Pb/kg diet

PATHWAYS, CHILDREN

Pathway	Typical Blood Pb ug/dl	Typical percent of total	with pica Blood Pb ug/dl	with pica percent of total	concentration in medium
SOIL CONTACT:	0.05	2%	0.05	0%	370 ug/g
SOIL INGESTION:	1.43	40%	20.58	91%	370 ug/g
INHALATION:	0.00	0%	0.00	0%	0.00 ug/m^3
WATER INGESTION:	0.00	0%	0.00	0%	0 ug/l
FOOD INGESTION:	2.08	58%	2.08	9%	10.0 ug Pb/kg diet