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5 April 1994
Project 2530A

ALCO
HAZMAT
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Ms. Madhulla Logan
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Subject: Revised Workplan for Additional Site Characterization
Proposed Encinal Marina Landing
2020 Sherman Avenue
Alameda, California

*See me
as March 1994
+ Feb 1994
with revisions*

Dear Ms. Logan:

This workplan has been prepared by Geomatrix Consultants, Inc. (Geomatrix), at the request of Encinal Real Estate, Inc. (Encinal), for additional site characterization of the former warehouse site (originally owned by Alameda Marina Village Associates) located at 2020 Sherman Avenue in Alameda, California (Figure 1). The purpose of conducting the site characterization described in this workplan is to evaluate the extent of VOC - affected groundwater downgradient of the site.

INVESTIGATION SUMMARY

Previous site investigations completed by others are described and the results are presented in our 30 December 1993 workplan. Geomatrix Consultants has completed the work described in that workplan which was approved by the county. The purpose of the work was to:

- Assess the lateral extent of chlorinated VOCs in groundwater in the area of EB-1.
- Measure groundwater gradient at the site.
- Confirm that evaluated metal concentrations in groundwater are due to suspended sediment in samples.
- Confirm that petroleum hydrocarbons in soil are not a concern at the site.

The results are summarized below.

A shallow groundwater survey was completed by Tracer Research Corporation (Tracer) of Tucson, Arizona on 24 January 1994. Nine groundwater samples were collected by pushing a one-inch diameter rod 5 to 7 feet into the ground. The rod was then withdrawn several inches to allow groundwater to enter the hole, and samples were acquired by

Geomatrix Consultants, Inc.
Engineers, Geologists, and Environmental Scientists

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vacuum through a 1/4-inch disposable polyethylene tube. Sample locations surrounded previous boring EB-1 following a 20-foot grid, as shown on Figures 2 and 3. The groundwater samples were analyzed in the field for BTEX, 1,1-dichloroethene (1,1-DCE), 1,2-DCE, 1,1-dichloroethane (1,1-DCA), 1,2-DCA, 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), and tetrachloroethene (PCE). 1,1-DCA was detected in 8 of the 9 locations at concentrations below 300 $\mu\text{g}/\text{l}$ except for location GW-3 where 1800 $\mu\text{g}/\text{l}$ 1,1-DCA were reported. Relatively low concentrations of 1,1-DCE were reported in 7 of the 9 sampling points, and low concentrations of TCA, TCE, and PCE were reported in 1 to 2 sampling points. Analytical results for the shallow groundwater survey are presented in Table 1 and Figure 3.

Four temporary piezometers were installed in borings created by continuous 2.5-inch diameter sampling to a depth of 10 to 12 feet. Samples taken from these piezometers through 1-inch diameter screened pipe before sandpack was placed were also analyzed for the VOCs listed above. The sample from piezometer P-1 was analyzed by Tracer on 24 January 1994. Samples from piezometers P-2, P-3, and P-4 were analyzed by EPA Method 8010 by AEN laboratory of Pleasant Hill, California. Samples from piezometers P-2 and P-3 had very low detections of 1,1 DCA, and P-1 located at the eastern property boundary had a concentration of 390 $\mu\text{g}/\text{l}$ (Table 1 and Figure 3).

Groundwater depths were measured on 20 January and 29 March 1994 in the 4 locatable monitoring wells installed by a previous consultant and the groundwater elevations were calculated. The well heads were surveyed by Bates and Bailey of Berkeley, California. Groundwater elevation maps are presented as Figures 4 and 5, and show the groundwater direction to the northeast.

Groundwater samples from piezometer P-2 and boring B-1 were filtered and acidified in the field before sending them to AEN laboratory for metals analysis. These samples were acquired because the results reported by previous consultants were within background concentrations for soil, but were anomalously high for groundwater. We suspected the groundwater samples had not been filtered before analysis, and therefore did not represent dissolved metals concentrations. Based on the very low to non-detectable filtered sample results, the target metals do not appear to be a concern at the site (Table 1).

Soil samples from borings P-1, P-3, B-1, and B-2 were composited into two samples representing depth intervals of approximately 2 and 6 feet. These samples were analyzed for BTEX, gasoline, diesel, and oil. The only detection in the 2-foot sample was oil at a concentration of 610 mg/kg. In the 6-foot sample, oil was detected at 20 mg/kg, and diesel was reported at 5 mg/kg. Based on these results, no additional soil testing for petroleum hydrocarbons is recommended at this time (Table 2).

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The results for all samples collected according to our 30 December workplan are presented in Tables 1 and 2, and the analytical laboratory reports and their chain-of-custody forms are attached. The locations of shallow groundwater survey points, borings, piezometers, and previously installed monitoring wells are shown on Figure 2.

OBJECTIVES

Evaluation of previous reports and the sampling results presented above does not indicate significant chemical impact to soil at the site, except in the area of previous boring EB-1 where elevated concentrations of chlorinated solvents were detected. Chemically affected groundwater appears to be limited to within 60 to 80 feet of EB-1 on the site, but appears to move offsite to the east-north-east. The objectives of the 30 December 1993 workplan have been met with the exception of assessing the lateral extent of chlorinated VOCs in groundwater in the area of EB-1. Additional sampling in the area off-site and to the east is proposed to better assess the extent of VOC concentrations in groundwater. Specific recommendations for monitoring well placement and laboratory analysis of groundwater samples will be developed based upon previous data and data collected during this phase of investigation.

PROPOSED GROUNDWATER CHARACTERIZATION

Shallow groundwater grab samples will be collected at the four locations shown on Figure 2 to further assess the lateral extent of 1,1-DCA in shallow groundwater. This area is located off-site to the east beyond a right-of-way owned by the Alameda Belt Line Railroad Company, and outside of the area proposed for residential development. A survey will be conducted by augering 1.5 to 2-inch diameter borings to the expected depth of groundwater, previously found at 5 to 7 feet. Groundwater will be collected with a small diameter, clean bailer in laboratory prepared bottles, and will be delivered under chain-of-custody procedures to On-Site Environmental Laboratories, Inc. of Fremont. The samples will be analyzed using a screening technique for chlorinated halogens including 1,1-DCA. Additional sampling points may be chosen after results from the first samples have been received; in this case, sample locations will follow a grid pattern.

HEALTH AND SAFETY

A health and safety plan for site characterization work performed by Geomatrix was submitted to the county with our 30 December 1993 workplan. This health and safety plan will also be used for the work described in this workplan.

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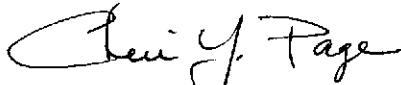
SCHEDULE AND REPORTING

After evaluation of current and previous site data, a report will be prepared summarizing field activities, analytical results, groundwater gradient information, soil types, and our evaluation of environmental site characteristics that could potentially impact residential development. The work is expected to require 1 to 3 days of field time, and is scheduled for April 1994. A report presenting the results of the site characterization work with recommendations will be completed within four weeks of the fieldwork.

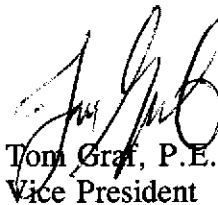
Thank you for this opportunity to be of service. If you have any questions, please call either of the undersigned.

Sincerely,

GEOMATRIX CONSULTANTS, INC.



Cheri Y. Page, R.G.
Project Geologist



Tom Graf, P.E.
Vice President

CYP/TEG/lam
CONTR2530WASC.LTR

Attachments: Table 1 - Groundwater Grab Sample Results - January 1994
Table 2 - Soil Sample Results - January 1994
Table 3 - Groundwater Elevations
Figure 1 - Location Map
Figure 2 - Site Plan
Figure 3 - DCA Concentrations in Groundwater Grab Samples - January 1994
Figure 4 - Groundwater Elevation Map - 20 January 1994
Figure 5 - Groundwater Elevation Map - 29 March 1994
Analytical Laboratory Reports

cc: Mr. Peter Wang - Encinal Real Estate, Inc.

TABLE 1
GROUNDWATER GRAB SAMPLE RESULTS
24 JANUARY 1994¹
 Encinal Real Estate
 2020 Sherman
 Alameda, California

Sample	1,1-DCE µg/l	1,1-DCA µg/l	1,2-DCE µg/l	1,2-DCA µg/l	TCA µg/l	TCE µg/l	PCE µg/l	Benzene µg/l	Toluene µg/l	Ethylbenzene µg/l	Xylenes µg/l	Arsenic mg/l	Chromium mg/l	Lead mg/l	Thallium mg/l
GW-1	3	54	<6	<0.9	<0.02	<0.07	<0.02	<0.5	<0.8	<1	<3	NA	NA	NA	NA
GW-2	<0.07	<0.2	<3	<0.4	<0.01	<0.03	<0.01	<0.2	<0.4	<0.7	<2	NA	NA	NA	NA
GW-3	160	1800	<14	<2	74	<0.6	2	<1	8	<3	<8	NA	NA	NA	NA
GW-4	2	110	<3	<0.4	6	0.7	0.05	<0.2	<0.4	<0.7	<2	NA	NA	NA	NA
GW-5	4	240	<3	<0.4	<0.01	<0.03	<0.01	<0.2	<0.4	<0.7	<2	NA	NA	NA	NA
GW-6	1	230	<6	<0.9	<0.02	<0.07	<0.02	<0.5	<0.8	<1	<3	NA	NA	NA	NA
GW-7	1	200	<6	<0.9	<0.02	<0.07	<0.02	<0.5	<0.8	<1	<3	NA	NA	NA	NA
GW-8	11	140	<3	<0.4	<0.01	<0.03	<0.01	<0.2	<0.4	<0.7	<2	NA	NA	NA	NA
GW-9	<0.07	20	<3	<0.4	<0.01	<0.03	<0.01	<0.2	<0.4	<0.7	<2	NA	NA	NA	NA
P-1	4	390	<6	<0.9	<0.02	<0.07	<0.02	<0.5	<0.8	<1	<3	NA	NA	NA	NA
P-2	<0.5	4	0.6	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	0.009	<0.01	<0.04	<0.1
P-3	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
P-4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
B-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.002	<0.01	<0.04	<0.1

Notes:

- NA - not analyzed
- DCA - dichloroethane
- TCA - trichloroethane
- DCE - dichloroethene
- TCE - trichloroethene
- PCE - tetrachloroethene

¹ Volatile organic analysis for samples P-1 and GW-1 through GW-9 were performed in the field by Tracer Research Corporation. All other analyses were performed by AEN laboratory.

TABLE 2

**SOIL SAMPLE RESULTS
JANUARY 1994
Encinal Real Estate
2020 Sherman
Alameda, California**

Composite Sample Identification ¹	Benzene μg/l	Toluene μg/l	Ethylbenzene μg/l	Xylene μg/l	Gasoline mg/kg	Diesel mg/kg	Oil mg/kg
P-1-2.5, P-3-2.0, B-1-2.0, B-2-2.0	<5	<5	<5	<5	<0.2	<10	610
P-1-6.0, P-3-4.5, B-1-6.0, B-2-6.0	<5	<5	<5	<5	<0.2	5	20

Note:

¹ Composite sample identification is comprised of the boring number and its depth below ground surface.

TABLE 3

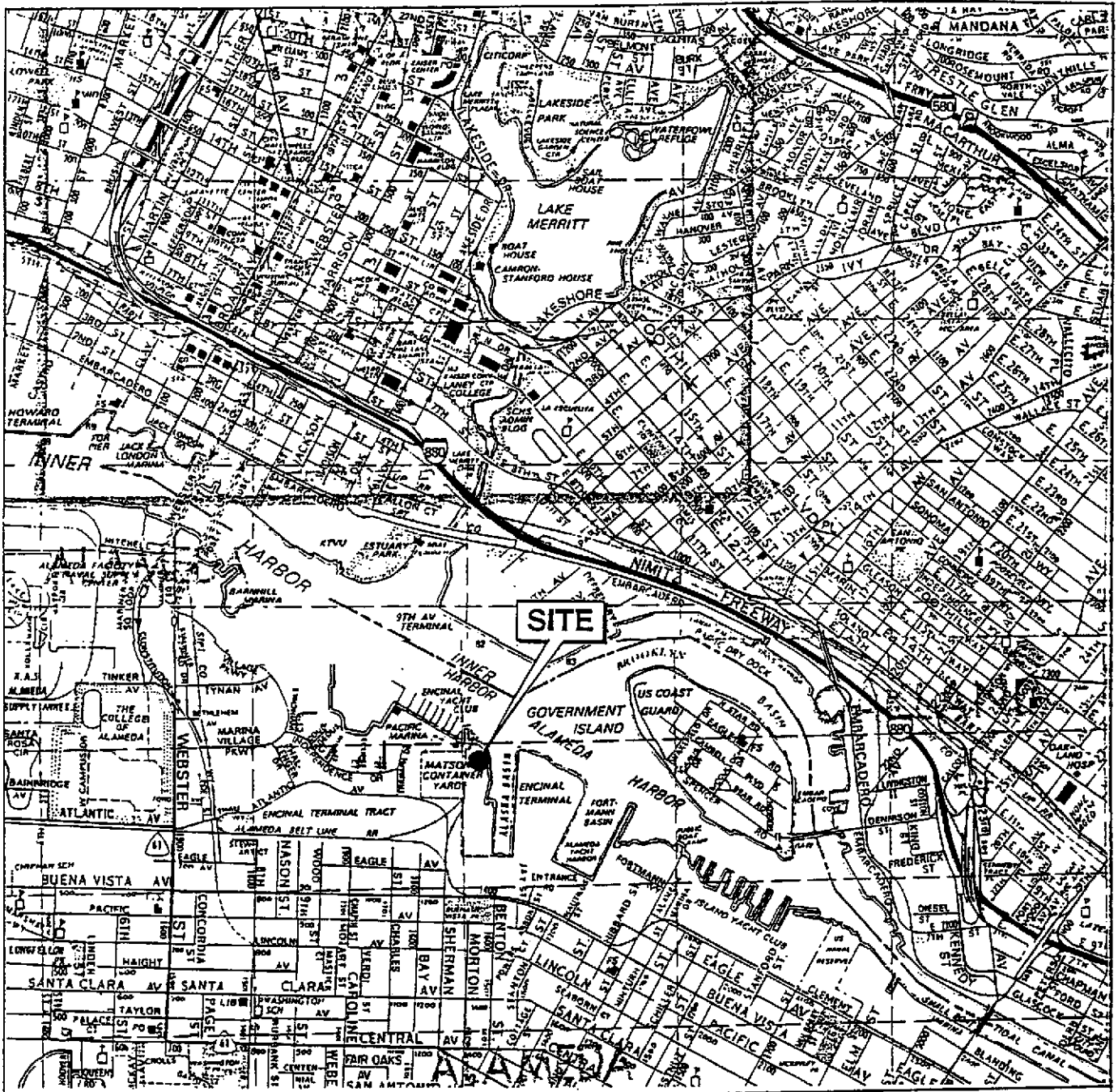
GROUNDWATER ELEVATIONS

Encinal Real Estate
 2020 Sherman
 Alameda, California

Well I.D.	Measuring Point Elevation (feet)	Depth Below Measuring Point (feet) 20 January 1994	Depth Below Measuring Point (feet) 29 March 1994	Water Level Elevation 20 January 1994	Water Level Elevation 29 March 1994
MW-2	9.97	1.74	0.73	8.23	9.24
MW-4	14.14	4.99	4.40	9.15	9.74
MW-5	13.51	3.60	2.86	9.91	10.65
MW-8	13.11	3.56	2.55	9.55	10.56

Notes:

1. Well locations are shown on Figures 4 and 5.
2. Elevations are in feet above mean sea level.
3. Measuring points are marked on the north rim of the well casing, and were surveyed by Bates and Bailey of Berkeley, California on 26 January 1994.



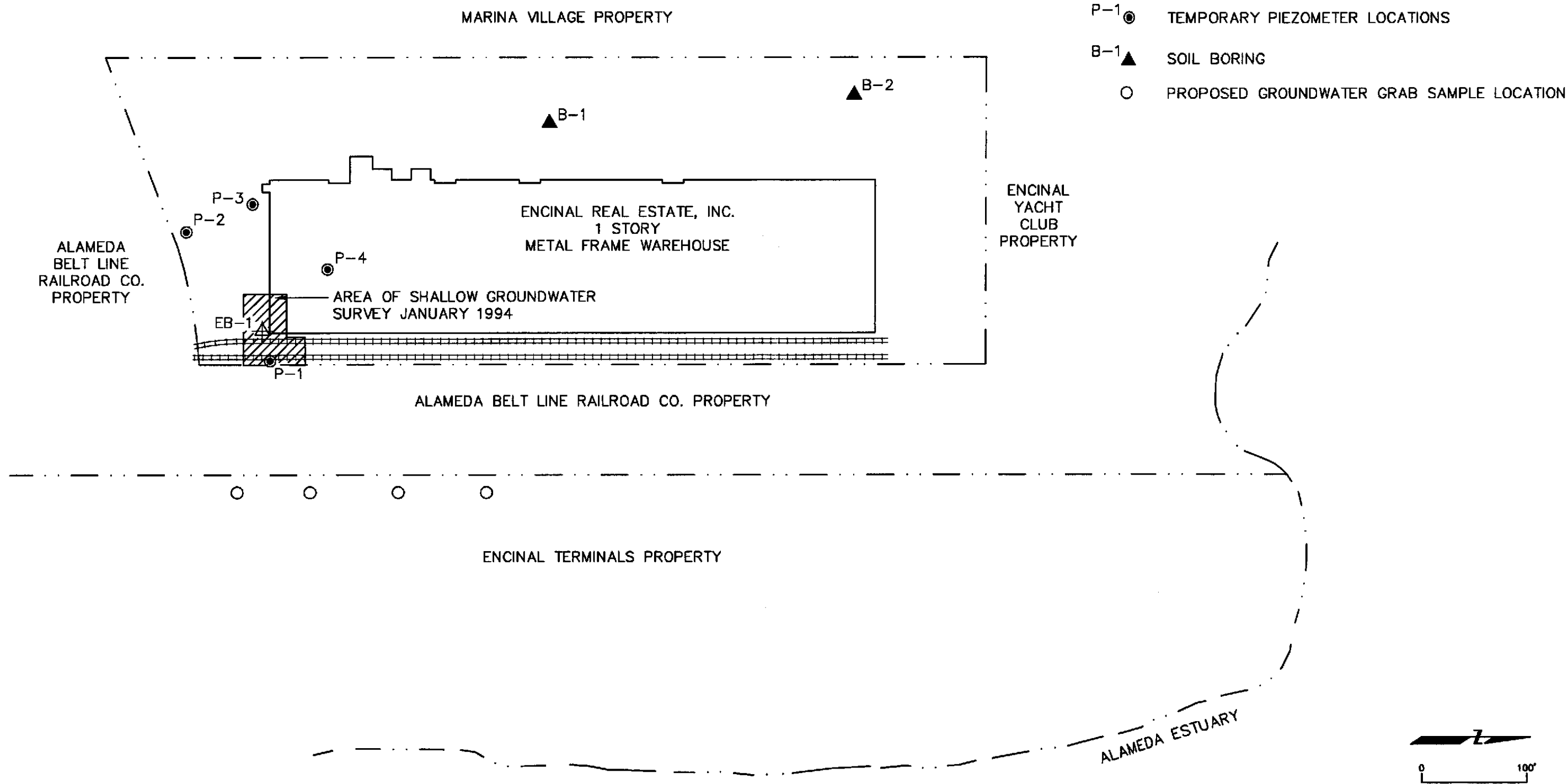
SITE LOCATION MAP
 2020 Sherman
 Alameda, California

Figure
 1
 Project No.
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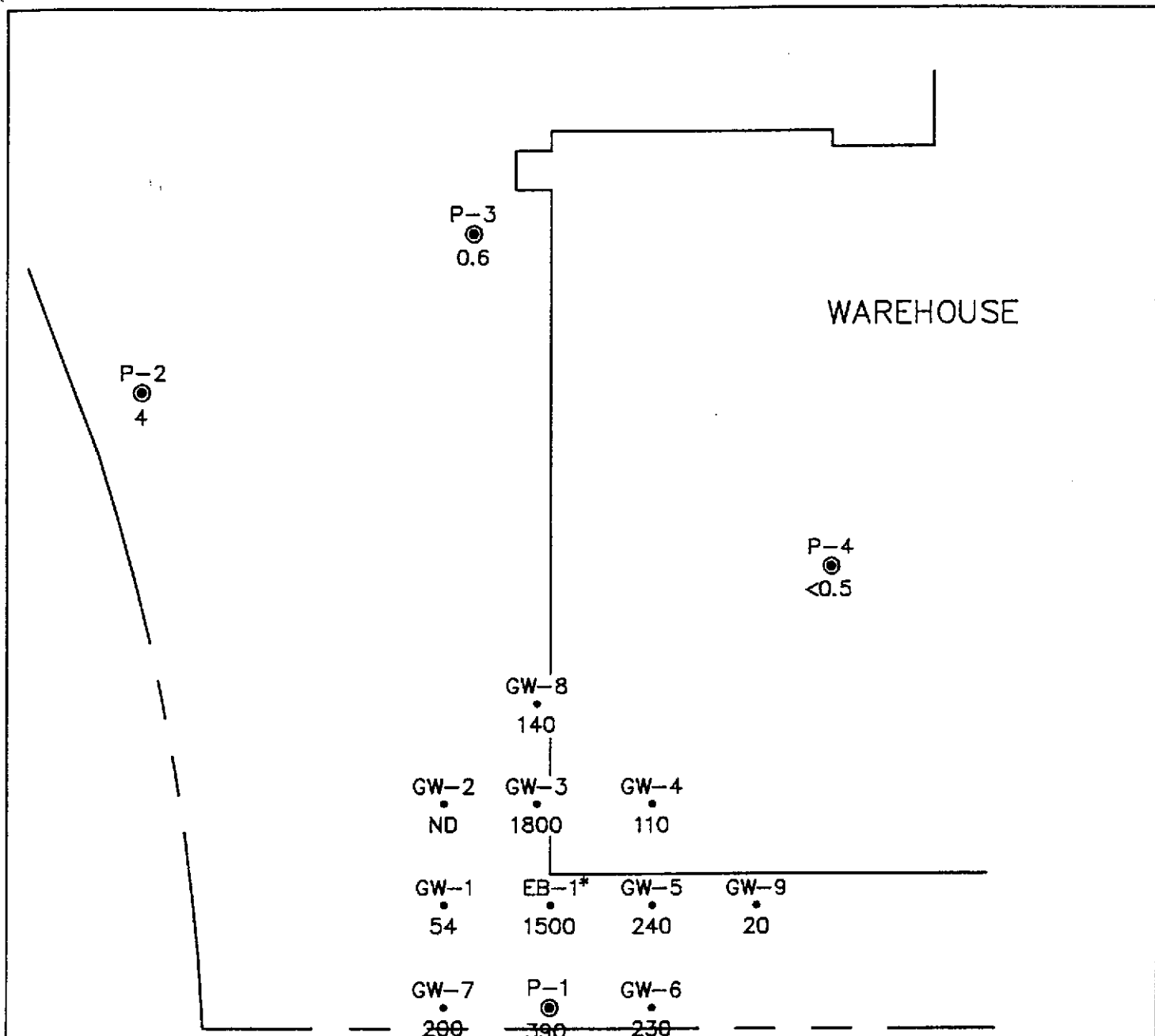


EXPLANATION

- APPROXIMATE PROPERTY LINE
- ▲ APPROXIMATE PREVIOUS GROUNDWATER GRAB SAMPLING LOCATION WITH DETECTABLE VOC'S
- P-1 ● TEMPORARY PIEZOMETER LOCATIONS
- B-1 ▲ SOIL BORING
- PROPOSED GROUNDWATER GRAB SAMPLE LOCATION



	Revisions	SOIL AND GROUNDWATER SAMPLE LOCATIONS JANUARY 1994	ENCINAL REAL ESTATE 2020 SHERMAN AVE. ALAMEDA, CALIFORNIA	Figure 2



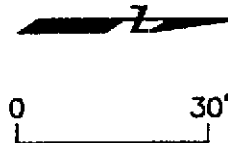
EXPLANATION

P-1
●
390
TEMPORARY PIEZOMETER LOCATION AND 1,1 - DICHLOROETHANE CONCENTRATION (1,1 - DCA) IN GROUNDWATER GRAB SAMPLE IN PARTS PER BILLION.

GW-1
●
54
SHALLOW GROUNDWATER SURVEY POINT AND 1,1 - DCA CONCENTRATION IN GROUNDWATER GRAB SAMPLE IN PARTS PER BILLION

*GROUNDWATER GRAB SAMPLE FROM BORING EB-1 WAS COLLECTED AND ANALYZED BY OTHERS IN 1990.

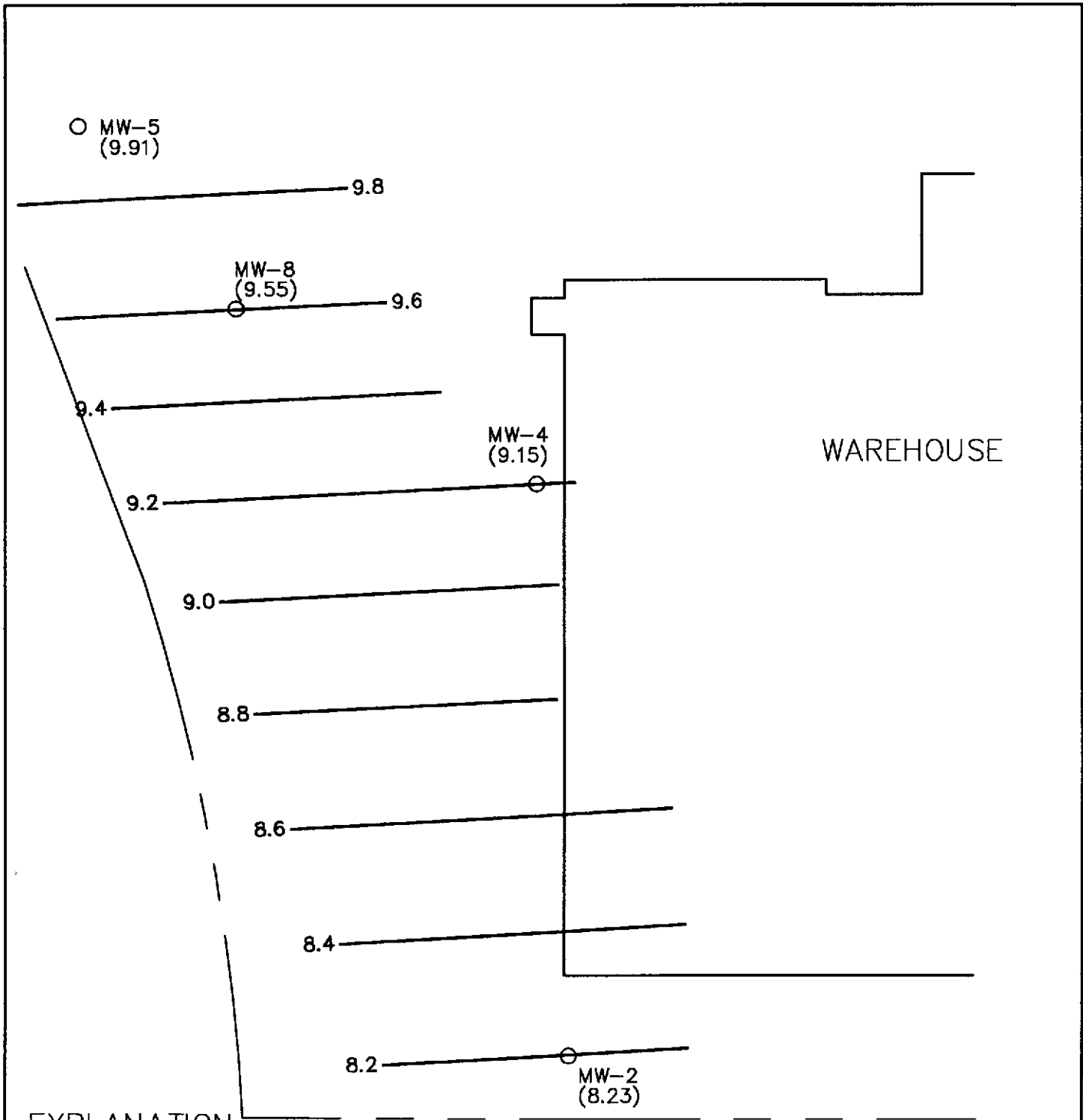
APPROX.



**1,1 - DCA CONCENTRATIONS IN GROUNDWATER
JANUARY 1994
ENCINAL REAL ESTATE - 2020 SHERMAN AVE.
ALAMEDA, CALIFORNIA**

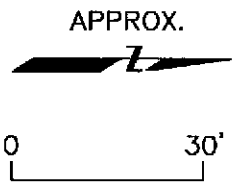
Figure
3

Project No.
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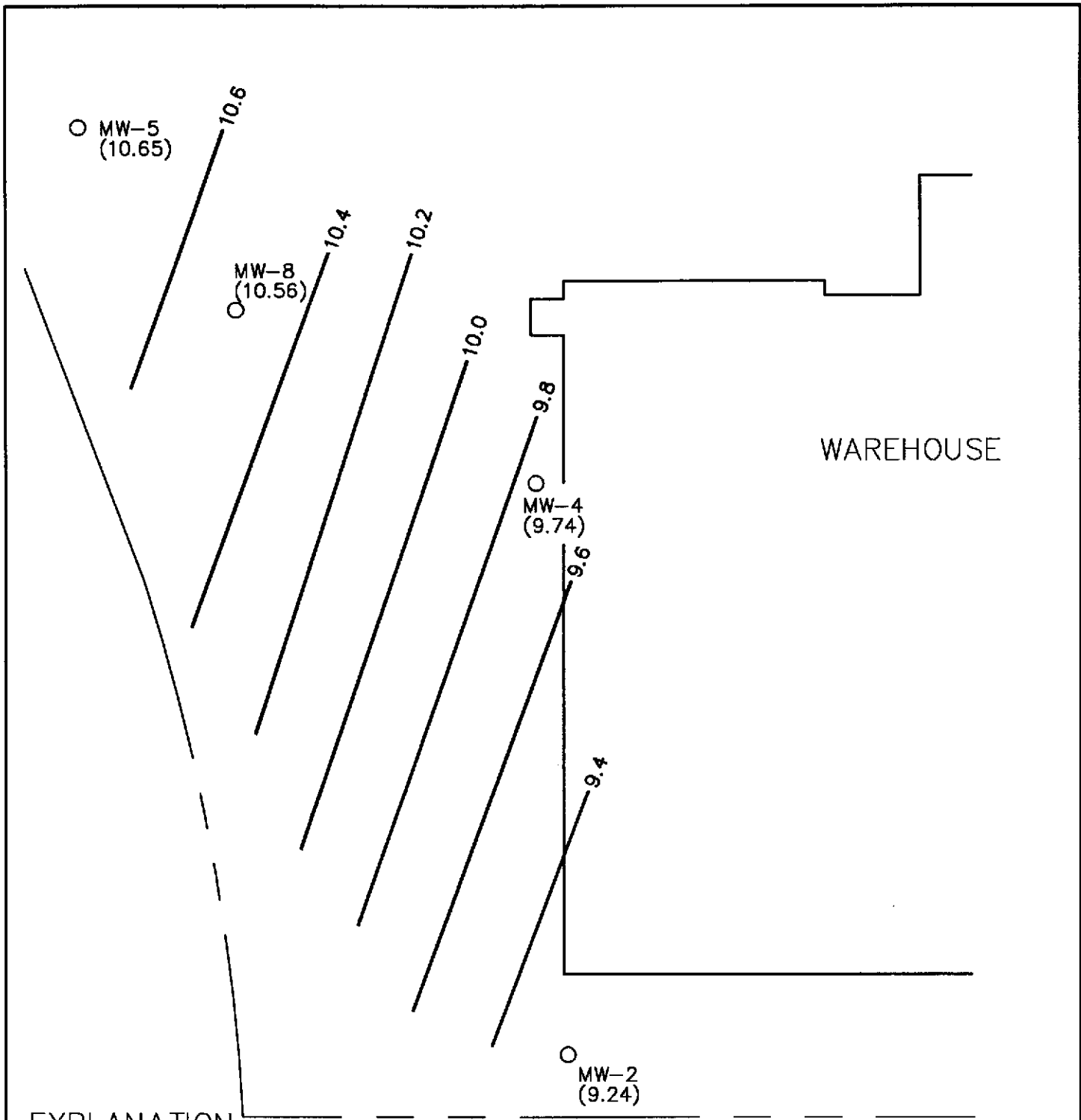
EXPLANATION

- MW-2 (8.2) MONITORING WELL WITH GROUNDWATER ELEVATION IN FEET
- 8.2 — LINE OF EQUAL GROUNDWATER ELEVATION WITH ELEVATION NOTED IN FEET



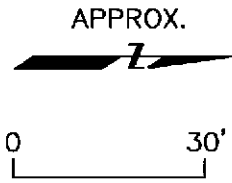
GROUNDWATER ELEVATION MAP - 20 JANUARY 1994
ENCINAL REAL ESTATE
2020 SHERMAN AVE.
ALAMEDA, CALIFORNIA

Figure
4
Project No.
2530 A



EXPLANATION

- MW-2 (8.2) MONITORING WELL WITH GROUNDWATER ELEVATION IN FEET
- 8.2 — LINE OF EQUAL GROUNDWATER ELEVATION WITH ELEVATION NOTED IN FEET



GROUNDWATER ELEVATION MAP - 29 MARCH 1994
ENCINAL REAL ESTATE
2020 SHERMAN AVE.
ALAMEDA, CALIFORNIA

Figure
 5
 Project No.
 2530 A