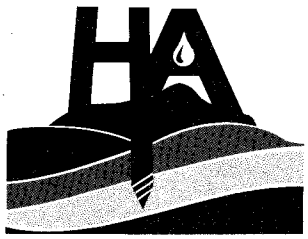


HAGEMAN-AGUIAR, INC.

Underground Contamination Investigations, Groundwater Consultants, Environmental Engineering

QUARTERLY

GROUNDWATER SAMPLING REPORT

(Sampled November 15, 1996)

PACIFIC CRYOGENIC COMPANY
2311 Magnolia Street
Oakland, California

November 21, 1996

3732 Mt. Diablo Blvd. Suite 372 Lafayette, California 94549 (510) 284-1661 FAX (510) 284-1664

TABLE OF CONTENTS

I. INTRODUCTION

The subject site is the historical location of Pacific Cryogenic Company at 2311 Magnolia Street, Oakland, California. The location of the site is shown on Figure 1 (site location map).

On June 30 and July 12, 1989, Geo-Environmental Technology removed three underground storage tanks from the subject site: one 8,000-gallon underground Diesel tank, one 1,000-gallon underground Gasoline tank, and one 550-gallon underground Waste Oil tank. Due to the detection of subsurface contamination in the vicinity of the Gasoline and Waste Oil tanks, shallow groundwater monitoring wells MW-1, MW-2 and MW-3 were installed.

On November 12, 1992, the underground piping running between the previous Gasoline and Waste Oil underground tanks and the previous dispenser pedestal were removed by Hageman-Aguiar, Inc. Subsequent to the piping removal, additional excavation was conducted on November 18, 1992. The excavation extended to a depth of approximately 15 feet below ground surface and was conducted in order to mitigate the apparent subsurface gasoline contamination. The three monitoring wells MW-4, MW-5 and MW-6 were installed within the excavation at the time of the backfilling operation.

On November 15, 1996, on-site monitoring wells MW-3 and MW-4 were sampled for the laboratory analysis for dissolved petroleum constituents. This "round" of groundwater sampling has been conducted as part of the quarterly groundwater monitoring program at the site, as required by the Alameda County Environmental Health Department and the

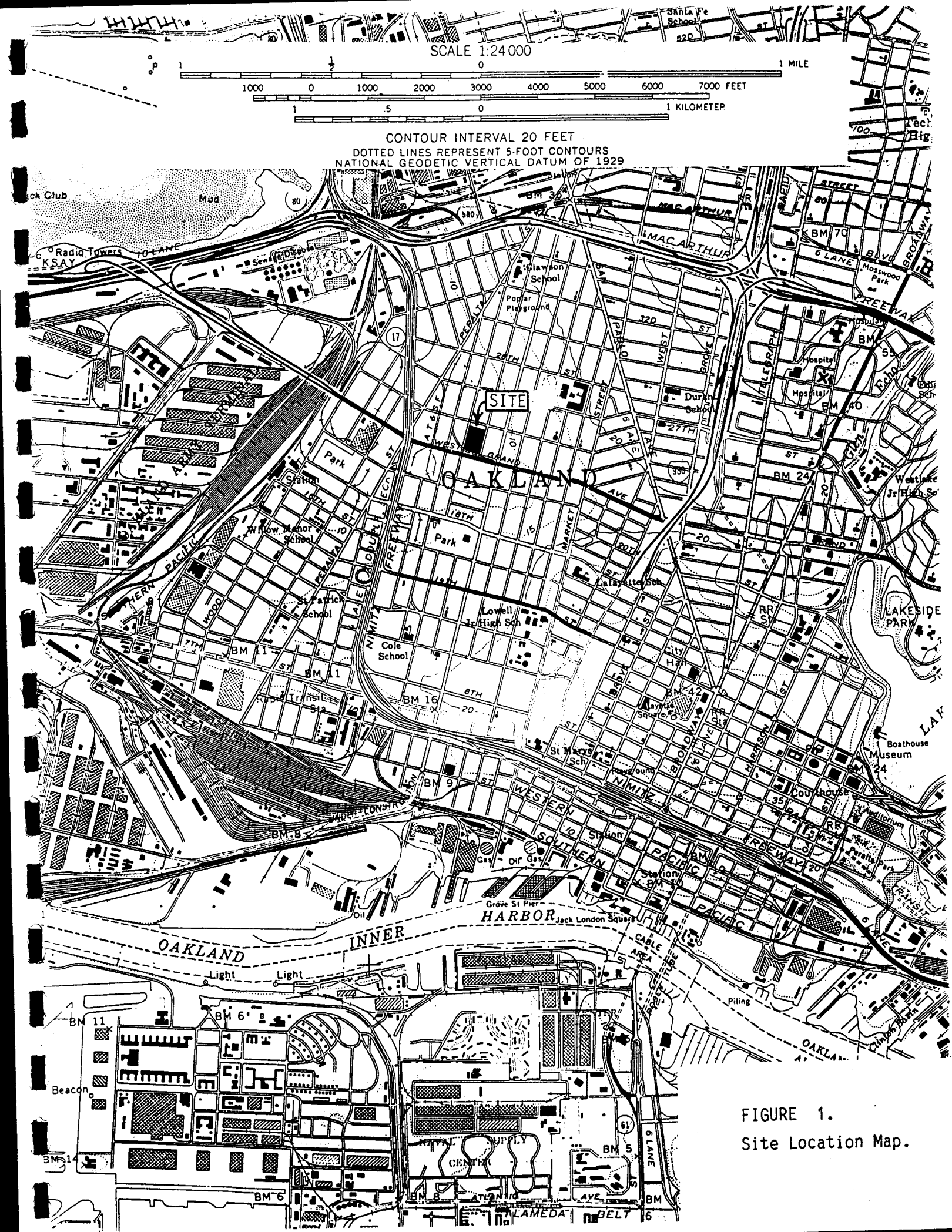


FIGURE 1.
Site Location Map.

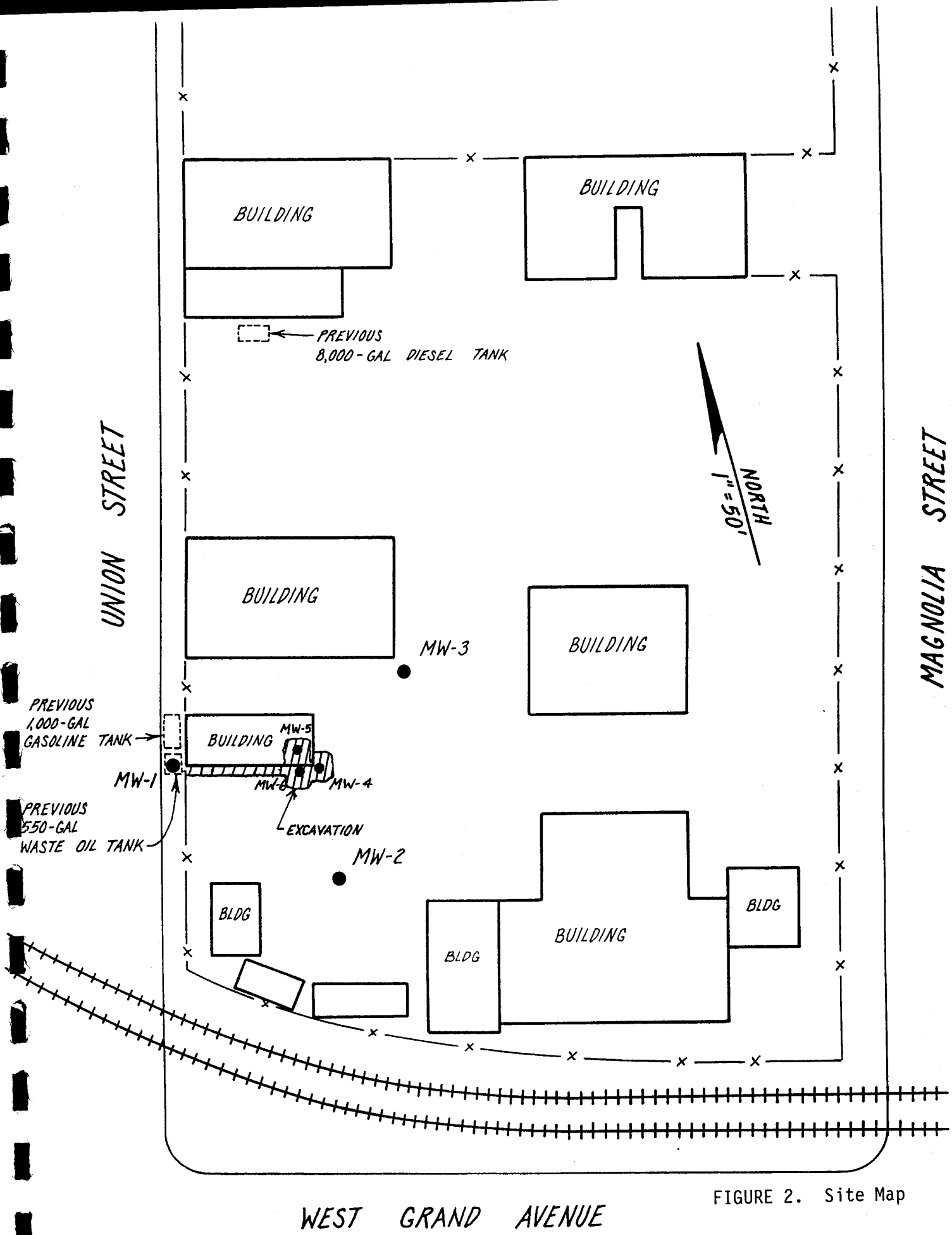


FIGURE 2. Site Map

California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. Currently, wells MW-3 and MW-4 are sampled quarterly, well MW-1 is sampled semi-annually, and sampling at well MW-2 has been discontinued.

II. FIELD WORK

Monitoring Well Sampling

On November 15, 1996, groundwater samples were collected from monitoring wells MW-3 and MW-4. Prior to groundwater sampling, each well was purged by bailing several casing volumes of water. Field conductivity, temperature, and pH meters were present on-site during the monitoring well sampling. As the purging process proceeded, the three parameters were monitored. Purging continued until readings appeared to have reasonably stabilized. A groundwater sample was subsequently collected using a new clean disposable sampling bailer. The water sample was placed inside appropriate 40 ml VOA vials free of any headspace. The samples were immediately placed on crushed ice, then transported under chain-of-custody to the laboratory at the end of the work day.

At the time each monitoring well was sampled, the following information was recorded in the field: 1) depth-to-water prior to purging, using an electrical well sounding tape, 2) identification of any floating product, sheen, or odor prior to purging, using a clear bailer, 3) sample pH, 4) sample temperature, and 5) specific conductance of the sample.

Copies of the well sampling logs are included as Attachment A.

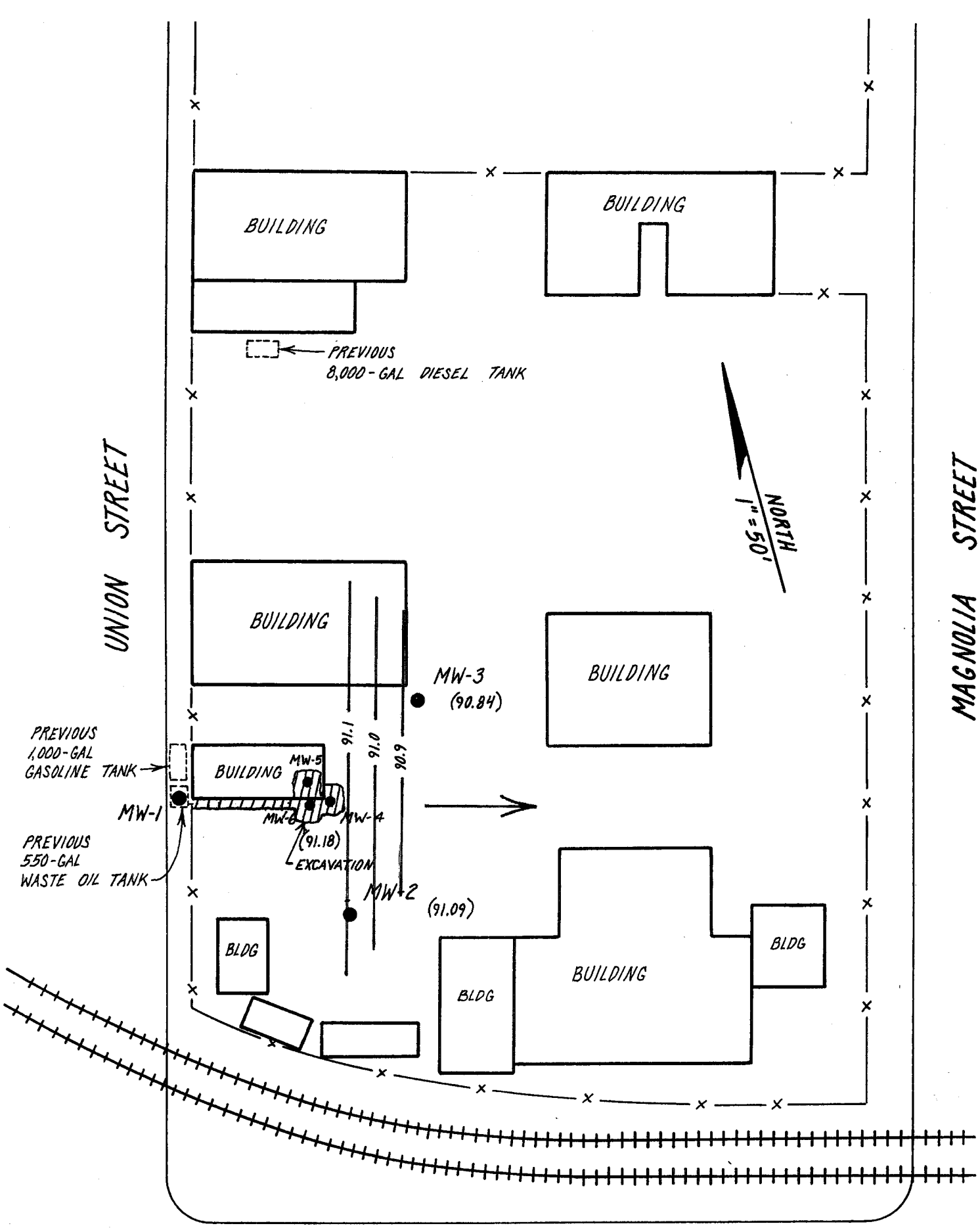


FIGURE 3. Shallow Groundwater Table Contour Map, measured on November 15, 1996.

TABLE 2.

Historical Water Table Elevations
(feet)

Well	Date of Measurement								
	4-3-92	6-16-92	10-8-92	1-7-93	4-23-93	7-16-93	11-8-93	2-2-94	5-2-94
MW-1	95.58	92.01	91.11	97.17	95.17	92.07	91.78	94.42	93.55
MW-2	93.25	91.60	90.83	94.24	92.69	91.46	91.04	92.55	92.19
MW-3	92.52	91.87	90.65	94.43	92.64	91.21	91.14	92.21	91.94
MW-4	---	---	---	---	---	91.48	91.16	92.67	92.37
Flow Direction	SE	SE	E	SE	SE	E	SE	E	E

Well	Date of Measurement								
	8-3-94	8-3-94	11-4-94	3-14-95	8-23-95	5-8-96	8-12-96	11-15-96	
MW-1	---	90.96	90.96	96.33	91.70	93.72	91.96	---	
MW-2	91.25	90.77	90.77	95.08	91.30	92.64	91.55	91.09	
MW-3	91.00	90.57	90.57	94.96	91.10	92.84	91.21	90.84	
MW-4	91.26	90.74	90.74	95.60	91.38	93.28	91.72	91.18	
Flow Direction	E	E	E	E	E	E	E	E	

IV. SHALLOW GROUNDWATER SAMPLING RESULTS

Laboratory Analysis

All analyses were conducted by a California State DOHS certified laboratory in accordance with EPA recommended procedures (Priority Environmental Labs, Milpitas, CA). All Groundwater samples were analyzed for Total Petroleum Hydrocarbons as Gasoline (EPA method 8015), and for Benzene, Toluene, Ethylbenzene, and Total Xylenes (EPA method 602).

Results of Groundwater Sampling

Table 3 presents the most recent results of the laboratory analysis of groundwater samples from wells MW-3 and MW-4, as well as the results of all previous "rounds" of sampling from wells MW-1, MW-2, MW-3 and MW-4.

As shown in Table 3, for this round of sampling, Gasoline was detected in the groundwater samples collected from wells MW-3 and MW-4 at concentrations of 4,900 µg/L (ppb) and 320 µg/L (ppb), respectively. In addition, Benzene was detected in the groundwater samples collected from wells MW-3 and MW-4 at concentrations of 66 µg/L (ppb) and 19 µg/L (ppb), respectively.

TABLE 3.
Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-1	10-26-90	---	1200	18	7.1	37
	03-04-92	460	120	9.0	16	44
	04-03-92	300	21	6.0	15	36
	06-16-92	220	54	17	29	73
	10-09-92	ND	ND	ND	ND	ND
	01-07-93	210	0.7	3.7	4.4	9.6
	04-23-93	280	0.9	1.3	2.9	6.2
	07-16-93	110	ND	ND	0.5	1.1
	11-08-93	ND	ND	ND	ND	ND
	01-28-94	190	5.7	4.9	6.7	21
	05-02-94	ND	ND	ND	ND	ND
	08-03-94	ND	ND	ND	ND	ND
	11-04-94	ND	ND	ND	ND	ND
	03-14-95	ND	ND	ND	ND	ND
	08-23-95	ND	ND	ND	ND	ND
	05-08-96	110	1.0	ND	ND	2.8
	08-12-96	---	---	---	---	---
	11-15-96	---	---	---	---	---
Detection Limit		50	0.5	0.5	0.5	0.5

ND = Not Detected

TABLE 3. (continued)
Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-2	03-04-92	ND	ND	ND	ND	ND
	04-03-92	ND	ND	ND	ND	ND
	06-16-92	ND	ND	ND	ND	ND
	10-09-92	ND	ND	ND	ND	ND
	01-07-93	ND	ND	ND	ND	ND
	04-23-93	ND	ND	ND	ND	ND
	07-16-93	ND	ND	ND	ND	ND
	11-08-93	ND	ND	ND	ND	ND
	01-28-94	ND	ND	ND	ND	ND
	05-02-94	ND	ND	ND	ND	ND
	08-03-94	ND	ND	ND	ND	ND
	11-04-94	ND	ND	ND	ND	ND
	03-14-95	ND	ND	ND	ND	ND
	08-23-95	ND	ND	ND	ND	ND
	05-08-96	ND	ND	ND	ND	ND
	08-12-96	---	---	---	---	---
	11-15-96	---	---	---	---	---
Detection Limit		50	0.5	0.5	0.5	0.5

ND = Not Detected

TABLE 3. (continued)
Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-3	03-04-92	14,000	6,200	60	110	740
	04-03-92	5,200	120	32	57	180
	06-16-92	6,000	180	45	82	190
	10-09-92	11,000	87	49	94	200
	01-07-93	4,200	3.3	13	44	92
	04-23-93	21,000	23	43	49	130
	07-16-93	16,000	19	21	25	78
	11-08-93	10,000	4.3	5.7	7.9	35
	01-28-94	7,500	8.5	10	50	95
	05-02-94	22,000	69	39	60	110
	08-03-94	2,500	35	12	27	25
	11-04-94	2,900	4.0	8.1	18	27
	03-14-95	2,500	9.5	3.0	4.6	8.3
	08-23-95	12,000	35	8.2	14	20
	05-08-96	19,000	57	17	32	56
	08-12-96	8,900	47	7.6	14	16
	11-15-96	4,900	66	13	33	41
Detection Limit		50	0.5	0.5	0.5	0.5

ND = Not Detected

TABLE 3. (continued)
Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-4	01-07-93	**4,800**	**6.4**	**25**	**60**	**110**
	04-23-93	**2,700**	**8.3**	**11**	**31**	**59**
	07-16-93	**3,000**	**3.7**	**4.2**	**4.9**	**15**
	11-08-93	**1,400**	**0.6**	**0.8**	**1.1**	**4.8**
	01-28-94	**830**	**8.5**	**10**	**12**	**27**
	05-02-94	**900**	**7.3**	**3.2**	**0.5**	**14**
	08-03-94	**1,000**	**22**	**0.7**	**8.0**	**7.4**
	11-04-94	**160**	**0.6**	ND	**1.9**	**2.9**
	03-14-95	**120**	**3.6**	ND	ND	**3.7**
	08-23-95	ND	ND	ND	ND	ND
	05-08-96	ND	ND	ND	ND	ND
	08-12-96	ND	ND	ND	ND	ND
	11-15-96	**320**	**19**	**3.2**	**5.6**	**15**
Detection Limit		50	0.5	0.5	0.5	0.5

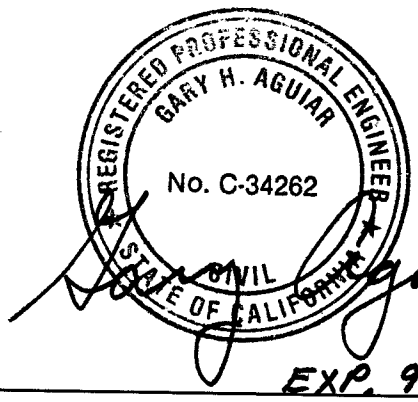
ND = Not Detected

QUARTERLY GROUNDWATER SAMPLING REPORT

PACIFIC CRYOGENIC COMPANY

2311 Magnolia Street, Oakland, CA

November 21, 1996



EXP. 9-30-99

Gary Aguiar **RCE 34262**

ATTACHMENT A

Well Sampling Logs

WELL SAMPLING LOG

Project/No. 0096 Page 1 of 2

Site Location Pacific Cryogenic

Well No. MW-4 Date 11/15/96

Weather Sunny 55°-65° Time Began 11:36
Completed 11:54

Sampling Personnel R Wilson

EVACUATION DATA

Description of Measuring Point (MP) WB @ G

Total Sounded Depth of Well Below MP 14.00' + 0.27'

- Depth to Water Below MP 8.77' Diameter of Casing 4"

= Water Column in Well 5.50'

Gallons in Casing 3.59 + Annular Space (30% porosity) _____ = Total Gallons _____

Gallons Pumped Prior to Sampling 36

Evacuation Method PVC Bailer
Sample Method Disposable Bailer
Sample Collected 2-VOA

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: none, clear
(thickness to 0.1 inch, if any)

				sample
Time	11:41	11:45	11:49	11:54
Gals Removed	9	18	27	36
Temperature	68.0	67.3	67.4	67.5
Conductivity	4.09×10^2	3.73×10^2	3.62×10^2	3.71×10^2
pH	6.63	6.64	6.70	6.68
Color / Odor	clear	clear	clear	clear
Turbidity	low	low	low	low

Comments: _____

WELL SAMPLING LOG

Project/No. 0096 Page 2 of 2

Site Location Pacific Cryogenics

Well No. MW-3 Date 11/15/96

Weather Sunny 55°-65° Time Began 12:12
Completed 12:33

Sampling Personnel R Wilson

EVACUATION DATA

Description of Measuring Point (MP) WB @ G

Total Sounded Depth of Well Below MP 22.67' +0.27'

- Depth to Water Below MP 9.18' Diameter of Casing 2"

= Water Column in Well 13.76'

Gallons in Casing 2.33 + Annular Space (30% porosity) _____ = Total Gallons _____

Gallons Pumped Prior to Sampling 3.5

Evacuation Method PVC Bailer

Sample Method Disposable Bailer

Sample collected 2-VOA

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: none, clear
(thickness to 0.1 inch, if any)

			Sample	
Time	12:16	12:18	12:33	
Gals Removed	2	3.5	3.5	
Temperature	67.1	67.6	67.4	
Conductivity	5.54×10^2	5.82×10^2	5.57×10^2	
pH	6.76	7.04	7.12	
Color / Odor	grey	grey	clear	
Turbidity	Med	Med (dewatered)	low	

Comments: _____

Hageman-Aguiar, Inc.

3732 Mt. Diablo Blvd. Suite 372
Lafayette, California 94549
(510) 284-1661 Fax (510) 284-1664

Project: 0094 Pacific Cryogenics **Date:** 11/15/96

WELL #	ELEVATION	DTW	PRODUCT	WELL DEPTH	COMMENTS
MW-1		NA			Thick sludge in well
MW-2		8.91'			
MW-3		9.18'		22.94'	
MW-4		8.77'		14.27'	

ATTACHMENT B

Analytical Results: Groundwater

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

November 18, 1996 PEL # 9611030

HAGEMAN - AGUIAR, INC.

Attn: Randal Wilson

Re: Two water samples for Gasoline/BTEX with MTBE analysis.

Project name: Pacific Oxygen
Project location: 2311 Magnolia - Oakland

Date sampled: Nov 15, 1996 Date submitted: Nov 15, 1996
Date extracted: Nov 15-16, 1996 Date analyzed: Nov 15-16, 1996

RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	MTBE (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylene (ug/L)
MW-3	4900	N.D.	66	13	33	41
MW-4	320	N.D.	19	3.2	5.6	15
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	96.3%	---	100.9%	101.9%	112.5%	104.5%
Detection limit	50	0.5	0.5	0.5	0.5	0.5
Method of Analysis	5030 / 8015	602	602	602	602	602

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

PEL # 9611030

CHAIN OF CUSTODY RECORD

INV # 27419

PROJECT NAME AND ADDRESS:

Pacific Oxygen
2311 Magnolia
Oakland

SAMPLER: (Signature) Randal Wilson

HAGEMAN - AGUIAR, INC.
3732 Mt. Diablo Blvd., Suite 372
Lafayette, CA 94549
(415)284-1661 (415)284-1664 (FAX)

CROSS REFERENCE NUMBER	DATE	TIME	SOIL	WATER	STATION LOCATION	ANALYSIS REQUESTED: TPH-G, BTEX, MTBE	REMARKS
MW-3	11/15/96	12:33		X		X	
MW-4	11/15/96	11:54		X		X	

RELINQUISHED BY: (Signature) Randal Wilson	DATE 11/15/96 TIME 16:27	RECEIVED BY: (Signature)	DATE TIME
RELINQUISHED BY: (Signature)	DATE TIME	RECEIVED BY: (Signature)	DATE TIME
RELINQUISHED BY: (Signature)	DATE TIME	RECEIVED BY: (Signature)	DATE TIME
RELINQUISHED BY: (Signature)	DATE TIME	RECEIVED FOR LABORATORY BY: (Signature) PGL	DATE 11/15/96 TIME 15:30