

Underground Contamination Investigations, Groundwater Consultants, Environmental Engineering

# QUARTERLY GROUNDWATER SAMPLING REPORT

(Sampled August 23, 1995)

17/1

PACIFIC CRYOGENIC COMPANY 2311 Magnolia Street Oakland, CA

September 6, 1995

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#### I. INTRODUCTION

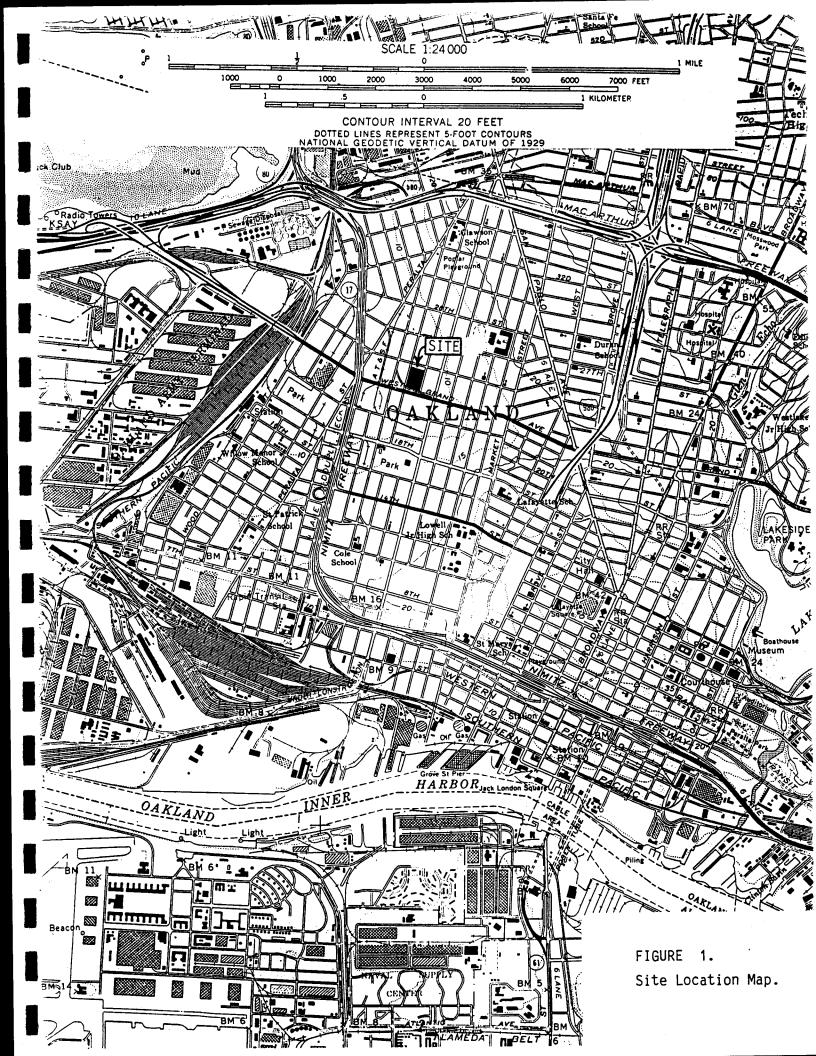
The subject site is the historical location of Pacific Cryogenic Company at 2311 Magnolia Street, Oakland, California. The location of the site is shown on Figure 1 (site location map).

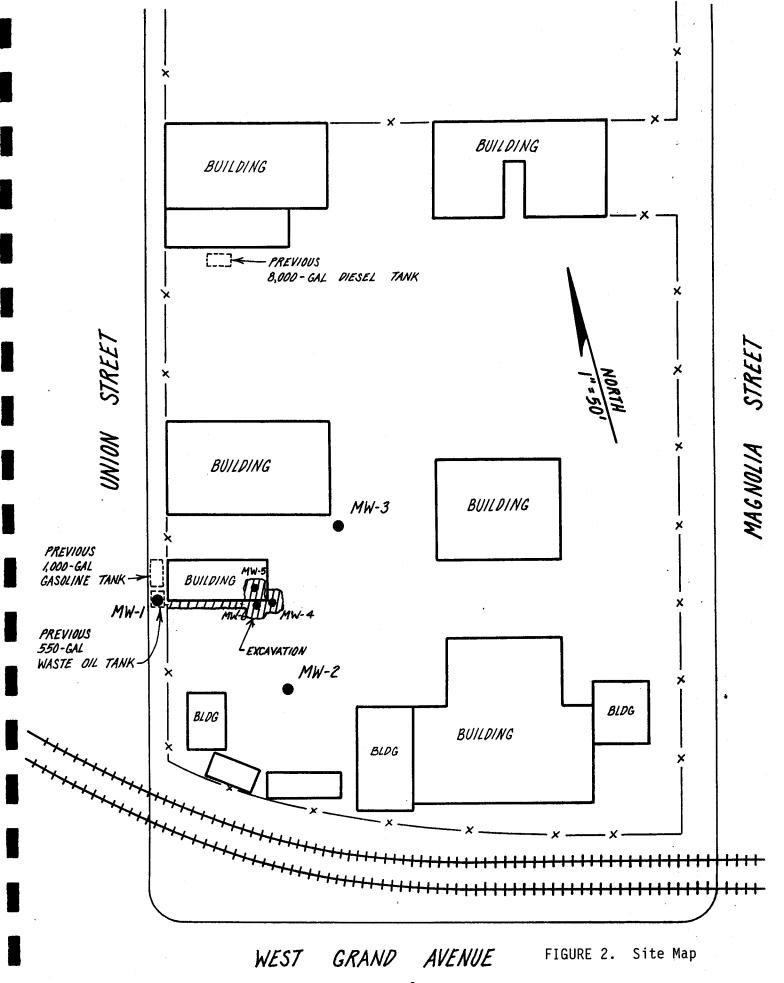
On June 30 and July 12, 1989, Geo-Environmental Technology removed three underground storage tanks from the subject site: one 8,000-gallon underground Diesel tank, one 1,000-gallon underground Gasoline tank, and one 550-gallon underground Waste Oil tank.

Due to the detection of subsurface contamination in the vicinity of the Gasoline and Waste Oil tanks, shallow groundwater monitoring well MW-1 was installed by Geo-Environmental Technology at the previous tank locations (see Figure 2). The results of shallow groundwater sampling on October 26, 1990, indicated the presence of Diesel at a concentration of 5,400  $\mu$ g/L, and Benzene, Toluene, Ethylbenzene, and Total Xylenes at concentrations of 1,200  $\mu$ g/L, 18  $\mu$ g/L, 7.1  $\mu$ g/L, and 37  $\mu$ g/L, respectively.

Subsequent to the installation and sampling of monitoring well MW-1, two additional shallow groundwater monitoring wells were installed on the subject site (wells MW-2 and MW-3). No data regarding these well installations appear to be available at the present time.

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. (see Figure 2). During the removal process, several holes were noted in both the waste oil and the gasoline underground pipelines. At one location, significant gasoline contamination was apparent in the soil (based upon odor and color).

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. Upon completion of the soil excavation on November 18, 1992, three excavation backfill wells were installed. The locations of these monitoring wells MW-4, MW-5 and MW-6 are shown in Figure 2.

On August 23, 1995, on-site monitoring wells MW-1, MW-2, MW-3 and MW-4 were sampled for the laboratory analysis for dissolved petroleum constituents.

#### II. FIELD WORK

#### Monitoring Well Sampling

On August 23, 1995, groundwater samples were collected from monitoring wells MW-1, MW-2, MW-3, and MW-4. groundwater sampling, each well was purged by bailing approximately 5 to 10 casing volumes of water. conductivity, temperature, and pH meters were present on-site during the monitoring well sampling. As the purging process proceeded, the three parameters were monitored. continued until readings appeared to have reasonably stabilized. After the water level in the well had attained 80% or more of the original static water level, a groundwater sample was collected using a clean teflon bailer. sample was placed inside appropriate 40 mL VOA vials and 1liter amber bottles 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 teflon 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.

#### Wastewater Generation

All water removed from the wells during purging and sampling was drummed and stored on-site until the results of laboratory analyses were obtained. Based upon these results, the water should be transported as a hazardous liquid waste under proper manifest to an appropriate TSD facility for treatment and disposal.

#### III. RESULTS OF WATER LEVEL MEASUREMENTS

#### Shallow Groundwater Flow Direction

Shallow water table elevations were measured on August 23, 1995. These measurements are shown in Table 1. Figure 3 presents a contour map for the shallow groundwater table beneath the site. As shown in this figure, the data from the three monitoring wells indicate that the shallow groundwater flow was in the easterly direction during this round of groundwater sampling.

#### Shallow Water Table Hydraulic Gradient

Figure 3 presents the contour map for the shallow groundwater table beneath the site. As shown in this figure, the shallow groundwater table beneath the site appears to have a calculated hydraulic gradient of dH/dL = 0.4'/83' = 0.0048.

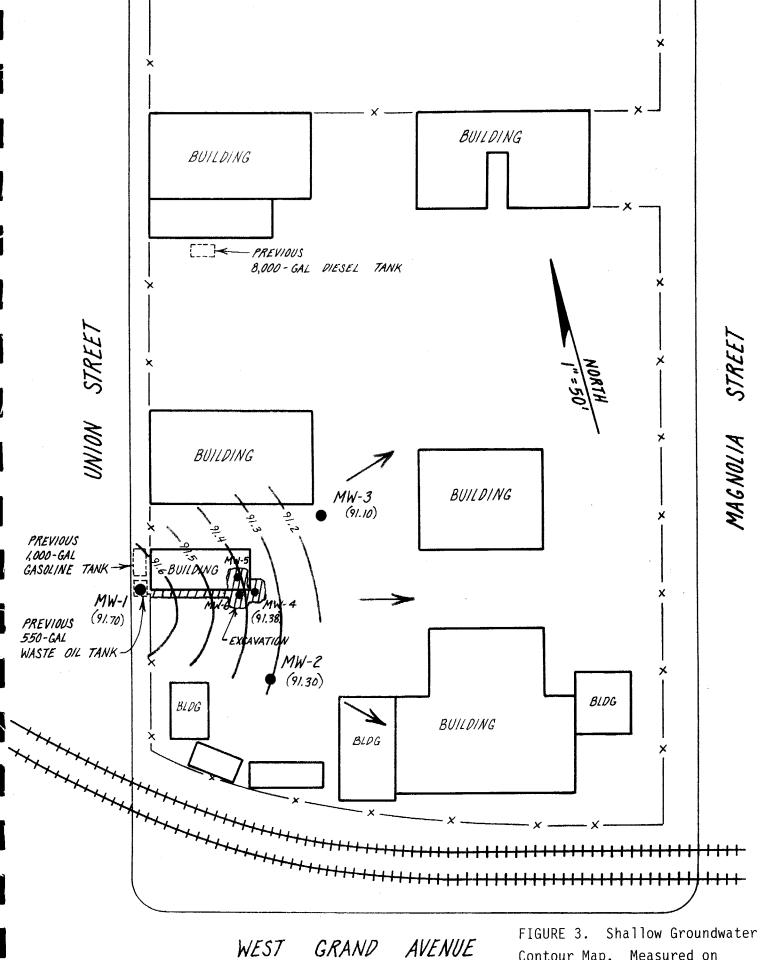
#### <u>Historical Water Level Measurements</u>

Table 2 presents the results of all water level measurements collected between April 3, 1992, and the present time.

TABLE 1.

Shallow Water Table Elevations
August 23, 1995

Well	Top of Casing Elevation Well (feet)		Water Table Elevation (feet)
MW-1	MW-1 99.27		91.70
MW-2	<b>MW-2</b> 100.00		91.30
MW-3	<b>MW-3</b> 100.02		91.10
MW-4	99.95	8.57	91.38



Contour Map. Measured on August 23, 1995.

TABLE 2.

Historical Water Table Elevations (feet)

	Date of Measurement								
Well	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

		Date of Measurement							
Well	8-3-94	8-3-94	11-4-94	3-14-954	8-23-95				
MW-1		90.96	90.96	96.33	91.70	-			
MW-2	91.25	90.77	90.77	95.08	91.30				
MW-3	91.00	90.57	90.57	94.96	91.10				
MW-4	91.26	90.74	90.74	95.60	91.38				
Flow Direction	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).

The past rounds of sampling included analysis of all groundwater samples for Total Petroleum Hydrocarbons as Diesel, Kerosene, Mineral Spirits and Motor Oil by EPA method 8015. As directed by Jennifer Eberle of the Alameda County Environmental Health Department, these analyses were not conducted during this round of quarterly groundwater sample collection.

#### Results of Groundwater Sampling

Tables 3 and 4 present the results of the laboratory analysis of the groundwater samples collected from monitoring wells MW-1, MW-2, MW-3 and MW-4.

As shown in Table 3, Gasoline, Benzene, Toluene, Ethyl Benzene, and Total Xylenes were detected in shallow groundwater samples collected from well MW-3 at concentrations of 12,000  $\mu$ g/l (ppb), 35  $\mu$ g/l (ppb), 8.2  $\mu$ g/l (ppb), 14  $\mu$ g/l (ppb), and 20  $\mu$ g/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
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
Detection	on Limit	50	0.5	0.5	0.5	0.5

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 04-03-92 06-16-92 10-09-92 01-07-93 04-23-93 07-16-93 11-08-93 01-28-94 05-02-94 08-03-94 11-04-94 03-14-95 08-23-95	14,000 5,200 6,000 11,000 4,200 21,000 16,000 7,500 22,000 2,500 2,500 2,500 12,000	6,200 120 180 87 3.3 23 19 4.3 8.5 69 35 4.0 9.5 35.0	60 32 45 49 13 43 21 5.7 10 39 12 8.1 3.0 8.2	110 57 82 94 44 49 25 7.9 50 60 27 18 4.6 14.0	740 180 190 200 92 130 78 35 95 110 25 27 8.3 20.0
MW-4	01-07-93 04-23-93 07-16-93 11-08-93 01-28-94 05-02-94 08-03-94 11-04-94 03-14-95 08-23-95	4,800 2,700 3,000 1,400 830 900 1,000 160 120 ND	6.4 8.3 3.7 0.6 8.5 7.3 22 0.6 3.6 ND	25 11 4.2 0.8 10 3.2 0.7 ND ND	60 31 4.9 1.1 12 0.5 8.0 1.9 ND	110 59 15 4.8 27 14 7.4 2.9 3.7
Detection Limit		50	0.5	0.5	0.5	0.5

TABLE 4. Shallow Groundwater Sampling Results

Well	Date	TPH as Kerosene (ug/L)	TPH as Diesel (ug/L)	TPH as Mineral Spirits (ug/L)	TPH as Motor Oil (ug/L)
MW-1	10-26-90		5,400		
101.44-1	03-04-92		5,400 590		-
	04-03-92	ND	ND		ND
	06-16-92		730		
	10-09-92	ND	ND		ND
	01-07-93	ND ND	ND		ND
	04-23-93		ND		
	07-16-93		59		
	11-08-93		ND		
	01-28-94	ND	ND	ND	ND
	05-02-94	ND	ND	ND	ND
	08-03-94	ND	ND	ND	ND
	11-04-94	ND	ND	ND	ND
	03-14-95	ND	ND	ND	ND
	08-23-95				
MW-2	03-04-92		ND		
	04-03-92	ND	ND		ND
	06-16-92		ND		
	10-09-92	ND	ND		ND
	01-07-93	ND	ND		ND
	04-23-93		ND		
	07-16-93		ND		
	11-08-93		ND		
	01-28-94	ND	ND	ND	ND
	05-02-94	ND	ND	ND	ND
	08-03-94	ND	ND	ND	ND
	11-04-94	ND	ND	ND	ND
	03-14-95	ND	ND	ND	ND
	08-23-95				
Detection	on Limit	50	50	50	50

TABLE 4. (continued)
Shallow Groundwater Sampling Results

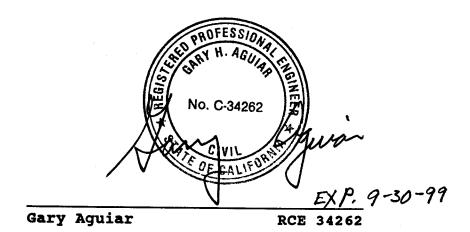
Well	Date	TPH as Kerosene (ug/L)	TPH as Diesel (ug/L)	TPH as Mineral Spirits (ug/L)	TPH as Motor Oil (ug/L)
MW-3	03-04-92 04-03-92 06-16-92 10-09-92 01-07-93 04-23-93 07-16-93 11-08-93 01-28-94 05-02-94 08-03-94 11-04-94 03-14-95 08-23-95	 ND ND ND N	360 ND ND ND ND ND ND ND ND ND ND	370 ND	 ND ND   ND ND ND ND ND ND
MW-4	01-07-93 04-23-93 07-16-93 11-08-93 01-28-94 05-02-94 11-04-94 03-14-95 08-23-95	ND	ND ND ND ND 160 ND ND ND	  180 ND ND ND ND	ND
Detection	on Limit	50	50	50	50

No detectable concentrations of Gasoline, Benzene, Toluene, Ethyl Benzene, or Total Xylenes were found in shallow groundwater samples taken from wells MW-1, MW-2, and MW-4.

A copy of the laboratory certificate for the water sample analysis is included in Attachment B.

QUARTERLY GROUNDWATER SAMPLING REPORT PACIFIC CRYOGENIC COMPANY 2311 Magnolia Street, Oakland, CA

September 6, 1995



ATTACHMENT A

Project/No. Pacific Oxygen	Page of
site Location Oakland CA	Date 8/23/95
Well No. MW-1	·
Weather Sunny Mid 80°s	Time Began
EVACUATION DATA	
Description of Measuring Point (MP) Well	Box @ Grade
Total Sounded Depth of Well Below MP 19.24  - Depth to Water Below MP 7.57	Diameter 11
= Water Column in Well 12,67	
Gallons in Casing 2.05 + Annular Space (30% porosity)	(x/0) = Total Gallons $20.5$
Gal	lons Pumped Prior to Sampling 15.0
Evacuation Method PVC Bailer	
SAMPLING DATA / F	IELD PARAMETERS
Inspection for Free Product: <u>Small O.1 or</u> (thickness to 0.1 inch, if any)	Grease Globs, Fuel Odor, Low-Mod Turb
Time 13:25 13:31	13:52 14:20
Gals Removed 5 10 #	12.5 15.0
Temperature <u>69.5</u> <u>69.7</u>	69.8 69.7
Conductivity 1020 900	940 960
DH 6.49 6.61 Lt Braun 4+ Braun	
color / Odor Fuel Odor Fuel Odor	
Turbidity <u>Mod</u> <u>Mod</u>	Mod Mod
comments: * Dewatered @	10 gallons

Project/No	Pacific O	Pa	age 2 of 4	
	Oaklan			Date <u>8/23/95</u>
Well No. <u>M</u> U	<i>N</i> −2			
Weather	onny Mi	1 80%		eted
	EVAC	UATION DATA		
Description of Measu	uring Point (MP)	Well	Box @ 6	prade
Total Sounded Depth	of Well Below MF	23.19		
- Depth	to Water Below M	8.70	Diamet of Ca	sing
= Wat	er Column in Wel	14.49		
Gallons in Casing	2,35 +	Annular Space _ (30% porosity)	(x10) =	Total Gallons 23.5
•		, Gal	lons Pumped Prio	r to Sampling 25
Evacuation Method _	PVC &	Bailer	:	
	SAMPL	ING DATA / F	TELD PARAME	TERS
	Free Product:	Mone Det	ected, Moo	LTurb, No Odor
Time	13:38	13:43	14:00	14:05
Gals Removed	_5_	10	_20_	<u> 35</u>
Temperature	68.7	68.9	68.9	68.7
_			1570	
Hq	6.64	6.69 Lt Brown	6.78 Lr Brown	6,91 L+ Brawn
Color / Odor	No Odor	No Odor	No odor	110 Odor
Turbidity	mod	Mod	Mod	<u>Mod</u>
Comments				

Project/No. Pacific Oxygen	Page $3$ of $4$
Site Location Oakland CA	Date 8/23/95
Well No. MW-3	<del></del>
Weather Sunny Mid 80°s	Completed
EVACUATION DATA	1
Description of Measuring Point (MP)	Box @ Grade
Total Sounded Depth of Well Below MP 22,70	•
- Depth to Water Below MP 8.92	Diameter of Casing
= Water Column in Well 13,78	
Gallons in Casing 2.2 + Annular Space (30% porosity)	(X/O) = Total Gallons $22$
- · · · · · · · · · · · · · · · · · · ·	llons Pumped Prior to Sampling
Evacuation Method <u>PVC Bailer</u>	ttors runped rivior to sampting
Evacuation Hetilog	
SAMPLING DATA /	FIELD PARAMETERS
Inspection for Free Product: <u>None Deta</u> (thickness to 0.1 inch, if any)	ected, Fuel Odor, High Turb
Time 14:14 14:47	15:13
Gals Removed 4 # 7	9
Temperature 69.3 69.2	69.1
Conductivity 1230 1310	1300
pH 6.61 6.85	6.83
pH 6,61 6,85 Gray, Gray, Color / Odor Fuel Odor Fuel Odor	Fuel Odor
Turbidity Mod-High Mod-High	1 Mod-High
comments: # Dewatered at	4 gallons

Project/No	Pacific (	Oxygen	P	age 4 of 4					
	Oakland	0		Date 8/23/95					
Well No. <u>M</u> (	N-4								
Weather	unny Mic	1 80°s		leted					
	EVACUATION DATA								
Description of Meas	uring Point (MP)	Well	Box @ G	<u>s</u> mde					
Total Sounded Depth	of Well Below Mi	14.12							
- Depth	to Water Below M	B.57	Diamet of Ca	ter 4" sing					
= Wat	er Column in Wel	1 5.5		<i>(</i> , ., )					
Gallons in Casing _	3,6 +	Annular Space	(x4) (x10) =	(/4,4) Total Gallons <u>(36)</u>					
		(30% porosity)	- ,						
			lons Pumped Prior	to Sampling36					
Evacuation Method _	PUC R	bailer							
	SAMPL	ING DATA / I	FIELD PARAMET	TERS					
Inspection for (thickness to 0	Free Product: <u>/</u> .1 inch, if eny)	lone Det	ected, Sl	ight Fuel Odor					
Time	14:26	14:35	14:42	14:43					
Gals Removed	10	_20_	_30_	36					
Temperature	68.9	68.7	68.8	68.9					
			720	•					
рH	6,81 L+ Rrayn	6.79 4+ Brown	6.76 Lt Bran	6,80 L+ 8rayn					
Color / Odor	Slight Fuel a	dor Slight Fuel	Odor 5 light Frel	Slight Frel Odor					
Turbidity	Low	Low	Low	Low					
Comments:									

## ATTACHMENT B

ANALYTICAL RESULTS: GROUNDWATER



# PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

August 24, 1995

PEL # 9508082

HAGEMAN - AGUIAR, INC.

Attn: Mark Hainsworth

Re: Four water samples for Gasoline/BTEX analysis.

Project name: Pacific Oxygen

Project location: Magnolia St., - Oakland, CA.

Date sampled: Aug 23, 1995 Date extracted: Aug 24, 1995 Date submitted: Aug 24, 1995 Date analyzed: Aug 24, 1995

#### **RESULTS:**

SAMPLE I.D.	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylene (ug/L)
MW-1 MW-2 MW-3 MW-4	N.D. N.D. 12000 N.D.	N.D. N.D. 35 N.D.	N.D. N.D. 8.2 N.D.	N.D. N.D. 14 N.D.	N.D. N.D. 20 N.D.
Blank	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	109.4%	105.7%	97.0%	97.9%	91.1%
Detection limit	50	0.5	0.5	0.5	0.5
Method of Analysis	5030 / 8015	602	602	602	602

David Duong Laboratory Director

1764 Houret Court Milpitas, CA. 95035

Tel: 408-946-9636

Fax: 408-946-9663

PEL#

9508082

## CHAIN OF CUSTODY RECORD

INV#

26282

PROJECT NAME AND ADDRESS: Pacific Oxygen  Magnelia Street  Oakland (A			HAGEMAN - AGUIAR, INC.  3732 Mt. Diablo Blvd., Suite 372 Lafayette, CA 94549  (415)284-1661 (415)284-1664 (FAX)			ANALYSIS REQUESTED							
CROSS REFERENCE NUMBER	DATE	TIME	S O I L	W A T E R	STATION LOCATION		/	13	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				REMARKS
MW-1	8/23/95			X	Monitoring Well #1		1>				$f^-$	f	Norm TAT
MW-2 MW-3	8/23/95		-	X	1 #2		λ						11871 174
MW-4	8/23/95			X	# 3								
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RELINQUISHED BY: (Signature)			TIME							DATE			
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