

ARCO Products Company
4 Centerpointe Drive
La Palma, California 90623-1066
Telephone 714 670 5300

[Handwritten initials]



Mailing Address: Box 5077
Buena Park, California 90622-5077

Date: August 3, 1998

Re: ARCO Station # 2185 • 9800 East 14th Street • Oakland, CA
First Quarter 1998 Groundwater Monitoring Report

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached proposal or report are true and correct."

Submitted by:

Paul Supple

Paul Supple
Environmental Engineer

ENVIRONMENTAL
PROTECTION
98 AUG 13 PM 2:45



August 3, 1998
Project 20805-130.007

Mr. Paul Supple
ARCO Products Company
P.O. Box 6549
Moraga, California 94570

Re: Quarterly Groundwater Monitoring Report, First Quarter 1998, for ARCO Service Station No 2185, located at 9800 East 14th Street, Oakland, California

Dear Mr. Supple:

Pinnacle Environmental Solutions, a division of EMCON (Pinnacle), is submitting the attached report which presents the results of the first quarter 1998 groundwater monitoring program at ARCO Products Company (ARCO) Service Station No. 2185, located at 9800 East 14th Street, Oakland, California (see Figure 1). Pertinent site features, including existing monitoring and groundwater extraction wells, are shown in Figure 2.

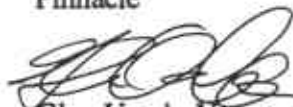
LIMITATIONS


No monitoring event is thorough enough to describe all geologic and hydrogeologic conditions of interest at a given site. If conditions have not been identified during the monitoring event, results should not be construed as a guarantee of the absence of such conditions at the site, but rather as the product of the scope and limitations of work performed during the monitoring event.

Please call if you have questions.

Sincerely,

Pinnacle


Glen VanderVeen
Project Manager


Jay R. Johnson, R.G.
Senior Project Supervisor

Attachment: Quarterly Groundwater Monitoring Report, First Quarter 1998

cc: Barney Chan, ACHCSA

N:\PJ\0805\08051300.7AS-98\prz:1

Pinnacle
Rev. 0, 8/3/98



ARCO QUARTERLY REPORT

Station No.: 2185 Address: 9800 East 14th Street, Oakland, California
Pinnacle Project No. 20805-130.007
ARCO Environmental Engineer/Phone No.: Paul Supple /(510) 299-8891
Pinnacle Project Manager/Phone No.: Glen VanderVeen /(510) 977-9020
Primary Agency/Regulatory ID No.: ACHCSA /Barney Chan

WORK PERFORMED THIS QUARTER (First- 1998):

1. Prepared and submitted quarterly groundwater monitoring report for fourth quarter 1997.
2. Performed quarterly groundwater monitoring and sampling for first quarter 1998.

WORK PROPOSED FOR NEXT QUARTER (Second- 1998):

1. Prepare and submit quarterly groundwater monitoring report for first quarter 1998.
2. Perform quarterly groundwater monitoring and sampling for second quarter 1998.

QUARTERLY MONITORING:

Current Phase of Project: Quarterly Groundwater Monitoring
Frequency of Sampling: Annual (1st Quarter): MW-1, MW-4, MW-7, MW-10
Quarterly: MW-2, MW-3, MW-5, MW-6, MW-8, MW-9
Frequency of Monitoring: Quarterly (groundwater)
Is Floating Product (FP) Present On-site: Yes No
Bulk Soil Removed to Date : 2,550 cubic yards of TPH impacted soil
Bulk Soil Removed This Quarter : None
Water Wells or Surface Waters,
within 2000 ft., impacted by site: None
Current Remediation Techniques: None
Average Depth to Groundwater: 7.25 feet
Groundwater Gradient (Average): 0.011 ft/ft toward northwest

DISCUSSION:

- ARCO has requested administrative closure for this site and is awaiting a response from ACHCSA.

ATTACHED:

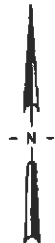
- Figure 1 - Site Location
- Figure 2 - Groundwater Analytical Summary Map
- Figure 3 - Groundwater Elevation Contour Map
- Table 1 - Groundwater Monitoring Data, First Quarter 1998
- Table 2 - Historical Groundwater Elevation and Analytical Data, Petroleum Hydrocarbons and Their Constituents
- Appendix A - Certified Analytical Reports, Chain-of-Custody Documentation, and Field Data Sheets



EA-SANJOSE-CAD/DRAWINGS: I:\DZ002\SITELOC.dwg Xrefs: <NONE>
 Scale: 1 = 1.00 DimScale: 1 = 1.00 Date: 3/12/97 Time: 5:19 PM Operator: KAJ

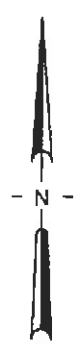


Base map from USGS 7.5' Quad. Maps:
 Oakland East and San Leandro, California.
 Photorevised 1980.



DATE NOV. 1997
 DWN KAJ
 APP _____
 REV _____
 PROJECT NO.
 805-130.005

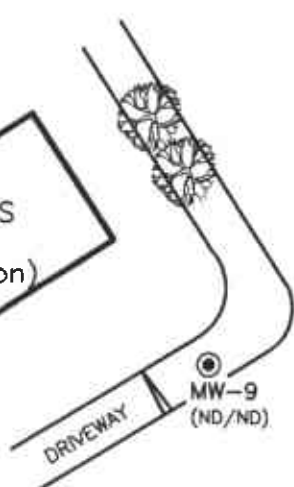
FIGURE 1
 ARCO PRODUCTS COMPANY
 SERVICE STATION 2185, 9800 E. 14TH STREET
 OAKLAND, CALIFORNIA
**QUARTERLY GROUNDWATER MONITORING
 SITE LOCATION**



CITY OF OAKLAND
FIRE STATION

98TH AVENUE

McDONALDS
(Former
Exxon Station)



MW-10
(ND/ND)

MW-5
(370/2)

MW-3
(250/<2)

MW-8
(ND/ND)

MW-6
(3500/<5)

MW-1
(ND/ND)

(850/ND)
FORMER
TANK
EXCAVATION

MW-2

VW-1

VW-2

MW-4
(ND/ND)

BIG-O TIRES
(FORMER GAS STATION)

Approximate location of
former pump island

EAST 14TH STREET

MW-7
(ND/ND)

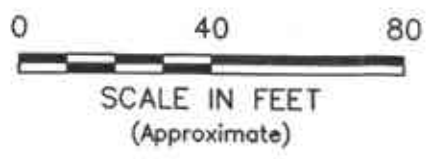


EXPLANATION

- Groundwater monitoring well
- Vapor extraction well
- ▭ Existing underground gasoline storage tank
- (850/ND) Concentration of total petroleum hydrocarbons, as gasoline (TPHG) and benzene in groundwater (ug/L); water samples were collected on 2/25/98
- ND Not detected at or above the method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)
- < Method reporting limit raised due to high analyte concentration requiring sample dilution or matrix interference

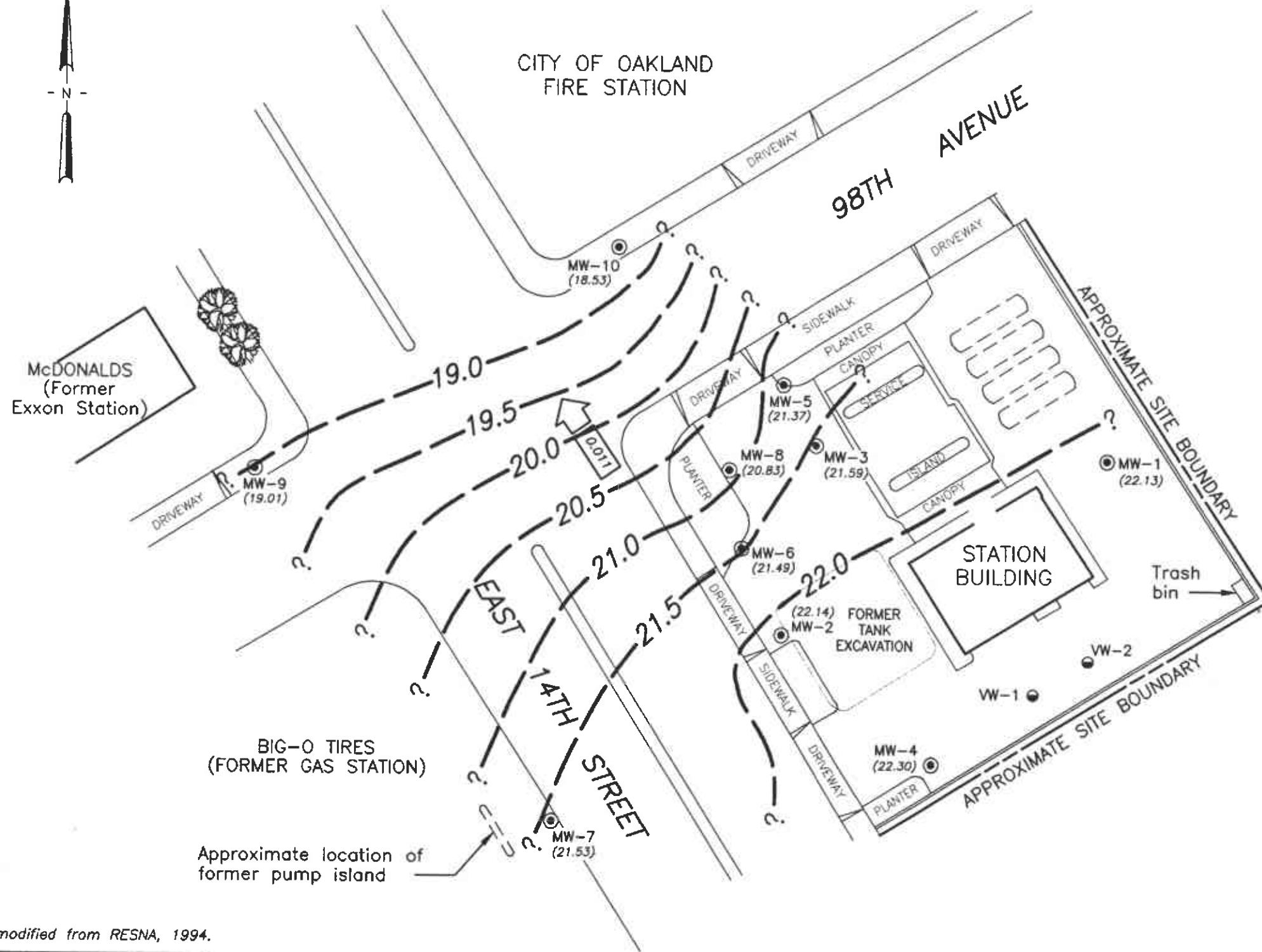
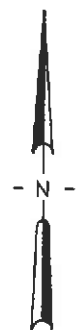
EA-SANJOSE-CAD/DRAWINGS: G:\B05-130\SJSITE.dwg Xrefs: <NONE>
 Date: 5/21/98 Time: 3:11 PM Operator: KJOHNSON
 Scale: 1" = 40.00 DimScale: 1" = 40.00

Base map modified from RESNA, 1994.



DATE	MAY 1998
DWN	KAJ
APP	
REV	
PROJECT NO.	805-130.005

FIGURE 2
 ARCO PRODUCTS COMPANY
 SERVICE STATION 2185, 9800 E. 14TH ST.
 OAKLAND, CALIFORNIA
GROUNDWATER ANALYTICAL SUMMARY
 1ST QUARTER 1998



EA-SANJOSE-CAD/DRAWINGS: G:\BOS-130\SIGWELEV.dwg Xrefs: <NONE>
 Date: 6/29/98 Time: 10:11 AM Operator: KJOHNSON
 Scale: 1" = 40.00' DimScale: 1" = 40.00'

1" 0" 1/2"

Base map modified from RESNA, 1994.

Pinnacle
 ENVIRONMENTAL SOLUTIONS
 A DIVISION OF EMCON



DATE MAY 1998
 DWN KAJ
 APP _____
 REV _____
 PROJECT NO.
 805-130.007

FIGURE 3
 ARCO PRODUCTS COMPANY
 SERVICE STATION 2185, 9800 E. 14TH ST.
 OAKLAND, CALIFORNIA
GROUNDWATER ELEVATION CONTOURS
 1ST QUARTER 1998

**Table 1
Groundwater Monitoring Data
First Quarter 1998**

**ARCO Service Station 2185
9800 East 14th Street, Oakland, California**

Date: 07-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L
MW-1	02-25-98	29.15	7.02	22.13	ND	NW	0.011	02-25-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-2	02-25-98	28.47	6.33	22.14	ND	NW	0.011	02-25-98	850	<0.5	1.1	13	1.4	<3	--
MW-3	02-25-98	28.57	6.98	21.59	ND	NW	0.011	02-25-98	250	<2 [^]	<2 [^]	7	<2 [^]	370	--
MW-4	02-25-98	29.21	6.91	22.30	ND	NW	0.011	02-25-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-5	02-25-98	28.12	6.75	21.37	ND	NW	0.011	02-25-98	370	2	6	11	9	270	--
MW-6	02-25-98	27.79	6.30	21.49	ND	NW	0.011	02-25-98	3500	<5 [^]	18	190	54	<30 [^]	--
MW-7	02-25-98	27.88	6.35	21.53	ND	NW	0.011	02-25-98	<50	<0.5	0.5	<0.5	0.7	14	--
MW-8	02-25-98	28.08	7.25	20.83	ND	NW	0.011	02-25-98	<50	<0.5	0.7	<0.5	0.9	56	--
MW-9	02-25-98	27.73	8.72	19.01	ND	NW	0.011	02-25-98	<50	<0.5	<0.5	<0.5	<0.5	<8 [^]	--
MW-10	02-25-98	27.55	9.02	18.53	ND	NW	0.011	02-25-98	<50	<0.5	1.4	<0.5	1.8	12	--

ft-MSL: elevation in feet, relative to mean sea level

MWN: ground-water flow direction and gradient apply to the entire monitoring well network

ft/ft: foot per foot

TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl tert-butyl ether

ND: none detected

NW: northwest

--: not analyzed

<: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 2185
9800 East 14th Street, Oakland, California

Date: 07-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L
MW-1	03-15-95	29.15	8.50	20.65	ND	NW	0.01	03-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-1	05-30-95	29.15	10.28	18.87	ND	SW	0.005	05-30-95	Not sampled: well sampled annually, during the first quarter						
MW-1	09-20-95	29.15	11.70	17.45	ND	WSW	0.005	09-20-95	Not sampled: well sampled annually, during the first quarter						
MW-1	11-07-95	29.15	12.12	17.03	ND	WSW	0.004	11-07-95	Not sampled: well sampled annually, during the first quarter						
MW-1	02-28-96	29.15	8.54	20.61	ND	NW	0.009	02-28-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-1	05-30-96	29.15	10.05	19.10	ND	W	0.007	05-31-96	Not sampled: well sampled annually, during the first quarter						
MW-1	08-20-96	29.15	11.35	17.80	ND	SW	0.005	08-20-96	Not sampled: well sampled annually, during the first quarter						
MW-1	11-19-96	29.15	11.20	17.95	ND	WSW	0.005	11-19-96	Not sampled: well sampled annually, during the first quarter						
MW-1	03-25-97	29.15	10.12	19.03	ND	WNW	0.006	03-25-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-1	06-17-97	29.15	11.27	17.88	ND	W	0.001	06-17-97	Not sampled: well sampled annually, during the first quarter						
MW-1	08-07-97	29.15	11.83	17.32	ND	SW	0.005	08-07-97	Not sampled: well sampled annually, during the first quarter						
MW-1	11-18-97	29.15	11.80	17.35	ND	SW	0.004	11-18-97	Not sampled: well sampled annually, during the first quarter						
MW-1	02-25-98	29.15	7.02	22.13	ND	NW	0.011	02-25-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-2	03-15-95	28.47	8.37	20.10	ND	NW	0.01	03-15-95	2100	7.4	<2.5	130	39	--	--
MW-2	05-30-95	28.47	9.95	18.52	ND	SW	0.005	05-30-95	1700	3.3	<2.5	120	31	--	--
MW-2	09-20-95	28.47	11.37	17.10	ND	WSW	0.005	09-21-95	1200	1	<1	68	16	<3	--
MW-2	11-07-95	28.47	11.73	16.74	ND	WSW	0.004	11-07-95	1100	<3	<3	74	14	<20	--
MW-2	02-28-96	28.47	8.12	20.35	ND	NW	0.009	02-29-96	2200	<3	<3	130	27	<20	--
MW-2	05-30-96	28.47	9.89	18.58	ND	W	0.007	05-31-96	970	<9	<1	29	3	<3	--
MW-2	08-20-96	28.47	11.05	17.42	ND	SW	0.005	08-20-96	670	<1	<1	16	1	<3	--
MW-2	11-19-96	28.47	10.96	17.51	ND	WSW	0.005	11-19-96	990	<1^	<1^	46	3	<5^	--
MW-2	03-25-97	28.47	9.84	18.63	ND	WNW	0.006	03-25-97	540	<1^	<1^	<1^	<1^	<6^	--
MW-2	06-17-97	28.47	10.99	17.48	ND	W	0.001	06-17-97	510	<7^	0.9	1.1	<2^	<3	--
MW-2	08-07-97	28.47	11.50	16.97	ND	SW	0.005	08-07-97	280	<0.5	<0.5	<0.5	<0.5	<3	--
MW-2	11-18-97	28.47	11.41	17.06	ND	SW	0.004	11-18-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-2	02-25-98	28.47	6.33	22.14	ND	NW	0.011	02-25-98	850	<0.5	1.1	13	1.4	<3	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 2185
9800 East 14th Street, Oakland, California

Date: 07-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-3	03-15-95	28.57	8.47	20.10	ND	NW	0.01	03-15-95	2000	<2.5	<2.5	88	82	--	--
MW-3	05-30-95	28.57	10.03	18.54	ND	SW	0.005	05-30-95	2000	3.2	<2.5	70	46	--	--
MW-3	09-20-95	28.57	11.30	17.27	ND	WSW	0.005	09-21-95	2100	12	<3	77	38	280	--
MW-3	11-07-95	28.57	11.65	16.92	ND	WSW	0.004	11-07-95	3000	18	<3	120	62	--	430
MW-3	02-28-96	28.57	8.35	20.22	ND	NW	0.009	02-29-96	5100	83	<5	160	57	640	--
MW-3	05-30-96	28.57	9.77	18.80	ND	W	0.007	05-31-96	2100	41	<5	57	15	890	--
MW-3	08-20-96	28.57	11.00	17.57	ND	SW	0.005	08-20-96	2500	94	<2.5	62	14	2200	--
MW-3	11-19-96	28.57	10.92	17.65	ND	WSW	0.005	11-19-96	2400	84	<2.5^	73	22	1300	--
MW-3	03-25-97	28.57	9.90	18.67	ND	WNW	0.006	03-25-97	<50	<0.5	<0.5	<0.5	<0.5	48	--
MW-3	06-17-97	28.57	10.95	17.62	ND	W	0.001	06-17-97	<200^	<2^	<2^	<2^	<2^	200	--
MW-3	08-07-97	28.57	11.44	17.13	ND	SW	0.005	08-07-97	<500^	<5^	<5^	<5^	<5^	490	--
MW-3	11-18-97	28.57	11.35	17.22	ND	SW	0.004	11-18-97	200	9	<2^	7	<2^	300	--
MW-3	02-25-98	28.57	6.98	21.59	ND	NW	0.011	02-25-98	250	<2^	<2^	7	<2^	370	--
MW-4	03-15-95	29.21	8.69	20.52	ND	NW	0.01	03-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	05-30-95	29.21	10.57	18.64	ND	SW	0.005	05-30-95	Not sampled: well sampled annually, during the first quarter						
MW-4	09-20-95	29.21	12.02	17.19	ND	WSW	0.005	09-20-95	Not sampled: well sampled annually, during the first quarter						
MW-4	11-07-95	29.21	12.42	16.79	ND	WSW	0.004	11-07-95	Not sampled: well sampled annually, during the first quarter						
MW-4	02-28-96	29.21	8.66	20.55	ND	NW	0.009	02-28-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-4	05-30-96	29.21	10.34	18.87	ND	W	0.007	05-31-96	Not sampled: well sampled annually, during the first quarter						
MW-4	08-20-96	29.21	11.67	17.54	ND	SW	0.005	08-20-96	Not sampled: well sampled annually, during the first quarter						
MW-4	11-19-96	29.21	11.50	17.71	ND	WSW	0.005	11-19-96	Not sampled: well sampled annually, during the first quarter						
MW-4	03-25-97	29.21	10.42	18.79	ND	WNW	0.006	03-25-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-4	06-17-97	29.21	11.60	17.61	ND	W	0.001	06-17-97	Not sampled: well sampled annually, during the first quarter						
MW-4	08-07-97	29.21	12.17	17.04	ND	SW	0.005	08-07-97	Not sampled: well sampled annually, during the first quarter						
MW-4	11-18-97	29.21	12.05	17.16	ND	SW	0.004	11-18-97	Not sampled: well sampled annually, during the first quarter						
MW-4	02-25-98	29.21	6.91	22.30	ND	NW	0.011	02-25-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 2185
9800 East 14th Street, Oakland, California

Date: 07-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L
MW-5	03-15-95	28.12	8.47	19.65	ND	NW	0.01	03-15-95	170	5.6	<0.5	17	11	--	--
MW-5	05-30-95	28.12	9.69	18.43	ND	SW	0.005	05-30-95	53	0.6	<0.5	4.8	2.8	--	--
MW-5	09-20-95	28.12	10.90	17.22	ND	WSW	0.005	09-21-95	1500	47	2	120	86	70	--
MW-5	11-07-95	28.12	11.20	16.92	ND	WSW	0.004	11-07-95	140	4.5	<0.5	8.3	16	10	--
MW-5	02-28-96	28.12	8.15	19.97	ND	NW	0.009	02-29-96	900	11	<1	59	29	99	--
MW-5	05-30-96	28.12	9.48	18.64	ND	W	0.007	05-31-96	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-5	08-20-96	28.12	10.58	17.54	ND	SW	0.005	08-20-96	67	0.7	<0.5	3.6	0.6	27	--
MW-5	11-19-96	28.12	10.50	17.62	ND	WSW	0.005	11-19-96	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-5	03-25-97	28.12	9.58	18.54	ND	WNW	0.006	03-25-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-5	06-17-97	28.12	10.52	17.60	ND	W	0.001	06-17-97	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-5	08-07-97	28.12	11.00	17.12	ND	SW	0.005	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-5	11-18-97	28.12	10.93	17.19	ND	SW	0.004	11-18-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-5	02-25-98	28.12	6.75	21.37	ND	NW	0.011	02-25-98	370	2	6	11	9	270	--
MW-6	03-15-95	27.79	7.75	20.04	ND	NW	0.01	03-15-95	3600	77	<5	420	180	--	--
MW-6	05-30-95	27.79	9.48	18.31	ND	SW	0.005	05-30-95	5000	68	<5	530	250	--	--
MW-6	09-20-95	27.79	10.75	17.04	ND	WSW	0.005	09-21-95	3300	36	<5	360	120	<30	--
MW-6	11-07-95	27.79	11.06	16.73	ND	WSW	0.004	11-07-95	3500	33	<5	410	110	<30	--
MW-6	02-28-96	27.79	7.86	19.93	ND	NW	0.009	02-29-96	520	33	<5	480	160	<30	--
MW-6	05-30-96	27.79	9.35	18.44	ND	W	0.007	05-31-96	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-6	08-20-96	27.79	10.43	17.36	ND	SW	0.005	08-20-96	1900	3.4	<2.5	150	21	<12	--
MW-6	11-19-96	27.79	10.36	17.43	ND	WSW	0.005	11-19-96	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-6	03-25-97	27.79	9.35	18.44	ND	WNW	0.006	03-25-97	1100	<2^	<2^	5	5	<10^	--
MW-6	06-17-97	27.79	10.37	17.42	ND	W	0.001	06-17-97	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-6	08-07-97	27.79	10.85	16.94	ND	SW	0.005	08-07-97	53	<0.5	<0.5	<0.5	<0.5	<3	--
MW-6	11-18-97	27.79	10.75	17.04	ND	SW	0.004	11-18-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-6	02-25-98	27.79	6.30	21.49	ND	NW	0.011	02-25-98	3500	<5^	18	190	54	<30^	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 2185
9800 East 14th Street, Oakland, California

Date: 07-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L
MW-7	03-15-95	27.88	8.13	19.75	ND	NW	0.01	03-15-95	150**	<0.5	<0.5	<0.5	<0.5	--	--
MW-7	05-30-95	27.88	10.14	17.74	ND	SW	0.005	05-30-95	110**	<0.5	<0.5	<0.5	<0.5	--	--
MW-7	09-20-95	27.88	11.52	16.36	ND	WSW	0.005	09-20-95	<400**	<0.8	<0.5	<0.5	<0.5	<7	--
MW-7	11-07-95	27.88	11.70	16.18	ND	WSW	0.004	11-07-95	<500	2	<1	<1	<1	<20	--
MW-7	02-28-96	27.88	8.19	19.69	ND	NW	0.009	02-29-96	<300**	<0.5	<0.5	<0.5	<0.5	<6	--
MW-7	05-30-96	27.88	9.98	17.90	ND	W	0.007	05-31-96	<100**	<0.5	<0.5	<0.5	<0.5	<3	--
MW-7	08-20-96	27.88	11.15	16.73	ND	SW	0.005	08-20-96	<200**	<0.5	<0.5	<0.5	<0.5	<5	--
MW-7	11-19-96	27.88	10.92	16.96	ND	WSW	0.005	11-19-96	Not sampled: well sampled annually, during the first quarter						
MW-7	03-25-97	27.88	9.88	18.00	ND	WNW	0.006	03-25-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-7	06-17-97	27.88	11.13	16.75	ND	W	0.001	06-17-97	Not sampled: well sampled annually, during the first quarter						
MW-7	08-07-97	27.88	11.65	16.23	ND	SW	0.005	08-07-97	Not sampled: well sampled annually, during the first quarter						
MW-7	11-18-97	27.88	11.46	16.42	ND	SW	0.004	11-18-97	Not sampled: well sampled annually, during the first quarter						
MW-7	02-25-98	27.88	6.35	21.53	ND	NW	0.011	02-25-98	<50	<0.5	0.5	<0.5	0.7	14	--
MW-8	03-15-95	NR	8.43	NR	ND	NR	NR	03-15-95	280	<0.5	<0.5	0.7	0.7	--	--
MW-8	05-30-95	NR	9.86	NR	ND	NR	NR	05-30-95	390	<0.5	<0.5	<2	1.6	--	--
MW-8	09-20-95	28.08	11.07	17.01	ND	WSW	0.005	09-21-95	470	<0.5	<0.5	3	1.2	52	--
MW-8	11-07-95	28.08	11.40	16.68	ND	WSW	0.004	11-07-95	280	<0.5	<0.5	0.6	<0.5	94	--
MW-8	02-28-96	28.08	8.30	19.78	ND	NW	0.009	02-29-96	160	<0.5	<0.5	<0.9	<0.6	32	--
MW-8	05-30-96	28.08	9.68	18.40	ND	W	0.007	05-31-96	100	<0.5	<0.5	<0.6	<0.5	16	--
MW-8	08-20-96	28.08	10.72	17.36	ND	SW	0.005	08-20-96	140	<0.5	<0.5	<0.5	<0.5	190	--
MW-8	11-19-96	28.08	10.58	17.50	ND	WSW	0.005	11-19-96	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-8	03-25-97	28.08	9.73	18.35	ND	WNW	0.006	03-25-97	63	<0.5	<0.5	<0.5	<0.5	38	--
MW-8	06-17-97	28.08	10.67	17.41	ND	W	0.001	06-17-97	Not sampled: well sampled semi-annually, during the first and third quarters						
MW-8	08-07-97	28.08	11.15	16.93	ND	SW	0.005	08-07-97	53	<0.5	<0.5	<0.5	<0.5	390	--
MW-8	11-18-97	28.08	11.05	17.03	ND	SW	0.004	11-18-97	<500^	<5^	<5^	<5^	<5^	640	--
MW-8	02-25-98	28.08	7.25	20.83	ND	NW	0.011	02-25-98	<50	<0.5	0.7	<0.5	0.9	56	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 2185
9800 East 14th Street, Oakland, California

Date: 07-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft								
MW-9	09-20-95	27.73	11.67	16.06	ND	WSW	0.005	09-20-95	<50	<0.5	<0.5	<0.5	<0.5	<4	--
MW-9	11-07-95	27.73	11.70	16.03	ND	WSW	0.004	11-07-95	<50	<0.5	<0.5	<0.5	<0.5	<4	--
MW-9	02-28-96	27.73	9.23	18.50	ND	NW	0.009	02-29-96	<50	<0.5	<0.5	<0.5	<0.5	<5	--
MW-9	05-30-96	27.73	10.50	17.23	ND	W	0.007	05-31-96	<50	0.6	<0.5	<0.5	<0.5	<8	--
MW-9	08-20-96	27.73	11.33	16.40	ND	SW	0.005	08-20-96	<50	<0.5	<0.5	<0.5	<0.5	<7	--
MW-9	11-19-96	27.73	11.20	16.53	ND	WSW	0.005	11-19-96	Not sampled: well sampled annually, during the first quarter						
MW-9	03-25-97	27.73	10.41	17.32	ND	WNW	0.006	03-25-97	<50	<0.5	<0.5	<0.5	<0.5	<6	--
MW-9	06-17-97	27.73	11.30	16.43	ND	W	0.001	06-17-97	Not sampled: well sampled annually, during the first quarter						
MW-9	08-07-97	27.73	11.70	16.03	ND	SW	0.005	08-07-97	Not sampled: well sampled annually, during the first quarter						
MW-9	11-18-97	27.73	11.42	16.31	ND	SW	0.004	11-18-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-9	02-25-98	27.73	8.72	19.01	ND	NW	0.011	02-25-98	<50	<0.5	<0.5	<0.5	<0.5	<8	--
MW-10	09-20-95	27.55	10.65	16.90	ND	WSW	0.005	09-21-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-10	11-07-95	27.55	10.85	16.70	ND	WSW	0.004	11-07-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-10	02-28-96	27.55	9.38	18.17	ND	NW	0.009	02-29-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-10	05-30-96	27.55	9.99	17.56	ND	W	0.007	05-31-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-10	08-20-96	27.55	10.47	17.08	ND	SW	0.005	08-20-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-10	11-19-96	27.55	10.44	17.11	ND	WSW	0.005	11-19-96	Not sampled: well sampled annually, during the first quarter						
MW-10	03-25-97	27.55	10.02	17.53	ND	WNW	0.006	03-25-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-10	06-17-97	27.55	10.40	17.15	ND	W	0.001	06-17-97	Not sampled: well sampled annually, during the first quarter						
MW-10	08-07-97	27.55	10.75	16.80	ND	SW	0.005	08-07-97	Not sampled: well sampled annually, during the first quarter						
MW-10	11-18-97	27.55	10.67	16.88	ND	SW	0.004	11-18-97	Not sampled: well sampled annually, during the first quarter						
MW-10	02-25-98	27.55	9.02	18.53	ND	NW	0.011	02-25-98	<50	<0.5	1.4	<0.5	1.8	12	--

**Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present****

**ARCO Service Station 2185
9800 East 14th Street, Oakland, California**

Date: 07-09-98

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient ft/ft	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8020 µg/L	Toluene EPA 8020 µg/L	Ethylbenzene EPA 8020 µg/L	Total Xylenes EPA 8020 µg/L	MTBE EPA 8020 µg/L	MTBE EPA 8240 µg/L
------------------	---------------------------	--------------------------------------	------------------------	------------------------------------	---------------------------------------	--------------------------------------	--------------------------------	----------------------------	-----------------------------	-----------------------------	-----------------------------	----------------------------------	-----------------------------------	--------------------------	--------------------------

ft-MSL: elevation in feet, relative to mean sea level

MWN: ground-water flow direction and gradient apply to the entire monitoring well network

ft/ft: foot per foot

TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method

µg/L: micrograms per liter

EPA: United States Environmental Protection Agency

MTBE: Methyl tert-butyl ether

ND: none detected

NR: not reported; data not available or not measurable

NW: northwest

⊕: method reporting limit was raised due to: (1) high analyte concentration requiring sample dilution, or (2) matrix interference

--: not analyzed or not applicable

** For previous historical groundwater elevation and analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 2185, Oakland, California*, (EMCON, February 27, 1996).

** chromatogram does not match the typical gasoline fingerprint

APPENDIX A

**CERTIFIED ANALYTICAL REPORTS,
CHAIN OF CUSTODY DOCUMENTATION,
AND FIELD DATA SHEETS**



March 11, 1998

Service Request No.: S9800405

Mr. Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-130.005/TO#22312.00/2185 OAKLAND

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on February 26, 1998. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 19, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Green', written over a large, light-colored scribble.

Steven L. Green
Project Chemist

A handwritten signature in black ink, appearing to read 'Bernadette J. Cox for Greg Anderson', written in a cursive style.

Greg Anderson
Regional QA Coordinator

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLIC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-10(9')
Lab Code: S9800405-001
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	2/28/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/28/98	1.4	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/28/98	1.8	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/28/98	12	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-4(10)
Lab Code: S9800405-002
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	2/27/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/27/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-1(10')
Lab Code: S9800405-003
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	.50	1	NA	2/27/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/27/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-2(9)
Lab Code: S9800405-004
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	2/27/98	850	
Benzene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/27/98	1.1	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/27/98	13	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/27/98	1.4	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/27/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-6(9)
Lab Code: S9800405-005
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	10	NA	3/1/98	3,500	
Benzene	EPA 5030	8020	0.5	10	NA	3/1/98	<5	C1
Toluene	EPA 5030	8020	0.5	10	NA	3/1/98	18	
Ethylbenzene	EPA 5030	8020	0.5	10	NA	3/1/98	190	
Xylenes, Total	EPA 5030	8020	0.5	10	NA	3/1/98	54	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	10	NA	3/1/98	<30	C1

C1

The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-9(8')
Lab Code: S9800405-006
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	2/27/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/27/98	<8	M1

M1

The MRL was elevated because of matrix interferences.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-7(8')
Lab Code: S9800405-007
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	3/7/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	3/7/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	3/7/98	0.5	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	3/7/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	3/7/98	0.7	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	3/7/98	14	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-5(10')
Lab Code: S9800405-008
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	4	NA	2/28/98	370	
Benzene	EPA 5030	8020	0.5	4	NA	2/28/98	2	
Toluene	EPA 5030	8020	0.5	4	NA	2/28/98	6	
Ethylbenzene	EPA 5030	8020	0.5	4	NA	2/28/98	11	
Xylenes, Total	EPA 5030	8020	0.5	4	NA	2/28/98	9	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	4	NA	2/28/98	270	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-3(10')
Lab Code: S9800405-009
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	4	NA	2/28/98	250	
Benzene	EPA 5030	8020	0.5	4	NA	2/28/98	<2	C1
Toluene	EPA 5030	8020	0.5	4	NA	2/28/98	<2	C1
Ethylbenzene	EPA 5030	8020	0.5	4	NA	2/28/98	7	
Xylenes, Total	EPA 5030	8020	0.5	4	NA	2/28/98	<2	C1
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	4	NA	2/28/98	370	

C1

The MRL was elevated due to high analyte concentration requiring sample dilution.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: 2/25/98
Date Received: 2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-8(10')
Lab Code: S9800405-010
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	3/7/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	3/7/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	3/7/98	0.7	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	3/7/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	3/7/98	0.9	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	3/7/98	56	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980227-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	2/27/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/27/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/27/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980228-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	2/28/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/28/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	2/28/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980306-WB1
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	3/6/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	3/6/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	3/6/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	3/6/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	3/6/98	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	3	1	NA	3/6/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

**Surrogate Recovery Summary
 BTEX, MTBE and TPH as Gasoline**

Prep Method: EPA 5030
Analysis Method: 8020 CA/LUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			4-Bromofluorobenzene	a,a,a-Trifluorotoluene
MW-10(9')	S9800405-001		101	78
MW-4(10')	S9800405-002		102	81
MW-1(10')	S9800405-003		102	82
MW-2(9')	S9800405-004		82	113
MW-6(9')	S9800405-005		103	78
MW-9(8')	S9800405-006		100	83
MW-7(8')	S9800405-007		94	78
MW-5(10')	S9800405-008		108	70
MW-3(10')	S9800405-009		105	73
MW-8(10')	S9800405-010		97	77
MW-4(10')	S9800405-002MS		97	89
MW-4(10')	S9800405-002DMS		98	85
Method Blank	S980227-WB1		101	77
Method Blank	S980228-WB1		100	76
Method Blank	S980306-WB1		100	83

CAS Acceptance Limits: 69-116 69-116

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND
Sample Matrix: Water

Service Request: S9800405
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 2/28/98

Matrix Spike/Duplicate Matrix Spike Summary
 TPH as Gasoline

Sample Name: MW-4(10') Units: ug/L (ppb)
Lab Code: S9800405-002MS, S9800405-002DMS Basis: NA
Test Notes:

Analyte	Prep Method	Analysis Method	Spike Level		Sample Result	Percent Recovery				CAS Acceptance Limits	Relative Percent Difference	Result Notes
			MRL	DMS		MS	DMS	MS	DMS			
Gasoline	EPA 5030	CA/LUFT	50	250	ND	230	240	92	96	75-135	4	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-130.005/TO#22312.00/2185 OAKLAND

Service Request: S9800405
Date Analyzed: 2/27/98

Initial Calibration Verification (ICV) Summary
 BTEX, MTBE and TPH as Gasoline

Sample Name: ICV
Lab Code: ICV1
Test Notes:

Units: ug/L (ppb)
Basis: NA

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS		Result Notes
					Percent Recovery	Percent Recovery	
TPH as Gasoline	EPA 5030	CA/LUFT	250	240	90-110	96	
Benzene	EPA 5030	8020	25	25	85-115	100	
Toluene	EPA 5030	8020	25	25	85-115	100	
Ethylbenzene	EPA 5030	8020	25	24	85-115	96	
Xylenes, Total	EPA 5030	8020	75	70	85-115	93	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8020	25	26	85-115	104	

ARCO Facility no. 2185		City (Facility) Oakland		Project manager (Consultant) Gail Messerotes		Laboratory name CAS		
ARCO engineer Paul Supple		Telephone no. (ARCO)		Telephone no. (Consultant) (408) 453-7300		Fax no. (Consultant) (408)		
Consultant name EMCON		Address (Consultant) 1921 Ringwood Ave. San Jose, CA 95131						Contract Number

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802	EPA 802 EPA 802 EPA 802	TPH Modified 8015 EPA 802 EPA 802	Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 418.1/SM 508E	EPA 601/6010	EPA 624/6240	EPA 625/6270	TCUP Metals <input type="checkbox"/> VOAC <input type="checkbox"/> VOAC	Semi Metals <input type="checkbox"/> VOAC <input type="checkbox"/> VOAC	CAM Metals EPA 601/7000	TLLCO <input type="checkbox"/> STLCO <input type="checkbox"/>	Lead Org/DHSC <input type="checkbox"/>	Lead EPA 7420/7421 <input type="checkbox"/>	Method of shipment Sampler will deliver		
			Soil	Water	Other	Ice	Acid																				
MW-10(5)1		2		X		X	HCL	2-25-98	1400		X															Special Detection Limit/reporting Lowest Possible	
MW-4(10)2		2		X		X	HCL		1150		X																Special QA/QC As Normal
MW-1(10)3		2		X		X	HCL		1210		X																
MW-2(9)4		2		X		X	HCL		1230		X																
MW-6(8)5		2		X		X	HCL		1305		X																
MW-9(8)6		2		X		X	HCL		1420		X																
MW-7(8)7		2		X		X	HCL		1418		X																
MW-5(10)8		2		X		X	HCL		1325		X																
MW-3(10)9		2		X		X	HCL		1342		X																
MW-8(10)10		2		X		X	HCL	✓	1358		X																

Condition of sample:		Temperature received:	
Relinquished by sampler <i>Paul Supple</i>	Date 2-26-98	Time	Received by <i>Paul Supple</i> CAS 2/26/98 1515
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory
			Date
			Time

Special Detection Limit/reporting Lowest Possible
Special QA/QC As Normal
Remarks 2-40ml HCL VOAS RAT 8
#207805 13000
Lab Number 54800405
Turnaround Time: Priority Rush 1 Business Day <input type="checkbox"/> Rush 2 Business Days <input type="checkbox"/> Expedited 5 Business Days <input type="checkbox"/> Standard 10 Business Days <input checked="" type="checkbox"/>

Distribution: White Copy - Laboratory; Canary Copy - ARCO Environmental Engineering; Pink Copy - Consultant

R11/D3

**FIELD REPORT
DEPTH TO WATER/FLOATING PRODUCT SURVEY**

PROJECT # : 21775-236.003

STATION ADDRESS : 9800 East 14th Street, Oakland

DATE : 2/25/98

ARCO STATION # : 2185

FIELD TECHNICIAN : Manuel Gallegos/ Chris Chaco

DAY : Wednesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket Present	Lock Number	Type Of Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	^G MW-10	OK	OK	OK	3900	LWC	9.02	9.02	9.62	N/A	22.9	
2	MW-4	OK	OK	OK	A110	LWC	6.91	6.91			23.7	
3	MW-1	OK	OK	OK	A110	LWC	7.02	7.02			23.0	
4	MW-2	OK	OK	OK	A110	LWC	6.33	6.33			23.0	
5	MW-6	OK	OK	OK	A110	LWC	6.30	6.30			27.8	
6	^G MW-9	OK	OK	OK	3900	LWC	8.72	8.72			22.5	
7	MW-7	OK	OK	OK	3616	LWC	6.35	6.35			25.3	
8	MW-5	OK	OK	OK	A110	LWC	6.75	6.75			26.8	
9	MW-3	OK	BA	OK	A110	LWC	6.98	6.98			23.3	Bolts do not secure to box.
10	MW-8	OK	OK	OK	A110	LWC	7.25	7.25			22.4	

SURVEY POINTS ARE TOP OF WELL CASINGS



WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775-236-003

SAMPLE ID: MW-1 (10')

PURGED BY: M.A./C.C.

CLIENT NAME: ARCO# 2185

SAMPLED BY: ↓

LOCATION: OAKLAND, CA

TYPE: Ground Water Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL):	<u>NK</u>	VOLUME IN CASING (gal.):	<u>10.83</u>
DEPTH TO WATER (feet):	<u>7.02</u>	CALCULATED PURGE (gal.):	<u>32.49</u>
DEPTH OF WELL (feet):	<u>23.6</u>	ACTUAL PURGE VOL (gal.):	<u>32.5</u>

DATE PURGED:	<u>2-25-98</u>	Start (2400 Hr)	<u>1154</u>	End (2400 Hr)	<u>1202</u>
DATE SAMPLED:	<u>↓</u>	Start (2400 Hr)	<u>1210</u>	End (2400 Hr)	<u>---</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1158</u>	<u>11.0</u>	<u>6.33</u>	<u>658.8</u>	<u>64.6</u>	<u>cloudy</u>	<u>light</u>
<u>1200</u>	<u>22.0</u>	<u>6.22</u>	<u>662.4</u>	<u>64.8</u>	<u>↓</u>	<u>↓</u>
<u>1202</u>	<u>32.5</u>	<u>6.19</u>	<u>660.9</u>	<u>64.6</u>	<u>↓</u>	<u>↓</u>

D. O. (ppm): 1-2 ODOR: NOK COLOR (COBALT 0-500): NR TURBIDITY (NTU 0-200 or 0-1000): NR

Field QC samples collected at this well: NR Parameters field filtered at this well: NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailer (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailer (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailer (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailer (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: OK LOCK #: ARCO-KEY

REMARKS: all samples taken

Meter Calibration: Date: 2/25/98 Time: _____ Meter Serial #: 8707 Temperature °F: _____
 (EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW 4

Signature: [Signature] Reviewed By: SJA Page 1 of 10



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-236-003

SAMPLE ID: MW-2(G1)

PURGED BY: MGA/C.C.

CLIENT NAME: ARCO# 2185

SAMPLED BY: [Signature]

LOCATION: OAKLAND, CA

TYPE: Ground Water Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL): <u>NR</u>	VOLUME IN CASING (gal.): <u>11.28</u>
DEPTH TO WATER (feet): <u>6.33</u>	CALCULATED PURGE (gal.): <u>33.84</u>
DEPTH OF WELL (feet): <u>23.6</u>	ACTUAL PURGE VOL (gal.): <u>34.0</u>

DATE PURGED: <u>2-25-98</u>	Start (2400 Hr) <u>1218</u>	End (2400 Hr) <u>1224</u>
DATE SAMPLED: <u>[Signature]</u>	Start (2400 Hr) <u>1230</u>	End (2400 Hr) <u>---</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1220</u>	<u>11.5</u>	<u>6.30</u>	<u>9550</u>	<u>64.9</u>	<u>Clear</u>	<u>Light</u>
<u>1222</u>	<u>23.0</u>	<u>6.26</u>	<u>748.7</u>	<u>66.2</u>	<u> </u>	<u> </u>
<u>1224</u>	<u>34.0</u>	<u>6.29</u>	<u>751.6</u>	<u>66.5</u>	<u> </u>	<u> </u>

D. O. (ppm): 1-2 ODOR: NO ODOUR ST. BONG NR NR
(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR Parameters field filtered at this well: NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailer (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailer (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailer (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailer (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: OK LOCK #: ARCO-1001

REMARKS: All samples taken

Meter Calibration: Date: 2/25/98 Time: _____ Meter Serial #: 870 Temperature °F: _____
 (EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-4

Signature: [Signature] Reviewed By: [Signature] Page 2 of 10



EMCON
ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-230-003

SAMPLE ID: MW-3(10')

PURGED BY: MA/C.C.

CLIENT NAME: ARCO# 2185

SAMPLED BY: ↓

LOCATION: OAKLAND, CA

TYPE: Ground Water Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER (inches): 2 _____ 3 _____ 4 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): NK

VOLUME IN CASING (gal.): 10.66

DEPTH TO WATER (feet): 6.98

CALCULATED PURGE (gal.): 31.98

DEPTH OF WELL (feet): 23.3

ACTUAL PURGE VOL (gal.): 32.0

DATE PURGED: 2-25-98

Start (2400 Hr) 1329

End (2400 Hr) 1334

DATE SAMPLED: ↓

Start (2400 Hr) 1342

End (2400 Hr) _____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1331</u>	<u>10.5</u>	<u>6.77</u>	<u>334</u>	<u>64.5</u>	<u>cloudy</u>	<u>med</u>
<u>1333</u>	<u>21.0</u>	<u>6.58</u>	<u>439</u>	<u>65.1</u>	<u>↓</u>	<u>↓</u>
<u>1336</u>	<u>32.0</u>	<u>6.49</u>	<u>436</u>	<u>65.3</u>	<u>↓</u>	<u>↓</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

D. O. (ppm): 23

ODOR: Strong

NR
(COBALT 0 - 500)

NR
(NTU 0 - 200
or 0 - 1000)

Field QC samples collected at this well:

Parameters field filtered at this well:

NR

NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- 2" Bladder Pump
- Centrifugal Pump
- Submersible Pump
- Well Wizard™
- Bailer (Teflon®)
- Bailer (PVC)
- Bailer (Stainless Steel)
- Dedicated

- 2" Bladder Pump
- DDL Sampler
- Dipper
- Well Wizard™
- Bailer (Teflon®)
- Bailer (Stainless Steel)
- Submersible Pump
- Dedicated

Other: _____

Other: _____

WELL INTEGRITY: OK

LOCK #: NKCO-key

REMARKS: all samples taken

Meter Calibration: Date: 2/25/98 Time: _____ Meter Serial #: 8707 Temperature °F: _____

(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-4

Signature: [Signature]

Reviewed By: SA

Page 3 of 10



WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-236-003

SAMPLE ID: MW-4(10')

PURGED BY: MA/C.C.

CLIENT NAME: ARCO# 2185

SAMPLED BY: ↓

LOCATION: OAKLAND, CA

TYPE: Ground Water Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL): <u>NK</u>	VOLUME IN CASING (gal.): <u>10.96</u>
DEPTH TO WATER (feet): <u>6.91</u>	CALCULATED PURGE (gal.): <u>32.90</u>
DEPTH OF WELL (feet): <u>23.7</u>	ACTUAL PURGE VOL. (gal.): <u>33.0</u>

DATE PURGED: <u>2-25-98</u>	Start (2400 Hr) <u>1134</u>	End (2400 Hr) <u>1147</u>
DATE SAMPLED: <u>↓</u>	Start (2400 Hr) <u>1150</u>	End (2400 Hr) <u> </u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1138</u>	<u>11.0</u>	<u>6.70</u>	<u>593.7</u>	<u>67.0</u>	<u>Clear</u>	<u>Light</u>
<u>1140</u>	<u>22.0</u>	<u>6.24</u>	<u>599.7</u>	<u>66.5</u>	<u>↓</u>	<u>↓</u>
<u>1147</u>	<u>33.0</u>	<u>6.20</u>	<u>601.4</u>	<u>66.5</u>	<u>↓</u>	<u>↓</u>

D. O. (ppm): 2 ODOR: None COLOR: NR TURBIDITY: NR
(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR Parameters field filtered at this well: NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailer (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailer (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailer (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailer (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
- Other: _____

WELL INTEGRITY: OK LOCK #: ARCO

REMARKS: all samples taken

Meter Calibration: Date: 2/25/98 Time: _____ Meter Serial #: 8700 Temperature °F: 56.2
 (EC 1000 1028 / 1000) (DI _____) (pH 7 7.34 / 7.00) (pH 10 1007 / 1000) (pH 4 4.01 / 4.00)

Location of previous calibration: _____
 Signature: [Signature] Reviewed By: GA Page 3 of 10



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-236-003

SAMPLE ID: MW-5(10')

PURGED BY: MA/C.C.

CLIENT NAME: ARLOH 2185

SAMPLED BY: ↓

LOCATION: OAKLAND, CA

TYPE: Ground Water Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/VMSL): <u>NR</u>	VOLUME IN CASING (gal.): <u>13.09</u>
DEPTH TO WATER (feet): <u>6.75</u>	CALCULATED PURGE (gal.): <u>39.29</u>
DEPTH OF WELL (feet): <u>26.8</u>	ACTUAL PURGE VOL (gal.): <u>39.5</u>

DATE PURGED: <u>2-25-98</u>	Start (2400 Hr) <u>1311</u>	End (2400 Hr) <u>1318</u>
DATE SAMPLED: <u>↓</u>	Start (2400 Hr) <u>1325</u>	End (2400 Hr) <u>---</u>

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1313</u>	<u>13.0</u>	<u>6.82</u>	<u>550</u>	<u>65.0</u>	<u>clear</u>	<u>clear</u>
<u>1315</u>	<u>26.0</u>	<u>6.64</u>	<u>549</u>	<u>65.5</u>	<u>↓</u>	<u>↓</u>
<u>1318</u>	<u>39.5</u>	<u>6.57</u>	<u>552</u>	<u>65.8</u>	<u>↓</u>	<u>↓</u>

D. O. (ppm): 3 OOR: none NR NR
(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR Parameters field filtered at this well: NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input checked="" type="checkbox"/> Centrifugal Pump | <input type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: OK LOCK #: ARLOH-KW

REMARKS: all samples taken

Meter Calibration: Date: 2/25/98 Time: _____ Meter Serial #: 8700 Temperature °F: _____
 (EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-4

Signature: [Signature] Reviewed By: MA Page 5 of 10



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-236-003

SAMPLE ID: MW-7(8')

PURGED BY: MA/C.C.

CLIENT NAME: ARCO# 2185

SAMPLED BY: ↓

LOCATION: OAKLAND, CA

TYPE: Ground Water Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 102, 3.09

DEPTH TO WATER (feet): 6.35 CALCULATED PURGE (gal.): 9.5

DEPTH OF WELL (feet): 25.3 ACTUAL PURGE VOL. (gal.): 9.5

DATE PURGED: 2-25-98 Start (2400 Hr) 1410 End (2400 Hr) 1413

DATE SAMPLED: ↓ Start (2400 Hr) 1418 End (2400 Hr) ---

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1411</u>	<u>3.0</u>	<u>6.78</u>	<u>573</u>	<u>63.5</u>	<u>NR</u>	<u>↓</u>
<u>1412</u>	<u>6.0</u>	<u>6.63</u>	<u>581</u>	<u>63.9</u>	<u>↓</u>	<u>↓</u>
<u>1413</u>	<u>9.5</u>	<u>6.62</u>	<u>579</u>	<u>64.1</u>	<u>↓</u>	<u>↓</u>
---	---	---	---	---	---	---
---	---	---	---	---	---	---

D. O. (ppm): 1-2 ODOR: none COLOR: NR TURBIDITY: NR

(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT

- 2' Bladder Pump
- Centrifugal Pump
- Submersible Pump
- Well Wizard™
- Bailer (Teflon®)
- Bailer (PVC)
- Bailer (Stainless Steel)
- Dedicated

Other: _____

SAMPLING EQUIPMENT

- 2' Bladder Pump
- DDL Sampler
- Dipper
- Well Wizard™
- Bailer (Teflon®)
- Bailer (Stainless Steel)
- Submersible Pump
- Dedicated

Other: _____

WELL INTEGRITY: OK LOCK #: 3614

REMARKS: all samples taken

Meter Calibration: Date: 2/25/98 Time: _____ Meter Serial #: 8707 Temperature °F: _____

(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-4

Signature: [Signature]

Reviewed By: [Signature]

Page 7 of 10



WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-236-003

SAMPLE ID: MW-8(10')

PURGED BY: MA/C.C.

CLIENT NAME: ARLO# 2185

SAMPLED BY: ↓

LOCATION: OAKLAND, CA

TYPE: Ground Water Surface Water _____ Treatment Effluent _____ Other _____

CASING DIAMETER (inches): 2 _____ 3 _____ 4 4.5 _____ 6 _____ Other _____

CASING ELEVATION (feet/MSL): NK

VOLUME IN CASING (gal.): 10.02

DEPTH TO WATER (feet): 7.25

CALCULATED PURGE (gal.): 30.08

DEPTH OF WELL (feet): 22.6

ACTUAL PURGE VOL. (gal.): 30.5

DATE PURGED: 2-25-98

Start (2400 Hr) 1347

End (2400 Hr) 1353

DATE SAMPLED: ↓

Start (2400 Hr) 1358

End (2400 Hr) _____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1349</u>	<u>10.0</u>	<u>6.60</u>	<u>590</u>	<u>64.2</u>	<u>CLAR</u>	<u>clear</u>
<u>1351</u>	<u>20.0</u>	<u>6.51</u>	<u>604</u>	<u>65.3</u>	<u>↓</u>	<u>↓</u>
<u>1353</u>	<u>30.5</u>	<u>6.47</u>	<u>608</u>	<u>65.8</u>	<u>↓</u>	<u>↓</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

D. O. (ppm): 2-

ODOR: none

NR
(COBALT 0 - 500)

NR
(NTU 0 - 200
or 0 - 1000)

Field QC samples collected at this well:

Parameters field filtered at this well:

NR

NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- 2' Bladder Pump
- Centrifugal Pump
- Submersible Pump
- Well Wizard™
- Bailer (Teflon®)
- Bailer (PVC)
- Bailer (Stainless Steel)
- Dedicated

- 2' Bladder Pump
- DDL Sampler
- Dipper
- Well Wizard™
- Bailer (Teflon®)
- Bailer (Stainless Steel)
- Submersible Pump
- Dedicated

Other: _____

Other: _____

WELL INTEGRITY: OK LOCK #: ARLO-204

REMARKS: all samples taken

Meter Calibration: Date: 2/25/98 Time: _____ Meter Serial #: 8700 Temperature °F: _____
 (EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW 4

Signature: [Signature]

Reviewed By: [Signature]

Page 86 of 10



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-236-003

SAMPLE ID: MW-9(8')

PURGED BY: MA/C.C.

CLIENT NAME: ARLOH 2185

SAMPLED BY: ↓

LOCATION: OAKLAND, CA

TYPE: Ground Water X Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL): NK

VOLUME IN CASING (gal.): NK

DEPTH TO WATER (feet): ↓

CALCULATED PURGE (gal.): ↓

DEPTH OF WELL (feet): ↓

ACTUAL PURGE VOL (gal.): ↓

DATE PURGED: 2-25-98

Start (2400 Hr)

End (2400 Hr)

DATE SAMPLED: ↓

Start (2400 Hr) 1420

End (2400 Hr)

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1420</u>	<u>0.00</u>	<u>6.55</u>	<u>598</u>	<u>62.9</u>	<u>Clear</u>	<u>Clear</u>

D. O. (ppm): 0-1

ODOR: None

NR NR
(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well:

Parameters field filtered at this well:

NR

NR

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- 2" Bladder Pump
- Centrifugal Pump
- Submersible Pump
- Well Wizard™
- Bailer (Teflon®)
- Bailer (PVC)
- Bailer (Stainless Steel)
- Dedicated

- 2" Bladder Pump
- DDL Sampler
- Dipper
- Well Wizard™
- Bailer (Teflon®)
- Bailer (Stainless Steel)
- Submersible Pump
- Dedicated

Other:

Other:

WELL INTEGRITY: OK LOCK #: ALLO-NK

REMARKS: all samples taken

Meter Calibration: Date: 2/25/98 Time: Meter Serial #: 8707 Temperature °F:

(EC 1000 /) (DI) (pH 7 /) (pH 10 /) (pH 4 /)

Location of previous calibration: MW 4

Signature: [Signature]

Reviewed By: [Signature]

Page 9 of 10



WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 21775-236-003
 PURGED BY: MA/C.C.
 SAMPLED BY: ↓

SAMPLE ID: MW-10 (9')
 CLIENT NAME: ARCO# 2185
 LOCATION: OAKLAND, CA

TYPE: Ground Water Surface Water Treatment Effluent Other

CASING DIAMETER (inches): 2 3 4 4.5 6 Other

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): NR
 DEPTH TO WATER (feet): ↓ CALCULATED PURGE (gal.): ↓
 DEPTH OF WELL (feet): ↓ ACTUAL PURGE VOL (gal.): ↓

DATE PURGED: 2-25-98 Start (2400 Hr) --- End (2400 Hr) ---
 DATE SAMPLED: ↓ Start (2400 Hr) 1400 End (2400 Hr) ---

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1400</u>	<u>NR</u>	<u>6.60</u>	<u>5.88</u>	<u>62.6</u>	<u>CLR</u>	<u>CLR</u>

D. O. (ppm): 0-1 ODOR: None. COLOR: NR TURBIDITY: NR
(COBALT 0 - 500) (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR Parameters field filtered at this well: NR

PURGING EQUIPMENT

- 2' Bladder Pump
- Centrifugal Pump
- Submersible Pump
- Well Wizard™
- Bailer (Teflon®)
- Bailer (PVC)
- Bailer (Stainless Steel)
- Dedicated

Other: _____

SAMPLING EQUIPMENT

- 2' Bladder Pump
- DDL Sampler
- Dipper
- Well Wizard™
- Bailer (Teflon®)
- Bailer (Stainless Steel)
- Submersible Pump
- Dedicated

Other: _____

WELL INTEGRITY: OK LOCK #: 3900

REMARKS: all samples taken

Meter Calibration: Date: 2/25/98 Time: _____ Meter Serial #: 87M Temperature °F: _____
 (EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-4

Signature: [Signature] Reviewed By: SA Page 10 of 10

1921 Ringwood Avenue
San Jose, California

1998

ARCO 2185
21775-236.003

Well ID	Quarter	Date	Purge Volume (gallons)	Did well dry	Well Contained Product	Gallons			
						First	Second	Third	Fourth
						253.50	0.00	23.00	23.00
MW-1	First	02/25/98	32.50	NO	NO				
	Second								
	Third	08/07/97	NA	NA	NO				
	Fourth	11/18/97	NA	NA	NO				
MW-2	First	02/25/98	34.00	NO	NO				
	Second								
	Third	08/07/97	GRAB	NO	NO				
	Fourth	11/18/97	GRAB	NO	NO				
MW-3	First	02/25/98	32.00	NO	NO				
	Second								
	Third	08/07/97	GRAB	NO	NO				
	Fourth	11/18/97	GRAB	NO	NO				
MW-4	First	02/25/98	33.00	NO	NO				
	Second								
	Third	08/07/97	NA	NO	NA				
	Fourth	11/18/97	NA	NO	NA				
MW-5	First	02/25/98	39.50	NO	NO				
	Second								
	Third	08/07/97	GRAB	NO	NO				
	Fourth	11/18/97	GRAB	NO	NO				
MW-6	First	02/25/98	42.50	NO	NO				
	Second								
	Third	08/07/97	GRAB	NO	NO				
	Fourth	11/18/97	GRAB	NO	NO				
MW-7	First	02/25/98	9.50	NO	NO				
	Second								
	Third	08/07/97	NA	NA	NA				
	Fourth	11/18/97	NA	NA	NA				
MW-8	First	02/25/98	30.50	NO	NO				
	Second								
	Third	08/07/97	23.00	NO	NO				
	Fourth	11/18/97	23.00	NO	NO				
MW-9	First	02/25/98	GRAB	NO	NO				
	Second								
	Third	08/07/97	NA	NA	NA				
	Fourth	11/18/97	GRAB	NO	NO				
MW-10	First	02/25/98	GRAB	NO	NO	Steam water (gal)			
	Second								
	Third	08/07/97	NA	NA	NA				
	Fourth	11/18/97	NA	NA	NA				

