EMCON
1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

ENVIRONMENTAL PROTECTION
96 JUN -3 PM 3:19

Date May 23, 1996
Project 20805-134.003

To:

Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harborbay Parkway, Suite 250
Alameda, California 94502-6577

We are enclosing:

Copies	Description
1	First quarter 1996 groundwater monitoring results for ARCO service station 6113, Livermore, California

For your:	X	Use	Sent by:		Regular Mail
		Approval			Standard Air
		Review			Courier
		Information		X	Other: Cert. Mail

Comments:
The enclosed groundwater monitoring report is being sent to you per the request of ARCO Products Company. Please call if you have questions or comments.

John C. Young
Project Manager

cc: Sum Arigala, RWQCB - SFBR
Danielle Stefani, LFD
Michael Whelan, ARCO Products Company
File

ARCO Products Company

Date:

May 23, 1996

Re: ARCO Station #

6113 • 785 East Stanley Boulevard • Livermore, CA
First Quarter 1996 Groundwater Monitoring Results

" 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:

Michael R. Whelan

Michael R. Whelan
Environmental Engineer

EMCON
1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

May 13, 1996
Project 20805-134.003

Mr. Michael Whelan
ARCO Products Company
P.O. Box 612530
San Jose, California 95161

Re: First quarter 1996 groundwater monitoring program results, ARCO service station 6113, Livermore, California

Dear Mr. Whelan:

This letter presents the results of the first quarter 1996 groundwater monitoring program at ARCO Products Company (ARCO) service station 6113, 785 East Stanley Boulevard, Livermore, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

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, such a finding should not therefore be construed as a guarantee of the absence of such conditions at the site, but rather as the result of the scope, limitations, and cost of work performed during the monitoring event.

Please call if you have questions.

Sincerely,

EMCON

REGISTERED GEOLOGIST
JOHN CHARLES YOUNG
EXP 7/96
NO. 6407
STATE OF CALIFORNIA

John C. Young, R.G. 6407
Project Manager

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May 13, 1996

ARCO QUARTERLY REPORT

Station No.: 6113 Address: 785 East Stanley Boulevard, Livermore, California
EMCON Project No. 20805-134.003
ARCO Environmental Engineer/Phone No.: Michael Whelan /(408) 453-1640
EMCON Project Manager/Phone No.: John Young /(408) 453-7300
Primary Agency/Regulatory ID No.: ACHCSA /Susan Hugo

WORK PERFORMED THIS QUARTER (First- 1996):

1. Conducted quarterly groundwater monitoring and sampling.
2. Prepared and submitted quarterly report for fourth quarter 1995.

WORK PROPOSED FOR NEXT QUARTER (Second- 1996):

1. Perform quarterly groundwater monitoring and sampling.
2. Prepare and submit quarterly report for first quarter 1996.

QUARTERLY MONITORING:

Current Phase of Project: Quarterly Groundwater Monitoring
Frequency of Sampling: Quarterly (groundwater)
Frequency of Monitoring: Quarterly (groundwater)
Is Floating Product (FP) Present On-site: ☐ Yes ☒ No
Bulk Soil Removed to Date : 288 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
Approximate Depth to Groundwater: 12.50 feet
Groundwater Gradient (Average): 0.031 ft/ft toward north-northwest (consistent with past events)

ATTACHED:

- Table 1 - Groundwater Monitoring Data, First Quarter 1996
- Table 2 - Historical Groundwater Elevation Data
- Table 3 - Historical Groundwater Analytical Data, Petroleum Hydrocarbons and Their Constituents
- Figure 1 - Site Location
- Figure 2 - Groundwater Data, First Quarter 1996
- Appendix A - Field Data Sheets, First Quarter 1996 Groundwater Monitoring Event
- Appendix B - Analytical Results and Chain of Custody Documentation, First Quarter 1996 Groundwater Monitoring Event

cc: Susan Hugo, ACHCSA
Sum Arigala, RWQCB-SFBR
Danielle Stefani, LFD

Table 1
Groundwater Monitoring Data
First Quarter 1996

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-08-96

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	TRPH EPA 418.1	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	02-22-96	457.04	13.23	443.81	ND	NNW	0.031	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-2	02-22-96	457.74	13.55	444.19	ND	NNW	0.031	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-3	02-22-96	456.97	13.14	443.83	ND	NNW	0.031	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-4	02-22-96	456.55	14.80	441.75	ND	NNW	0.031	02-22-96	100	<0.5	<0.5	<0.6	0.8	<3			
MW-5	02-22-96	455.84	13.34	442.50	ND	NNW	0.031	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-6	02-22-96	454.93	12.53	442.40	ND	NNW	0.031	02-22-96	<50	1.9	<0.5	0.8	2.1	<3			
MW-7	02-22-96	454.92	12.30	442.62	ND	NNW	0.031	02-22-96	<50	<0.5	<0.5	<0.5	<0.5	<3			
MW-8	02-22-96	456.97	10.97	446.00	ND	NNW	0.031	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-9	02-22-96	456.18	12.05	444.13	ND	NNW	0.031	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-10	02-22-96	456.85	14.30	442.55	ND	NNW	0.031	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-11	02-22-96	455.07	15.97	439.10	ND	NNW	0.031	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-12	02-22-96	455.04	14.45	440.59	ND	NNW	0.031	02-22-96	Not sampled: not scheduled for chemical analysis								

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 Statest Environmental Protection Agency
MTBE: methyl-tert-butyl ether
TRPH: total recoverable petroleum hydrocarbons
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
ND: none detected
NNW: north-northwest

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20805-134.003

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-08-96

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 foot/foot
MW-1	03-25-94	457.04	17.54	439.50	ND	NR	NR
MW-1	06-02-94	457.04	21.30	435.74	ND	NR	NR
MW-1	09-16-94	457.04	19.98	437.06	ND	N	0.014
MW-1	11-29-94	457.04	19.12	437.92	ND	N	0.025
MW-1	03-23-95	457.04	14.12	442.92	ND	NW	0.035
MW-1	05-31-95	457.04	14.45	442.59	ND	NNW	0.028
MW-1	08-31-95	457.04	17.12	439.92	ND	NNW	0.03
MW-1	11-28-95	457.04	16.34	440.70	ND	NNW	0.025
MW-1	02-22-96	457.04	13.23	443.81	ND	NNW	0.031
MW-2	03-25-94	457.74	17.26	440.48	ND	NR	NR
MW-2	06-02-94	457.74	21.23	436.51	ND	NR	NR
MW-2	09-16-94	457.74	19.64	438.10	ND	N	0.014
MW-2	11-29-94	457.74	18.89	438.85	ND	N	0.025
MW-2	03-23-95	457.74	14.15	443.59	ND	NW	0.035
MW-2	05-31-95	457.74	14.67	443.07	ND	NNW	0.028
MW-2	08-31-95	457.74	17.24	440.50	ND	NNW	0.03
MW-2	11-28-95	457.74	16.40	441.34	ND	NNW	0.025
MW-2	02-22-96	457.74	13.55	444.19	ND	NNW	0.031
MW-3	03-25-94	456.97	17.57	439.40	ND	NR	NR
MW-3	06-02-94	456.97	21.30	435.67	ND	NR	NR
MW-3	09-16-94	456.97	20.03	436.94	ND	N	0.014
MW-3	11-29-94	456.97	19.13	437.84	ND	N	0.025
MW-3	03-23-95	456.97	14.13	442.84	ND	NW	0.035
MW-3	05-31-95	456.97	14.46	442.51	ND	NNW	0.028
MW-3	08-31-95	456.97	17.06	439.91	ND	NNW	0.03
MW-3	11-28-95	456.97	16.27	440.70	ND	NNW	0.025
MW-3	02-22-96	456.97	13.14	443.83	ND	NNW	0.031

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-08-96

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 foot/foot
MW-4	03-25-94	456.55	18.59	437.96	ND	NR	NR
MW-4	06-02-94	456.55	21.41	435.14	ND	NR	NR
MW-4	09-16-94	456.55	20.51	436.04	ND	N	0.014
MW-4	11-29-94	456.55	19.77	436.78	ND	N	0.025
MW-4	03-23-95	456.55	15.39	441.16	ND	NW	0.035
MW-4	05-31-95	456.55	15.32	441.23	ND	NNW	0.028
MW-4	08-31-95	456.55	17.86	438.69	ND	NNW	0.03
MW-4	11-28-95	456.55	17.18	439.37	ND	NNW	0.025
MW-4	02-22-96	456.55	14.80	441.75	ND	NNW	0.031
MW-5	03-25-94	455.84	17.95	437.89	ND	NR	NR
MW-5	06-02-94	455.84	21.32	434.52	ND	NR	NR
MW-5	09-16-94	455.84	20.41	435.43	ND	N	0.014
MW-5	11-29-94	455.84	19.72	436.12	ND	N	0.025
MW-5	03-23-95	455.84	13.97	441.87	ND	NW	0.035
MW-5	05-31-95	455.84	Not surveyed: well was inaccessible				
MW-5	08-31-95	455.84	Not surveyed: well was inaccessible				
MW-5	11-28-95	455.84	16.46	439.38	ND	NNW	0.025
MW-5	02-22-96	455.84	13.34	442.50	ND	NNW	0.031
MW-6	03-25-94	454.93	17.13	437.80	ND	NR	NR
MW-6	06-02-94	454.93	20.45	434.48	ND	NR	NR
MW-6	09-16-94	454.93	19.62	435.31	ND	N	0.014
MW-6	11-29-94	454.93	18.89	436.04	ND	N	0.025
MW-6	03-23-95	454.93	13.38	441.55	ND	NW	0.035
MW-6	05-31-95	454.93	13.96	440.97	ND	NNW	0.028
MW-6	08-31-95	454.93	16.71	438.22	ND	NNW	0.03
MW-6	11-28-95	454.93	15.65	439.28	ND	NNW	0.025
MW-6	02-22-96	454.93	12.53	442.40	ND	NNW	0.031

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-08-96

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 foot/foot
MW-7	03-25-94	454.92	16.91	438.01	ND	NR	NR
MW-7	06-02-94	454.92	20.31	434.61	ND	NR	NR
MW-7	09-16-94	454.92	19.47	435.45	ND	N	0.014
MW-7	11-29-94	454.92	18.73	436.19	ND	N	0.025
MW-7	03-23-95	454.92	13.29	441.63	ND	NW	0.035
MW-7	05-31-95	454.92	13.72	441.20	ND	NNW	0.028
MW-7	08-31-95	454.92	16.53	438.39	ND	NNW	0.03
MW-7	11-28-95	454.92	15.50	439.42	ND	NNW	0.025
MW-7	02-22-96	454.92	12.30	442.62	ND	NNW	0.031
MW-8	03-25-94	456.97	15.04	441.93	ND	NR	NR
MW-8	06-02-94	456.97	18.43	438.54	ND	NR	NR
MW-8	09-16-94	456.97	17.02	439.95	ND	N	0.014
MW-8	11-29-94	456.97	16.83	440.14	ND	N	0.025
MW-8	03-23-95	456.97	11.55	445.42	ND	NW	0.035
MW-8	05-31-95	456.97	12.37	444.60	ND	NNW	0.028
MW-8	08-31-95	456.97	15.68	441.29	ND	NNW	0.03
MW-8	11-28-95	456.97	14.15	442.82	ND	NNW	0.025
MW-8	02-22-96	456.97	10.97	446.00	ND	NNW	0.031
MW-9	03-25-94	456.18	15.78	440.40	ND	NR	NR
MW-9	06-02-94	456.18	19.03	437.15	ND	NR	NR
MW-9	09-16-94	456.18	17.84	438.34	ND	N	0.014
MW-9	11-29-94	456.18	17.32	438.86	ND	N	0.025
MW-9	03-23-95	456.18	13.18	443.00	ND	NW	0.035
MW-9	05-31-95	456.18	12.66	443.52	ND	NNW	0.028
MW-9	08-31-95	456.18	14.40	441.78	ND	NNW	0.03
MW-9	11-28-95	456.18	14.26	441.92	ND	NNW	0.025
MW-9	02-22-96	456.18	12.05	444.13	ND	NNW	0.031

Table 2
Historical Groundwater Elevation Data
1994 - Present*

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-08-96

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 foot/foot
MW-10	03-25-94	456.85	18.84	438.01	ND	NR	NR
MW-10	06-02-94	456.85	22.40	434.45	ND	NR	NR
MW-10	09-16-94	456.85	21.25	435.60	ND	N	0.014
MW-10	11-29-94	456.85	20.50	436.35	ND	N	0.025
MW-10	03-23-95	456.85	14.86	441.99	ND	NW	0.035
MW-10	05-31-95	456.85	15.63	441.22	ND	NNW	0.028
MW-10	08-31-95	456.85	14.40	442.45	ND	NNW	0.03
MW-10	11-28-95	456.85	17.24	439.61	ND	NNW	0.025
MW-10	02-22-96	456.85	14.30	442.55	ND	NNW	0.031
MW-11	03-25-94	455.07	18.28	436.79	ND	NR	NR
MW-11	06-02-94	455.07	21.78	433.29	ND	NR	NR
MW-11	09-16-94	455.07	20.98	434.09	ND	N	0.014
MW-11	11-29-94	455.07	20.67	434.40	ND	N	0.025
MW-11	03-23-95	455.07	17.34	437.73	ND	NW	0.035
MW-11	05-31-95	455.07	16.68	438.39	ND	NNW	0.028
MW-11	08-31-95	455.07	20.20	434.87	ND	NNW	0.03
MW-11	11-28-95	455.07	17.80	437.27	ND	NNW	0.025
MW-11	02-22-96	455.07	15.97	439.10	ND	NNW	0.031
MW-12	03-25-94	455.04	18.74	436.30	ND	NR	NR
MW-12	06-02-94	455.04	22.21	432.83	ND	NR	NR
MW-12	09-16-94	455.04	21.62	433.42	ND	N	0.014
MW-12	11-29-94	455.04	20.82	434.22	ND	N	0.025
MW-12	03-23-95	455.04	15.54	439.50	ND	NW	0.035
MW-12	05-31-95	455.04	15.66	439.38	ND	NNW	0.028
MW-12	08-31-95	455.04	18.23	436.81	ND	NNW	0.03
MW-12	11-28-95	455.04	17.53	437.51	ND	NNW	0.025
MW-12	02-22-96	455.04	14.45	440.59	ND	NNW	0.031

ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
ND: none detected
NR: not reported; data not available
DRY: dry well; groundwater was not detected
N: north
NW: northwest
NNW: north-northwest
*: For previous historical groundwater elevation data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 6113, Livermore, California,* (EMCON, February 26, 1996).

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-08-96

Well Designation	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	TRPH EPA 418.1	TPHD LUFT Method
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	<600	--
MW-1	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	<500	--
MW-1	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	<500	--
MW-1	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	<500	--
MW-1	03-23-95	Not sampled: not scheduled for chemical analysis								
MW-1	05-31-95	Not sampled: not scheduled for chemical analysis								
MW-1	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-1	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-1	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-2	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2	03-23-95	Not sampled: not scheduled for chemical analysis								
MW-2	05-31-95	Not sampled: not scheduled for chemical analysis								
MW-2	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-2	11-29-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-2	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-3	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	03-23-95	Not sampled: not scheduled for chemical analysis								
MW-3	05-31-95	Not sampled: not scheduled for chemical analysis								
MW-3	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-3	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-3	02-22-96	Not sampled: not scheduled for chemical analysis								

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-08-96

Well Designation	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	TRPH EPA 418.1 µg/L	TPHD LUFT Method µg/L
MW-4	03-25-94	480	5.4	<0.5	1.6	1.7	--	--	--	--
MW-4	06-02-94	270	4.2	<0.5	1	<1.7	--	--	--	--
MW-4	09-16-94	250	1	<0.5	<0.6	<1	--	--	--	--
MW-4	11-29-94	280	1.8	<0.5	<1.2	<0.8	--	--	--	--
MW-4	03-23-95	210	2.1	0.6	0.8	2.1	--	--	--	--
MW-4	05-31-95	190	1.6	<0.5	0.7	0.9	--	--	--	--
MW-4	08-31-95	160	1.2	0.7	<0.5	<2	<3	--	--	--
MW-4	11-29-95	150	0.7	<0.5	0.7	1.4	<3	--	--	--
MW-4	02-22-96	100	<0.5	<0.5	<0.6	0.8	<3	--	--	--
MW-5	03-25-94	780	36	1.5	4.8	5.7	--	--	--	--
MW-5	06-02-94	500	25	7.4	6	33	--	--	--	--
MW-5	09-16-94	1500	370	28	110	120	--	--	--	--
MW-5	11-29-94	1100	280	11	82	31	--	--	--	--
MW-5	03-23-95	68	4.2	3.4	2.3	12	--	--	--	--
MW-5	05-31-95	Not sampled: well was inaccessible								
MW-5	08-31-95	Not sampled: well was inaccessible								
MW-5	11-29-95	960	41	24	38	210	<5	--	--	--
MW-5	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-6	03-25-94	530	<2.5	<2.5	<2.5	4.6	--	--	--	--
MW-6	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-6	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-6	11-29-94	<50	1.3	<0.5	<0.5	<0.5	--	--	--	--
MW-6	03-23-95	<50	1.5	<0.5	<0.5	0.9	--	--	--	--
MW-6	05-31-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-6	08-31-95	150	9	1.8	4	12	<3	--	--	--
MW-6	11-29-95	<50	0.6	<0.5	<0.5	0.8	<3	--	--	--
MW-6	02-22-96	<50	1.9	<0.5	0.8	2.1	<3	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-08-96

Well Designation	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	TRPH EPA 418.1	TPHD LUFT Method
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-7	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	03-23-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	05-31-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-7	08-31-95	<50	<0.5	<0.5	<0.5	1.2	<3	--	--	--
MW-7	11-29-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-7	02-22-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-8	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	03-23-95	Not sampled: not scheduled for chemical analysis								
MW-8	05-31-95	Not sampled: not scheduled for chemical analysis								
MW-8	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-8	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-8	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-9	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	03-23-95	Not sampled: not scheduled for chemical analysis								
MW-9	05-31-95	Not sampled: not scheduled for chemical analysis								
MW-9	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-9	11-29-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-9	02-22-96	Not sampled: not scheduled for chemical analysis								

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

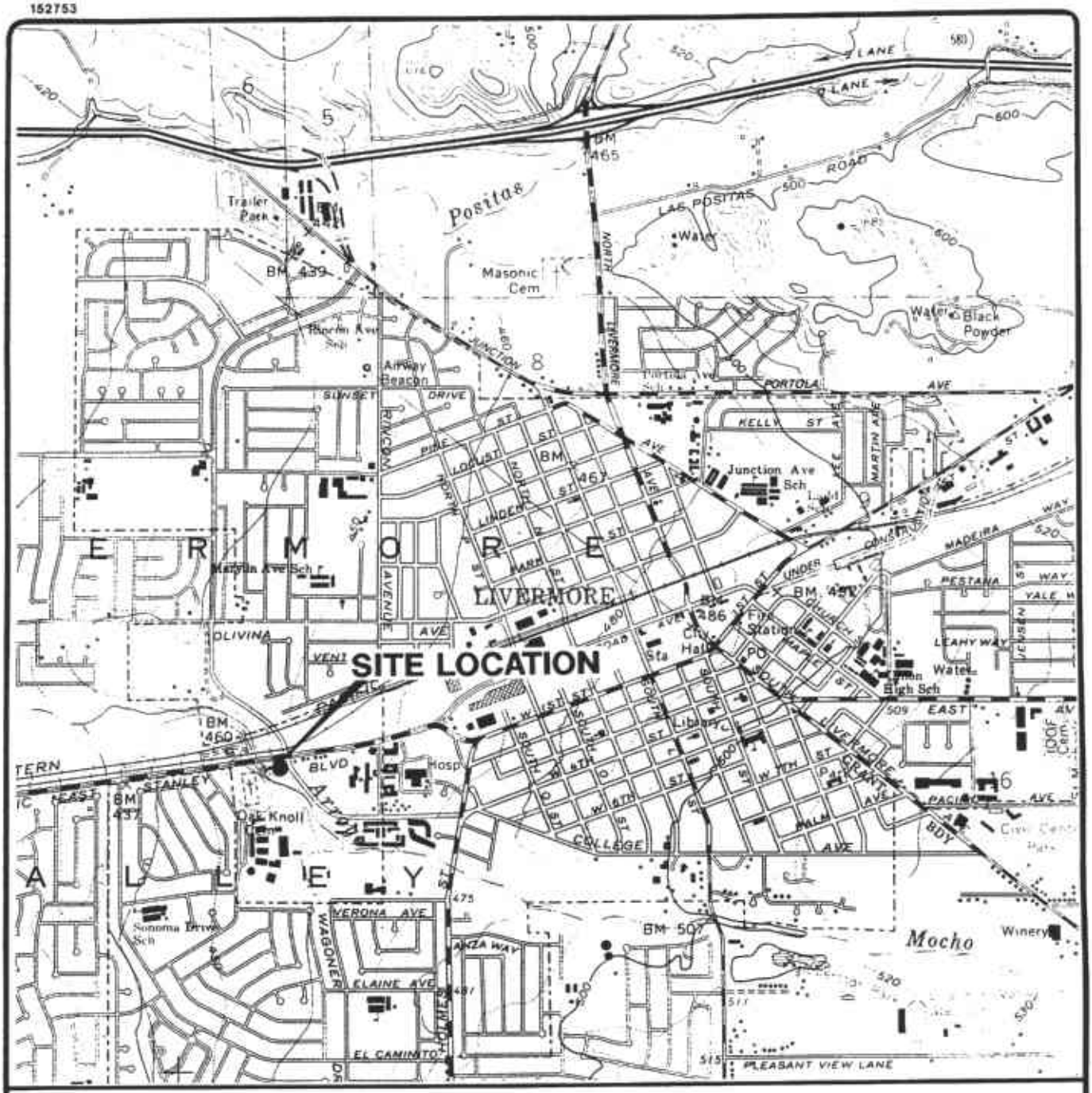
ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 05-08-96

Well Designation	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	TRPH EPA 418.1	TPHD LUFT Method
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-10	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-10	03-23-95	Not sampled: not scheduled for chemical analysis								
MW-10	05-31-95	Not sampled: not scheduled for chemical analysis								
MW-10	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-10	11-29-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-11	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	03-23-95	Not sampled: not scheduled for chemical analysis								
MW-11	05-31-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-11	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-11	02-22-96	Not sampled: not scheduled for chemical analysis								
MW-12	03-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	06-02-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	09-16-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	11-29-94	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	03-23-95	Not sampled: not scheduled for chemical analysis								
MW-12	05-31-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	08-31-95	Not sampled: not scheduled for chemical analysis								
MW-12	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	02-22-96	Not sampled: not scheduled for chemical analysis								

TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
µg/L: micrograms per liter
EPA: United Statest Environmental Protection Agency
MTBE: Methyl-tert-butyl ether
TRPH: total recoverable petroleum hydrocarbons
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
-- : not analyzed
*: For previous historical analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 6113, Livermore, California,* (EMCON, February 26, 1996).

152753

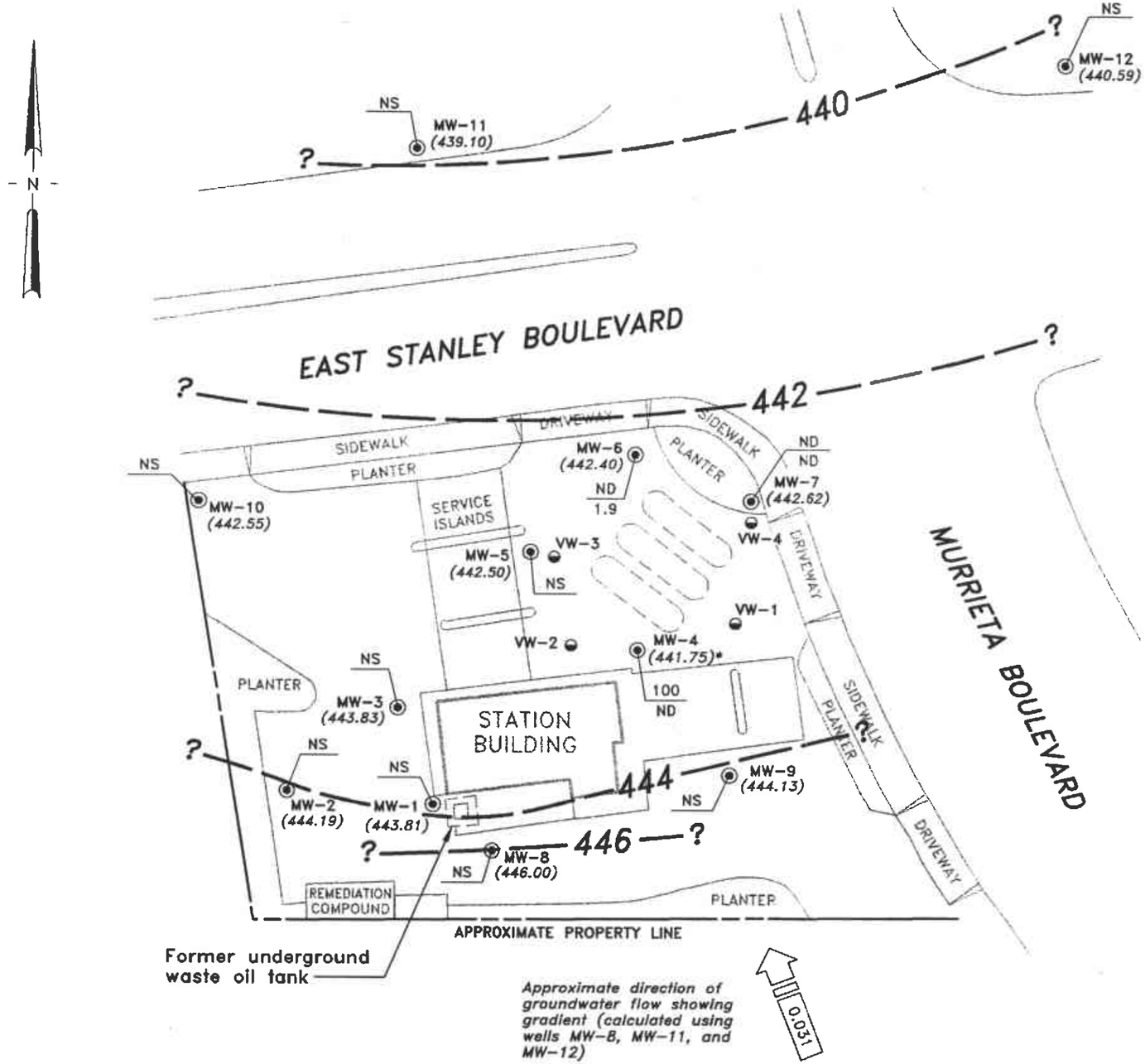


EMCON

ARCO PRODUCTS COMPANY
SERVICE STATION 6113, 785 E. STANLEY BLVD.
QUARTERLY GROUNDWATER MONITORING
LIVERMORE, CALIFORNIA

SITE LOCATION

FIGURE
1
PROJECT NO.
805-134.03



EXPLANATION

- Groundwater monitoring well
- Vapor extraction well
- Existing underground gasoline storage tank
- (442.40) Groundwater elevation (Ft.–MSL) measured 2/22/96
- ? Groundwater elevation contour (Ft.–MSL)
- ND / 1.9 TPHG concentration in groundwater (ug/L); sampled 2/22/96
  Benzene concentration in groundwater (ug/L); sampled 2/22/96
- NS Not sampled; not scheduled for chemical analysis
- ND Not detected at or above the method reporting limit for TPHG (50 ug/L) or benzene (0.5 ug/L)
- * Not used in contouring

Base map modified from RESNA, 1994.

EMCON

SCALE: 0 40 80 FEET
(Approximate)

ARCO PRODUCTS COMPANY
SERVICE STATION 6113, 785 E. STANLEY BLVD.
QUARTERLY GROUNDWATER MONITORING
LIVERMORE, CALIFORNIA

GROUNDWATER DATA
FIRST QUARTER 1996

FIGURE NO.
2
PROJECT NO.
805–134.003

G:\805-134\GOO REV 0 05/02/96 15:34:22 DD DJ

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 21775-248.002 STATION ADDRESS : 785 East Stanley Blvd., Livermore DATE : 2-22-96

ARCO STATION # : 6113 FIELD TECHNICIAN : M. GALLEGOS DAY : Thursday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking 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	MW-1	good	good	good	ARCO	good	13.23	13.23	N/A	N/A	44.7	
2	MW-2						13.55	13.55			38.4	
3	MW-3						13.14	13.14			39.0	
4	MW-6						12.53	12.53			66.3	
5	MW-7						12.30	12.30			67.3	
6	MW-8						10.97	10.97			66.3	
7	MW-9						12.05	12.05			67.6	
8	MW-10						14.30	14.30			45.4	
9	MW-11						15.97	15.97			44.3	
10	MW-12						14.45	14.45			33.2	water in box
11	MW-4						14.80	14.80			26.6	
12	MW-5	"	"	"	"	slip cap	13.34	13.34			62.2	

SURVEY POINTS ARE TOP OF WELL CASINGS

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775-248.021 SAMPLE ID: MW-4 (26')

PURGED BY: M. GALLEGOS CLIENT NAME: ARCO #6113

SAMPLED BY: " LOCATION: Livermore, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 7.70

DEPTH TO WATER (feet): 14.80 CALCULATED PURGE (gal.): 23.12

DEPTH OF WELL (feet): 26.6 ACTUAL PURGE VOL. (gal.): 23.5

DATE PURGED: 2-22-94 Start (2400 Hr) 1406 End (2400 Hr) 1413

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)
1408	8.0	6.89	533	61.6	Clear	Clear
1411	16.0	6.84	546	63.3	"	"
1413	23.5	6.83	552	63.5	"	"

D. O. (ppm): NR ODOR: Strong COLOR: NR (COBALT 0 - 500) TURBIDITY: NR (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
X ~~Submersible Pump~~
___ Well Wizard™
___ Bailer (Teflon®)
X Bailer (PVC)
___ Bailer (Stainless Steel)
___ Dedicated
Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump
___ DDL Sampler
___ Dipper
___ Well Wizard™
X Bailer (Teflon®)
___ Bailer (Stainless Steel)
___ Submersible Pump
___ Dedicated
Other: ___

WELL INTEGRITY: Good LOCK #: ARCO-KEY

REMARKS: All Samples taken

Meter Calibration: Date: 2/22/94 Time: ___ Meter Serial #: 9024 Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: M. O'Kelly Reviewed By: JH

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775-248.021 SAMPLE ID: MW-6 (66')

PURGED BY: M. GALLEGOS CLIENT NAME: ARCO #6113

SAMPLED BY: \" LOCATION: Livermore CA.

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 35.12

DEPTH TO WATER (feet): 12.53 CALCULATED PURGE (gal.): 105.38

DEPTH OF WELL (feet): 66.3 ACTUAL PURGE VOL. (gal.): 105.5

DATE PURGED: 2-22-96 Start (2400 Hr) 1218 End (2400 Hr) 1248

DATE SAMPLED: \" Start (2400 Hr) 1255 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1228	35.0	6.93	767	63.4	Cloudy	mod
1238	70.0	7.01	770	63.1	Clear	Clear
1248	105.5	7.03	768	62.7	"	"

D. O. (ppm): NR ODOR: Moderate NR (COBALT 0 - 500) NR (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	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
✓ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: ARCO-K

REMARKS: all Samples taken

Meter Calibration: Date: 2/22/96 Time: 1212 Meter Serial #: 9024 Temperature °F: 66.7

(EC 1000 1014 / 1000) (DI ___) (pH 7 699 / 700) (pH 10 999 / 1000) (pH 4 400 / 400)

Location of previous calibration: ___

Signature: [signature] Reviewed By: SH Page 2 of 3

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775-248.021 SAMPLE ID: MW-7 (67')

PURGED BY: M. Gallegos CLIENT NAME: ARCO # 6113

SAMPLED BY: ↓ LOCATION: Livermore, 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.): 35.3

DEPTH TO WATER (feet): 12.30 CALCULATED PURGE (gal.): 107.80

DEPTH OF WELL (feet): 67.3 ACTUAL PURGE VOL. (gal.): 108.0

DATE PURGED: 2-22-96 Start (2400 Hr) 1312 End (2400 Hr) 1342

DATE SAMPLED: ↓ Start (2400 Hr) 1350 End (2400 Hr) —

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1322	36.0	6.93	767	60.9	Clear	Clear
1332	72.0	6.90	785	62.5	↓	↓
1342	108.0	6.95	793	62.8	↓	↓

D. O. (ppm): NR ODOR: none

NR (COBALT 0 - 500) NR (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	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ Bailer (Teflon®)
___ Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
X Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: ARCO-KEY

REMARKS: all samples taken

Meter Calibration: Date: 2/22/96 Time: ___ Meter Serial #: 9024 Temperature °F: ___

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

Location of previous calibration: MW-6

Signature: [signature] Reviewed By: [signature] Page 3 of 3

Columbia Analytical Services, Inc.

March 8, 1996

Service Request No: S9600303

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **6113 Livermore/20805-134.002/TO#19350.00**

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on February 22, 1996. 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 8, 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,

Steven L. Green
Project Chemist

Cristina V. Rayburn for

Greg Anderson
Regional QA Coordinator

SLG/jk

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
TTLC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9600303
Project:	6113 Livermore/20805-134.002/TO#19350.00	**Date Collected:**	2/22/96
Sample Matrix:	Water	**Date Received:**	2/22/96
		Date Extracted:	NA

BTEX, MTBE and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ug/L (ppb)

		Sample Name:	**MW-6(66)**	**MW-7(67)**	**MW-4(26)**
		Lab Code:	S9600303-001	S9600303-002	S9600303-003
		Date Analyzed:	2/27/96	2/27/96	2/27/96
Analyte	**MRL**				
TPH as Gasoline	50		ND	ND	100
Benzene	0.5		1.9	ND	ND
Toluene	0.5		ND	ND	ND
Ethylbenzene	0.5		0.8	ND	<0.6*
Total Xylenes	0.5		2.1	ND	0.8
Methyl-tert-butyl ether	3		ND	ND	ND

* The MRL is elevated because of matrix interferences.

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9600303
Project:	6113 Livermore/20805-134.002/TO#19350.00	**Date Collected:**	2/22/96
Sample Matrix:	Water	**Date Received:**	2/22/96
		Date Extracted:	NA

BTEX, MTBE and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ug/L (ppb)

Sample Name:	**Method Blank**
Lab Code:	S9600226-WB
Date Analyzed:	2/26/96

Analyte	**MRL**	
TPH as Gasoline	50	ND
Benzene	0.5	ND
Toluene	0.5	ND
Ethylbenzene	0.5	ND
Total Xylenes	0.5	ND
Methyl-tert-butyl ether	3	ND

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9600303
Project:	6113 Livermore/20805-134.002/TO#19350.00	**Date Collected:**	2/22/96
Sample Matrix:	Water	**Date Received:**	2/22/96
		Date Extracted:	NA
		Date Analyzed:	2/26-27/96

Surrogate Recovery Summary
BTEX, MTBE and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	**Lab Code**	**PID Detector Percent Recovery** 4-Bromofluorobenzene	**FID Detector Percent Recovery** α,α,α–Trifluorotoluene
MW-6(66)	S9600303-001	99	99
MW-7(67)	S9600303-002	99	95
MW-4(26)	S9600303-003	101	101
Batch QC	S9600288-002MS	102	98
Batch QC	S9600288-002DMS	101	95
Method Blank	S9600226-WB	95	94
	CAS Acceptance Limits:	69-116	69-116

SUR2/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9600303
Project:	6113 Livermore/20805-134.002/TO#19350.00	**Date Collected:**	2/22/96
Sample Matrix:	Water	**Date Received:**	2/22/96
		Date Extracted:	NA
		Date Analyzed:	2/26/96

Matrix Spike/Duplicate Matrix Spike Summary
BTE
EPA Methods 5030/8020
Units: ug/L (ppb)

Sample Name: Batch QC
Lab Code: S9600288-002

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Percent Difference**
Benzene	25	25	ND	23.5	23.9	94	96	75-135	2
Toluene	25	25	ND	23.5	24.0	94	96	73-136	2
Ethylbenzene	25	25	ND	23.9	24.1	96	96	69-142	1

DMS1S/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 6113 Livermore/20805-134.002/TO#19350.00

Service Request: S9600303
Date Analyzed: 2/26/96

Initial Calibration Verification (ICV) Summary
BTEX, MTBE and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	23.2	93	85-115
Toluene	25	23.3	93	85-115
Ethylbenzene	25	23.2	93	85-115
Xylenes, Total	75	73.0	97	85-115
Gasoline	250	242	97	90-110
Methyl-tert-butyl Ether	50	46	92	85-115

ICV25AL/060194

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 19350.00

Chain of Custody

ARCO Facility no. 6113	City (Facility) Livermore	Project manager (Consultant) John Young	Laboratory name CAS
ARCO engineer Mike Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) (408)453-7300	Fax no. (Consultant) (408)453-0452
Consultant name EMCON	Address (Consultant) 1921 Ringwood Ave San Jose, CA 95131		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH (gas, MTBE) EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-6(66')	2			X		X	HCl	2/22/96	1255		X											
MW-7(67')	2			X		X	HCl	"	1350		X											
MW-4(26')	2			X		X	HCl	"	1420		X											

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml HCL VOAs

#20905-134.002

Lab number: 59600303

Turnaround time

- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days 3/7 ☒

Condition of sample: OK

Temperature received: Cool

	Date	Time		Date	Time
Relinquished by sampler	2/22/96	1645	Received by		
Relinquished by			Received by		
Relinquished by			Received by laboratory	2/22/96	1645

Joanne Brown

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant
APC-3292 (2-91)