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

Date March 31, 1996
Project 20805-134.002

To:

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

96 MAR 21 PM 2:32
ENVIRONMENTAL PROTECTION

We are enclosing:

Copies	Description
1	Fourth quarter 1995 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
Ivy Inouye, EMCON
File

ARCO Products Company

Date:

March 31, 1996

Re: ARCO Station #

6113 • 785 East Stanley Boulevard • Livermore, CA
Fourth Quarter 1995 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

February 26, 1996
Project 20805-134.002

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

Re: Fourth quarter 1995 groundwater monitoring program results, ARCO service station 6113, Livermore, California

Dear Mr. Whelan:

This letter presents the results of the fourth quarter 1995 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.

MONITORING PROGRAM FIELD PROCEDURES

A program of quarterly groundwater monitoring was initiated during the second quarter of 1990 to provide information concerning water quality, flow direction, and gradient consistent with ACHCSA and Regional Water Quality Control Board (RWQCB) requirements for underground fuel tank investigations. Water levels are measured quarterly in wells MW-1 through MW-12. Wells MW-1, MW-2, MW-3, MW-8, MW-9 and MW-10 are sampled annually, during the fourth quarter of the year. Wells MW-11 and MW-12 are sampled semiannually, during the second and fourth quarters. Wells MW-4 through MW-7 are sampled quarterly.

Beginning in the first quarter of 1996, wells MW-1, MW-2, MW-3, MW-8, MW-9 and MW-10 will be sampled annually, during the fourth quarter of the year. Wells MW-5, MW-11, and MW-12 will be sampled semiannually, during the second and fourth quarters of the year. Wells MW-4, MW-6, and MW-7 will be sampled quarterly. Water levels will be measured in all wells quarterly.

EMCON performed the fourth quarter 1995 groundwater monitoring event on November 28 and 29, 1995. Field work this quarter included (1) measuring depths to groundwater and subjectively analyzing groundwater for the presence of floating product in wells MW-1 through MW-12, (2) purging and subsequently sampling groundwater monitoring wells MW-1 through MW-12 for laboratory analysis, and (3) directing a state-certified laboratory to analyze the groundwater samples. Copies of all field data

sheets from the fourth quarter 1995 groundwater monitoring event are included in Appendix A.

MONITORING PROGRAM RESULTS

Results of the fourth quarter 1995 groundwater monitoring event are summarized in Table 1 and illustrated in Figure 2. Historical groundwater elevation data are summarized in Table 2. Table 3 summarizes historical analytical data for analysis of petroleum hydrocarbons and their constituents. Table 4 summarizes historical analytical data for halogenated volatile organic compounds (VOCs) and metals analyses. Copies of the fourth quarter 1995 analytical results and chain-of-custody documentation are included in Appendix B.

Groundwater elevation data collected on November 28, 1995, indicate that groundwater beneath the site flows north-northwest with an approximate hydraulic gradient of 0.03 foot per foot. Figure 2 illustrates groundwater contours and analytical data for the fourth quarter of 1995.

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.

SITE STATUS UPDATE

This update reports site activities performed during the fourth quarter of 1995 and those anticipated for the first quarter of 1996.

Fourth Quarter 1995 Activities

- Prepared and submitted quarterly groundwater monitoring report for third quarter 1995.
- Performed quarterly groundwater monitoring for fourth quarter 1995.

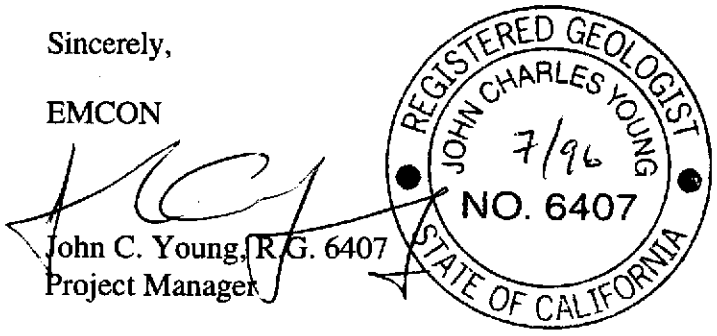
Work Anticipated for First Quarter 1996

- Prepare and submit quarterly groundwater monitoring report for fourth quarter 1995.
- Perform quarterly groundwater monitoring for first quarter 1996.

Please call if you have questions.

Sincerely,

EMCON



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

Attachments:

Table 1 -	Groundwater Monitoring Data, Fourth Quarter 1995
Table 2 -	Historical Groundwater Elevation Data
Table 3 -	Historical Groundwater Analytical Data, Petroleum Hydrocarbons and Their Constituents
Table 4 -	Historical Groundwater Analytical Data (VOCs and Metals)
Figure 1 -	Site Location
Figure 2 -	Groundwater Data, Fourth Quarter 1995
Appendix A -	Field Data Sheets, Fourth Quarter 1995 Groundwater Monitoring Event
Appendix B -	Analytical Results and Chain-of-Custody Documentation, Fourth Quarter 1995

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

Table 1
Groundwater Monitoring Data
Fourth Quarter 1995

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

Date: 02-20-96

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	11-28-95	457.04	16.34	440.70	ND	NNW	0.025	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-2	11-28-95	457.74	16.40	441.34	ND	NNW	0.025	11-29-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-3	11-28-95	456.97	16.27	440.70	ND	NNW	0.025	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-4	11-28-95	456.55	17.18	439.37	ND	NNW	0.025	11-29-95	150	0.7	<0.5	0.7	1.4	<3	--	--	--
MW-5	11-28-95	455.84	16.46	439.38	ND	NNW	0.025	11-29-95	960	41	24	38	210	<5	--	--	--
MW-6	11-28-95	454.93	15.65	439.28	ND	NNW	0.025	11-29-95	<50	0.6	<0.5	<0.5	0.8	<3	--	--	--
MW-7	11-28-95	454.92	15.50	439.42	ND	NNW	0.025	11-29-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-8	11-28-95	456.97	14.15	442.82	ND	NNW	0.025	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-9	11-28-95	456.18	14.26	441.92	ND	NNW	0.025	11-29-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-10	11-28-95	456.85	17.24	439.61	ND	NNW	0.025	11-29-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-11	11-28-95	455.07	17.80	437.27	ND	NNW	0.025	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--
MW-12	11-28-95	455.04	17.53	437.51	ND	NNW	0.025	11-28-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--

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
- - : not analyzed

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Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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	09-20-89	457.04	21.03	436.01	ND	NR	NR
MW-1	10-12-89	457.04	19.64	437.40	ND	NR	NR
MW-1	06-21-90	457.04	21.72	435.32	ND	NR	NR
MW-1	09-20-90	457.04	19.79	437.25	ND	NR	NR
MW-1	12-18-90	457.04	19.28	437.76	ND	NR	NR
MW-1	02-21-91	457.04	22.45	434.59	ND	NR	NR
MW-1	03-20-91	457.04	19.87	437.17	ND	NR	NR
MW-1	04-10-91	457.04	19.42	437.62	ND	NR	NR
MW-1	05-20-91	457.04	25.95	431.09	ND	NR	NR
MW-1	06-20-91	457.04	32.55	424.49	ND	NR	NR
MW-1	07-25-91	457.04	38.22	418.82	ND	NR	NR
MW-1	08-13-91	457.04	40.74	416.30	ND	NR	NR
MW-1	09-12-91	457.04	43.16	413.88	ND	NR	NR
MW-1	10-22-91	457.04	DRY	DRY	ND	DRY	DRY
MW-1	11-13-91	457.04	DRY	DRY	ND	DRY	DRY
MW-1	12-21-91	457.04	DRY	DRY	ND	DRY	DRY
MW-1	01-18-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	02-21-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	03-19-92	457.04	36.16	420.88	ND	NR	NR
MW-1	04-24-92	457.04	38.14	418.90	ND	NR	NR
MW-1	05-20-92	457.04	40.74	416.30	ND	NR	NR
MW-1	06-29-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	07-28-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	08-26-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	09-11-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	10-29-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	11-11-92	457.04	DRY	DRY	ND	DRY	DRY
MW-1	12-14-92	457.04	Not surveyed: inaccessible due to construction activities				
MW-1	01-27-93	457.04	30.10	426.94	ND	NR	NR
MW-1	02-26-93	457.04	24.72	432.32	ND	NR	NR
MW-1	03-30-93	457.04	20.87	436.17	ND	NR	NR
MW-1	04-30-93	457.04	19.46	437.58	ND	NR	NR
MW-1	05-14-93	457.04	19.27	437.77	ND	NR	NR
MW-1	06-17-93	457.04	19.21	437.83	ND	NR	NR
MW-1	07-27-93	457.04	19.95	437.09	ND	NR	NR
MW-1	08-30-93	457.04	20.72	436.32	ND	NR	NR
MW-1	11-04-93	457.04	20.61	436.43	ND	NR	NR
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

Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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-2	09-20-89	457.74	20.67	437.07	ND	NR	NR
MW-2	10-12-89	457.74	18.98	438.76	ND	NR	NR
MW-2	06-21-90	457.74	21.88	435.86	ND	NR	NR
MW-2	09-20-90	457.74	19.90	437.84	ND	NR	NR
MW-2	12-18-90	457.74	19.32	438.42	ND	NR	NR
MW-2	02-21-91	457.74	23.02	434.72	ND	NR	NR
MW-2	03-20-91	457.74	20.01	437.73	ND	NR	NR
MW-2	04-10-91	457.74	19.81	437.93	ND	NR	NR
MW-2	05-20-91	457.74	26.62	431.12	ND	NR	NR
MW-2	06-20-91	457.74	33.15	424.59	ND	NR	NR
MW-2	07-25-91	457.74	37.10	420.64	ND	NR	NR
MW-2	08-13-91	457.74	37.20	420.54	ND	NR	NR
MW-2	09-12-91	457.74	DRY	DRY	ND	DRY	DRY
MW-2	10-22-91	457.74	DRY	DRY	ND	DRY	DRY
MW-2	11-13-91	457.74	DRY	DRY	ND	DRY	DRY
MW-2	12-21-91	457.74	DRY	DRY	ND	DRY	DRY
MW-2	01-18-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	02-21-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	03-19-92	457.74	35.82	421.92	ND	NR	NR
MW-2	04-24-92	457.74	36.64	421.10	ND	NR	NR
MW-2	05-20-92	457.74	37.23	420.51	ND	NR	NR
MW-2	06-29-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	07-28-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	08-26-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	09-11-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	10-29-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	11-11-92	457.74	DRY	DRY	ND	DRY	DRY
MW-2	12-14-92	457.74	Not surveyed: inaccessible due to construction activities				
MW-2	01-27-93	457.74	32.87	424.87	ND	NR	NR
MW-2	02-26-93	457.74	Not surveyed: inaccessible due to construction activities				
MW-2	03-30-93	457.74	20.47	437.27	ND	NR	NR
MW-2	04-30-93	457.74	19.02	438.72	ND	NR	NR
MW-2	05-14-93	457.74	18.65	439.09	ND	NR	NR
MW-2	06-17-93	457.74	18.21	439.53	ND	NR	NR
MW-2	07-27-93	457.74	17.95	439.79	ND	NR	NR
MW-2	08-30-93	457.74	18.43	439.31	ND	NR	NR
MW-2	11-04-93	457.74	19.73	438.01	ND	NR	NR
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

Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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-3	09-20-89	456.97	20.98	435.99	ND	NR	NR
MW-3	10-12-89	456.97	19.66	437.31	ND	NR	NR
MW-3	06-21-90	456.97	21.72	435.25	ND	NR	NR
MW-3	09-20-90	456.97	19.72	437.25	ND	NR	NR
MW-3	12-18-90	456.97	19.21	437.76	ND	NR	NR
MW-3	02-21-91	456.97	22.36	434.61	ND	NR	NR
MW-3	03-20-91	456.97	19.79	437.18	ND	NR	NR
MW-3	04-10-91	456.97	19.35	437.62	ND	NR	NR
MW-3	05-20-91	456.97	25.86	431.11	ND	NR	NR
MW-3	06-20-91	456.97	32.45	424.52	ND	NR	NR
MW-3	07-25-91	456.97	38.06	418.91	ND	NR	NR
MW-3	08-13-91	456.97	38.40	418.57	ND	NR	NR
MW-3	09-12-91	456.97	DRY	DRY	ND	DRY	DRY
MW-3	10-22-91	456.97	DRY	DRY	ND	DRY	DRY
MW-3	11-13-91	456.97	DRY	DRY	ND	DRY	DRY
MW-3	12-21-91	456.97	DRY	DRY	ND	DRY	DRY
MW-3	01-18-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	02-21-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	03-19-92	456.97	36.03	420.94	ND	NR	NR
MW-3	04-24-92	456.97	37.92	419.05	ND	NR	NR
MW-3	05-20-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	06-29-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	07-28-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	08-26-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	09-11-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	10-29-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	11-11-92	456.97	DRY	DRY	ND	DRY	DRY
MW-3	12-14-92	456.97	Not surveyed: inaccessible due to construction activities				
MW-3	01-27-93	456.97	30.36	426.61	ND	NR	NR
MW-3	02-26-93	456.97	24.96	432.01	ND	NR	NR
MW-3	03-30-93	456.97	21.45	435.52	ND	NR	NR
MW-3	04-30-93	456.97	19.43	437.54	ND	NR	NR
MW-3	05-14-93	456.97	19.37	437.60	ND	NR	NR
MW-3	06-17-93	456.97	19.38	437.59	ND	NR	NR
MW-3	07-27-93	456.97	20.10	436.87	ND	NR	NR
MW-3	08-30-93	456.97	20.98	435.99	ND	NR	NR
MW-3	11-04-93	456.97	20.91	436.06	ND	NR	NR
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

Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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	02-21-91	456.55	22.01	434.54	ND	NR	NR
MW-4	03-20-91	456.55	20.31	436.24	ND	NR	NR
MW-4	04-10-91	456.55	19.55	437.00	ND	NR	NR
MW-4	05-20-91	456.55	25.24	431.31	ND	NR	NR
MW-4	06-20-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	07-25-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	08-13-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	09-12-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	10-22-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	11-13-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	12-21-91	456.55	DRY	DRY	ND	DRY	DRY
MW-4	01-18-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	02-21-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	03-19-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	04-24-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	05-20-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	06-29-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	07-28-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	08-26-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	09-11-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	10-29-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	11-11-92	456.55	DRY	DRY	ND	DRY	DRY
MW-4	12-14-92	456.55	Not surveyed: inaccessible due to construction activities				
MW-4	01-27-93	456.55	DRY	DRY	ND	DRY	DRY
MW-4	02-26-93	456.55	23.60	432.95	ND	NR	NR
MW-4	03-30-93	456.55	20.87	435.68	ND	NR	NR
MW-4	04-30-93	456.55	19.73	436.82	ND	NR	NR
MW-4	05-14-93	456.55	19.75	436.80	ND	NR	NR
MW-4	06-17-93	456.55	19.69	436.86	ND	NR	NR
MW-4	07-27-93	456.55	20.40	436.15	ND	NR	NR
MW-4	08-30-93	456.55	21.10	435.45	ND	NR	NR
MW-4	11-04-93	456.55	21.60	434.95	ND	NR	NR
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

Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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-5	06-29-92	455.84	50.53	405.31	ND	NR	NR
MW-5	07-28-92	455.84	54.92	400.92	ND	NR	NR
MW-5	08-26-92	455.84	59.58	396.26	ND	NR	NR
MW-5	09-11-92	455.84	60.88	394.96	ND	NR	NR
MW-5	10-29-92	455.84	DRY	DRY	ND	DRY	DRY
MW-5	11-11-92	455.84	DRY	DRY	ND	DRY	DRY
MW-5	12-14-92	455.84	Not surveyed: inaccessible due to construction activities				
MW-5	01-27-93	455.84	29.08	426.76	ND	NR	NR
MW-5	02-26-93	455.84	23.56	432.28	ND	NR	NR
MW-5	03-30-93	455.84	20.32	435.52	ND	NR	NR
MW-5	04-30-93	455.84	19.57	436.27	ND	NR	NR
MW-5	05-14-93	455.84	19.29	436.55	ND	NR	NR
MW-5	06-17-93	455.84	18.66	437.18	ND	NR	NR
MW-5	07-27-93	455.84	20.16	435.68	ND	NR	NR
MW-5	08-30-93	455.84	Not surveyed:				
MW-5	11-04-93	455.84	21.05	434.79	ND	NR	NR
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

Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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-6	06-29-92	454.93	49.72	405.21	ND	NR	NR
MW-6	07-28-92	454.93	54.63	400.30	ND	NR	NR
MW-6	08-26-92	454.93	59.45	395.48	ND	NR	NR
MW-6	09-11-92	454.93	^60.73	^394.20	0.04	NR	NR
MW-6	10-29-92	454.93	62.14	392.79	ND	NR	NR
MW-6	11-11-92	454.93	^62.42	^392.51	0.03	NR	NR
MW-6	12-14-92	454.93	Not surveyed: inaccessible due to construction activities				
MW-6	01-27-93	454.93	Not surveyed: inaccessible due to construction activities				
MW-6	02-26-93	454.93	22.73	432.20	ND	NR	NR
MW-6	03-30-93	454.93	19.53	435.40	ND	NR	NR
MW-6	04-30-93	454.93	18.76	436.17	ND	NR	NR
MW-6	05-14-93	454.93	^19.19	^435.74	0.01	NR	NR
MW-6	06-17-93	454.93	18.54	436.39	ND	NR	NR
MW-6	07-27-93	454.93	19.47	435.46	ND	NR	NR
MW-6	08-30-93	454.93	^20.33	^434.60	0.01	NR	NR
MW-6	11-04-93	454.93	^20.33	^434.60	0.01	NR	NR
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

Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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	06-29-92	454.92	49.57	405.35	ND	NR	NR
MW-7	07-28-92	454.92	54.60	400.32	ND	NR	NR
MW-7	08-26-92	454.92	59.60	395.32	ND	NR	NR
MW-7	09-11-92	454.92	60.74	394.18	ND	NR	NR
MW-7	10-29-92	454.92	62.23	392.69	ND	NR	NR
MW-7	11-11-92	454.92	62.69	392.23	ND	NR	NR
MW-7	12-14-92	454.92	Not surveyed: inaccessible due to construction activities				
MW-7	01-27-93	454.92	27.97	426.95	ND	NR	NR
MW-7	02-26-93	454.92	22.57	432.35	ND	NR	NR
MW-7	03-30-93	454.92	19.29	435.63	ND	NR	NR
MW-7	04-30-93	454.92	18.79	436.13	ND	NR	NR
MW-7	05-14-93	454.92	18.35	436.57	ND	NR	NR
MW-7	06-17-93	454.92	18.36	436.56	ND	NR	NR
MW-7	07-27-93	454.92	19.49	435.43	ND	NR	NR
MW-7	08-30-93	454.92	20.26	434.66	ND	NR	NR
MW-7	11-04-93	454.92	20.33	434.59	ND	NR	NR
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

Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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-8	06-29-92	456.97	50.40	406.57	ND	NR	NR
MW-8	07-28-92	456.97	55.79	401.18	ND	NR	NR
MW-8	08-26-92	456.97	60.79	396.18	ND	NR	NR
MW-8	09-11-92	456.97	61.97	395.00	ND	NR	NR
MW-8	10-29-92	456.97	63.51	393.46	ND	NR	NR
MW-8	11-11-92	456.97	64.21	392.76	ND	NR	NR
MW-8	12-14-92	456.97	Not surveyed: inaccessible due to construction activities				
MW-8	01-27-93	456.97	25.57	431.40	ND	NR	NR
MW-8	02-26-93	456.97	19.86	437.11	ND	NR	NR
MW-8	03-30-93	456.97	16.69	440.28	ND	NR	NR
MW-8	04-30-93	456.97	15.83	441.14	ND	NR	NR
MW-8	05-14-93	456.97	15.79	441.18	ND	NR	NR
MW-8	06-17-93	456.97	15.79	441.18	ND	NR	NR
MW-8	07-27-93	456.97	16.80	440.17	ND	NR	NR
MW-8	08-30-93	456.97	17.37	439.60	ND	NR	NR
MW-8	11-04-93	456.97	17.60	439.37	ND	NR	NR
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

Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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-9	06-29-92	456.18	50.29	405.89	ND	NR	NR
MW-9	07-28-92	456.18	55.53	400.65	ND	NR	NR
MW-9	08-26-92	456.18	60.62	395.56	ND	NR	NR
MW-9	09-11-92	456.18	61.67	394.51	ND	NR	NR
MW-9	10-29-92	456.18	63.17	393.01	ND	NR	NR
MW-9	11-11-92	456.18	63.68	392.50	ND	NR	NR
MW-9	12-14-92	456.18	Not surveyed: inaccessible due to construction activities				
MW-9	01-27-93	456.18	26.48	429.70	ND	NR	NR
MW-9	02-26-93	456.18	Not surveyed: inaccessible due to construction activities				
MW-9	03-30-93	456.18	17.77	438.41	ND	NR	NR
MW-9	04-30-93	456.18	17.01	439.17	ND	NR	NR
MW-9	05-14-93	456.18	16.55	439.63	ND	NR	NR
MW-9	06-17-93	456.18	16.68	439.50	ND	NR	NR
MW-9	07-27-93	456.18	17.77	438.41	ND	NR	NR
MW-9	08-30-93	456.18	18.74	437.44	ND	NR	NR
MW-9	11-04-93	456.18	18.72	437.46	ND	NR	NR
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-10	03-30-93	456.85	21.33	435.52	ND	NR	NR
MW-10	04-30-93	456.85	20.51	436.34	ND	NR	NR
MW-10	05-14-93	456.85	20.26	436.59	ND	NR	NR
MW-10	06-17-93	456.85	20.30	436.55	ND	NR	NR
MW-10	07-27-93	456.85	20.29	436.56	ND	NR	NR
MW-10	08-30-93	456.85	22.19	434.66	ND	NR	NR
MW-10	11-04-93	456.85	22.11	434.74	ND	NR	NR
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

Table 2
Historical Groundwater Elevation Data

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

Date: 02-20-96

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-11	03-30-93	455.07	20.78	434.29	ND	NR	NR
MW-11	04-30-93	455.07	20.71	434.36	ND	NR	NR
MW-11	05-14-93	455.07	20.01	435.06	ND	NR	NR
MW-11	06-17-93	455.07	20.18	434.89	ND	NR	NR
MW-11	07-27-93	455.07	21.31	433.76	ND	NR	NR
MW-11	08-30-93	455.07	21.09	433.98	ND	NR	NR
MW-11	11-04-93	455.07	21.40	433.67	ND	NR	NR
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-12	03-30-93	455.04	21.33	433.71	ND	NR	NR
MW-12	04-30-93	455.04	20.23	434.81	ND	NR	NR
MW-12	05-14-93	455.04	19.97	435.07	ND	NR	NR
MW-12	06-17-93	455.04	20.00	435.04	ND	NR	NR
MW-12	07-27-93	455.04	20.94	434.10	ND	NR	NR
MW-12	08-30-93	455.04	21.79	433.25	ND	NR	NR
MW-12	11-04-93	455.04	21.95	433.09	ND	NR	NR
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

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
^: groundwater elevation (GWE) and depth to water (DTW) adjusted to include 80 percent of the floating product thickness (FPT):
[GWE: (TOC - DTW) + (FPT x 0.8)]

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

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	09-20-89	80	3	1	0.7	1	--	--	<5000	<50
MW-1	06-21-90	<20	<0.5	0.66	<0.5	<0.5	--	--	13000	<100
MW-1	09-20-90	<50	<0.5	1	<0.5	1.8	--	--	<5000	<50
MW-1	12-18-90	<50	<0.5	1.8	<0.5	1.7	--	--	--	<5000
MW-1	02-21-91	<50	1.2	2.3	<0.5	2.2	--	--	--	<5000
MW-1	05-20-91	<30	<0.3	<0.3	<0.3	<0.3	--	--	--	<75000
MW-1	08-13-91	Not sampled: dry well								
MW-1	11-13-91	Not sampled: dry well								
MW-1	03-19-92	400	<3.5	<1.2	<0.8	<1.0	--	--	--	--
MW-1	06-29-92	Not sampled: dry well								
MW-1	09-11-92	Not sampled: dry well								
MW-1	11-12-92	Not sampled: dry well								
MW-1	03-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-1	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	120000	--
MW-1	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	900	--
MW-1	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	2900	--
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	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

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-2	09-20-89	<50	<0.5	<0.5	<0.5	1	--	--	<5000	<50
MW-2	06-21-90	<20	<0.5	<0.5	<0.5	<0.5	--	--	<5000	<100
MW-2	09-20-90	<50	<0.5	0.7	<0.5	1.4	--	--	<5000	<50
MW-2	12-18-90	<50	0.6	1.5	<0.5	1.9	--	--	<5000	--
MW-2	02-21-91	<50	<0.5	<0.5	<0.5	<0.5	--	--	<5000	--
MW-2	05-20-91	<30	<0.3	<0.3	<0.3	<0.3	--	--	<75000	--
MW-2	08-13-91	Not sampled: dry well								
MW-2	11-13-91	Not sampled: dry well								
MW-2	03-19-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2	06-29-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2	09-11-92	Not sampled: dry well								
MW-2	11-12-92	Not sampled: dry well								
MW-2	03-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
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	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

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-3	09-20-89	170	8.9	0.6	1.1	<1	--	--	<5000	<50
MW-3	06-21-90	<20	<0.5	1	<0.5	<0.5	--	--	10000	<100
MW-3	09-20-90	<50	<0.5	1	<0.5	1.9	--	--	<5000	<50
MW-3	12-18-90	<50	<0.5	1.7	<0.5	2	--	--	<5000	--
MW-3	02-21-91	<50	<0.5	<0.5	<0.5	<0.5	--	--	<5000	--
MW-3	05-20-91	97	1.3	1.1	6.2	8.4	--	--	<75000	--
MW-3	08-13-91	Not sampled: dry well								
MW-3	11-13-91	Not sampled: dry well								
MW-3	03-19-92	220	<1.1	<1.9	<0.6	<0.8	--	--	<5000	<50
MW-3	06-29-92	Not sampled: dry well								
MW-3	09-11-92	Not sampled: dry well								
MW-3	11-12-92	Not sampled: dry well								
MW-3	03-30-93	200*	<4.0	<0.5	<0.5	<0.5	--	--	--	--
MW-3	05-14-93	72*	<3.0	<0.5	<0.5	<0.5	--	--	--	--
MW-3	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
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	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

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-4	02-21-91	3500	410	7.6	30	47	--	--	<5000	--
MW-4	05-20-91	1400	150	6	4.4	3.1	--	--	<75000	--
MW-4	08-13-91	Not sampled: dry well								
MW-4	11-13-91	Not sampled: dry well								
MW-4	03-19-92	Not sampled: dry well								
MW-4	06-29-92	Not sampled: dry well								
MW-4	09-11-92	Not sampled: dry well								
MW-4	11-12-92	Not sampled: dry well								
MW-4	03-31-93	680	110	5.2	3	7.4	--	--	--	--
MW-4	05-14-93	1200	200	6.2	15	9.2	--	--	--	--
MW-4	08-30-93	620	22	0.9	3.6	2.1	--	--	--	--
MW-4	11-04-93	320	11	<0.5	1.3	0.9	--	--	--	--
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-5	06-29-92	8900	1700	640	310	1100	--	--	--	--
MW-5	09-11-92	13000	2200	1500	130	930	--	--	--	--
MW-5	11-12-92	Not sampled: dry well								--
MW-5	03-31-93	9700	1700	430	220	880	--	--	--	--
MW-5	05-14-93	9800	1300	820	270	1100	--	--	--	--
MW-5	08-30-93	Not sampled: well inaccessible								--
MW-5	11-04-93	41000	3500	3100	890	5400	--	--	--	--
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	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

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-6	06-29-92	8600	1800	460	52	450	--	--	--	--
MW-6	09-11-92	Not sampled: well contained floating product								
MW-6	11-12-92	Not sampled: well contained floating product								
MW-6	03-31-93	Not sampled: well contained floating product								
MW-6	05-14-93	Not sampled: well contained floating product								
MW-6	08-30-93	Not sampled: well contained floating product								
MW-6	11-04-93	Not sampled: well contained floating product								
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-7	06-29-92	270	38	3.7	1.1	4.4	--	--	--	--
MW-7	09-11-92	420	20	0.7	<0.5	<0.5	--	--	--	--
MW-7	11-12-92	470	31	1	<0.5	0.8	--	--	--	--
MW-7	03-31-93	190	20	1	<0.5	<0.5	--	--	--	--
MW-7	05-14-93	170	17	0.6	<0.5	0.5	--	--	--	--
MW-7	08-30-93	<50	1.8	<0.5	<0.5	0.5	--	--	--	--
MW-7	11-04-93	<50	6.6	<0.5	<0.5	0.8	--	--	--	--
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	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

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-8	06-29-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	<500	<50
MW-8	09-11-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	<500	<50
MW-8	11-12-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	03-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-8	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
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-9	06-29-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	09-11-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	11-12-92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	03-31-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-9	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
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	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

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	03-31-93	230*	<0.5	<0.5	<1	0.6	--	--	--	--
MW-10	05-14-93	440*	<10	<0.6	<0.9	<0.5	--	--	--	--
MW-10	08-30-93	280*	<4	<0.5	<1.3	0.6	--	--	--	--
MW-10	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
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-11	03-31-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-11	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
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	--	--	--

Table 3
Historical Groundwater Analytical Data
Petroleum Hydrocarbons and Their Constituents

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

Date: 02-14-96

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-12	03-31-93	150	20	<0.5	<0.5	<0.5	--	--	--	--
MW-12	05-14-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	08-30-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-12	11-04-93	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--
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	--	--	--

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
*: chromatogram does not match the typical gasoline fingerprint

Table 4
Historical Groundwater Analytical Data
Volatile Organic Compounds (VOCs) and Metals

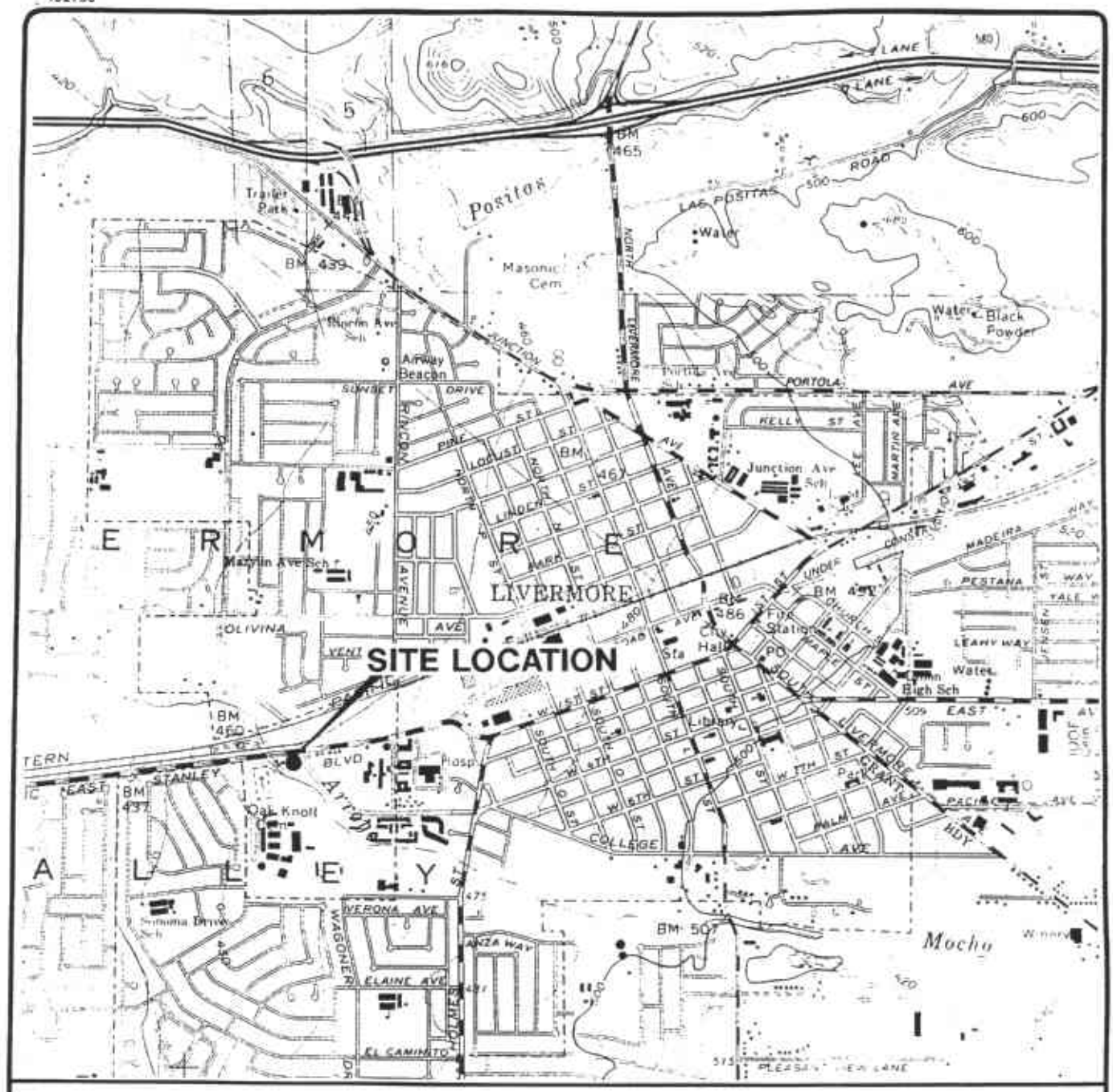
ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California

Date: 02-14-96

Well Designation	Water Sample FieldDate	Total VOCs EPA 5030/ 601	Cadmium EPA 6010	Chromium EPA 6010	Lead EPA 7421	Zinc EPA 6010	Nickel EPA 6010
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	09-20-89	Not analyzed: sampling for additional parameters was not initiated					
MW-2	09-20-89	Not analyzed: sampling for additional parameters was not initiated					
MW-3	09-20-89	Not analyzed: sampling for additional parameters was not initiated					
MW-4	02-21-91	Not analyzed: sampling for additional parameters was not initiated					
MW-5	06-29-92	Not analyzed: sampling for additional parameters was not initiated					
MW-6	06-29-92	Not analyzed: sampling for additional parameters was not initiated					
MW-7	06-29-92	Not analyzed: sampling for additional parameters was not initiated					
MW-8	06-29-92	ND	<3	1780	143	1310	5100
MW-8	09-11-92	--	13	3580	308	2620	10300
MW-8	11-12-92	--	28	3440	221	2550	9840
MW-8	03-30-93	Not analyzed: sampling for additional parameters was discontinued					
MW-9	06-29-92	--	--	--	--	--	--
MW-9	09-11-92	--	--	--	--	--	--
MW-9	11-12-92	--	10	1080	101	859	3070
MW-9	03-31-93	Not analyzed: sampling for additional parameters was discontinued					
MW-10	03-31-93	Not analyzed: sampling for additional parameters was not initiated					
MW-11	03-31-93	Not analyzed: sampling for additional parameters was not initiated					
MW-12	03-31-93	Not analyzed: sampling for additional parameters was not initiated					

µg/L: micrograms per liter
- - : not analyzed
ND: not detected (31 compounds tested for VOCs were nondetectable)

152753

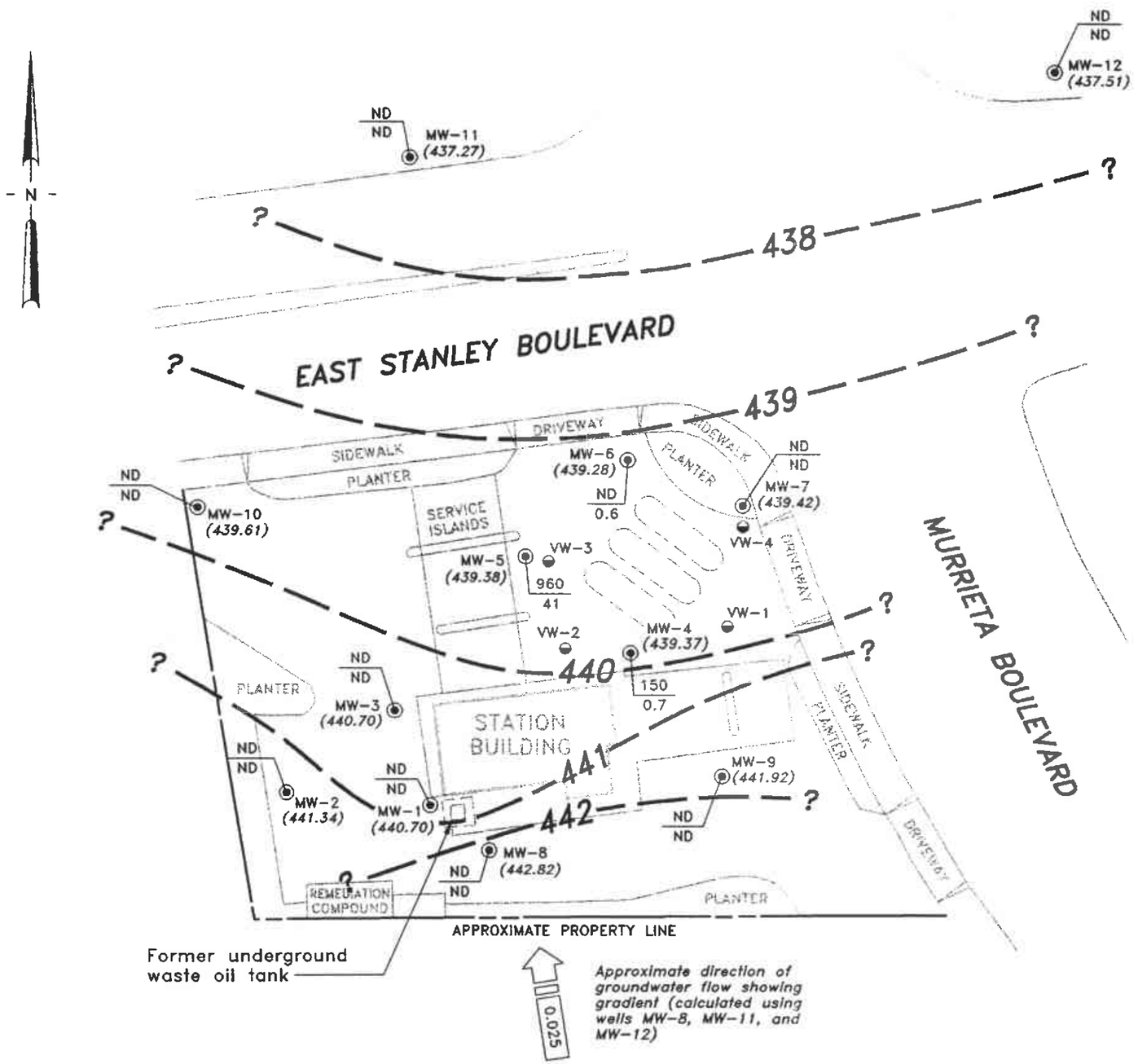


EMCON

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

SITE LOCATION

FIGURE
1
PROJECT NO.
805-134.02



EXPLANATION

- Groundwater monitoring well
- Vapor extraction well
- Existing underground gasoline storage tank
- (439.38) Groundwater elevation (Ft.–MSL) measured 11/28/95
- Groundwater elevation contour (Ft.–MSL)
- 960 / 41 TPHG concentration in groundwater (ug/L); sampled 11/28–29/95; Benzene concentration in groundwater (ug/L); sampled 11/28–29/95
- 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)

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
FOURTH QUARTER 1995

FIGURE NO. 2

PROJECT NO. 805–134.02

G:\805-134\GDO REV 0 09/27/95 09:04:51 KAJ DJ

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 1775-248.01 STATION ADDRESS : 785 East Stanley Blvd. DATE : 11-28-95

ARCO STATION # : 6113 FIELD TECHNICIAN : S Williams DAY : TUESDAY

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	OK	YES	OK	ARCO	OK	16.30	16.30	ND	ND	44.8	
2	MW-2	OK	YES	OK	ARCO	OK	16.40	16.40	ND	ND	38.6	
3	MW-3	OK	YES	OK	ARCO	OK	16.27	16.27	ND	ND	39.0	
4	MW-6	OK	YES	OK	ARCO	OK	15.65	15.65	ND	ND	66.7	
5	MW-7	OK	YES	OK	ARCO	OK	15.50	15.50	ND	ND	67.7	
6	MW-8	OK	YES	OK	ARCO	OK	14.15	14.15	ND	ND	66.6	
7	MW-9	OK	YES	OK	ARCO	OK	14.26	14.26	ND	ND	67.9	
8	MW-10	OK	YES	OK	ARCO	OK	17.24	17.24	ND	ND	49.7	
9	MW-11	OK	YES	OK	ARCO	OK	17.80	17.80	ND	ND	44.5	
10	MW-12	OK	YES	OK	ARCO	OK	17.53	17.53	ND	ND	32.8	
11	MW-4	OK	YES	OK	ARCO	OK	17.18	17.18	ND	ND	26.6	
12	MW-5	OK	YES	OK	ARCO	OK	16.48	16.46	ND	ND	62.6	

SURVEY POINTS ARE TOP OF WELL CASINGS

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775.248-01 SAMPLE ID: MW-1 (44)

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6115

SAMPLED BY: J 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.): 4.64

DEPTH TO WATER (feet): 16.34 CALCULATED PURGE (gal.): 13.94

DEPTH OF WELL (feet): 44.8 ACTUAL PURGE VOL. (gal.): 14

DATE PURGED: 11-28-95 Start (2400 Hr) 1545 End (2400 Hr) 1553

DATE SAMPLED: 11-28-95 Start (2400 Hr) — End (2400 Hr) 1556

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1550	5	7.30	478	63.9	BROWN	HEAVY
1551	10	7.33	422	63.1	Brown	MOD
1553	14	7.32	426	63.1	CLEAR	TRACE

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

___ 2" Bladder Pump ___ Bailer (Teflon®)

✓ Centrifugal Pump ___ Bailer (PVC)

___ Submersible Pump ___ Bailer (Stainless Steel)

___ Well Wizard™ ___ Dedicated

Other: ___

SAMPLING EQUIPMENT

___ 2" Bladder Pump ✓ Bailer (Teflon®)

___ DDL Sampler ___ Bailer (Stainless Steel)

___ Dipper ___ Submersible Pump

___ Well Wizard™ ___ Dedicated

Other: ___

WELL INTEGRITY: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 11-28-95 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 1 of 12

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248-01 SAMPLE ID: MW-2 (38)

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6113

SAMPLED BY: JW LOCATION: [redacted] 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.):	3.62
DEPTH TO WATER (feet):	16.40	CALCULATED PURGE (gal.):	10.87
DEPTH OF WELL (feet):	38.6	ACTUAL PURGE VOL. (gal.):	11

DATE PURGED: 11-29-95 Start (2400 Hr) 1020 End (2400 Hr) 1026

DATE SAMPLED: 11-29-95 Start (2400 Hr) — End (2400 Hr) 1030

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1024	4	7.66	527	60.8	BROWN	HEAVY
1025	8	7.34	528	61.6	CLEAR	TRACE
1026	11	7.26	530	62.0	CLEAR	CLEAR

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

Field QC samples collected at this well: NA

Parameters field filtered at this well: NA

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ 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: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 11-29-95 Time: 950 Meter Serial #: ___ Temperature °F: 59.5

(EC 1000 986/1000) (DI ___) (pH 7 6.98/7.00) (pH 10 10.00/10.00) (pH 4 3.98/—)

Location of previous calibration: ___

Signature: Joe Williams Reviewed By: ___ Page 2 of 12

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775.248.01 SAMPLE ID: MW-3 (38)

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6113

SAMPLED BY: J 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.):	3.71
DEPTH TO WATER (feet):	16.27	CALCULATED PURGE (gal.):	11.13
DEPTH OF WELL (feet):	39.0	ACTUAL PURGE VOL. (gal.):	12

DATE PURGED: 11-28-95 Start (2400 Hr) 1619 End (2400 Hr) 1624

DATE SAMPLED: 11-28-95 Start (2400 Hr) — End (2400 Hr) 1630

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1622	4	7.26	483	68.3	BROWN	HEAVY
1623	8	7.25	488	63.9	CLEAR	TRACE
1624	12	7.25	490	64.0	CLEAR	CLEAR

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)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 11-28-95 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

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WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248-07 SAMPLE ID: MW-4 (2 6)

PURGED BY: S WILLIAMS CLIENT NAME: ARCO 6775

SAMPLED BY: L LOCATION: LIVER MORE

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.): 6.15

DEPTH TO WATER (feet): 17.18 CALCULATED PURGE (gal.): 18.46

DEPTH OF WELL (feet): 26.6 ACTUAL PURGE VOL. (gal.): 18.5

DATE PURGED: 11-29-95 Start (2400 Hr) 1350 End (2400 Hr) 1355

DATE SAMPLED: 11-29-95 Start (2400 Hr) — End (2400 Hr) 1402

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1354	6.5	6.86	713	65.2	GRAY	HEAVY
1357	12.5	6.82	718	65.8	GRAY	MOD
1359	18.5	6.78	724	65.8	CLEAR	TRACE

D. O. (ppm): NA ODOR: STRONG

COLOR (COBALT 0 - 500): NA TURBIDITY (NTU 0 - 200 or 0 - 1000): NA

Field QC samples collected at this well: NA

Parameters field filtered at this well: NA

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 #: ARCO

REMARKS: ___

Meter Calibration: Date: 11-29-95 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

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WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248-01 SAMPLE ID: MW-5 62

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6173

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.):	30.1
DEPTH TO WATER (feet):	16.46	CALCULATED PURGE (gal.):	90.43
DEPTH OF WELL (feet):	62.6	ACTUAL PURGE VOL. (gal.):	90.5

DATE PURGED: 11-29-95 Start (2400 Hr) 1444 End (2400 Hr) 1514

DATE SAMPLED: 11-29-95 Start (2400 Hr) — End (2400 Hr) 1518

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1454	30.5	6.99	798	65.1	CLEAR	TRACE
1504	60.5	7.00	792	65.1	CLEAR	CLEAR
1514	90.5	6.99	793	65.2	CLEAR	CLEAR

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)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: NONE

REMARKS: ___

Meter Calibration: Date: 11-29-95 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

Signature: Joe Williams Reviewed By: SA Page 5 of 12

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WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1975-248-01 SAMPLE ID: MW-6 (66)

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6183

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): NA VOLUME IN CASING (gal.): 33.35

DEPTH TO WATER (feet): 15.65 CALCULATED PURGE (gal.): 100.05

DEPTH OF WELL (feet): 66.7 ACTUAL PURGE VOL. (gal.): 101

DATE PURGED: 11-29-95 Start (2400 Hr) 1143 End (2400 Hr) 1202

DATE SAMPLED: 11-29-95 Start (2400 Hr) — End (2400 Hr) 1209

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1150	34	7.00	822	64.1	CLEAR	TRACE
1156	68	7.00	814	64.3	CLEAR	TRACE
1202	101	6.99	817	64.3	CLEAR	CLEAR

D. O. (ppm): NA ODOR: STRONG COLOR: NA (COBALT 0 - 500) TURBIDITY: NA (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NA

Parameters field filtered at this well: NA

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ 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: OK LOCK #: NLO

REMARKS: ___

Meter Calibration: Date: 11-29-95 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 6 of 12

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WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248-01 SAMPLE ID: MW-7 67

PURGED BY: S WILLIAMS 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.):	34.10
DEPTH TO WATER (feet):	15.50	CALCULATED PURGE (gal.):	102.31
DEPTH OF WELL (feet):	67.7	ACTUAL PURGE VOL. (gal.):	102.5

DATE PURGED: 11-29-95 Start (2400 Hr) 1222 End (2400 Hr) 1249

DATE SAMPLED: 11-29-95 Start (2400 Hr) — End (2400 Hr) 1252

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1232	35	6.98	800	64.1	CLEAR	TRACE
1240	69	6.93	797	64.8	CLEAR	CLEAR
1249	102.5	6.94	799	64.8	CLEAR	CLEAR

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)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: ___ Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: SAT Page 7 of 12

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-24B-01 SAMPLE ID: MW-8 (66)

PURGED BY: J WILLIAMS 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): NA VOLUME IN CASING (gal.): 34.26

DEPTH TO WATER (feet): 14.15 CALCULATED PURGE (gal.): 102.8

DEPTH OF WELL (feet): 66.6 ACTUAL PURGE VOL. (gal.): 104

DATE PURGED: 11-28-95 Start (2400 Hr) 1445 End (2400 Hr) 1514

DATE SAMPLED: 11-28-95 Start (2400 Hr) ___ End (2400 Hr) 1576

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1445	35	7.09	733	65.9	CLEAR	CLEAR
1506	70	6.96	742	64.4	↓	↓
1514	104	6.96	741	64.1	↓	↓

D. O. (ppm): NR ODOR: NONE 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	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ 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: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 11-28-95 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

Signature: Joe Williams Reviewed By: ___ Page 8 of 17

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248 SAMPLE ID: MW-9 67

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6115

SAMPLED BY: J 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.):	35.04
DEPTH TO WATER (feet):	14.26	CALCULATED PURGE (gal.):	105.13
DEPTH OF WELL (feet):	67.9	ACTUAL PURGE VOL. (gal.):	105.5

DATE PURGED: 11-29-95 Start (2400 Hr) 1313 End (2400 Hr) 1354

DATE SAMPLED: 11-29-95 Start (2400 Hr) — End (2400 Hr) 1340

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1320	35.5	6.89	780	63.7	BROWN	MOD
1327	70.5	6.87	784	64.6	CLEAR	TRACE
1334	105.5	6.87	786	64.3	CLEAR	TRACE

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: NO

Parameters field filtered at this well: NO

PURGING EQUIPMENT

___ 2" Bladder Pump ___ Bailer (Teflon®)
✓ Centrifugal Pump ___ Bailer (PVC)
___ Submersible Pump ___ Bailer (Stainless Steel)
___ Well Wizard™ ___ Dedicated
Other: ___

SAMPLING EQUIPMENT

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

WELL INTEGRITY: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 11-29-95 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 9 of 12

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WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248-01 SAMPLE ID: MW-10 (49)

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6113

SAMPLED BY: J 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):	N/A	VOLUME IN CASING (gal.):	21.20
DEPTH TO WATER (feet):	17.34	CALCULATED PURGE (gal.):	63.62
DEPTH OF WELL (feet):	49.7	ACTUAL PURGE VOL. (gal.):	64

DATE PURGED: 11-29-95 Start (2400 Hr) 1055 End (2400 Hr) 1109

DATE SAMPLED: 11-29-95 Start (2400 Hr) — End (2400 Hr) 1114

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1059	22	7.13	701	60.9	BROWN	HEAVY
1104	43	7.19	719	61.9	BROWN	HEAVY
1109	64	7.19	727	62.0	CLEAR	TRACE

D. O. (ppm): N/A ODOR: NONE N/A N/A

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

Field QC samples collected at this well: N/A

Parameters field filtered at this well: N/A

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ 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: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: ___ Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: SAF Page 10 of 12

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248-01 SAMPLE ID: MW-11 (44)

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6113

SAMPLED BY: ↓ LOCATION: LIVERMORE

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.):	4.36
DEPTH TO WATER (feet):	17.80	CALCULATED PURGE (gal.):	13.08
DEPTH OF WELL (feet):	44.5'	ACTUAL PURGE VOL. (gal.):	8

DATE PURGED: 11-28-95 Start (2400 Hr) 1350 End (2400 Hr) 1400

DATE SAMPLED: 11-28-95 Start (2400 Hr) ___ End (2400 Hr) 1408

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1339	4.5'	7.07	700	75.2	BROWN	HEAVY
	DRIED	8 GALLON	1400			
1411	RECHARGE	7.16	742	70.1	BROWN	HEAVY

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

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	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	✓ 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: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 11-28-95 Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 11 of 12

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WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-248-01 SAMPLE ID: MW-12 (32)

PURGED BY: J WILLIAMS CLIENT NAME: ARCO 6113

SAMPLED BY: J 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):	N/A	VOLUME IN CASING (gal.):	2.49
DEPTH TO WATER (feet):	17.53	CALCULATED PURGE (gal.):	7.48
DEPTH OF WELL (feet):	32.8	ACTUAL PURGE VOL. (gal.):	9

DATE PURGED: 11-28-95 Start (2400 Hr) 1316 End (2400 Hr) 1320

DATE SAMPLED: 11-28-95 Start (2400 Hr) — End (2400 Hr) 1325

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1318	3	7.49	616	71.1	BROWN	HEAVY
1319	6	7.15	637	69.4	〃	〃
1320	9	7.08	636	69.0	〃	〃

D. O. (ppm): NR ODOR: WEAK 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)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: OK LOCK #: ARCO

REMARKS: ___

Meter Calibration: Date: 11-28-95 Time: 1300 Meter Serial #: ___ Temperature °F: 71.7

(EC 1000 1089 / 1000) (DI ___) (pH 7 7.02 / 7.00) (pH 10 10.09 / 10.00) (pH 4 4.01 / —)

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 12 of 12

Columbia
Analytical
Services inc.

December 14, 1995

Service Request No: S9501515

John Young
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

Re: **0805-134.02 / TO# 17075.00 / 6113 Livermore**

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on November 30, 1995. 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 11, 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

Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

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:**	S9501515
Project:	0805-134.02 / TO# 17075.00 / 6113 Livermore	**Date Collected:**	11/28,29/95
Sample Matrix:	Water	**Date Received:**	11/30/95
		Date Extracted:	NA

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

		Sample Name:	**MW-1 (44)**	**MW-2 (38)**	**MW-3 (38)**
		Lab Code:	S9501515-001	S9501515-002	S9501515-003
		Date Analyzed:	12/8/95	12/8/95	12/8/95
Analyte	**MRL**				
TPH as Gasoline	50		ND	ND	ND
Benzene	0.5		ND	ND	ND
Toluene	0.5		ND	ND	ND
Ethylbenzene	0.5		ND	ND	ND
Total Xylenes	0.5		ND	ND	ND
Methyl-tert-butyl ether	3		ND	ND	ND

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9501515
Project:	0805-134.02 / TO# 17075.00 / 6113 Livermore	**Date Collected:**	11/28,29/95
Sample Matrix:	Water	**Date Received:**	11/30/95
		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-8 (66)**
	Lab Code:	S9501515-004	S9501515-005	S9501515-006
	Date Analyzed:	12/8/95	12/8/95	12/8/95
Analyte	**MRL**			
TPH as Gasoline	50	ND	ND	ND
Benzene	0.5	0.6	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	0.8	ND	ND
Methyl-tert-butyl ether	3	ND	ND	ND

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9501515
Project:	0805-134.02 / TO# 17075.00 / 6113 Livermore	**Date Collected:**	11/28,29/95
Sample Matrix:	Water	**Date Received:**	11/30/95
		Date Extracted:	NA

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

	Sample Name:	**MW-9 (67)**	**MW-10 (49)**	**MW-11 (44)**
	Lab Code:	S9501515-007	S9501515-008	S9501515-009
	Date Analyzed:	12/8/95	12/8/95	12/8/95
Analyte	**MRL**			
TPH as Gasoline	50	ND	ND	ND
Benzene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	ND	ND	ND
Methyl-tert-butyl ether	3	ND	ND	ND

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9501515
Project:	0805-134.02 / TO# 17075.00 / 6113 Livermore	**Date Collected:**	11/28,29/95
Sample Matrix:	Water	**Date Received:**	11/30/95
		Date Extracted:	NA

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

		Sample Name:	**MW-12 (32)**	**MW-4 (26)**	**MW-5 (62)**
		Lab Code:	S9501515-010	S9501515-011	S9501515-012
		Date Analyzed:	12/8/95	12/8/95	12/11/95
Analyte	**MRL**				
TPH as Gasoline	50		ND	150	960
Benzene	0.5		ND	0.7	41
Toluene	0.5		ND	ND	24
Ethylbenzene	0.5		ND	0.7	38
Total Xylenes	0.5		ND	1.4	210
Methyl-tert-butyl ether	3		ND	ND	<5*

* Raised MRL due to high analyte concentration.

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9501515
Project:	0805-134.02 / TO# 17075.00 / 6113 Livermore	**Date Collected:**	11/28,29/95
Sample Matrix:	Water	**Date Received:**	11/30/95
		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**	**Method Blank**	**Method Blank**
		Lab Code:	S951207-WB	S951208-WB	S951211-WB
		Date Analyzed:	12/7/95	12/8/95	12/11/95
Analyte	**MRL**				
TPH as Gasoline	50		ND	ND	ND
Benzene	0.5		ND	ND	ND
Toluene	0.5		ND	ND	ND
Ethylbenzene	0.5		ND	ND	ND
Total Xylenes	0.5		ND	ND	ND
Methyl-tert-butyl ether	3		ND	ND	ND

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 0805-134.02 / TO# 17075.00 / 6113 Livermore
Sample Matrix: Water

Service Request: S9501515
Date Collected: 11/28,29/95
Date Received: 11/30/95
Date Extracted: NA
Date Analyzed: 12/7-11/95

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-1 (44)	S9501515-001	92	95
MW-2 (38)	S9501515-002	93	93
MW-3 (38)	S9501515-003	92	97
MW-6 (66)	S9501515-004	94	96
MW-7 (67)	S9501515-005	96	92
MW-8 (66)	S9501515-006	95	95
MW-9 (67)	S9501515-007	94	94
MW-10 (49)	S9501515-008	96	96
MW-11 (44)	S9501515-009	94	93
MW-12 (32)	S9501515-010	95	95
MW-4 (26)	S9501515-011	96	96
MW-5 (62)	S9501515-012	92	109
MW-11 (44) MS	S9501515-009MS	96	94
MW-11 (44) DMS	S9501515-009DMS	94	91
Method Blank	S951207-WB	93	92
Method Blank	S951208-WB	95	93
Method Blank	S951211-WB	91	97
	CAS Acceptance Limits:	69-116	69-116

SUR2/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9501515
Project:	0805-134.02 / TO# 17075.00 / 6113 Livermore	**Date Analyzed:**	12/7/95

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	24.6	98	85-115
Toluene	25	24.5	98	85-115
Ethylbenzene	25	24.3	97	85-115
Xylenes, Total	75	74.6	99	85-115
Gasoline	250	234	94	90-110
Methyl-tert-butyl Ether	50	49.0	98	85-115

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9501515
Project:	0805-134.02 / TO# 17075.00 / 6113 Livermore	**Date Collected:**	11/28,29/95
Sample Matrix:	Water	**Date Received:**	11/30/95
		Date Extracted:	NA
		Date Analyzed:	12/7-11/95

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

Sample Name: MW-11 (44)
Lab Code: S9501515-009

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
Benzene	25	25	ND	24.8	24.6	99	98	75-135	1
Toluene	25	25	ND	24.7	24.8	99	99	73-136	<1
Ethylbenzene	25	25	ND	24.7	24.7	99	99	69-142	<1

DMS1S/060194

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 17075.00

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

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: #0805-134.02
3-40ml HCL VOAs
Analyze highest well for MTBE only by EPA 8240. Do not report any other compounds.
HIGHEST WELL ONLY!

Lab number: 9501515

Turnaround time
- Priority Rush 1 Business Day ☐
- Rush 2 Business Days ☐
- Expedited 5 Business Days ☐
- Standard 10 Business Days ☒

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 EPA M602/8020/8015	TPH: Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	Highest well EPA 8240 Report MTBE only, Pulisa	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1(44)	1	3		X		X	HCL	11-28-95	1556		X					X						
MW-2(38)	2	3		X		X	HCL	11-29-95	1030		X					X						
MW-3(35)	3	3		X		X	HCL	11-28-95	1630		X					X						
MW-6(66)	4	3		X		X	HCL	11-29-95	1205		X					X						
MW-7(67)	5	3		X		X	HCL	11-29-95	1252		X					X						
MW-8(66)	6	3		X		X	HCL	11-28-95	1516		X					X						
MW-9(67)	7	3		X		X	HCL	11-29-95	1340		X					X						
MW-10(49)	8	3		X		X	HCL	11-29-95	1114		X					X						
MW-11(44)	9	3		X		X	HCL	11-28-95	1408		X					X						
MW-12(32)	10	3		X		X	HCL	11-28-95	1325		X					X						
MW-4(24)	11	3		X		X	HCL	11-29-95	1402		X					X						
MW-5(62)	12	3		X		X	HCL	11-29-95	1518		X					X						

Condition of sample: OK		Temperature received: Cool	
Relinquished by sampler: Joe [signature]	Date 11-30-95 Time 1002	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory: Jonna Brown	Date 11-30-95 Time 1002

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