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

Date August 22, 1996
Project 20805-132.003

To:

Benzene conc. higher in MW-3 than before. VW2 should be sampled also.

Ms. Eva Chu
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	Second quarter 1996 groundwater monitoring results for ARCO service station 6041, Dublin, California

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

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

John C. Young
Project Manager

cc: Copy entire document:
Kevin Graves, RWQCB - SFBR
Paul Supple, ARCO Products Company
File

Copy transmittal and Table 2:
Scott T. Hooton, BP Oil Company

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

August 8, 1996
Project 20805-132.003

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

Re: Second quarter 1996 groundwater monitoring program results, ARCO service station 6041, Dublin, California

Dear Mr. Supple:

This letter presents the results of the second quarter 1996 groundwater monitoring program at ARCO Products Company (ARCO) service station 6041, 7249 Village Parkway,, Dublin, 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 7/98
NO. 6407
STATE OF CALIFORNIA

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

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August 8, 1996

ARCO QUARTERLY REPORT

Station No.: 6041	Address: 7249 Village Parkway, Dublin, California
EMCON Project No.	20805-132.003
ARCO Environmental Engineer/Phone No.:	Paul Supple /(510) 299-8891
EMCON Project Manager/Phone No.:	John Young /(408) 453-7300
Primary Agency/Regulatory ID No.:	ACHCSA /Eva Chu

WORK PERFORMED THIS QUARTER (Second- 1996):

1. Conducted quarterly groundwater monitoring and sampling for second quarter 1996.
2. Prepared and submitted quarterly report for first quarter 1996.

WORK PROPOSED FOR NEXT QUARTER (Third- 1996):

1. Perform quarterly groundwater monitoring and sampling for third quarter 1996.
2. Prepare and submit quarterly report for second quarter 1996.
3. Initiate permitting for line replacement.

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 :	15 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:	6.90 feet
Groundwater Gradient (Average):	Flat Gradient

ATTACHED:

- Table 1 - Groundwater Monitoring Data, Second Quarter 1996
- Table 2 - Historical Groundwater Elevation and Analytical Data,
- Petroleum Hydrocarbons and Their Constituents
- Table 3 - Historical Groundwater Elevation Data (BP, Shell, and UNOCAL Stations)
- Figure 1 - Site Location
- Figure 2 - Groundwater Data, Second Quarter 1996
- Figure 3 - Groundwater Data (ARCO, BP, Shell, and UNOCAL Stations), Second Quarter 1996
- Appendix A - Field Data Sheets, Second Quarter 1996 Groundwater Monitoring Event
- Appendix B - Analytical Results and Chain of Custody Documentation, Second Quarter 1996 Groundwater Monitoring Event

cc: Eva Chu, ACHCSA
Kevin Graves, RWQCB-SFBR

Table 1
Groundwater Monitoring Data
Second Quarter 1996

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 07-15-96

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
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	05-23-96	336.56	8.73	327.83	ND	FG	FG	05-23-96	560	8.5	<1	1.1	<1	3900	- -
MW-2	05-23-96	334.80	6.90	327.90	ND	FG	FG	05-23-96	540	140	<2.5	13	<2.5	4600	- -
MW-3	05-23-96	335.53	7.70	327.83	ND	FG	FG	05-23-96	6500	690	<10	120	14	8600	- -
MW-4	05-23-96	334.22	6.47	327.75	ND	FG	FG	05-23-96	Not sampled: not scheduled for chemical analysis						
MW-5	05-23-96	335.87	7.87	328.00	ND	FG	FG	05-23-96	Not sampled: not scheduled for chemical analysis						
MW-6	05-23-96	335.84	8.05	327.79	ND	FG	FG	05-23-96	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
ND: none detected
FG: flat gradient; the groundwater gradient over the local area was nearly flat
- - : not analyzed

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20805-132.003

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 07-15-96

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
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-1	02-11-94	336.56	10.35	326.21	ND	NR	NR	02-11-94	2000	<2.5	<2.5	25	5.7	--	--
MW-1	03-13-94	336.56	9.99	326.57	ND	NR	NR								
MW-1	05-17-94	336.56	9.82	326.74	ND	NR	NR	05-17-94	1400	79	1.4	11	2.4	--	--
MW-1	08-25-94	336.56	10.11	326.45	ND	NR	NR	08-25-94	880	2.4	<1	4.6	<1	--	--
MW-1	09-22-94	336.56	11.20	325.36	ND	NR	NR								
MW-1	11-18-94	336.56	10.25	326.31	ND	NR	NR	11-18-94	2500	1.5	<0.5	1.4	<1	--	--
MW-1	02-15-95	336.56	8.53	328.03	ND	NR	NR	02-15-95	820	15	<1	5.2	1.4	--	--
MW-1	05-24-95	336.56	9.00	327.56	ND	ESE	0.002	05-24-95	640	12	<1	7.3	<1	--	--
MW-1	08-25-95	336.56	10.30	326.26	ND	NW	0.006	08-25-95	780	2	<1	2	2	2500	--
MW-1	11-28-95	336.56	11.01	325.55	ND	N	0.006	11-28-95	570	2.2	<0.5	1.4	0.9	--	--
MW-1	02-26-96	336.56	7.35	329.21	ND	E	0.012	03-13-96	1100	28	<7	13	7	3400	--
MW-1	05-23-96	336.56	8.73	327.83	ND	FG	FG	05-23-96	560	8.5	<1	1.1	<1	3900	--
MW-2	02-11-94	334.80	8.59	326.21	ND	NR	NR	02-11-94	<50	2.4	0.7	<0.5	<0.5	--	--
MW-2	03-13-94	334.80	8.09	326.71	ND	NR	NR								
MW-2	05-17-94	334.80	7.99	326.81	ND	NR	NR	05-17-94	150	19	<0.5	2.5	1.2	--	--
MW-2	08-25-94	334.80	9.23	325.57	ND	NR	NR	08-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-2	09-22-94	334.80	9.47	325.33	ND	NR	NR								
MW-2	11-18-94	334.80	8.70	326.10	ND	NR	NR	11-18-94	237	1.9	0.6	<0.5	<1	--	--
MW-2	02-15-95	334.80	6.75	328.05	ND	NR	NR	02-15-95	730	110	1.7	25	66	--	--
MW-2	05-24-95	334.80	6.88	327.92	ND	ESE	0.002	05-24-95	370	110	<1	17	1.9	--	--
MW-2	08-25-95	334.80	7.91	326.89	ND	NW	0.006	08-25-95	150	6	<1	<1	<1	2700	--
MW-2	11-28-95	334.80	9.06	325.74	ND	N	0.006	11-28-95	<50	<0.5	<0.5	<0.5	0.8	--	--
MW-2	02-26-96	334.80	6.65	328.15	ND	E	0.012	03-13-96	350	66	<0.5	11	1.7	<3	--
MW-2	05-23-96	334.80	6.90	327.90	ND	FG	FG	05-23-96	540	140	<2.5	13	<2.5	4600	--

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 07-15-96

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
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-3	02-11-94	335.53	9.60	325.93	ND	NR	NR	02-11-94	220	42	<1.0	84	<1.0	--	--
MW-3	03-13-94	335.53	9.03	326.50	ND	NR	NR								
MW-3	05-17-94	335.53	9.11	326.42	ND	NR	NR	05-17-94	200	44	<0.5	9.3	<0.5	--	--
MW-3	08-25-94	335.53	11.09	324.44	ND	NR	NR	08-25-94	100	4.3	<0.5	1.1	<0.5	--	--
MW-3	09-22-94	335.53	10.21	325.32	ND	NR	NR								
MW-3	11-18-94	335.53	9.79	325.74	ND	NR	NR	11-18-94	1850	3.5	<0.5	0.9	<1	--	--
MW-3	02-15-95	335.53	8.55	326.98	ND	NR	NR	02-15-95	100	14	<0.5	6.3	<0.5	--	--
MW-3	05-24-95	335.53	8.17	327.36	ND	ESE	0.002	05-24-95	110	8	<0.5	2.7	<0.5	--	--
MW-3	08-25-95	335.53	9.27	326.26	ND	NW	0.006	08-25-95	210	3.6	<0.5	2.9	0.6	20000	--
MW-3	11-28-95	335.53	9.91	325.62	ND	N	0.006	11-28-95	81	1.5	<0.5	1.4	<0.5	--	15000
MW-3	02-26-96	335.53	8.42	327.11	ND	E	0.012	03-13-96	16000	1600	1200	300	2000	9500	--
MW-3	05-23-96	335.53	7.70	327.83	ND	FG	FG	05-23-96	6500	690	<10	120	14	8600	--
MW-4	02-11-94	334.22	8.15	326.07	ND	NR	NR	02-11-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	03-13-94	334.22	7.57	326.65	ND	NR	NR								
MW-4	05-17-94	334.22	7.49	326.73	ND	NR	NR	05-17-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	08-25-94	334.22	8.79	325.43	ND	NR	NR	08-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	09-22-94	334.22	8.99	325.23	ND	NR	NR								
MW-4	11-18-94	334.22	8.31	325.91	ND	NR	NR	11-18-94	<50	<0.5	<0.5	<0.5	<1	--	--
MW-4	02-15-95	334.22	7.85	326.37	ND	NR	NR	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-4	05-24-95	334.22	6.68	327.54	ND	ESE	0.002	05-24-95	Not sampled: not scheduled for chemical analysis						
MW-4	08-25-95	334.22	6.93	327.29	ND	NW	0.006	08-25-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-4	11-28-95	334.22	8.21	326.01	ND	N	0.006	11-28-95	Not sampled: not scheduled for chemical analysis						
MW-4	02-26-96	334.22	6.65	327.57	ND	E	0.012	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-4	05-23-96	334.22	6.47	327.75	ND	FG	FG	05-23-96	Not sampled: not scheduled for chemical analysis						

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 07-15-96

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
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW-5	02-11-94	335.87	9.63	326.24	ND	NR	NR	02-11-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-5	03-13-94	335.87	9.26	326.61	ND	NR	NR								
MW-5	05-17-94	335.87	8.99	326.88	ND	NR	NR	05-17-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-5	08-25-94	335.87	10.23	325.64	ND	NR	NR	08-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-5	09-22-94	335.87	10.39	325.48	ND	NR	NR								
MW-5	11-18-94	335.87	9.65	326.22	ND	NR	NR	11-18-94	<50	<0.5	<0.5	<0.5	<1	--	--
MW-5	02-15-95	335.87	7.80	328.07	ND	NR	NR	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-5	05-24-95	335.87	8.10	327.77	ND	ESE	0.002	05-24-95	Not sampled: not scheduled for chemical analysis						
MW-5	08-25-95	335.87	9.43	326.44	ND	NW	0.006	08-25-95	Not sampled: not scheduled for chemical analysis						
MW-5	11-28-95	335.87	10.12	325.75	ND	N	0.006	11-28-95	Not sampled: not scheduled for chemical analysis						
MW-5	02-26-96	335.87	6.73	329.14	ND	E	0.012	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-5	05-23-96	335.87	7.87	328.00	ND	FG	FG	05-23-96	Not sampled: not scheduled for chemical analysis						
MW-6	02-11-94	335.84	9.66	326.18	ND	NR	NR	02-11-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-6	03-13-94	335.84	9.28	326.56	ND	NR	NR								
MW-6	05-17-94	335.84	9.10	326.74	ND	NR	NR	05-17-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-6	08-25-94	335.84	10.39	325.45	ND	NR	NR	08-25-94	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-6	09-22-94	335.84	10.50	325.34	ND	NR	NR								
MW-6	11-18-94	335.84	9.54	326.30	ND	NR	NR	11-18-94	<50	<0.5	<0.5	<0.5	<1	--	--
MW-6	02-15-95	335.84	7.81	328.03	ND	NR	NR	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--
MW-6	05-24-95	335.84	8.35	327.49	ND	ESE	0.002	05-24-95	Not sampled: not scheduled for chemical analysis						
MW-6	08-25-95	335.84	9.71	326.13	ND	NW	0.006	08-25-95	Not sampled: not scheduled for chemical analysis						
MW-6	11-28-95	335.84	10.28	325.56	ND	N	0.006	11-28-95	Not sampled: not scheduled for chemical analysis						
MW-6	02-26-96	335.84	6.60	329.24	ND	E	0.012	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--
MW-6	05-23-96	335.84	8.05	327.79	ND	FG	FG	05-23-96	Not sampled: not scheduled for chemical analysis						

Table 2
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1994 - Present*

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date: 07-15-96

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
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L

ft-MSL: elevation in feet, relative to mean sea level
MWN: ground-water flow direction and gradient apply to the entire monitoring well network
ft/ft: foot per foot
TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
µg/L: micrograms per liter
EPA: United States Environmental Protection Agency
MTBE: Methyl-tert-butyl ether
ND: none detected
NR: not reported; data not available or not measurable
ESE: east-southeast
NW: northwest
N: north
E: east
FG: flat gradient; the groundwater gradient over the local area was nearly flat
- -: not analyzed or not applicable
*: For previous historical groundwater elevation and analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results, ARCO Service Station 6041, Dublin, California,* (EMCON, February 26, 1996).

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 07-15-96

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
BP Station 1116					
MW-1	02-11-94	335.17	8.72	326.45	
MW-1	10-04-94	335.17	9.66	325.51	
MW-1	11-18-94	335.17	Not surveyed:		
MW-1	02-15-95	335.17	6.56	328.61	
MW-1	05-24-95	335.17	6.80	328.37	
MW-1	08-25-95	335.17	8.61	326.56	
MW-1	11-28-95	335.17	9.54	325.63	
MW-1	02-26-96	335.17	Not surveyed:		
MW-1	05-23-96	335.17	7.13	328.04	
MW-2	02-11-94	334.58	8.10	326.48	
MW-2	10-04-94	334.58	9.27	325.31	
MW-2	11-18-94	334.58	Not surveyed:		
MW-2	02-15-95	334.58	5.97	328.61	
MW-2	05-24-95	334.58	6.50	328.08	
MW-2	08-25-95	334.58	8.30	326.28	
MW-2	11-28-95	334.58	9.05	325.53	
MW-2	02-26-96	334.58	Not surveyed:		
MW-2	05-23-96	334.58	6.95	327.63	
MW-3	02-11-94	335.13	8.60	326.53	
MW-3	10-04-94	335.13	9.81	325.32	
MW-3	11-18-94	335.13	Not surveyed:		
MW-3	02-15-95	335.13	6.61	328.52	
MW-3	05-24-95	335.13	6.83	328.30	
MW-3	08-25-95	335.13	8.84	326.29	
MW-3	11-28-95	335.13	8.57	326.56	
MW-3	02-26-96	335.13	Not surveyed:		
MW-3	05-23-96	335.13	7.26	327.87	
AW-4	02-11-94	333.41	6.84	326.57	
AW-4	10-04-94	333.41	8.04	325.37	
AW-4	11-18-94	333.41	6.80	326.61	
AW-4	02-15-95	333.41	4.91	328.50	
AW-4	05-24-95	333.41	5.32	328.09	
AW-4	08-25-95	333.41	7.22	326.19	
AW-4	11-28-95	333.41	7.81	325.60	
AW-4	02-26-96	333.41	Not surveyed:		
AW-4	05-23-96	333.41	5.17	328.24	

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 07-15-96

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
AW-5	02-11-94	334.81	8.20	326.61	
AW-5	10-04-94	334.81	8.70	326.11	
AW-5	11-18-94	334.81	8.20	326.61	
AW-5	02-15-95	334.81	6.65	328.16	
AW-5	05-24-95	334.81	7.27	327.54	
AW-5	08-25-95	334.81	8.52	326.29	
AW-5	11-28-95	334.81	9.32	325.49	
AW-5	02-26-96	334.81	7.13	327.68	
AW-5	05-23-96	334.81	8.58	326.23	
AW-6	02-11-94	334.90	8.04	326.86	
AW-6	10-04-94	334.90	9.33	325.57	
AW-6	11-18-94	334.90	7.17	327.73	
AW-6	02-15-95	334.90	6.19	328.71	
AW-6	05-24-95	334.90	6.87	328.03	
AW-6	08-25-95	334.90	8.29	326.61	
AW-6	11-28-95	334.90	9.20	325.70	
AW-6	02-26-96	334.90	5.78	329.12	
AW-6	05-23-96	334.90	6.94	327.96	
Former Shell Station					
MW-1	02-11-94	334.83	8.62	326.21	
MW-1	08-25-94	334.83	9.24	325.59	
MW-1	11-23-94	334.83	8.74	326.09	
MW-1	02-15-95	334.83	6.84	327.99	
MW-1	05-24-95	334.83	7.91	326.92	
MW-1	08-25-95	334.83	8.11	326.72	
MW-1	11-28-95	334.83	Not surveyed: not scheduled for monitoring		
MW-1	02-26-96	334.83	5.60	329.23	
MW-1	05-23-96	334.83	Not surveyed: not scheduled for monitoring		
MW-2	02-11-94	336.96	11.04	325.92	
MW-2	08-25-94	336.96	11.29	325.67	
MW-2	11-23-94	336.96	10.92	326.04	
MW-2	02-15-95	336.96	8.90	328.06	
MW-2	05-24-95	336.96	10.02	326.94	
MW-2	08-25-95	336.96	10.24	326.72	
MW-2	11-28-95	336.96	Not surveyed: not scheduled for monitoring		
MW-2	02-26-96	336.96	7.54	329.42	
MW-2	05-23-96	336.96	Not surveyed: not scheduled for monitoring		

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 07-15-96

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
MW-3	02-11-94	336.93	10.68	326.25	
MW-3	08-25-94	336.93	11.30	325.63	
MW-3	11-23-94	336.93	10.48	326.45	
MW-3	02-15-95	336.93	8.35	328.58	
MW-3	05-24-95	336.93	9.67	327.26	
MW-3	08-25-95	336.93	9.36	327.57	
MW-3	11-28-95	336.93	Not surveyed: not scheduled for monitoring		
MW-3	02-26-96	336.93	7.04	329.89	
MW-3	05-23-96	336.93	Not surveyed: not scheduled for monitoring		
MW-4	02-11-94	337.14	10.71	326.43	
MW-4	08-25-94	337.14	10.84	326.30	
MW-4	11-23-94	337.14	10.78	326.36	
MW-4	02-15-95	337.14	9.49	327.65	
MW-4	05-24-95	337.14	10.73	326.41	
MW-4	08-25-95	337.14	10.22	326.92	
MW-4	11-28-95	337.14	Not surveyed: not scheduled for monitoring		
MW-4	02-26-96	337.14	7.52	329.62	
MW-4	05-23-96	337.14	Not surveyed: not scheduled for monitoring		
MW-5	02-11-94	334.96	8.97	325.99	
MW-5	08-25-94	334.96	9.19	325.77	
MW-5	11-23-94	334.96	8.78	326.18	
MW-5	02-15-95	334.96	6.88	328.08	
MW-5	05-24-95	334.96	8.04	326.92	
MW-5	08-25-95	334.96	8.34	326.62	
MW-5	11-28-95	334.96	Not surveyed: not scheduled for monitoring		
MW-5	02-26-96	334.96	Not surveyed: not scheduled for monitoring		
MW-5	05-23-96	334.96	Not surveyed: not scheduled for monitoring		
MW-6	02-11-94	335.42	9.02	326.40	
MW-6	08-25-94	335.42	9.79	325.63	
MW-6	11-23-94	335.42	9.20	326.22	
MW-6	02-15-95	335.42	7.36	328.06	
MW-6	05-24-95	335.42	8.80	326.62	
MW-6	08-25-95	335.42	8.50	326.92	
MW-6	11-28-95	335.42	Not surveyed: not scheduled for monitoring		
MW-6	02-26-96	335.42	5.94	329.48	
MW-6	05-23-96	335.42	Not surveyed: not scheduled for monitoring		

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 07-15-96

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
MW-7	02-11-94	333.23	6.12	327.11	
MW-7	08-25-94	333.23	6.76	326.47	
MW-7	11-23-94	333.23	6.75	326.48	
MW-7	02-15-95	333.23	5.40	327.83	
MW-7	05-24-95	333.23	6.82	326.41	
MW-7	08-25-95	333.23	6.46	326.77	
MW-7	11-28-95	333.23	Not surveyed: not scheduled for monitoring		
MW-7	02-26-96	333.23	Not surveyed: not scheduled for monitoring		
MW-7	05-23-96	333.23	Not surveyed: not scheduled for monitoring		
MW-8	02-11-94	335.80	8.80	327.00	
MW-8	08-25-94	335.80	9.52	326.28	
MW-8	11-23-94	335.80	9.08	326.72	
MW-8	02-15-95	335.80	6.67	329.13	
MW-8	05-24-95	335.80	7.56	328.24	
MW-8	08-25-95	335.80	8.60	327.20	
MW-8	11-28-95	335.80	Not surveyed: not scheduled for monitoring		
MW-8	02-26-96	335.80	Not surveyed: not scheduled for monitoring		
MW-8	05-23-96	335.80	Not surveyed: not scheduled for monitoring		
MW-9	02-11-94	334.57	8.88	325.69	
MW-9	08-25-94	334.57	8.79	325.78	
MW-9	11-23-94	334.57	8.65	325.92	
MW-9	02-15-95	334.57	7.36	327.21	
MW-9	05-24-95	334.57	7.75	326.82	
MW-9	08-25-95	334.57	7.90	326.67	
MW-9	11-28-95	334.57	Not surveyed: not scheduled for monitoring		
MW-9	02-26-96	334.57	Not surveyed: not scheduled for monitoring		
MW-9	05-23-96	334.57	Not surveyed: not scheduled for monitoring		
MW-11	02-11-94	334.20	8.21	325.99	
MW-11	08-25-94	334.20	8.68	325.52	
MW-11	11-23-94	334.20	8.27	325.93	
MW-11	02-15-95	334.20	6.46	327.74	
MW-11	05-24-95	334.20	7.69	326.51	
MW-11	08-25-95	334.20	7.70	326.50	
MW-11	11-28-95	334.20	Not surveyed: not scheduled for monitoring		
MW-11	02-26-96	334.20	Not surveyed: not scheduled for monitoring		
MW-11	05-23-96	334.20	Not surveyed: not scheduled for monitoring		

Table 3
Historical Groundwater Elevation Data

BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 07-15-96

Well Desig-nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
MW-12	02-11-94	332.53	7.18	325.35	
MW-12	08-25-94	332.53	7.24	325.29	
MW-12	11-23-94	332.53	7.16	325.37	
MW-12	02-15-95	332.53	5.16	327.37	
MW-12	05-24-95	332.53	6.95	325.58	
MW-12	08-25-95	332.53	5.63	326.90	
MW-12	11-28-95	332.53	Not surveyed: not scheduled for monitoring		
MW-12	02-26-96	332.53	Not surveyed: not scheduled for monitoring		
MW-12	05-23-96	332.53	Not surveyed: not scheduled for monitoring		
MW-13	02-11-94	335.64	9.12	326.52	
MW-13	08-25-94	335.64	9.32	326.32	
MW-13	11-23-94	335.64	9.37	326.27	
MW-13	02-15-95	335.64	8.42	327.22	
MW-13	05-24-95	335.64	9.90	325.74	
MW-13	08-25-95	335.64	8.32	327.32	
MW-13	11-28-95	335.64	Not surveyed: not scheduled for monitoring		
MW-13	02-26-96	335.64	5.76	329.88	
MW-13	05-23-96	335.64	Not surveyed: not scheduled for monitoring		
RW-1	08-25-94	336.19	10.56	325.63	
RW-1	11-23-94	336.19	10.07	326.12	
RW-1	02-15-95	336.19	8.20	327.99	
RW-1	05-24-95	336.19	9.66	326.53	
RW-1	08-25-95	336.19	9.37	326.82	
RW-1	11-28-95	336.19	Not surveyed: not scheduled for monitoring		
RW-1	02-26-96	336.19	Not surveyed: not scheduled for monitoring		
RW-1	05-23-96	336.19	Not surveyed: not scheduled for monitoring		
UNOCAL Station					
MW-1	02-11-94	336.07	9.72	326.35	
MW-1	05-17-94	336.07	9.26	326.81	
MW-1	08-25-94	336.07	10.58	325.49	
MW-1	11-18-94	336.07	9.69	326.38	
MW-1	02-17-95	336.07	7.80	328.27	
MW-1	05-24-95	336.07	8.98	327.09	
MW-1	08-25-95	336.07	9.68	326.39	
MW-1	11-28-95	336.07	10.45	325.62	
MW-1	02-26-96	336.07	6.45	329.62	
MW-1	05-23-96	336.07	Not surveyed: not scheduled for monitoring		

Table 3
Historical Groundwater Elevation Data

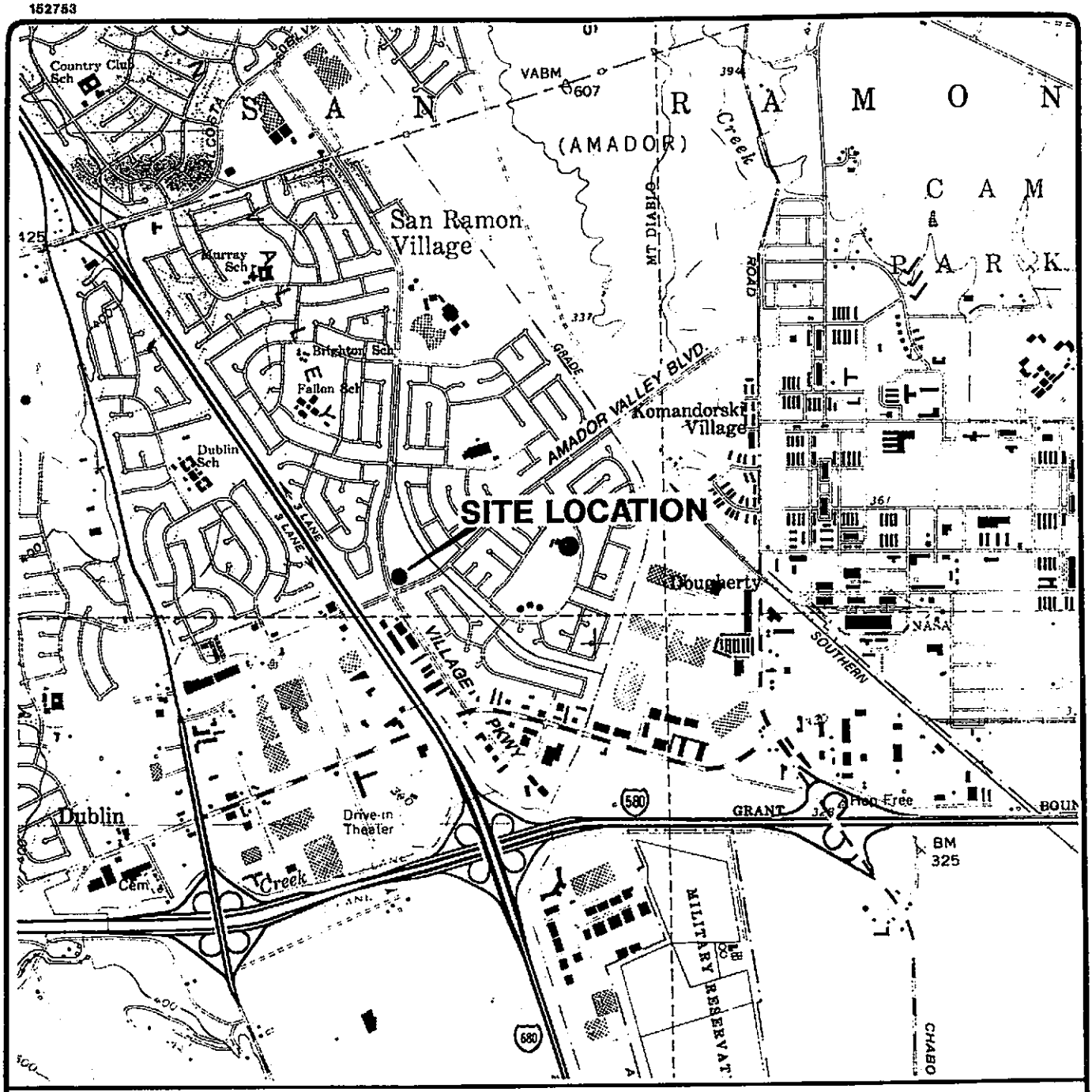
BP Station 1116, 7197 Village Parkway
Former Shell Station, 7194 Amador Valley Boulevard
UNOCAL Station, 7375 Amador Valley Boulevard

Date: 07-15-96

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Comments
MW-2	02-11-94	336.78	9.85	326.93	
MW-2	05-17-94	336.78	9.31	327.47	
MW-2	08-25-94	336.78	10.75	326.03	
MW-2	11-18-94	336.78	9.95	326.83	
MW-2	02-17-95	336.78	7.58	329.20	
MW-2	05-24-95	336.78	8.33	328.45	
MW-2	08-25-95	336.78	9.76	327.02	
MW-2	11-28-95	336.78	10.65	326.13	
MW-2	02-26-96	336.78	6.39	330.39	
MW-2	05-23-96	336.78	Not surveyed: not scheduled for monitoring		
MW-3	02-11-94	336.98	10.01	326.97	
MW-3	05-17-94	336.98	9.49	327.49	
MW-3	08-25-94	336.98	10.93	326.05	
MW-3	11-18-94	336.98	10.15	326.83	
MW-3	02-17-95	336.98	7.62	329.36	
MW-3	05-24-95	336.98	8.26	328.72	
MW-3	08-25-95	336.98	10.03	326.95	
MW-3	11-28-95	336.98	10.85	326.13	
MW-3	02-26-96	336.98	6.39	330.59	
MW-3	05-23-96	336.98	Not surveyed: not scheduled for monitoring		
MW-4	02-11-94	336.43	10.10	326.33	
MW-4	05-17-94	336.43	9.63	326.80	
MW-4	08-25-94	336.43	10.94	325.49	
MW-4	11-18-94	336.43	10.10	326.33	
MW-4	02-17-95	336.43	8.12	328.31	
MW-4	05-24-95	336.43	8.68	327.75	
MW-4	08-25-95	336.43	10.08	326.35	
MW-4	11-28-95	336.43	10.81	325.62	
MW-4	02-26-96	336.43	6.75	329.68	
MW-4	05-23-96	336.43	Not surveyed: not scheduled for monitoring		
MW-5	02-11-94	335.96	10.08	325.88	
MW-5	05-17-94	335.96	9.24	326.72	
MW-5	08-25-94	335.96	10.43	325.53	
MW-5	11-18-94	335.96	10.09	325.87	
MW-5	02-17-95	335.96	7.76	328.20	
MW-5	05-24-95	335.96	7.98	327.98	
MW-5	08-25-95	335.96	9.57	326.39	
MW-5	11-28-95	335.96	10.33	325.63	
MW-5	02-26-96	335.96	7.15	328.81	
MW-5	05-23-96	335.96	8.65	327.31	

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level

152753

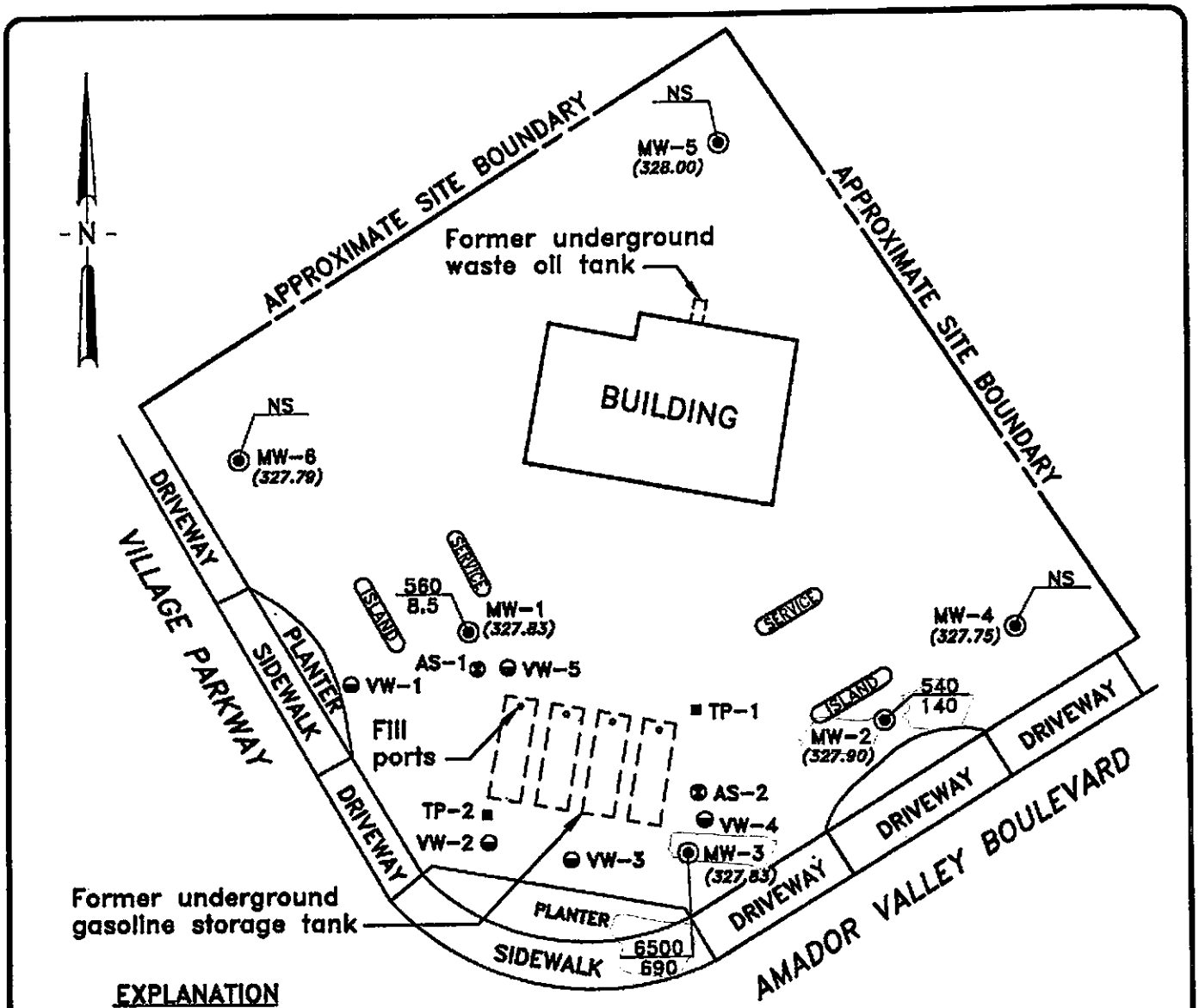


EMCON

ARCO PRODUCTS COMPANY
SERVICE STATION 6041, 7249 VILLAGE PARKWAY
QUARTERLY GROUNDWATER MONITORING
DUBLIN, CALIFORNIA

SITE LOCATION

FIGURE
1
PROJECT NO.
805-132.03



EXPLANATION

- ◉ Groundwater monitoring well
- ■ Tank pit observation well
- ⊖ Vapor extraction well
- ⊛ Air sparge well
- NS Not sampled; not scheduled for chemical analysis
- ND Not detected at or above the method reporting limit for TPHG (50 µg/L) and benzene (0.5 ug/L)

Note: Not contoured due to relatively flat gradient at the site.

- *(327.83)* Groundwater elevation (Ft.–MSL) measured 5/23/96
- ? Groundwater elevation contour (Ft.–MSL)
- 6500 / 690 TPHG concentration (ug/L); sampled 5/23/96; Benzene concentration (ug/L); sampled 5/23/96

SCALE: 0 40 80 FEET (Approximate)

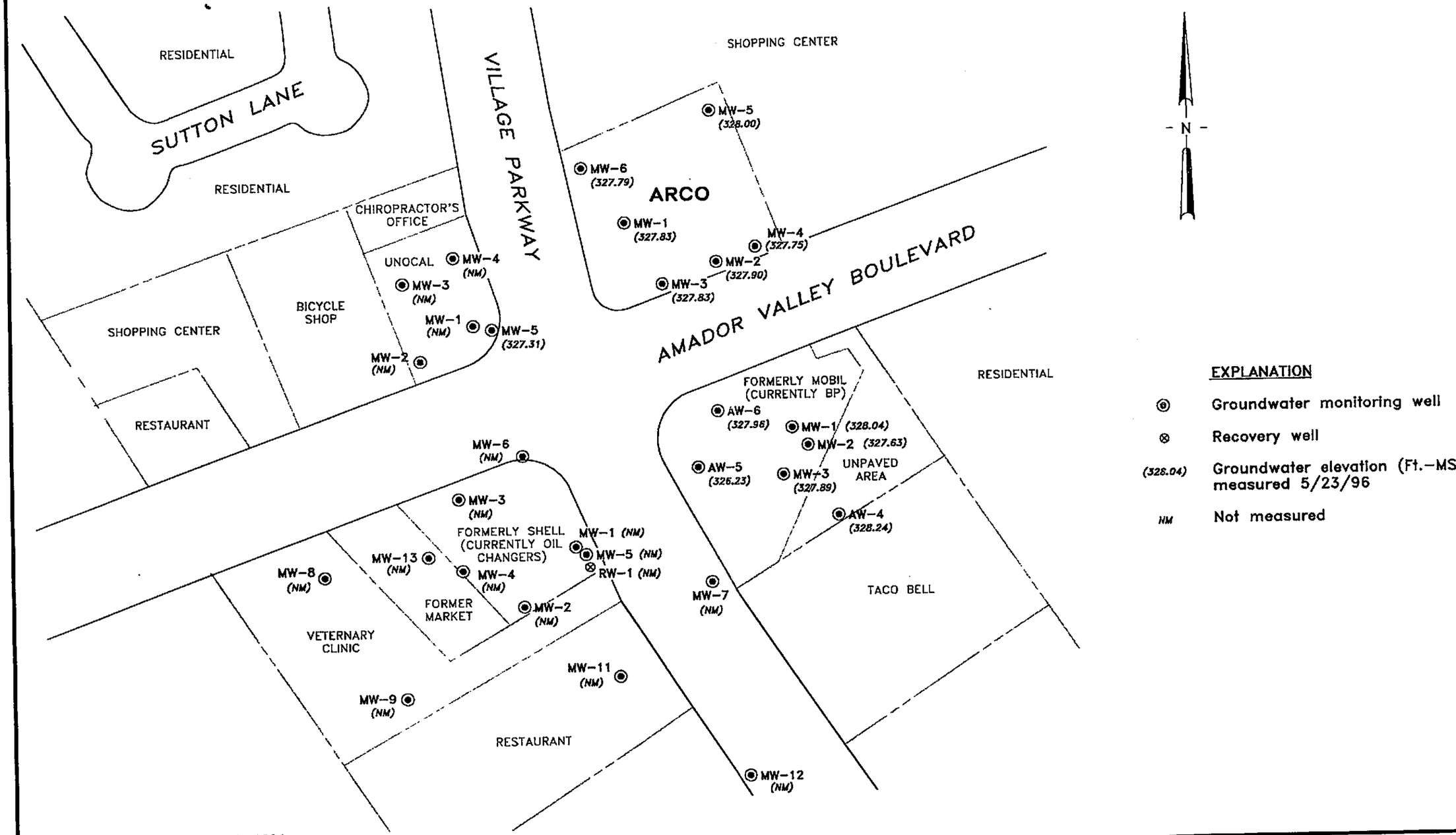
EMCON

ARCO PRODUCTS COMPANY
SERVICE STATION 6041, 7249 VILLAGE PARKWAY
QUARTERLY GROUNDWATER MONITORING
DUBLIN, CALIFORNIA

GROUNDWATER DATA
SECOND QUARTER 1996

FIGURE 2

PROJECT NO. 805-132.003



Base map modified from RESNA, 1994.

emcon

SCALE: 0 40 80 FEET

ARCO PRODUCTS COMPANY
SERVICE STATION 6041, 7249 VILLAGE PARKWAY
QUARTERLY GROUNDWATER MONITORING
DUBLIN, CALIFORNIA

GROUNDWATER DATA
SECOND QUARTER 1996

FIGURE
3
PROJECT NO.
805–132.03

G:\805-132\G00 REV 0 07/12/96 09:56:52 DD DJ

APPENDIX A

FIELD DATA SHEETS, SECOND QUARTER 1996 GROUNDWATER MONITORING EVENT

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : **21775-244.002** STATION ADDRESS : **7249 Village Parkway, Dublin** DATE : 5-23-96

ARCO STATION # : **6041** FIELD TECHNICIAN : MANUEL GALLEGOS DAY : Thursday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket Present	Lock Number	Type Of Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	**MW-4**	good	**15/16**	good	ARCO	Lwc	6.47	6.47	N/D	NR	14.4	
2	**MW-5**	good	**15/16**	good	ARCO	Lwc	7.87	7.87	N/D	NR	17.4	
3	**MW-6**	needs new box	**15/16**	good	ARCO	Lwc	8.05	8.05	N/D	NR	15.8	well box needs to be raised. Lwc will not fit.
4	**MW-2**	good	**15/16**	"	"	"	6.50	6.50	N/D	NR	14.1	water in box.
5	**MW-1**	"	**15/16**	"	"	"	8.73	8.73	N/D	NR	17.5	
6	**MW-3**	"	**15/16**	"	"	"	7.70	7.70	N/D	NR	14.6	

SURVEY POINTS ARE TOP OF WELL CASINGS

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 21775-244.002 SAMPLE ID: MW-1 (17')

PURGED BY: M GALLEGOS CLIENT NAME: ARCO Facility

SAMPLED BY: ✓ LOCATION: Dublin, 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.): 5.72

DEPTH TO WATER (feet): 8.72 CALCULATED PURGE (gal.): 17.18

DEPTH OF WELL (feet): 17.5 ACTUAL PURGE VOL. (gal.): 10.0

DATE PURGED: 5-23-96 Start (2400 Hr) 1127 End (2400 Hr) 1132

DATE SAMPLED: ✓ Start (2400 Hr) 1135 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1129	6.0	6.57	3170	69.5	clear	clear
___	well dried at 10.0 gallons					
1140	Recharge	6.50	3130	69.2	cloudy	mod
___	___	___	___	___	___	___
___	___	___	___	___	___	___

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

- ___ 2" Bladder Pump
- ___ Centrifugal Pump
- ___ 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-1007

REMARKS: Gal samples taken

Meter Calibration: Date: 5-23-96 Time: ___ Meter Serial #: 92054 Temperature °F: ___

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

Location of previous calibration: MW-2

Signature: [signature] Reviewed By: [signature] Page 1 of 3

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 7775-244.02 SAMPLE ID: MW-2(14')

PURGED BY: M. GALLEGOS CLIENT NAME: EPIC & GOULD

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.): 4.70

DEPTH TO WATER (feet): 6.90 CALCULATED PURGE (gal.): 14.11

DEPTH OF WELL (feet): 14.1 ACTUAL PURGE VOL. (gal.): 14.5

DATE PURGED: 5-23-96 Start (2400 Hr) 1035 End (2400 Hr) 1043

DATE SAMPLED: ✓ Start (2400 Hr) 1050 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1038	5.0	6.65	3180	69.4	cloudy	mod
1040	10.0	6.81	3220	70.1	"	"
1043	14.5	6.80	3230	70.2	✓	✓

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

COLOR (visual): NR (COBALT 0 - 500)

TURBIDITY (visual): 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
- ~~X~~ 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: Good LOCK #: EPIC-KEY

REMARKS: All samples taken

Meter Calibration: Date: 5-23-96 Time: 1030 Meter Serial #: 5204 Temperature °F: 73.4

(EC 1000 996 / 1000) (DI ___) (pH 7 696 / 700) (pH 10 1004 / 1000) (pH 4 402 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: RT Page 1 of 3

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 2775.024.002 SAMPLE ID: MW-3(14')

PURGED BY: M. Gallegos CLIENT NAME: ARCO (6044)

SAMPLED BY: " LOCATION: Dublin, 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): N/A VOLUME IN CASING (gal.): 4.50

DEPTH TO WATER (feet): 7.70 CALCULATED PURGE (gal.): 13.52

DEPTH OF WELL (feet): 14.0 ACTUAL PURGE VOL. (gal.): 7.0

DATE PURGED: 5-23-94 Start (2400 Hr) 1100 End (2400 Hr) 1106

DATE SAMPLED: " Start (2400 Hr) 1112 End (2400 Hr) ___

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1103	5.0	6.69	2510	69.3	cloudy	high
___	well dried out	___	7.0 gallons	___	___	___
1113	recharge	6.75	2470	69.3	cloudy	mod
___	___	___	___	___	___	___
___	___	___	___	___	___	___

D. O. (ppm): N/A ODOR: strong

COLOR (visual): N/A (COBALT 0 - 500)

TURBIDITY (visual): N/A (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

___ 2" Bladder Pump
___ Centrifugal Pump
___ 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-1694

REMARKS: All Samples Locked

Meter Calibration: Date: 5/23/94 Time: ___ Meter Serial #: 5204 Temperature °F: ___

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

Location of previous calibration: MW-2

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

MONITORING
PURGING
DISPOSING
SAMPLING

mpds SERVICES, INCORPORATED

Site: UNOCAL #5366
7375 Amador Valley
Dublin

TABLE 1

SUMMARY OF MONITORING DATA

(Monitored and Sampled on May 23, 1996)

Well #	Depth to Water (feet)♦	Product Thickness (feet)	Total Well Depth (feet)
MW5	8.65	0	20.02

Top of Casing Elevation: 335.96 feet MSL.

♦ The depth to water level measurements were taken from the top of the well casings.

2401 Stanwell Drive, Suite 300, Concord, CA 94520
TEL: (510) 602-5120 FAX: (510) 689-1918

ALISTO ENGINEERING GROUP
GROUNDWATER MONITORING

Client: BP Oil
Alisto Project No: 10-17-5-4
Service Station No: 11116

Date: 5-23-96
Field Personnel: Dave Cusack
Site Address: 7197 Village Parkway Dublin CA

FIELD ACTIVITY:

___Groundwater Monitoring
___Groundwater Sampling
___Well Development

QUALITY CONTROL SAMPLES:

___ QC-1 Sample Duplicate (Well ID)
___ QC-2 Trip Blank
___ QC-3 Rinsate Blank

Well ID	Well Diam	Order Measured/ Sampled	Total Depth	Depth to Water	Depth to Product	Product Thick-ness	Comments
MW1	2		25.90	7.13			not sampled
MW2	2		25.45	6.95			
MW3	2		25.90	7.26			
AW4	4		34.15	5.17			✓
S-1 AW5	4		32.90	8.58			
S-2 AW6	4	✓	16.50	6.94			

Notes:

FORM: FS2/121592

APPENDIX B

ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY DOCUMENTATION, SECOND QUARTER 1996 GROUNDWATER MONITORING EVENT

Columbia Analytical Services inc.

June 7, 1996 Service Request No: S9600829

Mr. John Young
EMCON
1921 Ringwood Ave.
San Jose, Ca 95131

Re: 6041 Dublin / Project No. 20805-132.003/TO#19350.00

Dear Mr. Young:

The following pages contain analytical results for sample(s) received by the laboratory on May 24, 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.

If you have questions or further needs, please call me at (408) 428-1283.

Sincerely,

Steven L. Green
Project Chemist

Greg Anderson
Regional QA Coordinator

sg/sh

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:**	S9600829
Project:	6041 Dublin / #20805-132.003/TO#19350.00	**Date Collected:**	5/23/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	NA

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

		Sample Name:	**MW-2(14)**	**MW-1(17)**	**MW-3(14)**
		Lab Code:	S9600829-001	S9600829-002	S9600829-003
		Date Analyzed:	6/3/96	5/31-6/3/96	6/3-4/96
Analyte	**MRL**				
TPH as Gasoline	50		540	560	6500
Benzene	0.5		140	8.5	690
Toluene	0.5		<2.5*	<1*	<10*
Ethylbenzene	0.5		13	1.1	120
Total Xylenes	0.5		<2.5*	<1*	14
Methyl *tert*-Butyl Ether	3		4600	3900	8600

* Raised MRL due to high analyte concentration requiring sample dilution.

3S22/060194

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9600829
Project:	6041 Dublin / #20805-132.003/TO#19350.00	**Date Collected:**	5/23/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		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**	**Method Blank**	**Method Blank**
		Lab Code:	S960531-WB1	S960603-WB1	S960604-WB1
		Date Analyzed:	5/31/96	6/3/96	6/4/96
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	**Service Request:**	S9600829
Project:	6041 Dublin / #20805-132.003/TO#19350.00	**Date Collected:**	5/23/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	NA
		Date Analyzed:	5/31-6/4/96

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-2(14)	S9600829-001	104	105
MW-1(17)	S9600829-002	92	112
MW-3(14)	S9600829-003	102	106
Batch QC (MS)	S9600830-003MS	104	101
Batch QC (DMS)	S9600830-003DMS	106	99
Method Blank	S960531-WB1	100	100
Method Blank	S960603-WB1	105	105
Method Blank	S960604-WB1	107	100
CAS Acceptance Limits:		69-116	69-116

SUR2/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9600829
Project:	6041 Dublin / #20805-132.003/TO#19350.00	**Date Collected:**	5/23/96
Sample Matrix:	Water	**Date Received:**	5/24/96
		Date Extracted:	NA
		Date Analyzed:	

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

Sample Name: Batch QC
Lab Code: S9600830-003

	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	24.0	25.0	96	100	75-135	4
Toluene	25	25	ND	24.4	25.3	98	101	73-136	4
Ethylbenzene	25	25	ND	24.4	25.5	98	102	69-142	4

DMS1S/060194

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	S9600829
Project:	6041 Dublin / #20805-132.003/TO#19350.00	**Date Analyzed:**	5/31/96

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	24.9	100	85-115
Toluene	25	25.1	100	85-115
Ethylbenzene	25	25.3	101	85-115
Xylenes, Total	75	76.4	102	85-115
Gasoline	250	245	98	90-110
Methyl *tert*-Butyl Ether	50	49	98	85-115

ICV25AL/060194

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 9350.00

Chain of Custody

ARCO Facility no. 6041	City (Facility) Dublin	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 EPA 8020/602/8015	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-2(41)	(1)	2		X		X	HCL	5-23-96	1050		X											
MW-1(41)	(2)	2		X		X	HCL	↓	1138		X											
MW-3(41)	(3)	2		X		X	HCL		1112		X											

Method of shipment: Sampler will deliver

Special detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml HCL VOAs

H20805-137.CC3

Lab number: 9600829

Turnaround time

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

Condition of sample: ok		Temperature received: Cool	
Relinquished by sampler	Date 5/24/96 Time 0945	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory Joanne Brown	Date 5/24/96 Time 0945

Distribution: White copy — Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

APC-3292 (2-91)