CAMBRIA

July 30, 2001

AUG 0 4 2001

Ms. Eva Chu
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Re: **Monitoring and Remediation Performance Report**
Second Quarter 2001
ARCO Service Station No. 6041
7249 Village Parkway
Dublin, California
Cambria Project # 438-1643

Dear Ms. Chu:

On behalf of ARCO, Cambria Environmental Technology, Inc. (Cambria) is submitting the attached report which presents the results of the second quarter 2001 groundwater monitoring program at ARCO Service Station No. 6041, located at 7249 Village Parkway, Dublin, California. Operation and performance data for the mobile dual-phase vacuum extraction (DVE) program is also presented. The monitoring program complies with the ACHCSA requirements regarding underground tank investigations.

Please call if you have any questions.

Sincerely,
Cambria Environmental Technology, Inc.

Ron Scheele, RG
Senior Project Manager

Attachment: Quarterly Groundwater Monitoring Report, Second Quarter 2001
Mobile DVE Quarterly Operation And Performance, Second Quarter 2001

cc: Mr. Paul Supple, ARCO, PO Box 6549, Moraga, California 94570
Ms. Karen Petryna, Equiva Services, LLC, PO Box 7869, Burbank, California 91510-7869

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
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Monitoring and Remediation Performance Report

Second Quarter 2001

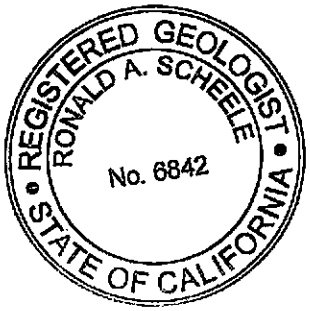
ARCO Service Station No. 6041
7249 Village Parkway
Dublin, California
Cambria Project # 438-1643

Prepared For:

Mr. Paul Supple
ARCO

July 30, 2001

Prepared By:
Cambria Environmental Technology, Inc.
6262 Hollis Street
Emeryville, California 94608



Written by:

Jason D. Olson
Senior Staff Environmental Scientist

Ron Scheele, RG
Senior Project Manager

CAMBRIA

Date: July 30, 2001
Quarter: 2nd Quarter, 2001

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.: 6041	Address: 7249 Village Parkway, Dublin, California
ARCO Environmental Engineer/Phone No.:	Paul Supple / (925) 299-8891
Consulting Co./Contact Person:	Cambria Environmental Technology, Inc. / Ron Scheele, RG
Consultant Project No.:	438-1643
Primary Agency/Regulatory ID No.:	ACHCSA

WORK PERFORMED THIS QUARTER (SECOND - 2001):

1. Submitted quarterly groundwater monitoring report for first quarter, 2001.
2. Performed quarterly groundwater monitoring and sampling on April 17, 2001.
3. Prepared remediation piping design for upcoming station remodel.
4. Performed final monthly mobile dual phase vacuum extraction (DVE) remediation event on May 1, 2001.

WORK PROPOSED FOR NEXT QUARTER (THIRD – 2001):

1. Prepare and submit quarterly groundwater monitoring report for second quarter 2001.
2. Perform quarterly groundwater monitoring and sampling for third quarter 2001.
3. Perform underground storage tank and product piping removal sampling during station upgrade activities.
4. Install remediation piping during station upgrade activities.
5. Evaluate DVE remedial effectiveness.

MONITORING:

Current Phase of Project:	Interim Remediation
Frequency of Groundwater Sampling	Quarterly: MW-1, MW-3, VW-2, Shell MW-6, Shell MW-7 Semi-annual: MW-2 (1st/3rd)
Frequency of Groundwater Monitoring	Quarterly
Is Free Product (FP) Present On-site:	No
Bulk Soil Removed to Date :	15 cubic yards of TPH impacted soil
Water Wells or Surface Waters, within 2000 ft., impacted by site:	None
Current Remediation Techniques:	DVE (8 hours monthly)
Average Depth to Groundwater:	9.49 feet
Groundwater Flow Direction and Gradient	0.015 ft/ft toward south-southwest

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Date: July 30, 2001
Quarter: 2nd Quarter, 2001

MOBILE DVE QUARTERLY OPERATION AND PERFORMANCE

Event Frequency:	Monthly (began on 11/22/00)
Event Duration This Quarter (average):	6.75 hours
Total Extraction Time – This Quarter:	6.75 hours
To Date:	44.50 hours
Extraction Wells:	TP-1, TP-2, MW-1, MW-3, VW-2 discontinued 12/13/00
Total TPHg removed this quarter:	3.90 pounds
Total TPHg removed to date:	< 9.86 pounds
Total Benzene removed this quarter	0.08 pounds
Total Benzene removed to date:	< 0.32 pounds
Total MTBE removed this quarter:	1.18 pounds
Total MTBE removed to date:	5.39 pounds

SOIL VAPOR EXTRACTION

TPHg Vapor Conc. End of Period (lab):	5,500 ppmv (MW-1 on 5/01/01)
Benzene Vapor Conc. End of Period (lab):	88 ppmv (MW-1 on 5/01/01)
MTBE Vapor Conc. End of Period (lab):	371 ppmv (MW-1 on 5/01/01)
System vapor flow rates:	21.5 to 34.1 cfm

GROUNDWATER EXTRACTION

Groundwater extracted this quarter:	2,300 gallons
Total groundwater extracted:	8,129 gallons
System groundwater flow rates:	0.25 to 14.13 gallons per minute
Source of groundwater analytical data:	2nd Quarter 2001
Max TPHg groundwater concentration (lab):	16,400 ug/L (MW-3)
Max Benzene groundwater concentration (lab):	1,680 ug/L (MW-3)
Max MTBE groundwater concentration (lab):	48,700 ug/L (MW-3)

DISCUSSION:

Based on field measurements collect on April 17, 2001, groundwater beneath the site flows towards the south-southwest at a gradient of 0.015 ft/ft. This is consistent with the historic groundwater flow direction and gradient.

Hydrocarbon concentrations detected this quarter are consistent with the previous sampling event with the exception of well MW-3, which showed a decrease in MTBE. The maximum TPHg, benzene, and MTBE concentrations were detected in well MW-3 at 16,400, 1,680, and 48,700 micrograms per liter (µg/L), respectively.

Six mobile DVE events have been performed at the site since November 22, 2000. Site DVE remediation effectiveness will be assessed after the completion of the third quarter groundwater sampling event and station upgrade activities.

ATTACHMENTS:

- Figure 1 - Groundwater Elevation Contour and Analytical Summary Map
- Table 1 - Groundwater Monitoring Data
- Table 2 - Groundwater Flow Direction and Gradient
- Table 3 - Groundwater Extraction – Mass Removal Data
- Table 4 - Soil Vapor Extraction – Mass Removal Data
- Appendix A - Sampling and Analysis Procedures
- Appendix B - Certified Analytical Reports and Chain-of-Custody Documentation
- Appendix C - Field Data Sheets

Groundwater Elevation Contour and Analytical Summary Map

April 17, 2001

EXPLANATION

- MW-1 — Groundwater monitoring well
- VW-3 — Vapor extraction well
- RW-1 — Shell monitoring well
- AS-1 — Air Sparge well
- TP-1 — Tank Pit Observation well
- 325.80 — Groundwater elevation contour line
- Anomalous groundwater elevation not used in contouring
- Well ID / ELEV / TPHg / Benzene / MTBE — Well Designation; Groundwater Elevation; Concentration of total petroleum hydrocarbons as gasoline, benzene, and MTBE in groundwater in micrograms per liter (ug/l). Samples collected on 04/17/01
- Approximate goundwater flow direction and gradient

SHOPPING CENTER

AMADOR VALLEY BOULEVARD

MW-4* 325.32

MW-2 325.68

MW-5 325.95

325.90

325.90

325.70

ARCO STATION BUILDING

TP-1

AS-2

MW-3 325.59

EXISTING USTs

VW-5

VW-3

325.50

MW-1 325.47

AS-1

TP-2

VW-2

325.50

VW-1

325.70

MW-6 325.81

BP STATION BUILDING

FORMER USTs

MW-7 <50.0 <0.50 <2.50

VILLAGE PARKWAY

MW-8 <50.0 <0.50 <2.50

OIL CHANGERS (FORMER SHELL SITE)

FORMER MARKET

UNOCAL SITE

CHIROPRACTOR'S OFFICE

N

0 20 40 80

Scale (ft)

ARCO Service Station 6041
7249 Village Parkway
Dublin, California

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FIGURE **1**

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-1	02-15-95	336.56	8.53	0.00	328.03	02-15-95	820	15	<1	5.2	1.4	--	--		
MW-1	05-24-95	336.56	9.00	0.00	327.56	05-24-95	640	12	<1	7.3	<1	--	--		
MW-1	08-25-95	336.56	10.30	0.00	326.26	08-25-95	780	2	<1	2	2	2,500	--		
MW-1	11-28-95	336.56	11.01	0.00	325.55	11-28-95	570	2.2	<0.5	1.4	0.9	--	--		
MW-1	02-26-96	336.56	7.35	0.00	329.21	03-13-96	1,100	28	<7	13	7	3,400	--		
MW-1	05-23-96	336.56	8.73	0.00	327.83	05-23-96	560	8.5	<1	1.1	<1	3,900	--		
MW-1	08-23-96	336.56	10.25	0.00	326.31	08-23-96	860	<1	<1	<4	2	5,600	--		
MW-1	03-21-97	336.56	9.35	0.00	327.21	03-21-97	520	12	<0.5	2.7	1.5	6,200	--		
MW-1	08-20-97	336.56	10.75	0.00	325.81	08-20-97	<5,000	<50	<50	<50	<50	7,400	--		
MW-1	11-21-97	336.56	11.10	0.00	325.46	11-21-97	<5,000	<50	<50	<50	<50	8,500	--		
MW-1	02-12-98	336.56	7.05	0.00	329.51	02-12-98	210	<0.5	<0.5	<0.5	<0.5	8,900	--	1.71	P
MW-1	07-31-98	336.56	10.04	0.00	326.52	07-31-98	<20,000	<200	<200	<200	<200	18,000	--	2.43	P
MW-1	02-17-99	336.56	8.50	0.00	328.06	02-17-99	<20,000	<200	<200	<200	<200	16,000	--	1.0	
MW-1	08-24-99	336.56	10.40	0.00	326.16	08-24-99	190	<0.5	4.4	<0.5	1.1	15,000	--	NR	P
MW-1	03-01-00	336.56	8.85	0.00	327.71	03-01-00	310	20	0.5	7.6	4	80,000	--	1.57	P
MW-1	08-18-00	336.56	9.35	0.00	327.21	08-18-00	<10,000	<100	<100	<100	<100	48,400	63,700	1.50	P
MW-1	12-27-00	336.56	10.81	0.00	325.75	12-27-00	<10,000	309	<100	<100	289	44,400	--	0.51	P
MW-1	02-09-01	336.56	10.65	0.00	325.91	02-09-01	2,820	368	<25.0	116	176	23,300	--	0.58	P
DUP	02-09-01	NR	NR	NR	NR	02-09-01	3,490	432	9.56	146	235	31,800	--	NR	
MW-1	**04-17-01**	**336.56**	**11.09**	**0.00**	**325.47**	**04-17-01**	**2,900**	**66.0**	**<10.0**	**33.2**	**25.1**	**46,500**	**--**	**0.63**	**P**
DUP	**04-17-01**	**NR**	**NR**	**NR**	**NR**	**04-17-01**	**2,600**	**70.1**	**<20.0**	**32.7**	**30.6**	**45,400**	**--**	**NR**	
MW-2	02-15-95	334.80	6.75	0.00	328.05	02-15-95	730	110	1.7	25	66	--	--		
MW-2	05-24-95	334.80	6.88	0.00	327.92	05-24-95	370	110	<1	17	1.9	--	--		
MW-2	08-25-95	334.80	7.91	0.00	326.89	08-25-95	150	6	<1	<1	<1	2,700	--		
MW-2	11-28-95	334.80	9.06	0.00	325.74	11-28-95	<50	<0.5	<0.5	<0.5	0.8	--	--		
MW-2	02-26-96	334.80	6.65	0.00	328.15	03-13-96	350	66	<0.5	11	1.7	<3	--		
MW-2	05-23-96	334.80	6.90	0.00	327.90	05-23-96	540	140	<2.5	13	<2.5	4,600	--		
MW-2	08-23-96	334.80	8.45	0.00	326.35	08-23-96	180	0.8	2	0.7	2.6	4,000	--		

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MW-2	03-21-97	334.80	7.28	0.00	327.52	03-21-97	410	90	<1	14	4	3,800	--		
MW-2	08-20-97	334.80	8.87	0.00	325.93	08-20-97	<5,000	<50	<50	<50	<50	3,100	--		
MW-2	11-21-97	334.80	9.28	0.00	325.52	11-21-97	<2,000	<20	<20	<20	<20	2,600	--		
MW-2	02-12-98	334.80	5.90	0.00	328.90	02-12-98	310	54	<0.5	6.2	1.1	3,800	--	3.76	P
MW-2	07-31-98	334.80	8.12	0.00	326.68	07-31-98	6,100	52	220	110	1100	7,700	--	2.96	P
MW-2	02-17-99	334.80	7.18	0.00	327.62	02-17-99	<5,000	<50	<50	<50	<50	4,200	--	1.0	P
MW-2	08-24-99	334.80	8.68	0.00	326.12	08-24-99	200	1.8	16	3.0	32	3,100	--	NR	P
MW-2	03-01-00	334.80	7.02	0.00	327.78	03-01-00	760	24	12	13	59	6,300	--	1.92	P
MW-2	08-18-00	334.80	7.75	0.00	327.05	08-18-00	<500	<5.00	<5.00	<5.00	<5.00	1,610	1,980	2.03	P
MW-2	12-27-00	334.80	8.85	0.00	325.95	Not Sampled: Well sampled during first and third quarters								NR	
MW-2	02-09-01	334.80	8.50	0.00	326.30	02-09-01	<50.0	<0.500	<0.500	<0.500	<0.500	9.11		0.53	P
MW-2	**04-17-01**	**334.80**	**9.12**	**0.00**	**325.68**	**Not Sampled: Well sampled during first and third quarters**								**NR**	
MW-3	02-15-95	335.53	8.55	0.00	326.98	02-15-95	100	14	<0.5	6.3	<0.5	--	--		
MW-3	05-24-95	335.53	8.17	0.00	327.36	05-24-95	110	8	<0.5	2.7	<0.5	--	--		
MW-3	08-25-95	335.53	9.27	0.00	326.26	08-25-95	210	3.6	<0.5	2.9	0.6	20,000	--		
MW-3	11-28-95	335.53	9.91	0.00	325.62	11-28-95	81	1.5	<0.5	1.4	<0.5	--	15,000		
MW-3	02-26-96	335.53	8.42	0.00	327.11	03-13-96	16,000	1,600	1,200	300	2,000	9,500	--		
MW-3	05-23-96	335.53	7.70	0.00	327.83	05-23-96	6,500	690	<10	120	14	8,600	--		
MW-3	08-23-96	335.53	9.25	0.00	326.28	08-23-96	1,700	85	2	61	5.3	11,000	--		
MW-3	03-21-97	335.53	8.72	0.00	326.81	03-21-97	100	2	<1	1	<1	6,600	--		
MW-3	08-20-97	335.53	9.73	0.00	325.80	08-20-97	<5,000	<50	<50	<50	<50	7,700	--		
MW-3	11-21-97	335.53	10.10	0.00	325.43	11-21-97	<5,000	<50	<50	<50	<50	9,700	--		
MW-3	02-12-98	335.53	6.68	0.00	328.85	02-12-98	110	11	<0.5	<0.5	1.9	10,000	--	1.02	P
MW-3	07-31-98	335.53	7.98	0.00	327.55	07-31-98	<10,000	<100	<100	<100	<100	13,000	--	2.59	P
MW-3	02-17-99	335.53	8.40	0.00	327.13	02-17-99	<20,000	<200	<200	<200	<200	23,000	--	1.0	P
MW-3	08-24-99	335.53	9.45	0.00	326.08	08-24-99	200	0.6	5.6	0.6	1.7	22,000	--	NR	P
MW-3	03-01-00	335.53	8.32	0.00	327.21	03-01-00	320	32	1.0	6.1	4	58,000	--	2.42	P
MW-3	08-18-00	335.53	8.35	0.00	327.18	08-18-00	<10,000	<100	<100	<100	<100	46,200	55,600	1.59	P

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7249 Village Parkway, Dublin, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
DUP	08-18-00	NR	NR	NR	NR	08-18-00	<10,000	<100	<100	<100	<100	45,500	51,700	NR	
MW-3	12-27-00	335.53	9.75	0.00	325.78	12-27-00	29,700	1,620	1,730	<250	6,230	62,600	--	1.59	P
MW-3	02-09-01	335.53	9.61	0.00	325.92	02-09-01	29,300	2,590	3,530	440	7,080	85,500	--	0.51	P
MW-3	**04-17-01**	**335.53**	**9.94**	**0.00**	**325.59**	**04-17-01**	**16,400**	**1,680**	**<25.0**	**310**	**2,290**	**48,700**	**--**	**0.41**	**P**
MW-4	02-15-95	334.22	7.85	0.00	326.37	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-4	05-24-95	334.22	6.68	0.00	327.54	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-4	08-25-95	334.22	6.93	0.00	327.29	08-25-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-4	11-28-95	334.22	8.21	0.00	326.01	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-4	02-26-96	334.22	6.65	0.00	327.57	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-4	05-23-96	334.22	6.47	0.00	327.75	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-4	08-23-96	334.22	7.66	0.00	326.56	Not sampled: well not part of sampling program									
MW-4	03-21-97	334.22	6.84	0.00	327.38	Not sampled: well not part of sampling program									
MW-4	08-20-97	334.22	8.32	0.00	325.90	Not sampled: well not part of sampling program									
MW-4	11-21-97	334.22	8.65	0.00	325.57	Not sampled: well not part of sampling program									
MW-4	02-12-98	334.22	6.35	0.00	327.87	Not sampled: well not part of sampling program									
MW-4	07-31-98	334.22	6.84	0.00	327.38	Not sampled: well not part of sampling program									
MW-4	02-17-99	334.22	7.50	0.00	326.72	Not sampled: well not part of sampling program									
MW-4	08-24-99	334.22	9.50	0.00	324.72	Not sampled: well not part of sampling program									
MW-4	03-01-00	334.22	6.93	0.00	327.29	Not sampled: well not part of sampling program									
MW-4	08-18-00	334.22	7.03	0.00	327.19	Not sampled: well not part of sampling program									
MW-4	12-27-00	334.22	8.10	0.00	326.12	Not sampled: well not part of sampling program									
MW-4	02-09-01	334.22	7.97	0.00	326.25	Not sampled: well not part of sampling program									
MW-4	**04-17-01**	**334.22**	**8.90**	**0.00**	**325.32**	**Not sampled: well not part of sampling program**									
MW-5	02-15-95	335.87	7.80	0.00	328.07	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-5	05-24-95	335.87	8.10	0.00	327.77	Not sampled: well sampled annually, during the first quarter									
MW-5	08-25-95	335.87	9.43	0.00	326.44	Not sampled: well sampled annually, during the first quarter									
MW-5	11-28-95	335.87	10.12	0.00	325.75	Not sampled: well sampled annually, during the first quarter									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

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7249 Village Parkway, Dublin, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-5	02-26-96	335.87	6.73	0.00	329.14	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-5	05-23-96	335.87	7.87	0.00	328.00	Not sampled: well sampled annually, during the first quarter									
MW-5	08-23-96	335.87	9.46	0.00	326.41	Not sampled: well not part of sampling program									
MW-5	03-21-97	335.87	8.23	0.00	327.64	Not sampled: well not part of sampling program									
MW-5	08-20-97	335.87	9.92	0.00	325.95	Not sampled: well not part of sampling program									
MW-5	11-21-97	335.87	10.18	0.00	325.69	Not sampled: well not part of sampling program									
MW-5	02-12-98	335.87	6.45	0.00	329.42	Not sampled: well not part of sampling program									
MW-5	07-31-98	335.87	8.98	0.00	326.89	Not sampled: well not part of sampling program									
MW-5	02-17-99	335.87	7.65	0.00	328.22	Not sampled: well not part of sampling program									
MW-5	08-24-99	335.87	8.10	0.00	327.77	Not sampled: well not part of sampling program									
MW-5	03-01-00	335.87	7.31	0.00	328.56	Not sampled: well not part of sampling program									
MW-5	08-18-00	335.87	8.65	0.00	327.22	Not sampled: well not part of sampling program									
MW-5	12-27-00	335.87	9.80	0.00	326.07	Not sampled: well not part of sampling program									
MW-5	02-09-01	335.87	9.65	0.00	326.22	Not sampled: well not part of sampling program									
MW-5	**04-17-01**	**335.87**	**9.92**	**0.00**	**325.95**	**Not sampled: well not part of sampling program**									
MW-6	02-15-95	335.84	7.81	0.00	328.03	02-15-95	<50	<0.5	<0.5	<0.5	<0.5	--	--		
MW-6	05-24-95	335.84	8.35	0.00	327.49	Not sampled: well sampled annually, during the first quarter									
MW-6	08-25-95	335.84	9.71	0.00	326.13	Not sampled: well sampled annually, during the first quarter									
MW-6	11-28-95	335.84	10.28	0.00	325.56	Not sampled: well sampled annually, during the first quarter									
MW-6	02-26-96	335.84	6.60	0.00	329.24	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--		
MW-6	05-23-96	335.84	8.05	0.00	327.79	Not sampled: well sampled annually, during the first quarter									
MW-6	08-23-96	335.84	9.58	0.00	326.26	Not sampled: well not part of sampling program									
MW-6	03-21-97	335.84	8.39	0.00	327.45	Not sampled: well not part of sampling program									
MW-6	08-20-97	335.84	9.98	0.00	325.86	Not sampled: well not part of sampling program									
MW-6	11-21-97	335.84	10.31	0.00	325.53	Not sampled: well not part of sampling program									
MW-6	02-12-98	335.84	3.15	0.00	332.69	Not sampled: well not part of sampling program									
MW-6	07-31-98	335.84	9.29	0.00	326.55	Not sampled: well not part of sampling program									
MW-6	02-17-99	335.84	7.72	0.00	328.12	Not sampled: well not part of sampling program									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-6	08-24-99	335.84	9.65	0.00	326.19	Not sampled: well not part of sampling program									
MW-6	03-01-00	335.84	7.35	0.00	328.49	Not sampled: well not part of sampling program									
MW-6	08-18-00	335.84	8.65	0.00	327.19	Not sampled: well not part of sampling program									
MW-6	12-27-00	335.84	9.83	0.00	326.01	Not sampled: well not part of sampling program									
MW-6	02-09-01	335.84	9.62	0.00	326.22	Not sampled: well not part of sampling program									
MW-6	**04-17-01**	**335.84**	**10.03**	**0.00**	**325.81**	**Not sampled: well not part of sampling program**									
VW-2	03-21-97	NR	8.22	0.00	NR	03-21-97	150	8.9	<0.5	<0.5	0.6	270	--		
VW-2	08-20-97	NR	9.16	0.00	NR	08-20-97	Not sampled: well not part of sampling program								
VW-2	11-21-97	NR	8.27	0.00	NR	11-21-97	<200	3	<2	<2	<2	180	--		
VW-2	02-12-98	NR	6.65	0.00	NR	02-12-98	200	19	<0.5	0.6	<0.5	2,200	--		
VW-2	07-31-98	NR	7.01	0.00	NR	07-31-98	Not sampled: well not part of sampling program								
VW-2	02-17-99	NR	8.47	0.00	NR	02-17-99	Not sampled: well not part of sampling program								
VW-2	08-24-99	NR	8.20	0.00	NR	08-24-99	Not sampled: well not part of sampling program								
VW-2	03-01-00	NR	8.72	0.00	NR	03-01-00	Not sampled: well not part of sampling program								
VW-2	08-18-00	NR	8.40	0.00	NR	08-18-00	<250	<2.50	<2.50	<2.50	<2.50	537		1.59	NP
VW-2	12-27-00	NR	8.95	0.00	NR	Not sampled: Well Dry									
VW-2	02-09-01	NR	8.87	0.00	NR	Not sampled: Well Dry									
VW-2	**04-17-01**	**NR**	**9.00**	**0.00**	**NR**	**Not sampled: Well Dry**									
Shell MW-6	12-27-00	NR	9.13	0.00	NR	12-27-00	74.7	<0.500	<0.500	<0.500	<0.500	<2.50		1.30	P
DUP	12-27-00	NR	NR	NR	NR	12-27-00	79.3	<0.500	<0.500	<0.500	<0.500	<2.50		NR	
Shell MW-6	02-09-01	NR	9.05	0.00	NR	02-09-01	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50		1.29	P
Shell MW-6	**04-17-01**	**NR**	**10.17**	**0.00**	**NR**	**04-17-01**	**<50.0**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<2.50**		**0.95**	**P**
Shell MW-7	12-27-00	NR	6.45	0.00	NR	12-27-00	<50.0	<0.500	0.696	<0.500	0.795	<2.50		1.33	P
Shell MW-7	02-09-01	NR	6.39	0.00	NR	02-09-01	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50		1.13	P
Shell MW-7	**04-17-01**	**NR**	**7.22**	**0.00**	**NR**	**04-17-01**	**<50.0**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**<2.50**		**1.12**	**P**

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present**

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)

Notes:

TOC: top of casing

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

TPH: total petroleum hydrocarbons, California DHS LUFT Method

BTEX: benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 03/01/00).

MTBE: Methyl tert-butyl ether

EPA: United States Environmental Protection Agency

*: EPA method 8020 prior to 03/01/00

µg/L: micrograms per liter

mg/L: milligrams per liter

ND: none detected

NR: not reported; data not available or not measurable

- -: not analyzed or not applicable

<: denotes concentration not present at or above laboratory detection limit stated to the right.

**: 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 2
Groundwater Flow Direction and Gradient

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
02-15-95	NR	NR
05-24-95	East-Southeast	0.002
08-25-95	Northwest	0.006
11-28-95	North	0.006
02-26-96	East	0.012
05-23-96	Flat Gradient	Flat Gradient
08-23-96	Flat Gradient	Flat Gradient
03-21-97	South-Southeast	0.005
08-20-97	South-Southwest	0.001
11-21-97	South-Southwest	0.002
02-12-98	East	0.024
07-31-98	Northwest	0.01
02-17-99	Southeast	0.007
08-24-99	South-Southwest	0.013
03-01-00	South-Southeast	0.005
09-26-00	South-Southeast	0.002
12-27-00	West-Southwest	0.003
02-09-01	West-Southwest	0.003
04-17-01	**South-Southwest**	**0.015**

Table 3
Groundwater Extraction
Mass Removal Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Groundwater Extraction Data						Hydrocarbon Concentrations			TPHg Removal		Benzene Removal		MTBE Removal	
Event Date	Well ID	Groundwater Extraction Duration (hours)	Groundwater Extracted (gallons)	Extraction Flow Rate (gpm)	Groundwater Sample Date	TPHg (Concentrations in ug/L)	Benzene	MTBE	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)
11/22/00	MW-1	3.08	235	1.27	09/26/00	<10,000	<100	63,700	<0.01961	<0.01961	<0.00020	<0.00020	0.1249	0.1249
12/13/00	MW-1	3.25	170	0.87	09/26/00	<10,000	<100	63,700	<0.01419	<0.03379	<0.00014	<0.00034	0.09036	0.2153
01/30/01	MW-1	1.50	50	0.56	12/27/00	<10,000	309	44,400	<0.00417	<0.03797	0.00013	<0.00047	0.01852	0.2338
03/20/01	MW-1	3.50	200	0.95	02/09/01	2,820	368	23,300	0.004706	<0.04267	0.00061	<0.00108	0.03888	0.2727
05/01/01	**MW-1**	**2.25**	**150**	**1.11**	**04/17/01**	**2,900**	**66.0**	**46,500**	**0.003630**	**<0.04630**	**0.00008**	**<0.00116**	**0.05820**	**0.3309**
11/22/00	MW-3	2.00	71	0.59	09/26/00	<10,000	<100	55,600	<0.00592	<0.00592	<0.00006	<0.00006	0.03294	0.03294
12/13/00	MW-3	3.00	110	0.61	09/26/00	<10,000	<100	55,600	<0.00918	<0.01510	<0.00009	<0.00015	0.05103	0.08397
01/30/01	MW-3	6.25	100	0.27	12/27/00	29,700	1,620	62,600	0.02478	<0.03989	0.00135	<0.00150	0.05224	0.1362
02/26/01	MW-3	1.25	30	0.40	02/09/01	29,300	2,590	85,500	0.00733	<0.04722	0.00065	<0.00215	0.02140	0.1576
05/01/01	**MW-3**	**2.00**	**30**	**0.25**	**04/17/01**	**16,400**	**1,680**	**48,700**	**0.00411**	**<0.05133**	**0.00042**	**<0.00257**	**0.01219**	**0.1698**
02/26/01	TP-1	2.75	1,900	11.52	2/9/2001*	29,300	2,590	85,500	0.4645	0.4645	0.04106	0.04106	1.356	1.356
05/01/01	**TP-1**	**2.50**	**2,120**	**14.13**	**4/17/2001***	**16,400**	**1,680**	**48,700**	**0.29012**	**<0.75465**	**0.02972**	**<0.07078**	**0.86150**	**2.2170**
02/26/01	TP-2	3.00	800	4.44	2/9/2001*	29,300	2,590	85,500	0.1956	0.1956	0.01729	0.01729	0.5708	0.5708
03/20/01	TP-2	4.50	2,083	7.71	2/9/2001*	29,300	2,590	85,500	0.5093	0.7049	0.04502	0.0623	1.4861	2.0569
11/22/00	VW-1	2.17	75	0.58	09/26/2000*	<10,000	<100.00	63,700	<0.00626	<0.00626	<0.00006	<0.00006	0.03987	0.03987
12/13/00	VW-2	1.50	5	0.06	09/26/00	<250	<2.50	554	<0.00001	<0.00001	0.00000	0.00000	0.00002	0.00002
Total Gallons Extracted:			**8,129**			**Total Pounds Removed:**				**<1.563**		**<0.1369**		**4.814**

Table 3
Groundwater Extraction
Mass Removal Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Groundwater Extraction Data						Hydrocarbon Concentrations			TPHg Removal		Benzene Removal		MTBE Removal	
Event Date	Well ID	Groundwater Extraction Duration (hours)	Groundwater Extracted (gallons)	Extraction Flow Rate (gpm)	Groundwater Sample Date	TPHg (Concentrations in ug/L)	Benzene	MTBE	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)

Notes:

* = Concentrations inferred from closest monitoring well
TPHg = Total petroleum hydrocarbons as gasoline
MTBE = Methyl tertiary butyl ether
ug/L = Micrograms per liter
lbs = Pounds
gpm = Gallons per minute

TPHg and benzene analyzed by EPA Method 8015/8020
MTBE analyzed by EPA Method 8020 or 8260 (if available)
Groundwater extracted by vacuum trucks provided by ACTI.
Concentrations based on the groundwater monitoring results from prior quarterly sampling event.

Table 4
Soil Vapor Extraction
Mass Removal Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Soil Vapor Extraction Data				Hydrocarbon Concentrations			TPHg Removal			Benzene Removal			MTBE Removal		
Event Date	Well ID	Vapor Extraction Duration (hours)	System Flow Rate (scfm)	TPHg (Concentrations in ppmv)	Benzene	MTBE	Mass Extraction Rate (lbs/hour)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)	Mass Extraction Rate (lbs/hour)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)	Mass Extraction Rate (lbs/hour)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)
11/22/00	MW-1	3.08	9.4	3,660	161	253	0.459	1.415	1.415	0.018	0.056	0.056	0.032	0.100	0.100
12/13/00	MW-1	3.25	7.7	2.979	<0.0310	<0.111	0.000	0.001	1.416	0.000	0.000	0.056	0.000	0.000	0.100
01/30/01	MW-1	1.50	9.7	9.6	0.11	0.58	0.001	0.002	1.418	0.000	0.000	0.056	0.000	0.000	0.100
03/20/01	MW-1	3.50	4.3	9,780	176	453	0.561	1.963	3.381	0.009	0.032	0.089	0.027	0.093	0.193
05/01/01	**MW-1**	**2.25**	**21.5**	**5,550**	**88**	**371**	**1.594**	**3.587**	**6.968**	**0.023**	**0.052**	**0.140**	**0.109**	**0.245**	**0.439**
11/22/00	MW-3	2.00	8.1	3,462	119	333	0.375	0.750	0.750	0.012	0.023	0.023	0.037	0.074	0.074
12/13/00	MW-3	3.00	5.2	<2.838	<0.0310	<0.111	0.000	0.000	0.750	0.000	0.000	0.023	0.000	0.000	0.074
01/30/01	MW-3	6.25	5.6	280	12	71	0.021	0.131	0.881	0.001	0.005	0.028	0.005	0.034	0.108
02/26/01	MW-3	1.25	17.9	<2.84	<0.0314	1.08	0.000	0.000	0.881	0.000	0.000	0.028	0.000	0.000	0.108
05/01/01	**MW-3**	**2.00**	**34.1**	**19.9**	**0.266**	**0.885**	**0.009**	**0.018**	**0.899**	**0.000**	**0.000**	**0.029**	**0.000**	**0.001**	**0.109**
02/26/01	TP-1	2.00	11.8	24.3	0.181	9.83	0.004	0.008	0.008	0.000	0.000	0.000	0.002	0.003	0.003
02/26/01	TP-2	3.00	17.1	5.79	<0.0314	9.16	0.001	0.004	0.004	0.000	0.000	0.000	0.002	0.006	0.006
11/22/00	VW-1	2.17	22.0	653	19.5	21.8	0.192	0.417	0.417	0.005	0.011	0.011	0.007	0.014	0.014
12/13/00	VW-2	1.50	23.0	<2.838	<0.0310	<0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Pounds Removed:									**8.30**			**0.180**			**0.571**

Table 4
Soil Vapor Extraction
Mass Removal Data

ARCO Service Station 6041
7249 Village Parkway, Dublin, California

Soil Vapor Extraction Data				Hydrocarbon Concentrations			TPHg Removal			Benzene Removal			MTBE Removal		
Event Date	Well ID	Vapor Extraction Duration (hours)	System Flow Rate (scfm)	TPHg (Concentrations in ppmv)	Benzene	MTBE	Mass Extraction Rate (lbs/hour)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)	Mass Extraction Rate (lbs/hour)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)	Mass Extraction Rate (lbs/hour)	Mass Extracted Per Event (lbs)	Mass Extracted To Date (lbs)

Abbreviations and Notes:

TPHg = Total petroleum hydrocarbons as gasoline (C6-C12) by modified EPA Method 8015 in 1 liter tedlar bag samples

MTBE = Methyl tertiary butyl ether

cfm = Cubic feet per minute

ppmv = Parts per million by volume

lbs = Pounds

TPHG, Benzene, and MTBE analyzed by EPA Method 8015/8020 in 1 liter tedlar bag samples

TPHg / Benzene / MTBE Removal Rate = Based on Bay Area Air Quality Management District's Manual of Procedures for Soil Vapor Extraction dated July 17, 1991.

(Rate = Concentration (ppmv) x system flow rate (cfm) x (1lb-mole/386ft3) x molecular weight (86 lb/lb-mole for TPHg, 78 lb/lb-mole for benzene, 88 lb/lb-mole for MTBE) x 60 min/hour x 1/1,000,000)

APPENDIX A

SAMPLING AND ANALYSIS PROCEDURES

APPENDIX A

SAMPLING AND ANALYSIS PROCEDURES

The sampling and analysis procedures for water quality monitoring programs are contained in this appendix. The procedures provided for consistent and reproducible sampling methods, proper application of analytical methods, and accurate and precise analytical results. Finally, these procedures provided guidelines so that the overall objectives of the monitoring program were achieved.

The following documents have been used as guidelines for developing these procedures:

- Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities, Environmental Protection Agency (EPA)-530/SW-611, August 1977
- Resource Conservation and Recovery Act (RCRA) Groundwater Monitoring Technical Enforcement Guidance Document, Office of Solid Waste and Emergency Response (OSWER) 9950.1, September 1986
- Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA SW-846, 3rd edition, November 1986
- Methods for Organic Chemical Analysis of Municipal and Industrial Waste Water, EPA-600/4-82-057, July 1982
- Methods for Organic Chemical Analysis of Water and Wastes, EPA-600/4-79-020, revised March 1983
- Leaking Underground Fuel Tank (LUFT) Field Manual, California State Water Resources Control Board, revised October 1989

Sample Collection

Sample collection procedures include equipment cleaning, water level and total well depth measurements, and well purging and sampling.

Equipment Cleaning

Before the sampling event was started, equipment that was used to sample groundwater was disassembled and cleaned with detergent water and then rinsed with tap water. During field sampling, equipment surfaces that were placed in the well or came into

contact with groundwater during field sampling were washed with detergent and double rinsed with tap water before the next well was purged or sampled.

Water Level, Floating Hydrocarbon, and Total Well Depth Measurements

Before purging and sampling occurred, the depth to water, floating hydrocarbon thickness and total well depth were measured using an oil/water interface measuring system. The oil/water interface measuring system consists of a probe that emits a continuous audible tone when immersed in a nonconductive fluid, such as oil or gasoline and an intermittent tone when immersed in a conductive fluid, such as water. The floating hydrocarbon thickness and water level were measured by lowering the probe into the well. Liquid levels were recorded relative to the tone emitted at the groundwater surface. The sonic probe was decontaminated after each use. A bottom-filling, clear disposable bailer was used to verify floating hydrocarbon thickness measurements of less than 0.02 foot. Alternatively, an electric sounder and a bottom-filling Teflon bailer may have been used to record floating hydrocarbon thickness and depth to water.

The electric sounder is a transistorized instrument that uses a reel-mounted, two-conductor, coaxial cable that connects the control panel to the sensor. Cable markings are stamped at 1-foot intervals. The water level was measured by lowering the sensor into the monitoring well. A low-current circuit was completed when the sensor contacted the water, which served as an electrolyte. The current was amplified and fed into an indicator light and audible buzzer, signaling when water had been contacted. A sensitivity control compensated for highly saline or conductive water. The electric sounder was decontaminated after each use. The bailer was lowered to a point just below the liquid level, retrieved, and observed for floating hydrocarbon.

Liquid measurements were recorded to the nearest 0.01 foot on the depth to water/floating product survey form. The groundwater elevation at each monitoring well was calculated by subtracting the measured depth to water from the surveyed elevation of the top of the well casing. (Every attempt was made to measure depth to water for all wells on the same day.) Total well depth was then measured by lowering the sensor to the bottom of the well. Total well depth, used to calculate purge volumes and to determine whether the well screen was partially obstructed by silt, was recorded to the nearest 0.1 foot on the depth to water/floating product survey form.

Well Purging

If the depth to groundwater was above the top of screens of the monitoring wells, then the wells were purged, otherwise non-purge groundwater samples were collected. Before sampling occurred, a polyvinyl chloride (PVC) bailer, centrifugal pump, low-flow submersible pump, or disposable bailer was used to purge standing water in the casing and gravel pack from the monitoring well. In most monitoring wells, the amount of water purged before sampling was greater than or equal to three casing volumes. Some monitoring wells were expected to be evacuated to dryness after removing fewer than three casing volumes. These low-yield monitoring wells were allowed to recharge for up to 24 hours. Samples were obtained as soon as the monitoring wells recharged to a level

sufficient for sample collection. If insufficient water recharged after 24 hours, the monitoring well was recorded as dry for the sampling event.

Groundwater purged from the monitoring wells was transported in a 240-gallon truck-mounted tank to Integrated Waste Management's Milpitas storage facility for disposal.

Field measurements of pH, specific conductance, and temperature were recorded in a waterproof field logbook. Field data sheets were reviewed for completeness by the sampling coordinator after the sampling event was completed.

The pH, specific conductance, and temperature meter were calibrated each day before field activities were begun. The calibration was checked once each day to verify meter performance. Field meter calibrations were recorded on the water sample field data sheet.

Well Sampling

A disposable bailer was the only equipment acceptable for well sampling. When samples for volatile organic analysis were being collected, the flow of groundwater from the bailer was regulated to minimize turbulence and aeration. Glass bottles of at least 40-milliliters volume and fitted with Teflon-lined septa were used in sampling for volatile organics. These bottles were filled completely to prevent air from remaining in the bottle. A positive meniscus formed when the bottle was completely full. A convex Teflon septum was placed over the positive meniscus to eliminate air. After the bottle was capped, it was inverted and tapped to verify that it contained no air bubbles. The sample containers for other parameters were filled, filtered as required, and capped.

When required, dissolved concentrations of metals were determined using appropriate field filtration techniques. The sample was filtered by emptying the contents of the disposable bailer into a pressure transfer vessel. A disposable 0.45-micron acrylic copolymer filter was threaded onto the transfer vessel at the discharge point, and the vessel was sealed. Pressure was applied to the vessel with a hand pump and the filtrate directed into the appropriate containers. Each filter was used once and discarded.

Sample Preservation and Handling

The following section specifies sample containers, preservation methods, and sample handling procedures.

Sample Containers and Preservation

Sample containers vary with each type of analytical parameter. Container types and materials were selected to be nonreactive with the particular analytical parameter tested.

Sample Handling

Sample containers were labeled immediately prior to sample collection. Samples were kept cool with cold packs or ice until received by the laboratory. At the time of

sampling, each sample was logged on an ARCO chain-of-custody record that accompanied the sample to the laboratory. Samples that required overnight storage prior to shipping to the laboratory were kept cool (4° C) in a refrigerator.

Samples were transferred from Cambria to an ARCO-approved laboratory by courier or taken directly to the laboratory by the environmental sampler. Sample shipments from Cambria to laboratories performing the selected analyses routinely occurred within two to three days of sample collection.

Sample Documentation

The following procedures were used during sampling and analysis to provide chain-of-custody control during sample handling from collection through storage. Sample documentation included the use of the following:

- Water sample field data sheets to document sampling activities in the field
- Labels to identify individual samples
- Chain-of-custody record sheets for documenting possession and transfer of samples
- Laboratory analysis request sheets for documenting analyses to be performed

Field Logbook

In the field, the sampler recorded the following information on the water sample field data sheet (see Figure A-2) for each sample collected:

- Project number
- Client's name
- Location
- Name of sampler
- Date and time
- Well accessibility and integrity
- Pertinent well data (e.g., casing diameter, depth to water, well depth)
- Calculated and actual purge volumes
- Purging equipment used
- Sampling equipment used
- Appearance of each sample (e.g., color, turbidity, sediment)
- Results of field analyses (temperature, pH, specific conductance)
- General comments

The water sample field data sheet was signed by the sampler and reviewed by the sampling coordinator.

Labels

Sample labels contained the following information:

- Project number
- Sample number (i.e., well designation)
- Sample depth
- Sampler's initials
- Date and time of collection
- Type of preservation used (if any)

Sampling and Analysis Chain-of-Custody Record

The ARCO chain-of-custody record initiated at the time of sampling contained, at a minimum, the sample designation (including the depth at which the sample was collected), sample type, analytical request, date of sampling, and the name of the sampler. The record sheet was signed, timed, and dated by the sampler when transferring the samples. The number of custodians in the chain of possession was minimized. A copy of the ARCO chain-of-custody record was returned to Cambria with the analytical results.

Groundwater Sampling and Analysis Request Form

A groundwater sampling and analysis request form (see Figure A-3) was used to communicate to the environmental sampler the requirements of the monitoring event. At a minimum, the groundwater sampling and analysis request form included the following information:

- Date scheduled
- Site-specific instructions
- Specific analytical parameters
- Well number
- Well specifications (expected total depth, depth of water, and product thickness)

APPENDIX B

CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

Sequoia Analytical

1455 McDowell Blvd. North, Ste. D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

May 03 , 2001

Ron Scheele
Cambria Environmental - Emeryville
6262 Hollis Street
Emeryville, CA 94608
RE: ARCO / P105022

Enclosed are the results of analyses for samples received by the laboratory on 05/01/01. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Angelee Cari

Angelee Cari
Client Services Representative

CA ELAP Certificate Number 2374

Sequoia Analytical

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Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 6041/Dublin	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	05/03/01 16:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	P105022-01	Air	05/01/01 08:00	05/01/01 15:45
MW-3	P105022-02	Air	05/01/01 11:00	05/01/01 15:45

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Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 6041/Dublin	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	05/03/01 16:11

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (P105022-01) Air Sampled: 05/01/01 08:00 Received: 05/01/01 15:45									
Gasoline	**5550**	284	ppmv	20	1050031	05/02/01	05/02/01	EPA 8015M/8020M	
Benzene	**88.1**	3.14	"	"	"	"	"	"	
Toluene	**18.5**	2.66	"	"	"	"	"	"	QR-04
Ethylbenzene	**43.6**	2.30	"	"	"	"	"	"	
Xylenes (total)	**39.8**	2.30	"	"	"	"	"	"	
Methyl tert-butyl ether	**371**	11.1	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*114 %*		*65-135*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*		*65-135*		"	"	"	
MW-3 (P105022-02) Air Sampled: 05/01/01 11:00 Received: 05/01/01 15:45									
Gasoline	**19.9**	7.10	ppmv	0.5	1050031	05/02/01	05/02/01	EPA 8015M/8020M	
Benzene	**0.266**	0.0785	"	"	"	"	"	"	
Toluene	**0.374**	0.0665	"	"	"	"	"	"	
Ethylbenzene	**0.224**	0.0575	"	"	"	"	"	"	
Xylenes (total)	**0.552**	0.0575	"	"	"	"	"	"	
Methyl tert-butyl ether	**0.885**	0.278	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*110 %*		*65-135*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.3 %*		*65-135*		"	"	"	

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Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 6041/Dublin	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	05/03/01 16:11

Total Petroleum Hydrocarbons as Gasoline and BTEX by EPA 8015M/8020M - Quality Control

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1050031 - EPA 5030, waters										
Blank (1050031-BLK1)				Prepared & Analyzed: 05/02/01						
Gasoline	ND	14.2	ppmv							
Benzene	ND	0.157	"							
Toluene	ND	0.133	"							
Ethylbenzene	ND	0.115	"							
Xylenes (total)	ND	0.115	"							
Methyl tert-butyl ether	ND	0.556	"							
Surrogate: a,a,a-Trifluorotoluene	*53.2*		*"*	*50.3*		*106*	*65-135*			
Surrogate: 4-Bromofluorobenzene	*40.2*		*"*	*41.9*		*95.9*	*65-135*			

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Cambria Environmental - Emeryville	Project: ARCO	
6262 Hollis Street	Project Number: 6041/Dublin	**Reported:**
Emeryville CA, 94608	Project Manager: Ron Scheele	05/03/01 16:11

Notes and Definitions

QR-04	Results between the primary and confirmation columns varied by greater than 40% RPD.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 27187.00

Chain of Custody

ARCO Facility no. 6041	City (Facility) Dublin	Project manager (Consultant) Ron Schulz / Jason Olson	Laboratory name Sequoia
ARCO engineer Paul Supple	Telephone no. (ARCO) 925-299-8891	Telephone no. (Consultant) 510-450-1983	Fax no. (Consultant) 510-450-8295
Consultant name CAMBRIA ENV. TECH	Address (Consultant) 6262 Hollis St, Emeryville CA		Contract number

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH MTBE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐
MW-1		2			AIR			5/1/01	8:00 AM		X					P105022-1				
MW-3		2			AIR			5/1/01	11:00 AM		X					↓		-	2	

Special detection Limit/reporting: Lowest Possible

Special QA/QC

Remarks: Gas, BTEX, MTBE
48 Hour Turnaround

COOLER CUSTODY SEALS INTACT ☐
NOT INTACT ☐
COOLER TEMPERATURE 22 °C

Lab number

Turnaround time

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

Condition of sample:		Temperature received: @Lab 15°C	
Relinquished by sampler	Date 5/1/01 Time 1230	Received by	5/1/01 1300
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date Time

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

Sequoia
Analytical

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7 May, 2001

Jason Olson
Cambria - Emeryville
6262 Hollis St.
Emeryville, CA 94608

RE: Arco
Sequoia Report: MKD0605

Enclosed are the results of analyses for samples received by the laboratory on 04/23/01 17:41. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeff Smyly
Project Manager

CA ELAP Certificate #1210

Sequoia Analytical

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Cambria - Emeryville	Project: Arco	
6262 Hollis St.	Project Number: #6041	**Reported:**
Emeryville CA, 94608	Project Manager: Jason Olson	05/07/01 11:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	MKD0605-01	Water	04/17/01 06:48	04/23/01 17:41
MW-3	MKD0605-02	Water	04/17/01 06:25	04/23/01 17:41
Shell MW-6	MKD0605-03	Water	04/17/01 05:20	04/23/01 17:41
Shell MW-7	MKD0605-04	Water	04/17/01 05:50	04/23/01 17:41
Dup	MKD0605-05	Water	04/17/01 00:00	04/23/01 17:41

Sequoia Analytical - Morgan Hill

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jeff Smyly, Project Manager

Sequoia Analytical

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Cambria - Emeryville	Project: Arco	
6262 Hollis St.	Project Number: #6041	**Reported:**
Emeryville CA, 94608	Project Manager: Jason Olson	05/07/01 11:17

-Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (MKD0605-01) Water Sampled: 04/17/01 06:48 Received: 04/23/01 17:41									
Purgeable Hydrocarbons	**2900**	1000	ug/l	20	1D25003	04/25/01	04/25/01	DHS LUFT	P-03
Benzene	**66.0**	10.0	"	"	"	"	"	"	
Toluene	ND	10.0	"	"	"	"	"	"	
Ethylbenzene	**33.2**	10.0	"	"	"	"	"	"	
Xylenes (total)	**25.1**	10.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**46500**	1250	"	500	"	"	04/26/01	"	M-03
Surrogate: a,a,a-Trifluorotoluene		*80.2 %*	*70-130*		"	"	*04/25/01*	"	
MW-3 (MKD0605-02) Water Sampled: 04/17/01 06:25 Received: 04/23/01 17:41									
Purgeable Hydrocarbons	**16400**	2500	ug/l	50	1D26002	04/26/01	04/26/01	DHS LUFT	P-01
Benzene	**1680**	25.0	"	"	"	"	"	"	
Toluene	ND	25.0	"	"	"	"	"	"	
Ethylbenzene	**310**	25.0	"	"	"	"	"	"	
Xylenes (total)	**2290**	25.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**48700**	500	"	200	"	"	04/25/01	"	M-03
Surrogate: a,a,a-Trifluorotoluene		*102 %*	*70-130*		"	"	*04/26/01*	"	
Shell MW-6 (MKD0605-03) Water Sampled: 04/17/01 05:20 Received: 04/23/01 17:41									
Purgeable Hydrocarbons	ND	50.0	ug/l	1	1D25003	04/25/01	04/25/01	DHS LUFT	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	0.500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.50	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*84.6 %*	*70-130*		"	"	"	"	

Sequoia Analytical

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Cambria - Emeryville	Project: Arco	
6262 Hollis St.	Project Number: #6041	**Reported:**
Emeryville CA, 94608	Project Manager: Jason Olson	05/07/01 11:17

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Shell MW-7 (MKD0605-04) Water Sampled: 04/17/01 05:50 Received: 04/23/01 17:41									
Purgeable Hydrocarbons	ND	50.0	ug/l	1	1D25003	04/25/01	04/25/01	DHS LUFT	
Benzene	ND	0.500	"	"	"	"	"	"	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	0.500	"	"	"	"	"	"	
Methyl tert-butyl ether	ND	2.50	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*86.2 %*		*70-130*		"	"	"	
Dup (MKD0605-05) Water Sampled: 04/17/01 00:00 Received: 04/23/01 17:41									
Purgeable Hydrocarbons	**2600**	2000	ug/l	40	1D25003	04/25/01	04/25/01	DHS LUFT	P-03
Benzene	**70.1**	20.0	"	"	"	"	"	"	
Toluene	ND	20.0	"	"	"	"	"	"	
Ethylbenzene	**32.7**	20.0	"	"	"	"	"	"	
Xylenes (total)	**30.6**	20.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**45400**	500	"	200	"	"	04/26/01	"	M-03
Surrogate: a,a,a-Trifluorotoluene		*86.0 %*		*70-130*		"	*04/25/01*	"	

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Cambria - Emeryville	Project: Arco	
6262 Hollis St.	Project Number: #6041	**Reported:**
Emeryville CA, 94608	Project Manager: Jason Olson	05/07/01 11:17

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT - Quality Control
Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1D25003 - EPA 5030B [P/T]										
Blank (1D25003-BLK1)				Prepared & Analyzed: 04/25/01						
Purgeable Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	0.500	"							
Methyl tert-butyl ether	ND	2.50	"							
Surrogate: a,a,a-Trifluorotoluene	*8.10*		"	*10.0*		*81.0*	*70-130*			
LCS (1D25003-BS1)				Prepared & Analyzed: 04/25/01						
Benzene	8.78	0.500	ug/l	10.0		87.8	70-130			
Toluene	7.99	0.500	"	10.0		79.9	70-130			
Ethylbenzene	7.95	0.500	"	10.0		79.5	70-130			
Xylenes (total)	24.0	0.500	"	30.0		80.0	70-130			
Surrogate: a,a,a-Trifluorotoluene	*8.17*		"	*10.0*		*81.7*	*70-130*			
Matrix Spike (1D25003-MS1)		**Source: MKD0559-01**		Prepared & Analyzed: 04/25/01						
Benzene	9.70	0.500	ug/l	10.0	ND	97.0	60-140			
Toluene	8.54	0.500	"	10.0	ND	85.4	60-140			
Ethylbenzene	8.20	0.500	"	10.0	ND	82.0	60-140			
Xylenes (total)	25.9	0.500	"	30.0	ND	86.3	60-140			
Surrogate: a,a,a-Trifluorotoluene	*8.47*		"	*10.0*		*84.7*	*70-130*			
Matrix Spike Dup (1D25003-MSD1)		**Source: MKD0559-01**		Prepared & Analyzed: 04/25/01						
Benzene	9.62	0.500	ug/l	10.0	ND	96.2	60-140	0.828	25	
Toluene	8.22	0.500	"	10.0	ND	82.2	60-140	3.82	25	
Ethylbenzene	7.70	0.500	"	10.0	ND	77.0	60-140	6.29	25	
Xylenes (total)	25.3	0.500	"	30.0	ND	84.3	60-140	2.34	25	
Surrogate: a,a,a-Trifluorotoluene	*8.57*		"	*10.0*		*85.7*	*70-130*			

Sequoia Analytical

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Cambria - Emeryville	Project: Arco	
6262 Hollis St.	Project Number: #6041	**Reported:**
Emeryville CA, 94608	Project Manager: Jason Olson	05/07/01 11:17

Total Purgeable Hydrocarbons (C6-C12), BTEX and MTBE by DHS LUFT - Quality Control

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1D26002 - EPA 5030B [P/T]										
Blank (1D26002-BLK1)				Prepared & Analyzed: 04/26/01						
Purgeable Hydrocarbons	ND	50.0	ug/l							
Benzene	ND	0.500	"							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	0.500	"							
Methyl tert-butyl ether	ND	2.50	"							
Surrogate: a,a,a-Trifluorotoluene	*9.83*		"	*10.0*		*98.3*	*70-130*			
LCS (1D26002-BS1)				Prepared & Analyzed: 04/26/01						
Benzene	9.96	0.500	ug/l	10.0		99.6	70-130			
Toluene	9.61	0.500	"	10.0		96.1	70-130			
Ethylbenzene	9.77	0.500	"	10.0		97.7	70-130			
Xylenes (total)	29.0	0.500	"	30.0		96.7	70-130			
Surrogate: a,a,a-Trifluorotoluene	*9.71*		"	*10.0*		*97.1*	*70-130*			
Matrix Spike (1D26002-MS1)		**Source: MKD0624-01**		Prepared & Analyzed: 04/26/01						
Benzene	10.9	0.500	ug/l	10.0	ND	109	60-140			
Toluene	10.8	0.500	"	10.0	ND	108	60-140			
Ethylbenzene	10.7	0.500	"	10.0	ND	107	60-140			
Xylenes (total)	30.0	0.500	"	30.0	ND	100	60-140			
Surrogate: a,a,a-Trifluorotoluene	*10.7*		"	*10.0*		*107*	*70-130*			
Matrix Spike Dup (1D26002-MSD1)		**Source: MKD0624-01**		Prepared & Analyzed: 04/26/01						
Benzene	11.2	0.500	ug/l	10.0	ND	112	60-140	2.71	25	
Toluene	10.9	0.500	"	10.0	ND	109	60-140	0.922	25	
Ethylbenzene	11.0	0.500	"	10.0	ND	110	60-140	2.76	25	
Xylenes (total)	30.7	0.500	"	30.0	ND	102	60-140	2.31	25	
Surrogate: a,a,a-Trifluorotoluene	*10.5*		"	*10.0*		*105*	*70-130*			

Sequoia Analytical

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Cambria - Emeryville	Project: Arco	
6262 Hollis St.	Project Number: #6041	**Reported:**
Emeryville CA, 94608	Project Manager: Jason Olson	05/07/01 11:17

Notes and Definitions

M-03	Sample was analyzed at a second dilution.
P-01	Chromatogram Pattern: Gasoline C6-C12
P-03	Chromatogram Pattern: Unidentified Hydrocarbons C6-C12
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

ARCO Products Company
Division of Atlantic-Richfield Company

Task Order No. 27187.00

Chain of Custody

ARCO Facility no. 6041	City (Facility) Dublin	Project manager (Consultant) Ron Scheele / Jason Olson	Laboratory name Sequoia
ARCO engineer Paul Supple	Telephone no. (ARCO) 925-299-8891	Telephone no. (Consultant) 510-450-1983	Fax no. (Consultant) 510-450-8295
Consultant name CAMBRIA ENV. TECH	Address (Consultant) 6262 Hollis St, Emeryville CA		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/TPHg, MTBE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM METALS EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-1	01	4		X		X	X	4-17-01	6:48		X											
MW-3	02	4		X		X	X	4-17-01	6:25		X											
Shell-MW6	03	4		X		X	X	4-17-01	5:20		X											
Shell/MW7	04	4		X		X	X	4-17-01	5:50		X											
DUP	05	4		X		X	X	4-17-01			X											

Special detection Limit/reporting: Lowest Possible

Special QA/QC

Remarks

Lab number: 11K0605

Turnaround time

Priority Rush
1 Business Day

Rush
2 Business Days

Expedited
5 Business Days

Standard
10 Business Days

Condition of sample:

Temperature received:

	Date	Time		Date	Time
Relinquished by Sampler	4-19-01	10:50	Received by	4-19-01	1200
Relinquished by	4-19-01		Received by		
Relinquished by	4-23	1741	Received by	4/23/01	1741

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

Form 3292 (2-91)

APPENDIX C

FIELD DATA SHEETS

CAMBRIA

WELL DEPTH MEASUREMENTS

Well ID	Time	Top of Screen	DTB	DTP	DTW	DOP	Casing Dia	Comments
MW-1	4:45	12'	17.5'		11.09		4"	
MW-2	4:38	10'	14.1'		9.12		4"	
MW-3	4:40	11'	14.7'		9.94		4"	
MW-4	4:35				8.90			
MW-5	4:33				9.92			
MW-6	4:30				10.03			
VW-2	4:28	4'	9.0'		9.0			
SHELL MW-6	4:20				10.17			Wells Located at neighboring shell station
SHELL MW-7	4:15				7.22			

Project Name: **ARCO 6041**

Project Number: **438-1643**

Measured By: [signature]

Date: 4-17-01

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CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Ron Scheele**	Well ID: MW-1
Project Number: **438 - 1643**	Date: 4-17-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 11.09	Total Well Depth: 17.50	Water Column Height: 6.41
Volume/ft: 0.65	1 Casing Volume: 4.16	3 Casing Volumes: 12.40
Purge/No Purge: purge		
Purging Device: **Submersible Pump**	Did Well Dewater?: no	Total Gallons Purged: 12
Start Purge Time: 6:35	Stop Purge Time: 6:42	Total Time: 7 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
6:38	4	15.4	7.24	1212	
6:40	8	15.9	7.29	1374	
6:43	12	16.2	7.50	1315	
					DO = 0.63 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-1	4-17-01	6:48	4 VOA	HCL	TPHg, BTEX, MTBE	8020
DUP						

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NSM 5/31/94

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Ron Scheele**	Well ID: MW-3
Project Number: **438 - 1643**	Date: 4-17-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SC
Initial Depth to Water: 9.94	Total Well Depth: 14.70	Water Column Height: 4.76
Volume/ft: 0.65	1 Casing Volume: 3.09	3 Casing Volumes: 9.27
Purge/No Purge: Purge		
Purging Device: **Submersible Pump**	Did Well Dewater?: NO	Total Gallons Purged: 9
Start Purge Time: 6:10	Stop Purge Time: 6:19	Total Time: 9 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
6:12	3	16.1	7.20	1517	
6:15	6	16.3	7.45	1827	
6:20	9	16.1	7.19	1854	
					DO = 0.41 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-3	4-17-01	6:25	**4 VOA**	**HCL**	**TPHg, BTEX, MTBE**	**8020**

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CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Ron Scheele**	Well ID: MW-2
Project Number: **438 - 1643**	Date: 4-17-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: " **pvc**
		Technician(s):
Initial Depth to Water: 9.00	Total Well Depth:	Water Column Height:
Volume/ft:	1 Casing Volume:	3 Casing Volumes:
Purge/No Purge:		
Purging Device: **Submersible Pump**	Did Well Dewater?:	Total Gallons Purged:
Start Purge Time:	Stop Purge Time:	Total Time:

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
		Insufficient			
		water			
			no Sample		

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
			4 VOA	**HCL**	**TPHg, BTEX, MTBE**	**8020**

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NSM 5/31/94

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Ron Scheele**	Well ID: Shell MW-6
Project Number: **438 - 1643**	Date: 4-17-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 10.17	Total Well Depth: 22.70	Water Column Height: 12.53
Volume/ft: 0.65	1 Casing Volume: 8.14	3 Casing Volumes: 24.4
Purge/No Purge: 3" pvc bailer		
Purging Device: **Submersible Pump**	Did Well Dewater?: no	Total Gallons Purged: 24
Start Purge Time: 5:00	Stop Purge Time: 5:14	Total Time: 14 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
5:05	8	16.1	7.12	3150	
5:10	16	16.8	7.04	2120	
5:15	24	16.5	7.13	2170	
					DO = .95 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
Shell MW6	4-17-01	5:20	**4 VOA**	**HCL**	**TPHg, BTEX, MTBE**	**8020**

CAMBRIA

WELL SAMPLING FORM

Project Name: **ARCO 6041**	Cambria Mgr: **Ron Scheele**	Well ID: Shell MW-7
Project Number: **438 - 1643**	Date: 4-17-01	Well Yield:
Site Address: **7249 Village Pkwy, Dublin**	Sampling Method: **Disposable bailer**	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 7.22	Total Well Depth: 16.30	Water Column Height: 9.08
Volume/ft: 0.65	1 Casing Volume: 5.90	3 Casing Volumes: 17.70
Purge/No Purge: purge		
Purging Device: **Submersible Pump**	Did Well Dewater?: no	Total Gallons Purged: 19
Start Purge Time: 5:30	Stop Purge Time: 5:44	Total Time: 14 mins

1 Casing Volume = Water column height x Volume/ ft.

Well Diam.	Volume/ft (gallons)
2"	0.16
4"	0.65
6"	1.47

Time	Casing Volume	Temp. C	pH	Cond. uS	Comments
5:35	6	15.9	7.50	1217	
5:40	12	16.3	7.22	1812	
5:45	18	16.1	7.28	1894	
					DO = 1.2 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
Shell MW-7	4-17-01	5:50	**4 VOA**	**HCL**	**TPHg, BTEX, MTBE**	**8020**