CAMBRIA

January 15, 2001

Barney Chan
Alameda Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Re: **Fourth Quarter 2000 Monitoring And Remediation System Performance Report**
ARCO Service Station No. 2035
1001 San Pablo Avenue
Albany, California
Cambria Project #436-1608

Dear Mr. Chan:

On behalf of ARCO, Cambria Environmental Technology, Inc. (Cambria) is submitting the attached report which presents the results of the fourth quarter 2000 groundwater monitoring program at ARCO Service Station No. 2035, located at 1001 San Pablo Avenue, Albany, California. Operation and performance data for the site's soil-vapor extraction system (SVE) and groundwater remediation system are also presented. The monitoring program complies with the Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

Please call if you have questions.

Sincerely,

Cambria Environmental Technology, Inc.

Ron Scheele, RG
Senior Project Manager

Attachment: Quarterly Groundwater Monitoring Report, Fourth Quarter 2000
SVE Quarterly Operation and Performance, Fourth Quarter 2000

Cc: Mr. Paul Supple, ARCO, PO Box 6549 Moraga, CA 94570
James A. Lestrange, Property Owner, 2421 Dena Way, Calistoga, Ca 94515
Muriel & Emile Turpin, Trustees, 957 Arlington Ave, Berkeley, CA, 94707

Oakland, CA
San Ramon, CA
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Cambria Environmental Technology, Inc.

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Quarterly Groundwater Monitoring Report

Fourth Quarter 2000

ARCO Service Station No. 2035
1001 San Pablo Avenue
Albany, California
Cambria Project #436-1608

Prepared For:

Mr. Paul Supple
ARCO

January 15, 2001

Prepared By:
Cambria Environmental Technology, Inc.
1144 65th St Suite B
Oakland, California 94608

REGISTERED GEOLOGIST • RONALD A. SCHEELE • No. 6842 • STATE OF CALIFORNIA

Written by:

Jason D. Olson
Staff Environmental Scientist

Ron Scheele, RG
Senior Project Manager

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Date: January 15, 2001
Quarter: 4th Quarter, 2000

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.:	2035	Address:	1001 San Pablo Avenue, Albany, California
ARCO Environmental Engineer			Paul Supple
Consulting Co./Contact Person:			Cambria Environmental Technology, Inc./ Ron Scheele, RG
Consultant Project No.:			436-1608
Primary Agency/Regulatory ID No.:			ACHCSA

WORK PERFORMED THIS QUARTER (FOURTH - 2000):

1. Submitted quarterly status report for third quarter, 2000.
2. Performed fourth quarter groundwater monitoring and sampling on November 6, 2000.
3. Restarted SVE system on October 17, 2000. System was shut down on November 28, 2000 for further repairs.

WORK PROPOSED FOR NEXT QUARTER (FIRST - 2001):

1. Prepare and submit semi-annual groundwater monitoring and soil vapor extraction (SVE) operation and performance report for fourth quarter 2000.
2. Restart SVE and operate through first quarter.
3. Repair and restart air sparge bubbler system.

MONITORING:

Current Phase of Project:	Groundwater Monitoring and Operation and Maintenance of Remediation System (SVE)
Frequency of Sampling:	Annual (2nd quarter): MW-5 Semi-annual (2nd/4th quarter): MW-1 through MW-4, MW-6, RW-1
Frequency of Monitoring:	Semi-Annual (groundwater), Monthly (SVE)
Is Free Product (FP) Present On-Site:	No
Cumulative FP Recovered to Date	27.9 gallons, Wells AS-1, AS-2, RW-1, VW-1, VW-2, and VW-7
FP Recovered This Quarter :	None
Bulk Soil Removed to Date :	605 cubic yards of TPH impacted soil
Water Wells or Surface Waters, Within 2000 ft., impacted by site:	None
Current Remediation Techniques:	SVE, and Air Bubbling (currently shut down for repair) in RW-1
Average Depth to Groundwater:	10.06 feet
Groundwater Flow Direction and Gradient:	0.018 ft/ft toward West

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Date: January 15, 2001
Quarter: 4th Quarter, 2000

SVE QUARTERLY OPERATION AND PERFORMANCE

Equipment Inventory:	Therm Tech Model VAC-10 Thermal/Catalytic Oxidizer
Operating Mode:	Catalytic Oxidation
BAAQMD Permit #:	8694
TPH Conc. End of Period (lab):	77 ppmv (10/17/00)
Benzene Conc. End of Period (lab):	1.4 ppmv (10/17/00)
SVE Flowrate End of Period:	27.32 scfm
Total HC Recovered This Period:	66.2 pounds
Total HC Recovered to Date:	3,827 pounds
Utility Usage	
Electric (kWh):	1940 kWh
Gas (Therms):	Not available
Operating Hours This Period (SVE):	487 hours
Operating Hours to Date (SVE):	12045.52 hours
Percent Operational (SVE):	31%
Unit Maintenance:	Routine twice-monthly maintenance
Number of Auto Shut Downs:	1
Destruction Efficiency Permit Requirement:	98.5% (POC >2,000 ppmv); 97% (POC >200 ppmv); 90% (POC <200 ppmv)
Percent TPH Conversion:	71% (System shut down for repair due to low destruction efficiency)
Average Stack Temperature:	959 ºF
Average SVE Source Flow:	27.32 scfm
Average SVE Process Flow:	102.54 scfm
Average Source Vacuum:	19.0 inches of Water

DISCUSSION:

Based on field measurements collected on November 6, 2000, groundwater beneath the site flows towards the west, at a gradient of 0.018 ft/ft. This is consistent with the historic groundwater flow direction and gradient.

Hydrocarbon concentrations detected this quarter are consistent with previous sampling event, with the exception of well RW-1, which showed a significant increase in TPHg and BTEX levels. The maximum TPHg, benzene, and MTBE concentrations were detected in well RW-1 at 156,000, 3,260, and 26,200 micrograms per liter (µg/L), respectively.

The SVE system shut down due to a malfunctioning blower overload switch on November 28, 2000. The SVE and air sparging systems are scheduled to be repaired and restarted in the first quarter, 2001.

ATTACHMENTS:

- Figure 1 - Groundwater Elevation Contour and Analytical Summary Map
- Table 1 - Groundwater Monitoring Data
- Table 2 - Groundwater Flow Direction and Gradient
- Table 3 - Operational Uptime Information
- Table 4 - Flow Rates and Analytical Results of Air Samples
- Table 5 - Extraction Rates, Emission Rates, Destruction Efficiency, and Mass Removed
- Appendix A - Sampling and Analysis Procedures
- Appendix B - Certified Analytical Reports and Chain-of-Custody Documentation
- Appendix C - Field Data Sheets

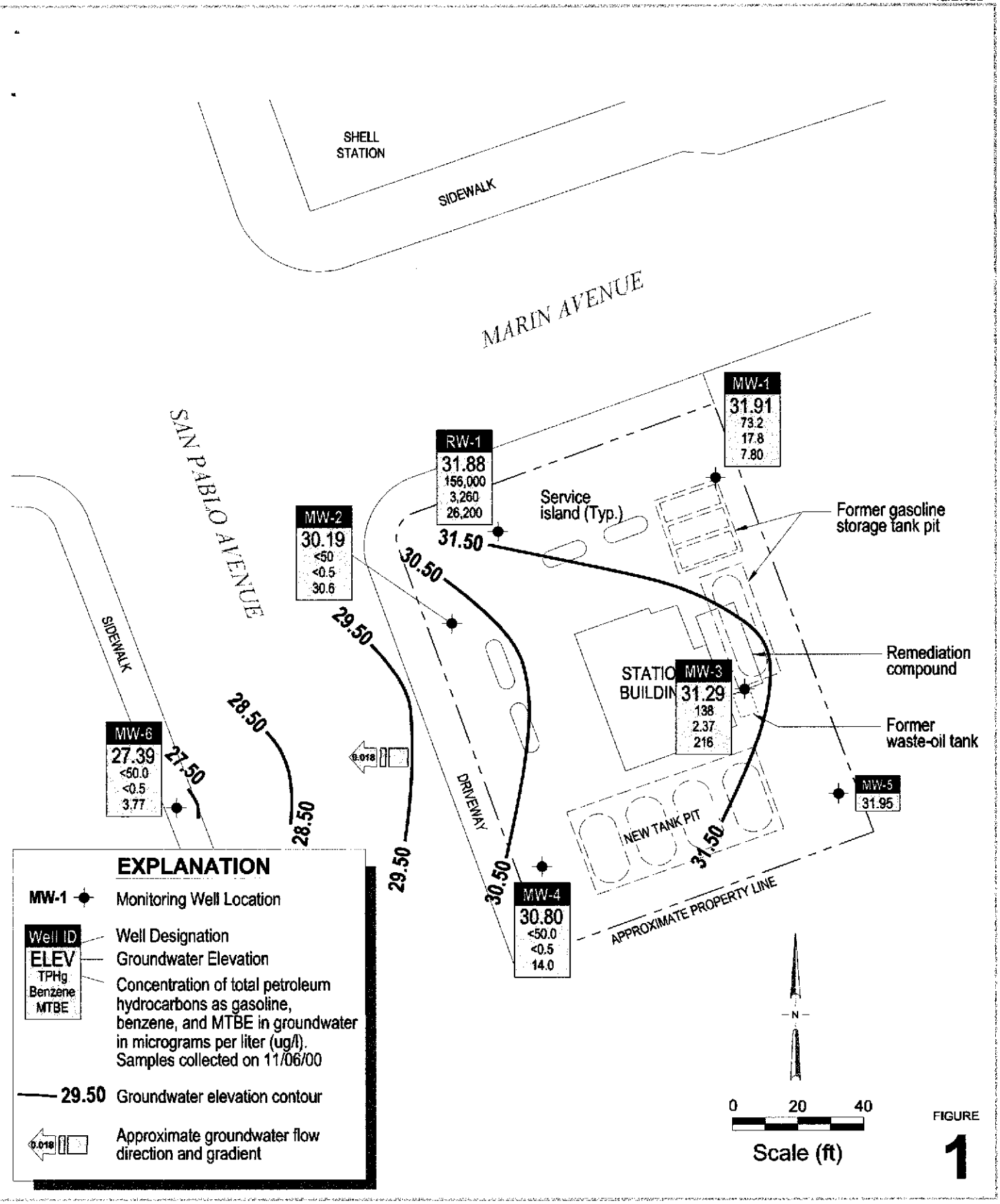

FIGURE 1

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ARCO Service Station 2035

1001 San Pablo Avenue

Albany, California

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Groundwater Elevation Contour and Analytical Summary Map

November 6, 2000

Table 1
Groundwater Monitoring Data

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation [1] (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 8240/8260 (µg/L)	TRPH (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-1	03-24-95	41.41	6.21	0.00	35.20	03-24-95	8,800	3,600	<50	62	99	--	--	--		
MW-1	05-24-95	41.41	9.37	0.00	32.04	05-24-95	4,800	2,000	<20	52	<20	--	--	--		
MW-1	08-22-95	41.41	10.30	0.00	31.11	08-22-95	780	310	<2.5	12	<2.5	14	--	--		
MW-1	11-09-95	41.41	12.25	0.00	29.16	11-09-95	58	14	<0.5	<0.5	<0.5	--	--	--		
MW-1	02-27-96	41.41	9.08	0.00	32.33	02-27-96	2,700	930	12	18	32	51	--	--		
MW-1	04-22-96	41.41	9.11	0.00	32.30	04-22-96	2,700	1,000	<10	22	<10	<60	--	--		
MW-1	08-15-96	41.41	10.37	0.00	31.04	08-15-96	300	52	<0.5	0.9	<0.5	22	--	--		
MW-1	12-10-96	41.41	8.79	0.00	32.62	12-10-96	270	63	0.7	<0.5	1	25	--	--		
MW-1	03-27-97	41.41	9.80	0.00	31.61	03-27-97	1,500	610	<5	15	7	56	--	--		
MW-1	05-22-97	41.41	9.65	0.00	31.76	05-22-97	110	6	<0.5	<0.5	0.7	10	--	--		
MW-1	09-04-97	41.41	10.22	0.00	31.19	09-04-97	180	40	<0.5	1.2	0.5	26	--	--		
MW-1	11-03-97	41.41	10.68	0.00	30.73	11-03-97	83	8	<0.5	<0.5	<0.5	13	--	--		
MW-1	02-20-98	41.41	6.92	0.00	34.49	02-20-98	1,800	540	7	27	31	46	--	--		
MW-1	05-18-98	41.41	9.28	0.00	32.13	05-18-98	4,500	1,300	20	57	20	<60	--	--		
MW-1	08-20-98	41.41	10.05	0.00	31.36	08-21-98	530	110	<5	<5	<5	400	--	--		
MW-1	10-20-98	41.41	10.42	0.00	30.99	10-20-98	66	9.1	<0.5	<0.5	<0.5	8	--	--		
MW-1	02-16-99	41.41	8.10	0.00	33.31	02-16-99	1,200	390	<5	<5	6	45	--	--		
MW-1	05-24-99	41.41	9.53	0.00	31.88	05-24-99	1,300	600	3	13	3	26	--	--		
MW-1	08-24-99	41.41	10.03	0.00	31.38	08-24-99	100	21	1.3	<0.5	<0.5	8	--	--	0.55	P
MW-1	11-16-99	41.41	9.80	0.00	31.61	11-16-99	99	10	0.6	<0.5	<1	7	--	--	2.1	P
MW-1	02-01-00	41.41	8.82	0.00	32.59	02-02-00	400	93	1.6	3.6	3.7	19	--	--	1.0	P
DUP 1	06-21-00	--	--	--	--	06-21-00	416	88.4	<2.50	4.61	1.56	<5.00	--	--	--	--
MW-1	06-21-00	41.41	9.60	0.00	31.81	06-21-00	444	100	<2.50	4.15	<2.50	15.9	--	--	1.7	P
MW-1	**11-06-00**	**41.41**	**9.50**	**0.00**	**31.91**	**11-06-00**	**73.2**	**17.8**	**<0.500**	**<0.500**	**<0.500**	**7.80**	**--**	**--**	**1.04**	**P**
MW-2	03-24-95	40.38	6.96	0.00	33.42	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
MW-2	05-24-95	40.38	10.02	0.00	30.36	05-24-95	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-2	08-22-95	40.38	10.87	0.00	29.51	08-22-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
MW-2	11-09-95	40.38	13.12	0.00	27.26	11-09-95	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-2	02-27-96	40.38	10.25	0.00	30.13	02-27-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		

Table 1
Groundwater Monitoring Data

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation [1]	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 8240/8260 (µg/L)	TRPH (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-2	04-22-96	40.38	9.98	0.00	30.40	04-22-96	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-2	08-15-96	40.38	11.10	0.00	29.28	08-15-96	<50	<0.5	<0.5	<0.5	<0.5	4	--	--		
MW-2	12-10-96	40.38	10.00	0.00	30.38	12-10-96	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-2	03-27-97	40.38	10.38	0.00	30.00	03-27-97	<50	<0.5	<0.5	<0.5	<0.5	12	--	--		
MW-2	05-22-97	40.38	10.65	0.00	29.73	05-22-97	Not sampled: well sampled semi-annually, during the first and third quarters									
MW-2	09-04-97	40.38	10.87	0.00	29.51	09-04-97	<50	<0.5	<0.5	<0.5	<0.5	19	--			
MW-2	11-03-97	40.38	11.25	0.00	29.13	11-03-97	<50	<0.5	<0.5	<0.5	<0.5	18	--	--		
MW-2	02-20-98	40.38	7.69	0.00	32.69	02-20-98	<50	0.5	<0.5	<0.5	<0.5	12	--	--		
MW-2	05-18-98	40.38	9.88	0.00	30.50	05-18-98	<50	<0.5	<0.5	<0.5	<0.5	10	--	--		
MW-2	08-20-98	40.38	10.62	0.00	29.76	08-21-98	<50	<0.5	<0.5	<0.5	<0.5	3	--	--		
MW-2	10-20-98	40.38	11.00	0.00	29.38	10-20-98	<50	<0.5	<0.5	<0.5	<0.5	31	--	--		
MW-2	02-16-99	40.38	9.04	0.00	31.34	02-16-99	<50	<0.5	<0.5	<0.5	<0.5	13	--	--		
MW-2	05-24-99	40.38	9.90	0.00	30.48	05-24-99	<50	0.6	<0.5	<0.5	<0.5	47	--	--		
MW-2	08-24-99	40.38	10.60	0.00	29.78	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	20	--	--	0.88	P
MW-2	11-16-99	40.38	10.45	0.00	29.93	11-16-99	<50	<0.5	<0.5	<0.5	<1	<3	--	--	2.5	P
MW-2	02-01-00	40.38	9.49	0.00	30.89	02-02-00	<50	<0.5	<0.5	<0.5	<1	59	--	--	1.0	P
MW-2	06-21-00	40.38	10.30	0.00	30.08	06-21-00	<50.0	<0.500	<0.500	<0.500	<0.500	4.17	--	--	1.5	P
MW-2	**11-06-00**	**40.38**	**10.19**	**0.00**	**30.19**	**11-06-00**	**<50.0**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**30.6**	**--**	**--**	**1.27**	**P**
MW-3	03-24-95	41.44	7.29	0.00	34.15	03-24-95	51	0.8	<0.5	2.4	<0.5	--	--	<500		
MW-3	05-24-95	41.44	9.53	0.00	31.91	05-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	<500		
MW-3	08-22-95	41.44	11.19	0.00	30.25	08-22-95	<50	<0.5	<0.5	<0.5	<0.5	79	--	<500		
MW-3	11-09-95	41.44	12.77	0.00	28.67	11-09-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	600		
MW-3	02-27-96	41.44	9.41	0.00	32.03	02-27-96	120	3.6	<0.5	2.2	3.7	90	--	<0.5		
MW-3	04-22-96	41.44	9.63	0.00	31.81	04-22-96	<50	<0.5	<0.5	<0.5	<0.5	90	--	--		
MW-3	08-15-96	41.44	11.12	0.00	30.32	08-15-96	<50	<0.5	<0.5	<0.5	<0.5	54	--	--		
MW-3	12-10-96	41.44	10.34	0.00	31.10	12-10-96	71	<0.5	<0.5	<0.5	<0.5	130	--	--		
MW-3	03-27-97	41.44	10.28	0.00	31.16	03-27-97	<100	<1	<1	<1	<1	170	--	--		
MW-3	05-22-97	41.44	10.40	0.00	31.04	05-22-97	<100	<1	<1	<1	<1	95	--	--		
MW-3	09-04-97	41.44	10.75	0.00	30.69	09-04-97	<50	<0.5	<0.5	<0.5	<0.5	37	--	--		

Table 1
Groundwater Monitoring Data

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation [1] (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 8240/8260 (µg/L)	TRPH (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-3	11-03-97	41.44	11.44	0.00	30.00	11-03-97	<200	<2	<2	<2	<2	130	--	--		
MW-3	02-20-98	41.44	7.48	0.00	33.96	02-20-98	<200	<2	5	<2	8	140	--	<0.5		
MW-3	05-18-98	41.44	9.87	0.00	31.57	05-18-98	<100	<1	<1	<1	<1	150	--	<0.5		
MW-3	08-20-98	41.44	10.72	0.00	30.72	08-21-98	<200	<2	<2	<2	<2	210	--	<0.5		
MW-3	10-20-98	41.44	11.30	0.00	30.14	10-20-98	<200	<2	<2	<2	<2	270	--	<0.5		
MW-3	02-16-99	41.44	8.60	0.00	32.84	02-16-99	<500	<5	<5	<5	<5	700	--	--		
MW-3	05-24-99	41.44	9.87	0.00	31.57	05-24-99	<50	<0.5	<0.5	<0.5	<0.5	150	140	--		
MW-3	08-24-99	41.44	10.83	0.00	30.61	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	54	71	--	0.41	P
MW-3	11-16-99	41.44	10.54	0.00	30.90	11-16-99	100	<0.5	3.3	<0.5	<1	500	--	--	6.2	P
MW-3	02-01-00	41.44	5.69	0.00	35.75	02-02-00	18,000	1,000	45	1,500	940	100	--	--	2.12	P
MW-3	06-21-00	41.44	9.99	0.00	31.45	06-21-00	90.9	1.52	<0.500	<0.500	<0.500	187	--	--	2.6	P
MW-3	**11-06-00**	**41.44**	**10.15**	**0.00**	**31.29**	**11-06-00**	**138**	**2.37**	**<0.500**	**<0.500**	**<0.500**	**216**	**--**	**--**	**0.47**	**P**
MW-4	03-24-95	40.33	5.92	0.00	34.41	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
MW-4	05-24-95	40.33	9.23	0.00	31.10	05-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
MW-4	08-22-95	40.33	10.61	0.00	29.72	08-22-95	<50	<0.5	<0.5	<0.5	<0.5	99	--	--		
MW-4	11-09-95	40.33	11.97	0.00	28.36	11-09-95	<50	<0.5	<0.5	<0.5	<0.5	--	89	--		
MW-4	02-27-96	40.33	8.84	0.00	31.49	02-27-96	<50	0.8	<0.5	<0.5	<0.5	<3	--	--		
MW-4	04-22-96	40.33	9.15	0.00	31.18	04-22-96	Not sampled: well sampled annually, during the first quarter									
MW-4	08-15-96	40.33	10.35	0.00	29.98	08-15-96	Not sampled: well sampled annually, during the first quarter									
MW-4	12-10-96	40.33	8.70	0.00	31.63	12-10-96	Not sampled: well sampled annually, during the first quarter									
MW-4	03-27-97	40.33	9.75	0.00	30.58	03-27-97	<5,000	<50	<50	<50	<50	4,200	--	--		
MW-4	05-22-97	40.33	9.91	0.00	30.42	05-22-97	Not sampled: well sampled annually, during the first quarter									
MW-4	09-04-97	40.33	10.25	0.00	30.08	09-04-97	Not sampled: well sampled annually, during the first quarter									
MW-4	11-03-97	40.33	10.79	0.00	29.54	11-03-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
MW-4	02-20-98	40.33	6.78	0.00	33.55	02-20-98	<2,000	<20	<20	<20	<20	3,300	--	--		
MW-4	05-18-98	40.33	9.26	0.00	31.07	05-18-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
MW-4	08-20-98	40.33	10.10	0.00	30.23	08-21-98	<50	<0.5	<0.5	<0.5	<0.5	9	--	--		
MW-4	10-20-98	40.33	10.43	0.00	29.90	10-20-98	<50	<0.5	<0.5	<0.5	<0.5	17	--	--		
MW-4	02-16-99	40.33	8.56	0.00	31.77	02-16-99	<500	<5	<5	<5	<5	400	--	--		

Table 1
Groundwater Monitoring Data

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation [1] (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 8240/8260 (µg/L)	TRPH (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-4	05-24-99	40.33	9.52	0.00	30.81	05-24-99	<50	<0.5	<0.5	<0.5	<0.5	10	7.6	- -		
MW-4	08-24-99	40.33	9.99	0.00	30.34	08-24-99	<2,500	<25	<25	<25	<25	1,200	1,300	- -	0.84	NP
MW-4	11-16-99	40.33	9.80	0.00	30.53	11-16-99	<50	<0.5	<0.5	<0.5	<1	<3	- -	- -	0.0	NP
MW-4	02-01-00	40.33	9.11	0.00	31.22	02-02-00	<50	<0.5	<0.5	<0.5	<1	1,200	- -	- -	1.0	NP
MW-4	06-21-00	40.33	9.60	0.00	30.73	06-21-00	<50.0	<0.500	<0.500	<0.500	<0.500	60.5	- -	- -	1.3	NP
MW-4	**11-06-00**	**40.33**	**9.53**	**0.00**	**30.80**	**11-06-00**	**<50.0**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**14.0**	**- -**	**- -**	**0.71**	**NP**
MW-5	03-24-95	41.84	6.23	0.00	35.61	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	- -	- -	- -		
MW-5	05-24-95	41.84	9.61	0.00	32.23	05-24-95	Not sampled: well sampled annually, during the first quarter									
MW-5	08-22-95	41.84	11.12	0.00	30.72	08-22-95	Not sampled: well sampled annually, during the first quarter									
MW-5	11-09-95	41.84	12.52	0.00	29.32	11-09-95	Not sampled: well sampled annually, during the first quarter									
MW-5	02-27-96	41.84	9.52	0.00	32.32	02-27-96	<50	<0.5	<0.5	<0.5	<0.5	<3	- -	- -		
MW-5	04-22-96	41.84	9.44	0.00	32.40	04-22-96	Not sampled: well sampled annually, during the first quarter									
MW-5	08-15-96	41.84	10.83	0.00	31.01	08-15-96	Not sampled: well sampled annually, during the first quarter									
MW-5	12-10-96	41.84	9.20	0.00	32.64	12-10-96	Not sampled: well sampled annually, during the first quarter									
MW-5	03-27-97	41.84	10.10	0.00	31.74	03-27-97	<50	<0.5	<0.5	<0.5	<0.5	<3	- -	- -		
MW-5	05-22-97	41.84	10.28	0.00	31.56	05-22-97	Not sampled: well sampled annually, during the first quarter									
MW-5	09-04-97	41.84	10.73	0.00	31.11	09-04-97	Not sampled: well sampled annually, during the first quarter									
MW-5	11-03-97	41.84	11.23	0.00	30.61	11-03-97	Not sampled: well sampled annually, during the first quarter									
MW-5	02-20-98	41.84	6.67	0.00	35.17	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	- -	- -		
MW-5	05-18-98	41.84	9.61	0.00	32.23	05-18-98	Not sampled: well sampled annually, during the first quarter									
MW-5	08-20-98	41.84	10.58	0.00	31.26	08-21-98	Not sampled: well sampled annually, during the first quarter									
MW-5	10-20-98	41.84	10.66	0.00	31.18	10-20-98	Not sampled: well sampled annually, during the first quarter									
MW-5	02-16-99	41.84	8.35	0.00	33.49	02-16-99	Not sampled									
MW-5	05-24-99	41.84	9.95	0.00	31.89	05-24-99	<50	<0.5	<0.5	<0.5	<0.5	<3	- -	- -		
MW-5	08-24-99	41.84	10.51	0.00	31.33	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	<3	- -	- -	0.79	NP
MW-5	11-16-99	41.84	10.37	0.00	31.47	11-16-99	Not sampled: well sampled annually, during the second quarter									
MW-5	02-01-00	41.84	9.35	0.00	32.49	02-02-00	<50	<0.5	<0.5	<0.5	<1	<3	- -	- -	1.0	NP
MW-5	06-21-00	41.84	10.03	0.00	31.81	06-21-00	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	- -	- -	3.1	NP
MW-5	**11-06-00**	**41.84**	**9.89**	**0.00**	**31.95**	**11-06-00**	**Not sampled: well sampled annually, during the second quarter**									

Table 1
Groundwater Monitoring Data

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation [1] (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 8240/8260 (µg/L)	TRPH (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
MW-6	03-24-95	40.13	9.03	0.00	31.10	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
MW-6	05-24-95	40.13	12.45	0.00	27.68	05-24-95	Not sampled: well sampled annually, during the first quarter									
MW-6	08-22-95	40.13	13.32	0.00	26.81	08-22-95	Not sampled: well sampled annually, during the first quarter									
MW-6	11-09-95	40.13	14.13	0.00	26.00	11-09-95	Not sampled: well sampled annually, during the first quarter									
MW-6	02-27-96	40.13	11.86	0.00	28.27	02-27-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
MW-6	04-22-96	40.13	12.35	0.00	27.78	04-22-96	Not sampled: well sampled annually, during the first quarter									
MW-6	08-15-96	40.13	13.18	0.00	26.95	08-15-96	Not sampled: well sampled annually, during the first quarter									
MW-6	12-10-96	40.13	11.94	0.00	28.19	12-10-96	Not sampled: well sampled annually, during the first quarter									
MW-6	03-27-97	40.13	13.10	0.00	27.03	03-27-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
MW-6	05-22-97	40.13	13.00	0.00	27.13	05-22-97	Not sampled: well sampled annually, during the first quarter									
MW-6	09-04-97	40.13	13.30	0.00	26.83	09-04-97	Not sampled: well sampled annually, during the first quarter									
MW-6	11-03-97	40.13	13.42	0.00	26.71	11-03-97	<50	<0.5	<0.5	<0.5	<0.5	19	--	--		
MW-6	02-20-98	40.13	10.57	0.00	29.56	02-20-98	<100	<1	<1	<1	<1	95	--	--		
MW-6	05-18-98	40.13	12.64	0.00	27.49	05-18-98	<100	<1	<1	<1	<1	180	--	--		
MW-6	08-20-98	40.13	13.13	0.00	27.00	08-21-98	<100	<1	<1	<1	<1	180	--	--		
MW-6	10-20-98	40.13	13.48	0.00	26.65	10-20-98	<100	<1	<1	<1	<1	180	--	--		
MW-6	02-16-99	40.13	11.92	0.00	28.21	02-16-99	<200	<2	<2	<2	<2	200	--	--		
MW-6	05-24-99	40.13	12.80	0.00	27.33	05-24-99	<50	<0.5	<0.5	<0.5	<0.5	120	--	--		
MW-6	08-24-99	40.13	13.03	0.00	27.10	08-24-99	<50	<0.5	<0.5	<0.5	<0.5	44	--	--	0.46	NP
MW-6	11-16-99	40.13	12.70	0.00	27.43	11-16-99	<50	<0.5	<0.5	<0.5	<1	17	17	--	0.0	NP
MW-6	02-01-00	40.13	8.61	0.00	31.52	02-02-00	<50	<0.5	<0.5	<0.5	<1	6	--	--	1.0	NP
MW-6	06-21-00	40.13	12.88	0.00	27.25	06-21-00	<50.0	<0.500	<0.500	<0.500	<0.500	2.57	--	--	2.8	NP
MW-6	**11-06-00**	**40.13**	**12.74**	**0.00**	**27.39**	**11-06-00**	**<50.0**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**3.77**	--	--	**1.51**	**NP**
DUP	**11-06-00**	--	--	--	--	**11-06-00**	**<50.0**	**<0.500**	**<0.500**	**<0.500**	**<0.500**	**4.03**	--	--	--	--
RW-1	03-24-95	40.33	9.32	0.01	31.02	03-24-95	11,000	560	660	150	1,700	--	--	--		
RW-1	05-24-95	40.33	9.75	0.03	30.60	05-24-95	Not sampled: well contained floating product									
RW-1	08-22-95	40.33	10.86	0.02	29.48	08-22-95	Not sampled: well contained floating product									
RW-1	11-09-95	40.33	20.61	0.00	19.72	11-09-95	1,600	79	46	13	240	--	--	--		

Table 1
Groundwater Monitoring Data

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation [1] (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 8240/8260 (µg/L)	TRPH (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
RW-1	02-27-96	40.33	16.56	0.00	23.77	02-27-96	210	44	7.5	2.5	24	29	--	--		
RW-1	04-22-96	40.33	9.65	0.00	30.68	04-22-96	36,000	7,400	3,700	580	3,400	<300	--	--		
RW-1	08-15-96	40.33	10.60	0.00	29.73	08-15-96	1,800	31	38	15	150	<30	--	--		
RW-1	12-10-96	40.33	8.72	0.00	31.61	12-10-96	25,000	1,900	1,000	330	3,200	<100	--	--		
RW-1	03-27-97	40.33	10.33	0.00	30.00	03-27-97	7,200	1,900	59	95	240	480	--	--		
RW-1	05-22-97	40.33	10.10	0.00	30.23	05-22-97	3,000	630	84	45	340	<60	--	--		
RW-1	09-04-97	40.33	10.42	0.00	29.91	09-04-97	7,100	120	55	14	160	<60	--	--		
RW-1	11-03-97	40.33	9.10	0.00	31.23	11-03-97	<200	14	19	3	19	140	--	--		
RW-1	02-20-98	40.33	7.49	0.00	32.84	02-20-98	3,800	1,000	85	64	220	950	--	--		
RW-1	05-18-98	40.33	8.90	0.00	31.43	05-18-98	<200	45	<2	2	4	220	--	--		
RW-1	08-20-98	40.33	11.06	0.00	29.27	08-21-98	480	200	<2	<2	30	180	--	--		
RW-1	10-20-98	40.33	11.12	0.00	29.21	10-20-98	110	36	2.9	<0.5	4.1	5	--	--		
RW-1	02-16-99	40.33	7.70	0.00	32.63	02-17-99	250	61	2	2	19	94	--	--		
RW-1	05-24-99	40.33	11.12	0.00	29.21	05-24-99	4,500	2,000	7	<2	180	35	--	--		
RW-1	08-24-99	40.33	10.15	0.00	30.18	08-24-99	2,600	1,100	6.3	2.3	17	39	--	--	0.52	NP
RW-1	11-16-99	40.33	9.95	0.00	30.38	11-16-99	1,200	2,600	16	86	41	140	--	--	1.4	P
RW-1	02-01-00	40.33	11.88	0.00	28.45	02-02-00	11,000	980	230	200	1,400	38	--	--	1.0	NP
RW-1	06-21-00	40.33	9.83	0.00	30.50	06-21-00	899	278	<2.50	8.70	8.46	61.1	--	--	1.3	NP
RW-1	**11-06-00**	**40.33**	**8.45**	**0.00**	**31.88**	**11-06-00**	**156,000**	**3,260**	**28,800**	**4,570**	**25,700**	**26,200**	**--**	**--**	**0.63**	**P**

Table 1
Groundwater Monitoring Data

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation [1] (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 8240/8260 (µg/L)	TRPH (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level
TPH: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
BTEX: benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 11/16/99).
MTBE: Methyl tert-butyl ether
TRPH: total recoverable petroleum hydrocarbons, by EPA method 418.1
µg/L: micrograms per liter
mg/L: milligrams per liter
ND: none detected
- -: not analyzed or not applicable
<: denotes concentration not present at or above laboratory detection limit stated to the right.
[1] = Computed by adding correction factor to groundwater elevation. Correction factor = free product thickness times 0.73 (approximate specific gravity of gasoline).
*: EPA method 8020 prior to 11/16/99
**: For previous historical groundwater elevation and analytical data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 2035, Albany, California*, (EMCON, March 25, 1996).

Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
03-24-95	Northwest	0.037
05-24-95	West-Northwest	0.013
08-22-95	Southwest	0.012
11-09-95	West-Southwest	0.01
02-27-96	Southwest	0.009
04-22-96	West-Southwest	0.014
08-15-96	Southwest	0.011
12-10-96	West-Southwest	0.023
03-27-97	West-Southwest	0.026
05-22-97	West-Southwest	0.024
09-04-97	West	0.019
11-03-97	Southwest	0.038
02-20-98	West	0.031
05-18-98	West	0.02
08-20-98	West	0.02
10-20-98	West	0.02
02-16-99	West	0.03
05-24-99	West-Southwest	0.03
08-24-99	West-Southwest	0.01
11-16-99	West-Southwest	0.02
02-01-00	Northwest	0.08
06-21-00	West	0.023
11-06-00	**West**	**0.018**

Table 3
Soil Vapor Extraction System (1997-Present)
Operational Uptime Information

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Date	Period Operation					Cumulative Operation			
	Meter (hours)	Total (days)	Uptime (days)	Downtime (days)	Uptime (%)	Total (days)	Uptime (days)	Downtime (days)	Uptime (%)
11/01/97						1425	335	1090	24%
12/01/97	11484.46	30	14	16	47%	1455	349	1106	24%
01/27/98	11484.46	57	0	57	0%	1512	349	1163	23%
08/12/98	11484.46	197	0	197	0%	1709	349	1360	20%
09/02/98	11484.69	21	0	21	0%	1730	349	1381	20%
10/19/98	12279.71	47	33	14	70%	1777	382	1395	22%
11/10/98	12809.36	22	22	0	100%	1799	404	1395	22%
01/22/99	12809.36	73	0	73	0%	1872	404	1468	22%
02/11/99	12809.53	20	0	20	0%	1892	404	1488	21%
04/01/99	12809.64	49	0	49	0%	1941	404	1537	21%
06/10/99	12810.03	70	0	70	0%	2011	404	1607	20%
06/24/99	13146.19	14	14	0	100%	2025	418	1607	21%
08/17/99	13146.19	54	0	54	0%	2079	418	1661	20%
09/09/99	13146.76	23	0	23	0%	2102	418	1684	20%
09/21/99	13435.42	12	12	0	100%	2114	430	1684	20%
10/06/99	13450.28	15	1	14	4%	2129	431	1698	20%
10/20/99	13474.88	14	1	13	7%	2143	432	1711	20%
11/03/99	13811.70	14	14	0	100%	2157	446	1711	21%
11/17/99	14148.06	14	14	0	100%	2171	460	1711	21%
12/01/99	14391.11	14	10	4	72%	2185	470	1715	22%
12/16/99	14751.38	15	15	0	100%	2200	485	1715	22%
01/05/00	14751.41	20	0	20	0%	2220	485	1735	22%
01/19/00	15087.10	14	14	0	100%	2234	499	1735	22%
02/21/00	15087.15	33	0	33	0%	2267	499	1768	22%
03/01/00	15303.43	9	9	0	100%	2276	508	1768	22%
03/23/00	15830.59	22	22	0	100%	2298	530	1768	23%

Table 3
Soil Vapor Extraction System (1997-Present)
Operational Uptime Information

ARCO Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Date	Period Operation					Cumulative Operation			
	Meter (hours)	Total (days)	Uptime (days)	Downtime (days)	Uptime (%)	Total (days)	Uptime (days)	Downtime (days)	Uptime (%)
10/17/00	15831.89	208	0	208	0%	2506	530	1976	21%
10/24/00	15998.10	7	7	0	99%	2513	537	1976	21%
11/13/00	16318.69	20	13	7	67%	2533	551	1982	22%
11/28/00	16318.88	15	0	15	0%	2548	551	1997	22%

Table 4
Soil Vapor Extraction System
Flow Rates and Analytical Results of Air Samples (1997 - present)

Arco Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Date	Sample Location	Vacuum (in. H20)	Velocity (fpm)	Flowrate[1] (scfm)	Hydrocarbon Concentrations (ppmv) TPHg	Benzene	Toluene	Ethylbenzene	Xylene	MTBE
12/01/97	Influent			221.40	160	0.6	<0.1	1.6	2.5	
	Effluent				8	<0.1	0.1	<0.1	0.3	
01/27/98	Influent	NA	NA	NA	NA	NA	NA	NA	NA	
	Effluent									
08/12/98	Influent	NA	NA	NA	NA	NA	NA	NA	NA	
	Effluent									
09/02/98	Influent	30.0	600	27.27	610	<1	<1	2	3	
	Effluent		1050	92.44	9	<0.1	<0.1	0.1	<0.2	
10/19/98	Influent	20.0	500	23.33	64	<0.1	0.7	<0.1	<0.2	
	Effluent		1200	106.45	<5	<0.1	<0.1	<0.1	<0.2	
11/10/98	Influent	20.0	500	23.33	8	<0.1	0.1	<0.1	<0.2	
	Effluent		1200	106.45	<5	<0.1	<0.1	<0.1	<0.2	
06/10/99	Influent	35.0	1500	67.26	100	0.5	3	<0.1	0.9	<1
	Effluent		975	74.86	<5	<0.1	<0.1	<0.1	<0.2	<1
09/09/99	Influent	15.4	1900	89.69	<49	0.7	1.1	<0.1	<0.2	33
	Effluent		1200	92.14	<5	<0.1	<0.1	<0.1	<0.2	<0.8
10/06/99	Influent	16.0	1825	86.02	240	1	2.9	<0.1	0.7	67
	Effluent		900	69.11	9	<0.1	0.1	0.1	<0.2	<0.8
12/01/99	Influent	11.0	1900	90.70	210	0.7	0.8	<0.2	0.2	61
	Effluent		1500	115.18	<5	<0.1	<0.1	<0.1	<0.2	1.4
01/05/00	Influent	9.8	800	38.30	90	0.4	0.7	0.1	<0.2	33
	Effluent		1450	111.34	<5	<0.1	<0.1	<0.1	<0.2	<0.8
03/01/00	Influent	9.8	2000	95.76	54	1.3	4.8	1.1	7.2	19
	Effluent		1500	115.18	<5	<0.1	<0.1	<0.1	<0.2	<0.8
10/17/00	**Influent**	**19.0**	**--**	**27.32**	**77**	**1.4**	**1.8**	**0.33**	**1.4**	**20**
	Effluent		**--**	**102.54**	**6.0**	**0.044**	**0.16**	**0.055**	**0.38**	**0.59**

Table 4
Soil Vapor Extraction System
Flow Rates and Analytical Results of Air Samples (1997 - present)

Arco Service Station No. 2035
1001 San Pablo Avenue, Albany, California

Date	Sample Location	Vacuum (in. H20)	Velocity (fpm)	Flowrate[1] (scfm)	Hydrocarbon Concentrations (ppmv)					
					TPHg	Benzene	Toluene	Ethylbenzene	Xylene	MTBE

[1] Influent Flow Rate previous to 10/17/00, cfm = (Velocity, fpm)(Influent Pipe Area, sq. ft.)(406.8 in.H20 - Vacuum, in.H20) / (406.8 in.H20)
where Influent Pipe Diameter = 3"
Effluent Flow Rate, cfm = (Velocity, fpm)(Effluent Pipe Area, sq.ft.)[(460° R + 77° F)/(460° R + Vapor Temp F)]
where Effluent (after blower) Pipe Diameter = 4"

Table 5
Soil Vapor Extraction System
Extraction Rates, Emission Rates, Destruction Efficiency, and Mass Removed
(1997 - present)

ARCO Service Station No. 2035
1001 San Pablo Avenue, Alabany, California

Date	Extraction Rate from Wellfield[1]		Emission Rate to Atmosphere[2]		Destruction Efficiency[3]		Period Removal[4]		Cumulative Removal	
	TPHg (lbs/day)	Benzene (lbs/day)	TPHg (lbs/day)	Benzene (lbs/day)	TPHg (%)	Benzene (%)	TPHg (lbs)	Benzene (lbs)	TPHg (lbs)	Benzene (lbs)
12/01/97	13.02	0.0381	0.6508	<0.0064	95%	NC	0.000	0.000	3023	250.5
09/02/98	6.11	0.0000	0.3057	<0.0027	95%	NC	135	0.000	3157	250.5
10/19/98	0.549	0.0000	<0.1956	<0.0031	NC	NC	0.000	0.000	3157	250.5
11/10/98	0.069	0.0000	<0.1956	<0.0031	NC	NC	0.000	0.000	3157	250.5
06/10/99	2.47	0.0097	<0.1375	<0.0021	94%	NC	34.7	0.135	3192	250.7
09/09/99	0.0000	0.0180	<0.1693	<0.0026	NC	NC	0.000	0.217	3192	250.9
10/06/99	7.59	0.0247	0.2285	<0.0020	97%	92%	316	1.03	3509	251.9
12/01/99	7.00	0.0182	<0.2116	<0.0033	97%	82%	176	0.458	3685	252.4
01/05/00	1.27	0.0044	<0.2046	<0.0032	84%	27%	17.7	0.0615	3702	252.4
03/01/00	1.90	0.0357	<0.2116	<0.0033	89%	91%	58.9	1.11	3761	253.5
10/17/00	**0.77**	**0.0110**	**<0.2261**	**<0.0013**	**71%**	**88%**	**15.7**	**0.223**	**3777**	**253.8**

[1] Extraction Rate, lbs/day = (Influent Flow, cfm)(Influent conc., ppmv)(g/mole)(60 min/hr)(24 hr/day)(28.3 L/cf) / (10^6)(24.45 moles/L)(453.6 g/lb)
where TPHG = 100 g/mole and Benzene = 78.1 g/mole; Influent conc. = 0, if reported as non-detect

[2] Emission Rate, lbs/day = (Effluent Flow, cfm)(Effluent conc., ppmv)(g/mole)(60 min/hr)(24 hr/day)(28.3 L/cf) / (10^6)(24.45 moles/L)(453.6 g/lb)
where TPHG = 100 g/mole and Benzene = 78.1 g/mole; Effluent conc. = Method Reporting Limit, if reported as non-detect

[3] Destruction Efficiency, % = (Extraction Rate - Emission Rate)(100) / (Extraction Rate); NC = Not Calculated due to non-detection.

[4] Period Removal, lbs = (Extraction Rate)(Uptime)

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

404 N. Wiget Lane
Walnut Creek, CA 94598
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www.sequoialabs.com

20 October, 2000

Darryk Ataide
Cambria - Oakland
1144 65th St. Suite C
Oakland, CA 94608

RE: Arco
Sequoia Report: W010441

Enclosed are the results of analyses for samples received by the laboratory on 19-Oct-00 15:05. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Charlie Westwater
Project Manager

CA ELAP Certificate #1271

Sequoia Analytical

404 N. Wiget Lane
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Cambria - Oakland	Project: Arco	
1144 65th St. Suite C	Project Number: Arco #2035	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Ataide	20-Oct-00 14:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
IN	W010441-01	Air	17-Oct-00 00:00	19-Oct-00 15:05
EF	W010441-02	Air	17-Oct-00 00:00	19-Oct-00 15:05

Sequoia Analytical - Walnut Creek

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.

Charlie Westwater, Project Manager

Sequoia Analytical

404 N. Wiget Lane
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Cambria - Oakland	Project: Arco	
1144 65th St. Suite C	Project Number: Arco #2035	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Ataide	20-Oct-00 14:29

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

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IN (W010441-01) Air Sampled: 17-Oct-00 00:00 Received: 19-Oct-00 15:05									**P-02**
Purgeable Hydrocarbons	**310**	100	mg/m³ Air	2	0J19004	19-Oct-00	19-Oct-00	DHS LUFT	
Benzene	**4.5**	1.0	"	"	"	"	"	"	
Toluene	**6.9**	1.0	"	"	"	"	"	"	
Ethylbenzene	**1.4**	1.0	"	"	"	"	"	"	
Xylenes (total)	**6.2**	1.0	"	"	"	"	"	"	
Methyl tert-butyl ether	**72**	5.0	"	"	"	"	"	"	CC-3
Surrogate: a,a,a-Trifluorotoluene		*90.7 %*	*70-130*		"	"	"	"	
EF (W010441-02) Air Sampled: 17-Oct-00 00:00 Received: 19-Oct-00 15:05									**P-01**
Purgeable Hydrocarbons	**25**	10	mg/m³ Air	0.2	0J19004	19-Oct-00	20-Oct-00	DHS LUFT	
Benzene	**0.14**	0.10	"	"	"	"	"	"	
Toluene	**0.60**	0.10	"	"	"	"	"	"	
Ethylbenzene	**0.24**	0.10	"	"	"	"	"	"	
Xylenes (total)	**1.6**	0.10	"	"	"	"	"	"	
Methyl tert-butyl ether	**2.1**	0.50	"	"	"	"	"	"	
rogate: a,a,a-Trifluorotoluene		*85.3 %*	*70-130*		"	"	"	"	

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Cambria - Oakland	Project: Arco	
1144 65th St. Suite C	Project Number: Arco #2035	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Ataide	20-Oct-00 14:29

Total Purgeable Hydrocarbons (C6-C12) and BTEX in Air by DHS LUFT

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
IN (W010441-01) Air Sampled: 17-Oct-00 00:00 Received: 19-Oct-00 15:05									
Purgeable Hydrocarbons	77	2.4	ppmv	1	0J19004	19-Oct-00	19-Oct-00	DHS LUFT	
Benzene	1.4	0.016	"	"	"	"	"	"	
Toluene	1.8	0.013	"	"	"	"	"	"	
Ethylbenzene	0.33	0.012	"	"	"	"	"	"	
Xylenes (total)	1.4	0.012	"	"	"	"	"	"	
Methyl tert-butyl ether	20	0.14	"	"	"	"	"	"	
EF (W010441-02) Air Sampled: 17-Oct-00 00:00 Received: 19-Oct-00 15:05									
Purgeable Hydrocarbons	6.0	2.4	ppmv	1	0J19004	19-Oct-00	20-Oct-00	DHS LUFT	
Benzene	0.044	0.016	"	"	"	"	"	"	
Toluene	0.16	0.013	"	"	"	"	"	"	
Ethylbenzene	0.055	0.012	"	"	"	"	"	"	
Xylenes (total)	0.38	0.012	"	"	"	"	"	"	
Methyl tert-butyl ether	0.59	0.14	"	"	"	"	"	"	

Sequoia Analytical

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Cambria - Oakland	Project: Arco	
1144 65th St. Suite C	Project Number: Arco #2035	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Ataide	20-Oct-00 14:29

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0J19004 - EPA 5030B [P/T]										
Blank (0J19004-BLK1)				Prepared & Analyzed: 16-Oct-00						
Purgeable Hydrocarbons	ND	10	mg/m³ Air							
Benzene	ND	0.10	"							
Toluene	ND	0.10	"							
Ethylbenzene	ND	0.10	"							
Xylenes (total)	ND	0.10	"							
Methyl tert-butyl ether	ND	0.50	"							
Surrogate: a,a,a-Trifluorotoluene	*5.32*		"	*6.00*		*88.7*	*70-130*			
Blank (0J19004-BLK2)				Prepared & Analyzed: 19-Oct-00						
Purgeable Hydrocarbons	ND	10	mg/m³ Air							
Benzene	ND	0.10	"							
Toluene	ND	0.10	"							
Ethylbenzene	ND	0.10	"							
Xylenes (total)	ND	0.10	"							
Methyl tert-butyl ether	ND	0.50	"							
Surrogate: a,a,a-Trifluorotoluene	*6.40*		"	*6.00*		*107*	*70-130*			
Blank (0J19004-BLK3)				Prepared & Analyzed: 20-Oct-00						
Purgeable Hydrocarbons	ND	10	mg/m³ Air							
Benzene	ND	0.10	"							
Toluene	ND	0.10	"							
Ethylbenzene	ND	0.10	"							
Xylenes (total)	ND	0.10	"							
Methyl tert-butyl ether	ND	0.50	"							
Surrogate: a,a,a-Trifluorotoluene	*5.44*		"	*6.00*		*90.7*	*70-130*			
LCS (0J19004-BS1)				Prepared & Analyzed: 19-Oct-00						
Benzene	1.70	0.10	mg/m³ Air	2.00		85.0	70-130			
Toluene	1.77	0.10	"	2.00		88.5	70-130			
Ethylbenzene	1.84	0.10	"	2.00		92.0	70-130			
Xylenes (total)	5.42	0.10	"	6.00		90.3	70-130			
Surrogate: a,a,a-Trifluorotoluene	*4.74*		"	*6.00*		*79.0*	*70-130*			

Sequoia Analytical

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Cambria - Oakland	Project: Arco	
1144 65th St. Suite C	Project Number: Arco #2035	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Ataide	20-Oct-00 14:29

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

Sequoia Analytical - Walnut Creek

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0J19004 - EPA 5030B [P/T]										
LCS (0J19004-BS2)				Prepared & Analyzed: 19-Oct-00						
Benzene	3.86	0.10	mg/m³ Air	4.00		96.5	70-130			
Toluene	3.94	0.10	"	4.00		98.5	70-130			
Ethylbenzene	4.00	0.10	"	4.00		100	70-130			
Xylenes (total)	11.6	0.10	"	12.0		96.7	70-130			
Surrogate: a,a,a-Trifluorotoluene	*5.56*		"	*6.00*		*92.7*	*70-130*			
LCS Dup (0J19004-BSD1)				Prepared & Analyzed: 19-Oct-00						
Benzene	1.52	0.10	mg/m³ Air	2.00		76.0	70-130	11.2	25	
Toluene	1.58	0.10	"	2.00		79.0	70-130	11.3	25	
Ethylbenzene	1.62	0.10	"	2.00		81.0	70-130	12.7	25	
Xylenes (total)	4.68	0.10	"	6.00		78.0	70-130	14.7	25	
Surrogate: a,a,a-Trifluorotoluene	*5.44*		"	*6.00*		*90.7*	*70-130*			

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Cambria - Oakland	Project: Arco	
1144 65th St. Suite C	Project Number: Arco #2035	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Ataide	20-Oct-00 14:29

Notes and Definitions

CC-3	Continuing Calibration indicates that the quantitative result for this analyte includes a greater than 15% degree of uncertainty. The value as reported is within method acceptance.
P-01	Chromatogram Pattern: Gasoline C6-C12
P-02	Chromatogram Pattern: Gasoline C6-C12 + Unidentified Hydrocarbons <C6
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. WO10441

Chain of Custody

ARCO Facility no. 2035	City (Facility) Albany, CA	Project manager (Consultant) Darryk Ataide	Laboratory name Sequoia
ARCO engineer Paul Supple	Telephone no. (ARCO) 925-299-8891	Telephone no. (Consultant) (510) 420-3339	Fax no. (Consultant) (510) 420-9170
Consultant name CAMBRIA	Address (Consultant) 1144 65th St. Oakland CA 94608		Contract number 26043 00

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other (AIR)	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH/MTBE EPA 8260/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 8248240	EPA 8258270	TCLP Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
IN	01A	1			X			17Oct00	1600		X											
EF	02A	1			X			17Oct00	1605		X											

Special detection Limit/reporting: Report Results in PPMV. Lowest possible detection Limits.

Special QA/QC:

Remarks: BTEX, TPHg MTBE on all Samples.

Lab number:

Turnaround time:

- Priority Rush 1 Business Day: X
- Rush 2 Business Days: X
- Expedited 5 Business Days: ☐
- Standard 10 Business Days: ☐

Condition of sample:

Temperature received:

	Date	Time	
Relinquished by sampler: Julie A. Beal	19Oct00	1300	Received by: Mark Collins/Sequoia 10/19/00 1350
Relinquished by: Mark Collins	10/19	1505	Received by:
Relinquished by:	Date	Time	Received by laboratory: Kenneth C Jensen WC — Date 10/19/00 — Time 15:05

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

APC-3292 (2-9)

Sequoia
Analytical

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30 November, 2000

Darryk Attaide
Cambria - Oakland
1144 65th St, Suite B
Oakland, CA 94608

RE: Arco 2035
Sequoia Report: MJK0617

Enclosed are the results of analyses for samples received by the laboratory on 11/16/00 19:59. 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 - Oakland	Project: Arco 2035	
1144 65th St, Suite B	Project Number: 436-1608	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Attaide	11/30/00 19:20

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	MJK0617-01	Water	11/06/00 15:59	11/16/00 19:59
MW-2	MJK0617-02	Water	11/06/00 15:10	11/16/00 19:59
MW-3	MJK0617-03	Water	11/06/00 14:38	11/16/00 19:59
MW-4	MJK0617-04	Water	11/06/00 15:30	11/16/00 19:59
MW-6	MJK0617-05	Water	11/06/00 13:55	11/16/00 19:59
RW-1	MJK0617-06	Water	11/06/00 16:47	11/16/00 19:59
DUP	MJK0617-07	Water	11/06/00 00:00	11/16/00 19:59

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 - Oakland	Project: Arco 2035	
1144 65th St, Suite B	Project Number: 436-1608	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Attaide	11/30/00 19:20

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 (MJK0617-01) Water Sampled: 11/06/00 15:59 Received: 11/16/00 19:59									
Purgeable Hydrocarbons	**73.2**	50.0	ug/l	1	0K21004	11/21/00	11/21/00	DHS LUFT	H-02,P-01
Benzene	**17.8**	0.500	"	"	"	"	"	"	H-02
Toluene	ND	0.500	"	"	"	"	"	"	H-02
Ethylbenzene	ND	0.500	"	"	"	"	"	"	H-02
Xylenes (total)	ND	0.500	"	"	"	"	"	"	H-02
Methyl tert-butyl ether	**7.80**	2.50	"	"	"	"	"	"	H-02
Surrogate: a,a,a-Trifluorotoluene		*89.5 %*	*70-130*		"	"	"	"	*H-02*
MW-2 (MJK0617-02) Water Sampled: 11/06/00 15:10 Received: 11/16/00 19:59									
Purgeable Hydrocarbons	ND	50.0	ug/l	1	0K24002	11/24/00	11/24/00	DHS LUFT	H-02
Benzene	ND	0.500	"	"	"	"	"	"	H-02
Toluene	ND	0.500	"	"	"	"	"	"	H-02
Ethylbenzene	ND	0.500	"	"	"	"	"	"	H-02
Xylenes (total)	ND	0.500	"	"	"	"	"	"	H-02
Methyl tert-butyl ether	**30.6**	2.50	"	"	"	"	"	"	H-02
Surrogate: a,a,a-Trifluorotoluene		*97.0 %*	*70-130*		"	"	"	"	*H-02*
MW-3 (MJK0617-03) Water Sampled: 11/06/00 14:38 Received: 11/16/00 19:59									
Purgeable Hydrocarbons	**138**	50.0	ug/l	1	0K21004	11/21/00	11/21/00	DHS LUFT	H-02,P-03
Benzene	**2.37**	0.500	"	"	"	"	"	"	H-02
Toluene	ND	0.500	"	"	"	"	"	"	H-02
Ethylbenzene	ND	0.500	"	"	"	"	"	"	H-02
Xylenes (total)	ND	0.500	"	"	"	"	"	"	H-02
Methyl tert-butyl ether	**216**	2.50	"	"	"	"	"	"	H-02
Surrogate: a,a,a-Trifluorotoluene		*83.9 %*	*70-130*		"	"	"	"	*H-02*

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Cambria - Oakland	Project: Arco 2035	
1144 65th St, Suite B	Project Number: 436-1608	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Attaide	11/30/00 19:20

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-4 (MJK0617-04) Water Sampled: 11/06/00 15:30 Received: 11/16/00 19:59									
Purgeable Hydrocarbons	ND	50.0	ug/l	1	0K21004	11/21/00	11/21/00	DHS LUFT	H-02
Benzene	ND	0.500	"	"	"	"	"	"	H-02
Toluene	ND	0.500	"	"	"	"	"	"	H-02
Ethylbenzene	ND	0.500	"	"	"	"	"	"	H-02
Xylenes (total)	ND	0.500	"	"	"	"	"	"	H-02
Methyl tert-butyl ether	**14.0**	2.50	"	"	"	"	"	"	H-02
Surrogate: a,a,a-Trifluorotoluene		*89.6 %*	*70-130*		"	"	"	"	*H-02*
MW-6 (MJK0617-05) Water Sampled: 11/06/00 13:55 Received: 11/16/00 19:59									
Purgeable Hydrocarbons	ND	50.0	ug/l	1	0K21004	11/21/00	11/21/00	DHS LUFT	H-02
Benzene	ND	0.500	"	"	"	"	"	"	H-02
Toluene	ND	0.500	"	"	"	"	"	"	H-02
Ethylbenzene	ND	0.500	"	"	"	"	"	"	H-02
Xylenes (total)	ND	0.500	"	"	"	"	"	"	H-02
Methyl tert-butyl ether	**3.77**	2.50	"	"	"	"	"	"	H-02
Surrogate: a,a,a-Trifluorotoluene		*88.9 %*	*70-130*		"	"	"	"	*H-02*
RW-1 (MJK0617-06) Water Sampled: 11/06/00 16:47 Received: 11/16/00 19:59									
Purgeable Hydrocarbons	**156000**	50000	ug/l	1000	0K21004	11/21/00	11/21/00	DHS LUFT	H-02,P-01
Benzene	**3260**	500	"	"	"	"	"	"	H-02
Toluene	**28800**	500	"	"	"	"	"	"	H-02
Ethylbenzene	**4570**	500	"	"	"	"	"	"	H-02
Xylenes (total)	**25700**	500	"	"	"	"	"	"	H-02
Methyl tert-butyl ether	**26200**	2500	"	"	"	"	"	"	H-02
Surrogate: a,a,a-Trifluorotoluene		*87.2 %*	*70-130*		"	"	"	"	*H-02*

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Cambria - Oakland	Project: Arco 2035	
1144 65th St, Suite B	Project Number: 436-1608	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Attaide	11/30/00 19:20

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
DUP (MJK0617-07) Water Sampled: 11/06/00 00:00 Received: 11/16/00 19:59									
Purgeable Hydrocarbons	ND	50.0	ug/l	1	0K21004	11/21/00	11/21/00	DHS LUFT	H-02
Benzene	ND	0.500	"	"	"	"	"	"	H-02
Toluene	ND	0.500	"	"	"	"	"	"	H-02
Ethylbenzene	ND	0.500	"	"	"	"	"	"	H-02
Xylenes (total)	ND	0.500	"	"	"	"	"	"	H-02
Methyl tert-butyl ether	**4.03**	2.50	"	"	"	"	"	"	H-02
Surrogate: a,a,a-Trifluorotoluene		*88.1 %*		*70-130*		"	"	"	*H-02*

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Cambria - Oakland	Project: Arco 2035	
1144 65th St, Suite B	Project Number: 436-1608	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Attaide	11/30/00 19:20

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 0K21004 - EPA 5030B [P/T]										
Blank (0K21004-BLK1)				Prepared & Analyzed: 11/21/00						
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	*8.77*		"	*10.0*		*87.7*	*70-130*			
LCS (0K21004-BS1)				Prepared & Analyzed: 11/21/00						
Purgeable Hydrocarbons	220	50.0	ug/l	250		88.0	70-130			
Surrogate: a,a,a-Trifluorotoluene	*8.05*		"	*10.0*		*80.5*	*70-130*			
Matrix Spike (0K21004-MS1)		**Source: MJK0525-01**		Prepared & Analyzed: 11/21/00						
Purgeable Hydrocarbons	215	50.0	ug/l	250	ND	86.0	60-140			
Surrogate: a,a,a-Trifluorotoluene	*9.23*		"	*10.0*		*92.3*	*70-130*			
Matrix Spike Dup (0K21004-MSD1)		**Source: MJK0525-01**		Prepared & Analyzed: 11/21/00						
Purgeable Hydrocarbons	204	50.0	ug/l	250	ND	81.6	60-140	5.25	25	
Surrogate: a,a,a-Trifluorotoluene	*9.21*		"	*10.0*		*92.1*	*70-130*			
Batch 0K24002 - EPA 5030B [P/T]										
Blank (0K24002-BLK1)				Prepared & Analyzed: 11/24/00						
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	*9.69*		"	*10.0*		*96.9*	*70-130*			

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Cambria - Oakland	Project: Arco 2035	
1144 65th St, Suite B	Project Number: 436-1608	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Attaide	11/30/00 19:20

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 0K24002 - EPA 5030B [P/T]										
LCS (0K24002-BS1)				Prepared & Analyzed: 11/24/00						
Benzene	9.79	0.500	ug/l	10.0		97.9	70-130			
Toluene	9.95	0.500	"	10.0		99.5	70-130			
Ethylbenzene	9.55	0.500	"	10.0		95.5	70-130			
Xylenes (total)	28.7	0.500	"	30.0		95.7	70-130			
Surrogate: a,a,a-Trifluorotoluene	*9.60*		"	*10.0*		*96.0*	*70-130*			
Matrix Spike (0K24002-MS1)		**Source: MJK0640-05**		Prepared & Analyzed: 11/24/00						
Benzene	10.1	0.500	ug/l	10.0	ND	101	60-140			
Toluene	10.1	0.500	"	10.0	ND	99.4	60-140			
Ethylbenzene	9.85	0.500	"	10.0	ND	98.5	60-140			
Xylenes (total)	30.4	0.500	"	30.0	ND	101	60-140			
Surrogate: a,a,a-Trifluorotoluene	*10.4*		"	*10.0*		*104*	*70-130*			
Matrix Spike Dup (0K24002-MSD1)		**Source: MJK0640-05**		Prepared & Analyzed: 11/24/00						
Benzene	9.60	0.500	ug/l	10.0	ND	96.0	60-140	5.08	25	
Toluene	9.53	0.500	"	10.0	ND	93.7	60-140	5.81	25	
Ethylbenzene	9.16	0.500	"	10.0	ND	91.6	60-140	7.26	25	
Xylenes (total)	27.6	0.500	"	30.0	ND	91.4	60-140	9.66	25	
Surrogate: a,a,a-Trifluorotoluene	*9.45*		"	*10.0*		*94.5*	*70-130*			

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Cambria - Oakland	Project: Arco 2035	
1144 65th St, Suite B	Project Number: 436-1608	**Reported:**
Oakland CA, 94608	Project Manager: Darryk Attaide	11/30/00 19:20

Notes and Definitions

H-02	This sample was analyzed outside of EPA recommended hold time.
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

Chain of Custody

ARCO Facility no. 2035 | City (Facility) Albany | Project manager (Consultant) Daysik Ataide | Laboratory name Sequoia

ARCO engineer Paul Supple | Telephone no. (ARCO) 925-299-8891 | Telephone no. (Consultant) 510-420-3300 | Fax no. (Consultant) 510-420-9170 | Contract number

Consultant name Cambria Env. Tech | Address (Consultant) 1144 65th St Oakland Ca. | Method of shipment

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Water	Other	Preservation: Ice	Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA M602/8020/8015	TPH Modified 8015 Gas / Diesel	Oil and Grease 413.1 / 413.2	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals / VOA / Semi VOA	CAM METALS EPA 6010/7000 TTLC / STLC	Lead Org./DHS / Lead EPA 7420/7421	TPHg BTEX MTBE by 8021B
MW-1	01	4		X		X	X	11-6-00	15:54												X
MW-2	02	4		X		X	X	11-6-00	15:10												X
MW-3	03	4		X		X	X	11-6-00	14:38												X
MW-4	04	4		X		X	X	11-6-00	15:30												X
MW-6	05	4		X		X	X	11-6-00	13:55												X
RW-1	04	4		X		X	X	11-6-00	16:47												X
DUP	07	4		X		X	X	11-6-00													X

Special detection Limit/reporting: Lowest possible

Special QA/QC

Remarks

Lab number: MJK0617

Condition of sample:

Temperature received:

Relinquished by sampler	Date	Time	Received by	Date	Time
D. Gill	11-15-00	11:30		11-15-00	1130
Relinquished by	Date	Time	Received by	Date	Time
Gene Herman	11/16/00	14:00	James M (MH)	11/16/00	19:50 PM
Relinquished by	Date	Time	Received by	Date	Time

Turnaround time

- Priority Rush 1 Business Day [ ]
- Rush 2 Business Days [ ]
- Expedited 5 Business Days [ ]
- Standard 10 Business Days [X]

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

APPENDIX C

FIELD DATA SHEETS

CAMBRIA

WELL DEPTH MEASUREMENTS

Well ID	Order	Time	Top of Screen	DTB	DTP	DTW	DOP	Casing Dia	Comment
MW-1	6	13:30	15'	30.1'		9.50		4"	
MW-2	4	13:20	20'	29.1'		10.19		4"	
MW-3	3	13:15	12.5'	33.5'		10.15		4"	
MW-4	5	13:25	8.5'	25.8'		9.53		4"	
MW-5	1	13:10	8.5'	25.1'		9.89		4"	
MW-6	2	13:05	8'	24.8'		12.74		2"	
RW-1	7	13:35	11'	25.4'		8.45		6"	

Project Name: **ARCO 2035**

Project Number: **436-1608**

Measured By: L. Dill

Date: 11-6-00

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CAMBRIA

WELL SAMPLING FORM

Project Name: ARCO 2035	Cambria Mgr: DA	Well ID: [redacted] RW-1
Project Number: 436-1609-003	Date: 11-6-00	Well Yield: -----
Site Address: 1001 SAN PABLO AVE ALBANY, CA	Sampling Method: Disposable bailer	Well Diameter: 6" pvc
		Technician(s): SG
Initial Depth to Water: 8.45	Total Well Depth: 25.40	Water Column Height: ~~24.15~~ 16.95
Volume/ft: 1.47	1 Casing Volume: 24.95 ~~35.50~~	3 Casing Volumes: ~~106.50~~ 74.74
Purging Device: 4" pvc bailer	Did Well Dewater?: NO	Total Gallons Purged: 74
Start Purge Time: 16:20	Stop Purge Time: 16:41	Total Time: 21 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
16:27	1	25	17.1	6.94	854	
16:34	2	50	16.8	7.37	897	
16:42	3	75	16.5	7.39	855	
						DO = 0.63 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-RW-2	11-6-00	16:47	4 VOA	HCl	TPHg BTEX MtbE by 8021B	8021B
MW-						

CAMBRIA

WELL SAMPLING FORM

Project Name: ARCO 2035	Cambria Mgr: DA	Well ID: MW- MW-1
Project Number: 436-1609-003	Date: 11-6-00	Well Yield: -----
Site Address: 1001 SAN PABLO AVE ALBANY, CA	Sampling Method: Disposable bailer	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 9.50	Total Well Depth: 30.10	Water Column Height: 20.60
Volume/ft: 0.65	1 Casing Volume: 13.39	3 Casing Volumes: 40.17
Purging Device: PVC bailer	Did Well Dewater?:	Total Gallons Purged:
Start Purge Time: 15:40	Stop Purge Time: 15:53	Total Time: 13mins

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
1545	1 13	16.9	7.76	645	
15:48	2 26	15.6	7.02	697	
15:54	3 40	16.2	7.22	628	
					DO=1.04 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW- MW-1	11-6-00	15:59	4 VOA	HCl	TPHg BTEX MtbE by 8021B	8021B
MW-						

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NSM 5/31/94

CAMBRIA

WELL SAMPLING FORM

Project Name: ARCO 2035	Cambria Mgr: DA	Well ID: MW- 4
Project Number: 436-1609-003	Date: 11-6-00	Well Yield: -----
Site Address: 1001 SAN PABLO AVE ALBANY, CA	Sampling Method: Disposable bailer	Well Diameter: 4" pvc
		Technician(s):
Initial Depth to Water: 9.53	Total Well Depth: 25.80	Water Column Height:
Volume/ft: 0.65	1 Casing Volume:	3 Casing Volumes:
Purging Device:	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
	1				
	2				
	3				
		NO PURGE			
					DO = 0.71 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW- 4	11-6-00	15:30	4 VOA	HCl	TPHg BTEX MtbE by 8021B	8021B
MW-						

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NSM 5/31/94

CAMBRIA

WELL SAMPLING FORM

Project Name: ARCO 2035	Cambria Mgr: DA	Well ID: MW- 2
Project Number: 436-1608-003	Date: 11-6-00	Well Yield: -----
Site Address: 1001 SAN PABLO AVE ALBANY, CA	Sampling Method: Disposable bailer	Well Diameter: 4" pvc
		Technician(s): SG
Initial Depth to Water: 10.19	Total Well Depth: 29.10	Water Column Height: 18.91
Volume/ft: 0.65	1 Casing Volume: 12.29	3 Casing Volumes: 36.87
Purging Device: PVC bailer	Did Well Dewater?: NO	Total Gallons Purged: 36
Start Purge Time: 14:50	Stop Purge Time: 15:04	Total Time: 14mins

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
14:55	1	12	18.4	7.92	830	
14:59	2	24	17.0	7.26	677	
15:05	3	36	17.2	6.78	654	
						DO = 1.27 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW- 2	11-6-00	15:10	4 VOA	HCl	TPHg BTEX MtbE by 8021B	8021B
MW-						

CAMBRIA

WELL SAMPLING FORM

Project Name: ARCO 2035	Cambria Mgr: DA	Well ID: MW- 3
Project Number: 436-1608-003	Date: 11-6-00	Well Yield: -----
Site Address: 1001 SAN PABLO AVE ALBANY, CA	Sampling Method: Disposable bailer	Well Diameter: ~~2~~ 4 pvc
		Technician(s): SG
Initial Depth to Water: 10.15	Total Well Depth: 33.50	Water Column Height: 23.35
Volume/ft: 0.65	1 Casing Volume: 15.17	3 Casing Volumes: 45.50
Purging Device: ~~PVC~~ bailer	Did Well Dewater?: NO	Total Gallons Purged: 45
Start Purge Time: 14:21	Stop Purge Time: 14:32	Total Time: 11min

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
14:24	1 15	17.5	7.97	1875	
14:27	2 30	18.1	7.14	1804	
14:33	3 45	18.7	7.19	1851	
					DO 0.47 mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW-3	11-6-00	14:38	4 VOA	HCl	TPHg BTEX MtbE by 8021B	8021B
MW-						

CAMBRIA

WELL SAMPLING FORM

Project Name: ARCO 2035	Cambria Mgr: DA	Well ID: MW-6
Project Number: 436-1608-003	Date: 11-6-00	Well Yield: -----
Site Address: 1001 San Pablo Ave Albany, CA	Sampling Method: Disposable bailer	Well Diameter: ~~4~~ pvc 2" PVC
		Technician(s): SG
Initial Depth to Water: 12.74	Total Well Depth: 24.8	Water Column Height:
Volume/ft: 0.16 ~~0.65~~	1 Casing Volume:	3 Casing Volumes:
Purging Device:	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
	1				
	2				
	3				
		NO purge			
					DO= 1.51 ~~6.51~~ mg/L

Sample ID	Date	Time	Container Type	Preservative	Analytes	Analytic Method
MW- 6	11-6-00	13:55	4 VOA	HCl	TPHs BTEX MTBE	8021B
MW-	DUP					

D:\TEMPLATE\FORMS\FIELD\WELLSAMP.WPD
NSM 5/31/94