ARCO Products Company
4 Centerpointe Drive
La Palma, California 90623-1066
Telephone 714 670 5300

Mailing Address: Box 5077
Buena Park, California 90622-5077

R072

Date: June 1, 1999

Re: ARCO Station #

2169 • 889 West Grand Avenue • Oakland, CA
First Quarter 1999 Groundwater Monitoring Results and
Remediation System Performance Evaluation Report

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct. In accordance with Assembly Bill 681 all current property owners have been provided a copy of this report, work plan or closure request."

Submitted by:

Paul Supple
Environmental Engineer

June 1, 1999
Project 20805-129.006

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

Re: Quarterly Groundwater Monitoring Results and Remediation System Performance Evaluation Report, First Quarter 1999, for ARCO Service Station No. 2169, located at 889 West Grand Avenue, Oakland, California

Dear Mr. Supple:

Pinnacle Environmental Solutions, a division of EMCON (Pinnacle), is submitting the attached report which presents the results of the first quarter 1999 groundwater monitoring program at ARCO Products Company (ARCO) Service Station No. 2169, located at 889 West Grand Avenue, Oakland, California. Operation and performance data for the site's interim soil-vapor extraction (SVE) and air-bubbling remediation systems are also presented. The monitoring program complies with the Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

LIMITATIONS

No monitoring event is thorough enough to describe all geologic and hydrogeologic conditions of interest at a given site. If conditions have not been identified during the monitoring event, results should not be construed as a guarantee of the absence of such conditions at the site, but rather as the product of the scope and limitations of work performed during the monitoring event.

Please call if you have questions.

Sincerely,

Pinnacle

Glen VanderVeen
Project Manager

Valli Voruganti, P.E.
Project Engineer

Attachment: Quarterly Groundwater Monitoring Report, First Quarter 1999

cc: Susan Hugo, ACHCSA

OAK\S:\ARCO\2169\QTRLY\2169Q199.DOC\uh:1

Date: June 1, 1999

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.: 2169 Address:	889 West Grand Avenue, Oakland, California
Pinnacle Project No.	20805-129.006
ARCO Environmental Engineer/Phone No.:	Paul Supple /(925) 299-8891
Pinnacle Project Manager/Phone No.:	Glen VanderVeen /(510) 740-5807
Primary Agency/Regulatory ID No.:	ACHCSA

WORK PERFORMED THIS QUARTER (FIRST - 1999):

1. Prepared and submitted quarterly groundwater monitoring report for fourth quarter 1998.
2. Performed quarterly groundwater monitoring and sampling for first quarter 1999.
3. Operated air bubbling system.
4. SVE system remained shut down due to low hydrocarbon concentrations in extracted vapor.

WORK PROPOSED FOR NEXT QUARTER (SECOND - 1999):

1. Prepare and submit quarterly groundwater monitoring report for first quarter 1999.
2. Perform quarterly groundwater monitoring and sampling for second quarter 1999.
3. Restart soil-vapor extraction (SVE) system and operate continuously, if hydrocarbon removal rates warrant.
4. Continue with air bubbling to enhance natural biodegredation.

QUARTERLY MONITORING:

Current Phase of Project:	Quarterly Groundwater Monitoring and Operation and Maintenance of Remediation Systems
Frequency of Sampling:	Annual (1st Quarter): A-3, A-4 Semi-annual (1st/2nd Quarter): A-2, AR-1, AR-2 Quarterly: A-1, A-5, A-6, ADR-1, ADR-2
Frequency of Monitoring:	Quarterly (groundwater), Monthly (SVE and Air-Bubbling)
Is Floating Product (FP) Present On-site:	☐ Yes ☒ No
Cumulative FP Recovered to Date :	4.8 gallons, Wells ADR-1 and ADR-2
FP Recovered This Quarter :	None
Bulk Soil Removed to Date :	2,196 cubic yards of TPH-impacted soil
Bulk Soil Removed This Quarter :	None
Water Wells or Surface Waters within 2000 ft., impacted by site:	None
Current Remediation Techniques:	SVE and Air-Bubbling Systems
Average Depth to Groundwater:	8.1 feet
Groundwater Flow Direction and Gradient (Average):	0.008 ft/ft toward northwest

SVE QUARTERLY OPERATION AND PERFORMANCE:

Equipment Inventory:	Therm Tech Model VAC-25, 250 cfm, Thermal/Catalytic Oxidizer
Operating Mode:	Catalytic Oxidation
BAAQMD Permit #:	12119
TPH Conc. End of Period (lab):	Not applicable
Benzene Conc. End of Period (lab):	Not applicable
Flowrate End of Period:	Not applicable
HC Destroyed This Period:	Not applicable
HC Destroyed to Date:	8582.3 pounds
Utility Usage Electric (KWH):	Not available
Operating Hours This Period:	0 hours
Percent Operational:	0%
Operating Hours to Date:	7726.81 hours
Unit Maintenance:	Not applicable
Number of Auto Shut Downs:	0
Destruction Efficiency Permit Requirement:	90%
Average Percent TPH Conversion:	Not applicable
Average Stack Temperature:	Not applicable
Average Source Flow:	Not applicable
Average Process Flow:	Not applicable
Average Source Vacuum:	Not applicable

DISCUSSION:

- Wells A-3 and A-4 will be sampled during the 2nd quarter 1999. (Scheduled for annual sampling during the first quarter).

ATTACHMENTS:

- Table 1 - Historical Groundwater Elevation and Analytical Data, Petroleum Hydrocarbons and Their Constituents
- Figure 1 - Groundwater Analytical Summary Map
- Figure 2 - Groundwater Elevation Contour Map
- Appendix A - Sampling and Analysis Procedures
- Appendix B - Certified Analytical Reports and Chain-of-Custody Documentation
- Appendix C - Field Data Sheets

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

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A-1	03-24-95	14.16	8.10	6.06	ND	NW	0.009	03-24-95	1200	230	39	34	66	--	--	160
A-1	06-05-95	14.16	11 13	3 03	ND	NW	0.002	06-05-95	1500	310	27	36	76	--	--	710
A-1	08-17-95	14.16	11.71	2.45	ND	W	0.001	08-18-95	1600	470	35	48	110	120	--	240
A-1	12-04-95	14 16	12.28	1.88	ND	NNW	0 002	12-04-95	1200	240	17	25	56	--	120	--
A-1	03-01-96	14.16	8.78	5.38	ND	NW	0 003	03-13-96	1300	300	74	29	73	100	--	--
A-1	05-29-96	14.16	9.85	4.31	ND	NW	0.002	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters							
A-1	08-29-96	14.16	11.08	3.08	ND	W	0.002	08-29-96	1200	320	5.9	25	27	110	--	--
A-1	11-21-96	14 16	10.54	3.62	ND	WNW	0.002	11-21-96	Not sampled. well sampled semi-annually, during the first and third quarters							
A-1	03-26-97	14 16	10.55	3.61	ND	NW	0.002	03-26-97	<50	0.8	<0 5	<0.5	<0.5	64	--	--
A-1	05-21-97	14.16	11.10	3.06	ND	NNW	0.002	05-21-97	*Not sampled: well sampled semi-annually, during the first and third quarters*							
A-1	08-08-97	14.16	11.32	2.84	ND	NNW	0.002	08-08-97	91	7	<0.5	0.5	3.9	<60	--	--
A-1	11-18-97	14.16	3.46	10.70	ND	NNW	0.003	11-18-97	54	<0.5	<0.5	<0.5	0.6	27	--	--
A-1	02-20-98	14.16	7 10	7.06	ND	N	0.013	02-23-98	590	160	22	15	28	70	--	--
A-1	05-11-98	14 16	9.87	4.29	ND	N	0 03	05-11-98	280	26	<0 5	0.8	2.3	6	--	--
A-1	07-30-98	14.16	10.73	3.43	ND	N	0.002	07-30-98	1000	210	5	<5	38	<30	--	--
A-1	10-08-98	14.16	11.15	3.01	ND	NNW	0.002	10-08-98	3100	740	11	<10	24	<60	--	--
A-1	02-18-99	14.16	8 00	6 16	ND	NW	0.008	02-18-99	510	87	7.1	6 4	13	52	--	--
A-2	03-24-95	14.55	8.64	5 91	ND	NW	0 009	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
A-2	06-05-95	14.55	11.72	2 83	ND	NW	0.002	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
A-2	08-17-95	14.55	12.35	2.20	ND	W	0.001	08-17-95	<50	<0.5	<0.5	<0.5	<0 5	12	--	--
A-2	12-04-95	14.55	12.74	1.81	ND	NNW	0 002	12-04-95	<50	<0 5	<0 5	<0.5	<0.5	--	--	--
A-2	03-01-96	14.55	9.34	5.21	ND	NW	0.003	03-13-96	<50	<0 5	0 6	<0.5	1 3	<9	--	--
A-2	05-29-96	14.55	10.40	4.15	ND	NW	0.002	05-29-96	<50	<0.5	<0 5	<0.5	<0.5	<20	--	--
A-2	08-29-96	14.55	11 50	3.05	ND	W	0.002	08-29-96	<50	<0.5	<0.5	<0.5	<0 5	<39	--	--
A-2	11-21-96	14.55	11 06	3 49	ND	WNW	0.002	11-21-96	<50	<0.5	<0.5	<0.5	<0.5	<30	--	--
A-2	03-26-97	14.55	11.12	3.43	ND	NW	0.002	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--
A-2	05-21-97	14.55	11 58	2 97	ND	NNW	0.002	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters							
A-2	08-08-97	14 55	11.82	2.73	ND	NNW	0 002	08-08-97	<50	<0.5	<0.5	<0 5	<0.5	<20	--	--
A-2	11-18-97	14.55	3.33	11.22	ND	NNW	0.003	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters							
A-2	02-20-98	14 55	7.68	6.87	ND	N	0.013	02-20-98	<50	<0.5	<0.5	<0 5	<0.5	17	--	--

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Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A-2	05-11-98	14.55	10 45	4.10	ND	N	0 03	05-11-98	Not sampled							
A-2	07-30-98	14.55	11.23	3 32	ND	N	0.002	07-30-98	Not sampled: well sampled semi-annually, during the first and second quarters							
A-2	10-08-98	14.55	11.62	2.93	ND	NNW	0.002	10-08-98	Not sampled: well sampled semi-annually, during the first and second quarters							
A-2	02-18-99	14.55	8.62	5.93	ND	NW	0.008	02-18-99	93	<0.5	<0 5	<0.5	<1	26	--	--
A-3	03-24-95	15.75	8.83	6.92	ND	NW	0.009	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
A-3	06-05-95	15.75	12.44	3.31	ND	NW	0.002	06-05-95	Not sampled: well sampled annually, during the first quarter							
A-3	08-17-95	15.75	13.04	2.71	ND	W	0.001	08-17-95	Not sampled: well sampled annually, during the first quarter							
A-3	12-04-95	15.75	13.57	2.18	ND	NNW	0 002	12-04-95	Not sampled: well sampled annually, during the first quarter							
A-3	03-01-96	15 75	9.90	5 85	ND	NW	0 003	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
A-3	05-29-96	15.75	11.08	4.67	ND	NW	0.002	05-29-96	Not sampled: well sampled annually, during the first quarter							
A-3	08-29-96	15.75	12.38	3.37	ND	W	0 002	08-29-96	Not sampled: well sampled annually, during the first quarter							
A-3	11-21-96	15.75	11.86	3.89	ND	WNW	0.002	11-21-96	Not sampled: well sampled annually, during the first quarter							
A-3	03-26-97	15.75	11.81	3.94	ND	NW	0.002	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
A-3	05-21-97	15.75	12.35	3 40	ND	NNW	0 002	05-21-97	Not sampled: well sampled annually, during the first quarter							
A-3	08-08-97	15.75	12.62	3.13	ND	NNW	0.002	08-08-97	Not sampled: well sampled annually, during the first quarter							
A-3	11-18-97	15.75	3.75	12.00	ND	NNW	0.003	11-18-97	Not sampled: well sampled annually, during the first quarter							
A-3	02-20-98	15.75	8 06	7 69	ND	N	0 013	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
A-3	05-11-98	15.75	11.19	4.56	ND	N	0.03	05-11-98	Not sampled: well sampled annually, during the first quarter							
A-3	07-30-98	15.75	12.05	3.70	ND	N	0.002	07-30-98	Not sampled. well sampled annually, during the first quarter							
A-3	10-08-98	15 75	12.43	3 32	ND	NNW	0 002	10-08-98	Not sampled: well sampled annually, during the first quarter							
A-3	02-18-99	15.75	9.05	6.70	ND	NW	0.008	02-18-99	Not sampled							
A-4	03-24-95	15.25	7 20	8 05	ND	NW	0 009	03-24-95	<50	<0 5	<0.5	<0 5	<0.5	--	--	--
A-4	06-05-95	15.25	11.70	3 55	ND	NW	0.002	06-05-95	Not sampled: well sampled annually, during the first quarter							
A-4	08-17-95	15.25	12.28	2.97	ND	W	0.001	08-17-95	Not sampled: well sampled annually, during the first quarter							
A-4	12-04-95	15.25	12.63	2.62	ND	NNW	0.002	12-04-95	Not sampled: well sampled annually, during the first quarter							
A-4	03-01-96	15 25	8.55	6 70	ND	NW	0 003	03-13-96	<50	<0.5	<0.5	<0 5	<0.5	<3	--	--
A-4	05-29-96	15.25	10.32	4.93	ND	NW	0.002	05-29-96	Not sampled: well sampled annually, during the first quarter							
A-4	08-29-96	15.25	11.55	3.70	ND	W	0.002	08-29-96	Not sampled: well sampled annually, during the first quarter							
A-4	11-21-96	15.25	10.83	4.42	ND	WNW	0 002	11-21-96	Not sampled: well sampled annually, during the first quarter							

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		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A-4	03-26-97	15.25	10.97	4.28	ND	NW	0.002	03-26-97	<50	<0 5	<0 5	<0.5	<0.5	<3	--	--
A-4	05-21-97	15.25	11.51	3.74	ND	NNW	0.002	05-21-97	Not sampled. well sampled annually, during the first quarter							
A-4	08-08-97	15.25	11 73	3.52	ND	NNW	0.002	08-08-97	Not sampled· well sampled annually, during the first quarter							
A-4	11-18-97	15.25	4.37	10.88	ND	NNW	0.003	11-18-97	Not sampled: well sampled annually, during the first quarter							
A-4	02-20-98	15 25	6.25	9 00	ND	N	0.013	02-20-98	<50	<0.5	<0 5	<0.5	<0.5	<3	--	--
A-4	05-11-98	15.25	10.33	4.92	ND	N	0 03	05-11-98	Not sampled: well sampled annually, during the first quarter							
A-4	07-30-98	15.25	11.25	4.00	ND	N	0.002	07-30-98	Not sampled: well sampled annually, during the first quarter							
A-4	10-08-98	15.25	11 62	3.63	ND	NNW	0.002	10-08-98	Not sampled: well sampled annually, during the first quarter							
A-4	02-18-99	15.25	7.12	8.13	ND	NW	0.008	02-18-99	Not sampled							
A-5	03-24-95	13.51	7.40	6.11	ND	NW	0.009	03-24-95	3300	200	310	130	460	--	--	--
A-5	06-05-95	13.51	10.43	3 08	ND	NW	0 002	06-05-95	57000	2700	4600	1500	6800	--	--	--
A-5	08-17-95	13.51	11.15	2.36	ND	W	0 001	08-18-95	34000	1600	2700	1100	5100	<28	--	--
A-5	12-04-95	13.51	11.42	2.09	ND	NNW	0.002	12-04-95	61	<0.5	<0.5	<0.5	<0.5	--	--	--
A-5	03-01-96	13.51	8.11	5.40	ND	NW	0.003	03-13-96	11000	860	960	380	1600	<100	--	--
A-5	05-29-96	13.51	9.30	4.21	ND	NW	0.002	05-29-96	19000	1600	1900	880	3300	<100	--	--
A-5	08-29-96	13.51	10.60	2.91	ND	W	0.002	08-29-96	7700	490	450	260	990	<30	--	--
A-5	11-21-96	13 51	10.05	3.46	ND	WNW	0.002	11-21-96	8000	450	550	340	1100	<30	--	--
A-5	03-26-97	13 51	9.87	3 64	ND	NW	0.002	03-26-97	3100	190	140	130	340	<30	--	--
A-5	05-21-97	13 51	10.25	3.26	ND	NNW	0 002	05-21-97	16000	1500	900	700	2700	<120	--	--
A-5	08-08-97	13 51	10.42	3.09	ND	NNW	0 002	08-08-97	9000	690	240	440	1300	<30	--	--
A-5	11-18-97	13.51	NR	NR	NR	NNW	0.003	11-18-97	Not sampled: well was inaccessible							
A-5	02-20-98	13.51	NR	NR	NR	N	0 013	02-20-98	Not sampled: well was inaccessible							
A-5	05-11-98	13.51	NR	NR	NR	N	0.03	05-11-98	Not sampled: well was inaccessible							
A-5	07-30-98	13.51	NR	NR	NR	N	0.002	07-30-98	Not sampled: well was inaccessible							
A-5	10-08-98	13 51	NR	NR	NR	NNW	0.002	10-08-98	Not sampled: well was inaccessible							
A-5	02-18-99	13.51	7.63	5.88	ND	NW	0.008	02-18-99	<50	0.8	<0.5	<0.5	1 5	<10	--	--
A-6	03-24-95	13 51	7 89	5.62	ND	NW	0.009	03-24-95	120	<0.5	<1	<0 5	<1 5	--	--	--
A-6	06-05-95	13 51	10 06	3.45	ND	NW	0.002	06-05-95	160	<0.5	<0.6	<0.5	<0 5	--	--	--
A-6	08-17-95	13 51	11 10	2.41	ND	W	0.001	08-18-95	530	<0.5	<0.5	<2 4	<4.2	6	--	--

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Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A-6	12-04-95	13.51	11.52	1.99	ND	NNW	0.002	12-04-95	28000	1600	1800	880	3600	--	--	--
A-6	03-01-96	13.51	8.21	5 30	ND	NW	0.003	03-13-96	1400	<3	<15	<7	<10	<20	--	--
A-6	05-29-96	13.51	9.25	4.26	ND	NW	0.002	05-29-96	410	<2	<2	<2	<2	3	--	--
A-6	08-29-96	13.51	10.52	2.99	ND	W	0 002	08-29-96	80	<0.5	<0.5	<0.5	<0.5	6	--	--
A-6	11-21-96	13.51	10.54	2.97	ND	WNW	0 002	11-21-96	62	<0.5	<0 5	<0.5	<0.5	12	--	--
A-6	03-26-97	13.51	9.93	3 58	ND	NW	0.002	03-26-97	110	<0.5	0.8	1	1 4	15	--	--
A-6	05-21-97	13.51	10.54	2.97	ND	NNW	0.002	05-21-97	600	0.6	0.6	<2	2.7	<3	--	--
A-6	08-08-97	13.51	10 77	2.74	ND	NNW	0 002	08-08-97	850	<0.5	<0.5	6.1	<0.5	<4	--	--
A-6	11-18-97	13.51	3.41	10.10	ND	NNW	0.003	11-18-97	690	<1	<1	3	2	7	--	--
A-6	02-20-98	13.51	6.73	6.78	ND	N	0.013	02-20-98	60	<0.5	0.6	1.3	0.5	4	--	--
A-6	05-11-98	13.51	9.26	4.25	ND	N	0.03	05-11-98	140	<0.5	0.7	0.6	<0 5	6	--	--
A-6	07-30-98	13.51	10.12	3 39	ND	N	0.002	07-30-98	910	<2	<2	3	7	34	--	--
A-6	10-08-98	13.51	10.53	2.98	ND	NNW	0.002	10-08-98	1300	<2	4	3	4	21	--	--
A-6	02-18-99	13.51	7 50	6.01	ND	NW	0.008	02-18-99	150	<0.5	<0.5	1.4	1.7	35	--	--
AR-1	03-24-95	15.61	7.25	8.36	ND	NW	0.009	03-24-95	270	14	0 6	2.5	2.1	--	--	130
AR-1	06-05-95	15 61	11.37	4.24	ND	NW	0 002	06-05-95	190	10	<0.5	0.8	0 5	--	--	580
AR-1	08-17-95	15.61	12.40	3.21	ND	W	0.001	08-17-95	960	110	12	4.5	150	14	--	<50
AR-1	12-04-95	15.61	12.90	2.71	ND	NNW	0.002	12-04-95	<50	1.5	<0.5	<0.5	0 8	--	--	--
AR-1	03-01-96	15.61	8.19	7 42	ND	NW	0 003	03-13-96	150	3.8	0.5	1.4	1.3	<3	--	--
AR-1	05-29-96	15.61	10.41	5 20	ND	NW	0.002	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters							
AR-1	08-29-96	15.61	12.12	3.49	ND	W	0.002	08-29-96	<50	<0.5	<0.5	<0.5	0 8	<3	--	--
AR-1	11-21-96	15 61	11.52	4.09	ND	WNW	0 002	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters							
AR-1	03-26-97	15 61	11.33	4 28	ND	NW	0.002	03-26-97	<50	<0 5	<0 5	<0 5	<0.5	<3	--	--
AR-1	05-21-97	15.61	12.02	3.59	ND	NNW	0 002	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters							
AR-1	08-08-97	15.61	12 31	3.30	ND	NNW	0.002	08-08-97	<50	0.7	<0 5	1	<0.5	<3	--	--
AR-1	11-18-97	15.61	3.97	11.64	ND	NNW	0.003	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters							
AR-1	02-20-98	15.61	6 42	9.19	ND	N	0.013	02-23-98	<200	<2	<2	<2	<2	160	--	--
AR-1	05-11-98	15 61	10.93	4.68	ND	N	0.03	05-11-98	<50	<0 5	<0.5	<0.5	<0 5	4	--	--
AR-1	07-30-98	15.61	11.82	3.79	ND	N	0.002	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	6	--	--
AR-1	10-08-98	15 61	12.24	3 37	ND	NNW	0.002	10-08-98	<50	<0 5	<0 5	<0.5	<0 5	6	--	--

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

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
AR-1	02-18-99	15 61	7.75	7.86	ND	NW	0 008	02-18-99	<50	<0.5	<0 5	<0.5	<1.0	<10	--	--
AR-2	03-24-95	15.28	9.13	6.15	ND	NW	0.009	03-24-95	<50	6.2	<0.5	<0.5	0.6	--	--	<50
AR-2	06-05-95	15.28	12 09	3.19	ND	NW	0.002	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	<50
AR-2	08-17-95	15.28	12.78	2.50	ND	W	0.001	08-18-95	<50	<0.5	<0 5	<0.5	<0.5	4	--	<50
AR-2	12-04-95	15.28	11.44	3.84	ND	NNW	0.002	12-13-95	<50	<0.5	<0.5	<0.5	<0 5	--	--	--
AR-2	03-01-96	15.28	9.83	5.45	ND	NW	0.003	03-13-96	190	26	2.6	3.3	13	200	--	--
AR-2	05-29-96	15.28	10.97	4.31	ND	NW	0.002	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters							
AR-2	08-29-96	15.28	12.20	3 08	ND	W	0.002	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	95	--	--
AR-2	11-21-96	15.28	11.57	3.71	ND	WNW	0.002	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters							
AR-2	03-26-97	15.28	11 60	3.68	ND	NW	0.002	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	9	--	--
AR-2	05-21-97	15.28	12.12	3.16	ND	NNW	0.002	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters							
AR-2	08-08-97	15.28	12.35	2.93	ND	NNW	0.002	08-08-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
AR-2	11-18-97	15.28	3.48	11.80	ND	NNW	0.003	11-18-97	Not sampled. well sampled semi-annually, during the first and third quarters							
AR-2	02-20-98	15 28	8 00	7.28	ND	N	0 013	02-20-98	<50	<0.5	<0 5	<0.5	<0 5	43	--	--
AR-2	05-11-98	15.28	10.97	4.31	ND	N	0.03	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
AR-2	07-30-98	15.28	11.76	3 52	ND	N	0.002	07-30-98	<50	<0.5	<0.5	<0 5	<0.5	<3	--	--
AR-2	10-08-98	15.28	12.17	3.11	ND	NNW	0 002	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
AR-2	02-18-99	15.28	9.17	6.11	ND	NW	0 008	02-18-99	<50	<0.5	<0.5	<0.5	<1 0	<10	--	--
ADR-1	03-24-95	13.95	8.04	** 5.92	0 01	NW	0.009	03-24-95	Not sampled: well contained floating product							
ADR-1	06-05-95	13.95	11.02	2.93	ND	NW	0 002	06-05-95	23000	310	420	300	1900	--	--	13000
ADR-1	08-17-95	13.95	11.86	2.09	ND	W	0.001	08-18-95	4400	150	120	95	620	120	--	4500
ADR-1	12-04-95	13 95	10 05	3.90	ND	NNW	0.002	12-13-95	8800	100	130	120	990	--	--	--
ADR-1	03-01-96	13.95	8.76	5 19	ND	NW	0.003	03-13-96	89000	370	1000	840	8100	<500	--	--
ADR-1	05-29-96	13.95	9.74	4.21	ND	NW	0.002	05-30-96	27000	230	380	370	2700	<100	--	--
ADR-1	08-29-96	13.95	10.77	3.18	ND	W	0.002	08-29-96	5300	190	58	76	470	85	--	--
ADR-1	11-21-96	13.95	10.49	3.46	ND	WNW	0.002	11-21-96	1900	82	21	32	270	110	--	--
ADR-1	03-26-97	13.95	10.37	3.58	ND	NW	0.002	03-26-97	1300	260	6	39	27	95	--	--
ADR-1	05-21-97	13.95	10.90	3.05	ND	NNW	0.002	05-21-97	2100	300	18	37	200	79	--	--
ADR-1	08-08-97	13.95	11.12	2 83	ND	NNW	0 002	08-08-97	3900	620	49	110	470	<200	--	--

Table 1
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889 West Grand Avenue, Oakland, CA

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		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ADR-1	11-18-97	13.95	3.47	10.48	ND	NNW	0.003	11-18-97	18000	900	140	360	2700	<60	--	--
ADR-1	02-20-98	13.95	NR	NR	NR	N	0 013	02-20-98	Not sampled: well was inaccessible							
ADR-1	05-11-98	13.95	NR	NR	NR	N	0.03	05-11-98	Not sampled: well was inaccessible							
ADR-1	07-30-98	13 95	NR	NR	NR	N	0.002	07-30-98	Not sampled: well was inaccessible							
ADR-1	10-08-98	13.95	NR	NR	NR	NNW	0 002	10-08-98	Not sampled: well was inaccessible							
ADR-1	02-18-99	13.95	7.80	6.15	ND	NW	0.008	02-18-99	200	4.4	<0.5	1.3	1.3	43	--	--
ADR-2	03-24-95	14.64	8.41	NR*	>3.00*	NR*	NR*	03-24-95	Not sampled: well contained floatng product							
ADR-2	06-05-95	14.64	11.45	NR*	>3 00*	NR*	NR*	06-05-95	Not sampled. well contained floating product							
ADR-2	08-17-95	14.64	12.10	** 2.56	0.03	W	0.001	08-17-95	Not sampled· well contained floating product							
ADR-2	12-04-95	14.64	10.93	** 3.73	0.03	NNW	0.002	12-13-95	Not sampled: well contained floating product							
ADR-2	03-01-96	14.64	8.74	5 90	ND	NW	0.003	03-13-96	29000	1100	1200	710	3800	<500	--	--
ADR-2	05-29-96	14.64	10.43	4.21	ND	NW	0.002	05-29-96	33000	510	500	470	2300	120	--	--
ADR-2	08-29-96	14.64	11.64	3.00	ND	W	0.002	08-29-96	8000	230	180	150	730	53	--	--
ADR-2	11-21-96	14.64	11 23	3 41	ND	WNW	0.002	11-21-96	15000	630	440	390	2100	75	--	--
ADR-2	03-26-97	14.64	11.13	3.51	ND	NW	0.002	03-26-97	6100	320	23	180	400	32	--	--
ADR-2	05-21-97	14.64	11.64	3.00	ND	NNW	0.002	05-21-97	6100	380	22	210	320	<30	--	--
ADR-2	08-08-97	14.64	11.85	2.79	ND	NNW	0 002	08-08-97	8400	380	35	230	910	<30	--	--
ADR-2	11-18-97	14.64	3.33	11.31	ND	NNW	0.003	11-18-97	11000	230	29	300	1200	<60	--	--
ADR-2	02-20-98	14 64	7.67	6.97	ND	N	0.013	02-20-98	4700	320	30	130	360	20	--	--
ADR-2	05-11-98	14.64	10 47	4.17	ND	N	0 03	05-11-98	Not sampled							
ADR-2	07-30-98	14.64	NR	NR	NR	N	0.002	07-30-98	Not sampled: well was inaccessible							
ADR-2	10-08-98	14 64	11.67	2.97	ND	NNW	0.002	10-08-98	Not sampled							
ADR-2	02-18-99	14.64	NR	NR	NR	NW	0.008	02-18-99	Not sampled well inaccessible							

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

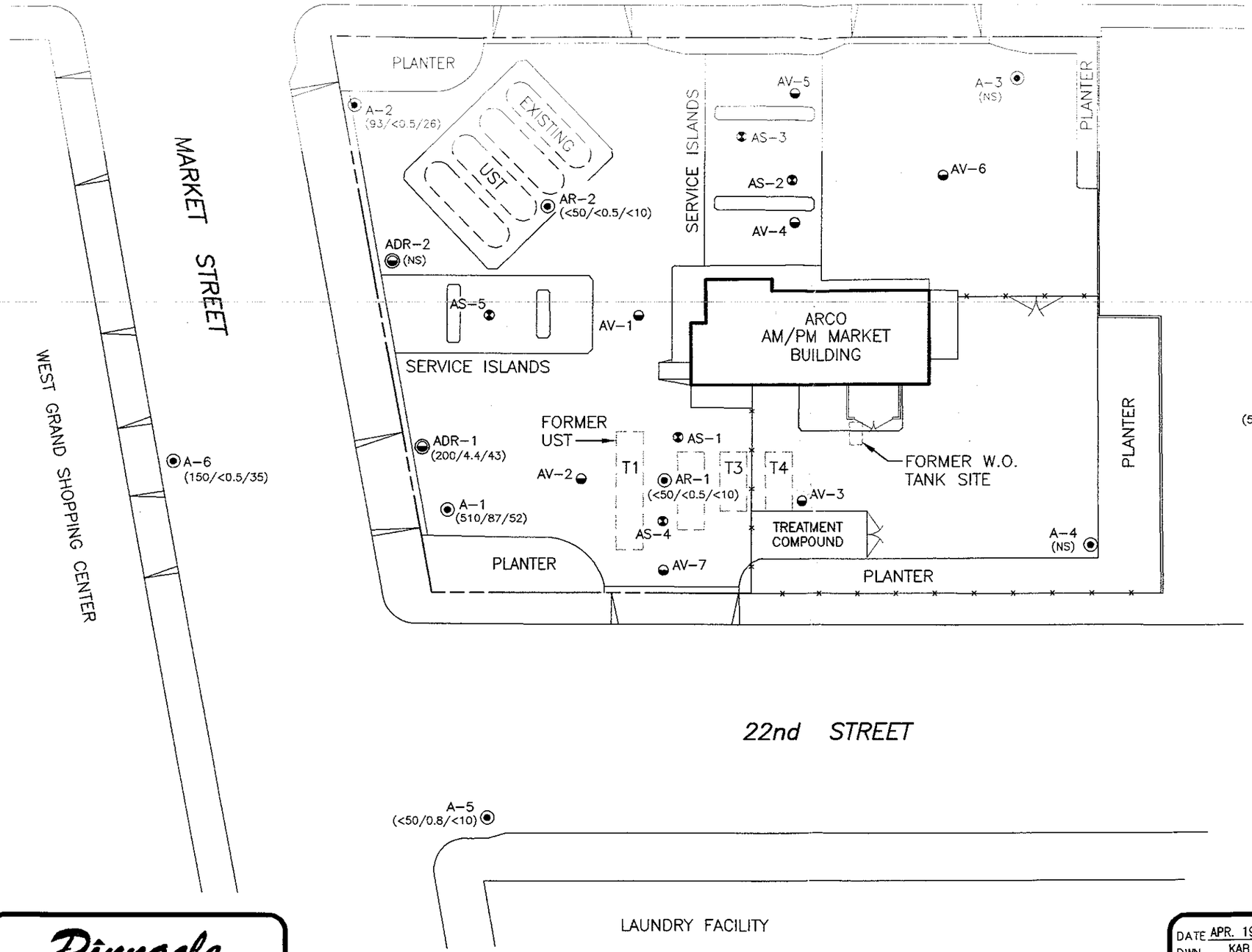
ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Well Designation	Water Level Field Date	Top of Casing Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG LUFT Method	Benzene EPA 8020	Toluene EPA 8020	Ethylbenzene EPA 8020	Total Xylenes EPA 8020	MTBE EPA 8020	MTBE EPA 8240	TPHD LUFT Method
		ft-MSL	feet	ft-MSL	feet	MWN	ft/ft		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L

ft-MSL: elevation in feet, relative to mean sea level
MWN: groundwater flow direction and gradient apply to the entire monitoring well network
ft/ft: foot per foot
TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
µg/L: micrograms per liter
EPA: United States Environmental Protection Agency
MTBE: Methyl tert-butyl ether
TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
ND: none detected
NR: not reported; data not available or not measurable
NW: Northwest
- -: not analyzed or not applicable
*: well contained more than 3 feet of floating product; exact product thickness and groundwater elevation could not be measured
**: [corrected elevation (Z')] = Z + (h * 0.73) where. Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water
***: For previous historical groundwater elevation data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 2169, 889 West Grand Avenue, Oakland, California. (EMCON, March 4, 1996).*

APPENDIX A

SAMPLING AND ANALYSIS PROCEDURES



N

EXPLANATION

- Groundwater monitoring well
- Vapor extraction well
- Groundwater monitoring/vapor extraction well
- Air sparging well
- (510/87/52) Concentration of total petroleum hydrocarbons as gasoline (TPHG), benzene, and MTBE in groundwater (ug/L); samples collected 2/18/99
- < Not detected at or above the indicated laboratory detection limit
- NS Not sampled

0 40 80
SCALE IN FEET

IMAGE Files: <No Images>
XREF Files: <No Xrefs>
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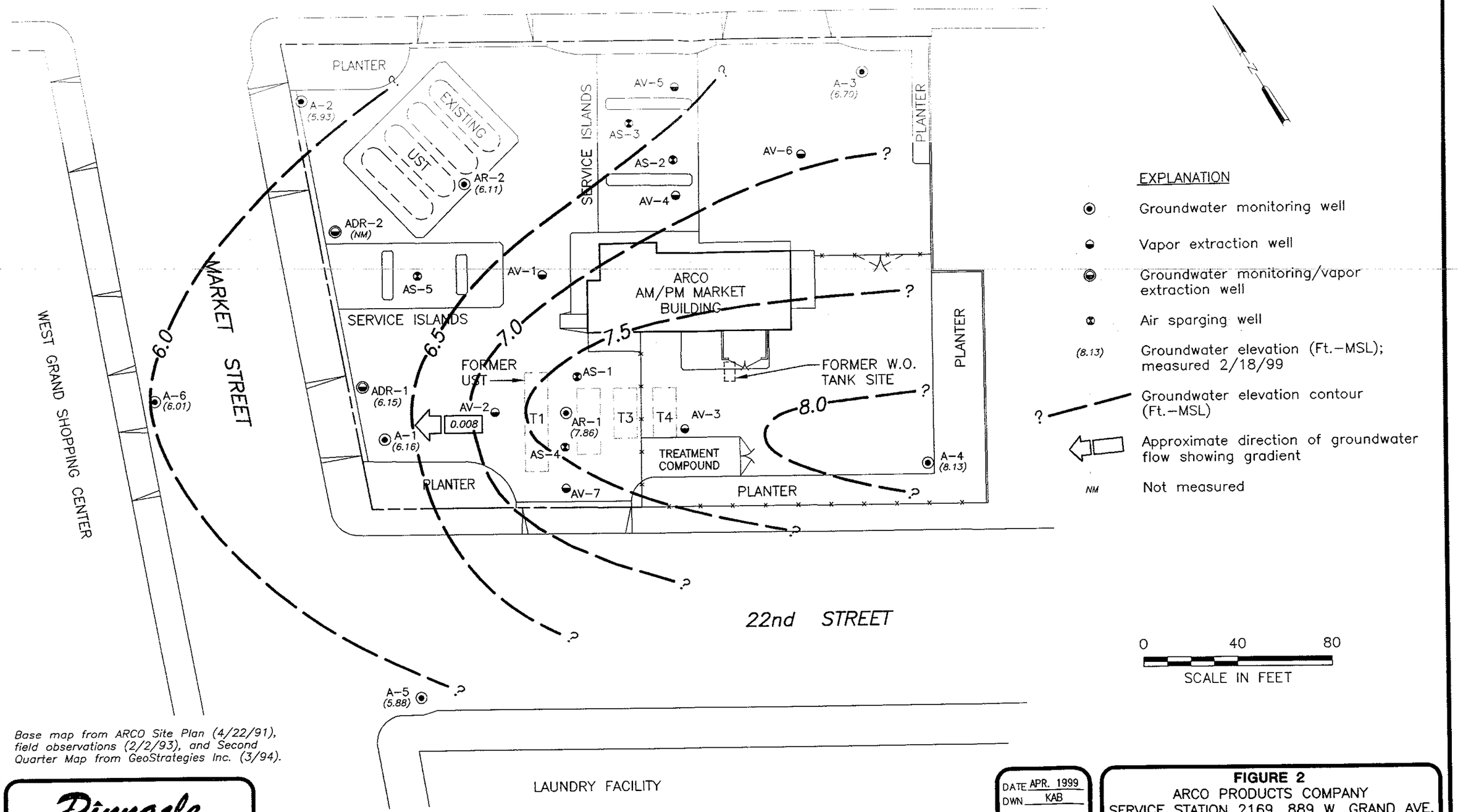
Pinnacle
ENVIRONMENTAL SOLUTIONS
A DIVISION OF EMCON

DATE APR. 1999
DWN KAB
APP
REV 0
PROJECT NO.
20805-129.006

FIGURE 1
ARCO PRODUCTS COMPANY
SERVICE STATION 2169, 889 W. GRAND AVE.
OAKLAND, CALIFORNIA
GROUNDWATER ANALYTICAL SUMMARY
FIRST QUARTER 1999



Base map from ARCO Site Plan (4/22/91), field observations (2/2/93), and Second Quarter Map from GeoStrategies Inc. (3/94).

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FIGURE 2
ARCO PRODUCTS COMPANY
SERVICE STATION 2169, 889 W. GRAND AVE.
OAKLAND, CALIFORNIA
GROUNDWATER ELEVATION CONTOURS
FIRST QUARTER 1999

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1" 1/2" 0"

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 deionized water. During field sampling, equipment surfaces that were placed in the well or came into contact with groundwater during field sampling were steam cleaned with deionized 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 by being rinsed with deionized water or steam cleaned after each use. A bottom-filling, clear Teflon® 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 by being rinsed with deionized water 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. Before sampling occurred, a polyvinyl chloride (PVC) bailer, centrifugal pump, low-flow submersible pump, or Teflon bailer was used to purge standing water in the casing and gravel pack from the monitoring well. Monitoring wells were purged according to the protocol presented in Figure A-1. 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 500-gallon water trailer, 55-gallon drum, or a 325-gallon truck-mounted tank to EMCON's San Jose or Sacramento office location for temporary storage. EMCON arranged for transport and disposal of the purged groundwater through Integrated Waste Stream Management, Inc.

Field measurements of pH, specific conductance, and temperature were recorded in a waterproof field logbook. Figure A-2 shows an example of the water sample field data sheet on which field data are recorded. 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 Teflon 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 Teflon 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 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. The refrigerator was kept in a warehouse, which was locked when not occupied by an EMCON employee. A sample/refrigerator log was kept to record the date and time that samples were placed into and removed from the refrigerator.

Samples were transferred from EMCON to an ARCO-approved laboratory by courier or taken directly to the laboratory by the environmental sampler. Sample shipments from EMCON to laboratories performing the selected analyses routinely occurred within 24 hours 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 EMCON 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)

MONITORING WELL PURGING PROTOCOL

OWT

MEASURE AND RECORD DEPTH TO WATER AND WELL TOTAL DEPTH

CHECK FOR FLOATING PRODUCT

YES

MEASURE AND DOCUMENT FLOATING PRODUCT THICKNESS. DO NOT SAMPLE WELL FOR DISSOLVED CONSTITUENTS.

NO

CALCULATE PURGE VOLUME BY USING THE FOLLOWING EQUATION:

$P = \pi r^2 h \times 7.48 \times 3$

where:

P = calculated purge volume (gallons)

$\pi = 3.14$

r = radius of well casing in feet

h = height of water column in feet

EVACUATE WATER FROM WELL EQUAL TO THE CALCULATED PURGE VOLUME WHILE MONITORING GROUNDWATER STABILIZATION INDICATOR PARAMETERS (pH, CONDUCTIVITY, TEMPERATURE) AT INTERVALS OF ONE CASING VOLUME.

WELL EVACUATED TO PRACTICAL LIMITS OF DRYNESS BEFORE REMOVING CALCULATED PURGE VOLUME

NO

FINAL TWO SETS OF GROUNDWATER STABILIZATION INDICATOR PARAMETER MEASUREMENTS MEET THE FOLLOWING CRITERIA:

pH = ± 0.1 pH units

COND. = ± 10 %

TEMP. = ± 1.0 °F

YES

WELL PURGING CRITERIA MET; PROCEED TO WELL SAMPLING.

NO

CONTINUE PURGING; EVACUATE ADDITIONAL CASING VOLUME OF WATER, MONITORING INDICATOR PARAMETERS FOR STABILITY.

YES

WELL RECHARGES TO A LEVEL SUFFICIENT FOR SAMPLE COLLECTION WITHIN 24 HOURS OF EVACUATION TO DRYNESS.

YES

FIELD TEST FIRST RECHARGE WATER FOR INDICATOR PARAMETERS, *THEN* PROCEED TO WELL SAMPLING.

NO

RECORD WELL AS DRY FOR PURPOSES OF SAMPLING.

EMCON

MONITORING WELL PURGING PROTOCOL

FIGURE

A-1

WATER SAMPLE FIELD DATA SHEET

Rev. 5/96

OWT

PROJECT NO : _____ SAMPLE ID : _____

PURGED BY : _____ CLIENT NAME : _____

SAMPLED BY : _____ LOCATION : _____

TYPE: Groundwater _____ Surface Water _____ Leachate _____ Other _____

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

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

DEPTH OF WELL (feet) : _____ CALCULATED PURGE (gal.) : _____

DEPTH OF WATER (feet) : _____ ACTUAL PURGE VOL. (gal.) : _____

DATE PURGED : _____ END PURGE : _____

DATE SAMPLED : _____ SAMPLING TIME : _____

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@25°c)	TEMPERATURE (°F)	TURBIDITY (visual/NTU)	TIME (2400 HR)

OTHER: _____ ODOR: _____ _____ (COBALT 0-100) _____ (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1) : _____

PURGING EQUIPMENT

_____ 2" Bladder Pump _____ Bailer (Teflon)

_____ Centrifugal Pump _____ Bailer (PVC)

_____ Submersible Pump _____ Bailer (Stainless Steel)

_____ Well Wizard™ _____ Dedicated

Other: _____

SAMPLING EQUIPMENT

_____ 2" Bladder Pump _____ Bailer (Teflon)

_____ Bomb Sampler _____ Bailer (Stainless Steel)

_____ Dipper _____ Submersible Pump

_____ Well Wizard™ _____ Dedicated

Other: _____

WELL INTEGRITY: _____ LOCK: _____

REMARKS: _____

pH, E.C., Temp. Meter Calibration: Date: _____ Time: _____ Meter Serial No.: _____

E.C. 1000 _____ / _____ pH 7 _____ / _____ pH 10 _____ / _____ pH 4 _____ / _____

Temperature °F _____

SIGNATURE: _____ REVIEWED BY: _____ PAGE _____ OF _____

EMCON

WATER SAMPLE FIELD DATA SHEET

FIGURE A-2

OWT

EMCON - SACRAMENTO
GROUNDWATER SAMPLING AND ANALYSIS REQUEST FORM

PROJECT NAME :

SCHEDULED DATE :

SPECIAL INSTRUCTIONS / CONSIDERATIONS :

Project Authorization: _____
EMCON Project No.: _____
OWT Project No.: _____
Task Code: _____
Originals To: _____
cc: _____

Well Lock Number (s)

☐ CHECK BOX TO AUTHORIZE DATA ENTRY

Site Contact: _____ Name _____ Phone #

Well Number or Source	Casing Diameter (inches)	Casing Length (feet)	Depth to Water (feet)	ANAYSES REQUESTED

Laboratory and Lab QC Istructions:

EMCON

SAMPLING AND ANALYSIS REQUEST FORM

FIGURE
A-3

APPENDIX B

CERTIFIED ANALYTICAL REPORTS, AND CHAIN-OF-CUSTODY DOCUMENTATION

Columbia Analytical Services INC
An Employee-Owned Company

March 5, 1999 Service Request No.: S9900591

Mr. Glen Vanderveen
PINNACLE
144 A Mayhew Wy.
Walnut Creek, CA 94596

RE: 20805-129.005/TO#24118.00/RAT8/2169 OAKLAND

Dear Mr. Vanderveen:

The following pages contain analytical results for sample(s) received by the laboratory on February 19, 1999. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 16, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

Please feel welcome to contact me should you have questions or further needs.

Sincerely,

Bernadette T. Cox
Project Chemist

Regional QA Coordinator

3334 Victor Court ▪ Santa Clara CA 95054-2316 ▪ Telephone (408) 748-9700 ▪ Fax (408) 748-9860

COLUMBIA ANALYTICAL SERVICES, Inc.
Acronyms

A2LA	American Association for Laboratory Accreditation
ASTM	American Society for Testing and Materials
BOD	*Biochemical Oxygen Demand*
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAM	California Assessment Metals
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
COD	Chemical Oxygen Demand
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DLCS	Duplicate Laboratory Control Sample
DMS	Duplicate Matrix Spike
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
IC	Ion Chromatography
ICB	Initial Calibration Blank sample
ICP	Inductively Coupled Plasma atomic emission spectrometry
ICV	Initial Calibration Verification sample
J	Estimated concentration. The value is less than the MRL, but greater than or equal to the MDL. If the value is equal to the MRL, the result is actually <MRL before rounding.
LCS	Laboratory Control Sample
LUFT	Leaking Underground Fuel Tank
M	Modified
MBAS	Methylene Blue Active Substances
MCL	Maximum Contaminant Level. The highest permissible concentration of a substance allowed in drinking water as established by the U. S. EPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	*Method Reporting Limit*
MS	Matrix Spike
MTBE	Methyl tert-Butyl Ether
NA	Not Applicable
NAN	Not Analyzed
NC	Not Calculated
NCASI	National Council of the paper industry for Air and Stream Improvement
ND	Not Detected at or above the method reporting/detection limit (MRL/MDL)
NIOSH	National Institute for Occupational Safety and Health
NTU	Nephelometric Turbidity Units
ppb	Parts Per Billion
ppm	Parts Per Million
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RCRA	*Resource Conservation and Recovery Act*
RPD	Relative Percent Difference
SIM	Selected Ion Monitoring
SM	Standard Methods for the Examination of Water and Wastewater, 18th Ed., 1992
STLC	Solubility Threshold Limit Concentration
SW	Test Methods for Evaluating Solid Waste, *Physical/Chemical Methods*, SW-846, 3rd Ed., 1986 and as amended by Updates I, II, IIA, and IIB.
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
tr	Trace level. The concentration of an analyte that is less than the PQL but greater than or equal to the MDL. If the value is equal to the PQL, the result is actually <PQL before rounding.
TRPH	Total Recoverable Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTLC	*Total Threshold Limit Concentration*
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9900868
Project:	20805-129.005/TO#24118.00/RAT8/2169 OAKLAND	**Date Collected:**	2/18/99
Sample Matrix:	Water	**Date Received:**	2/19/99

MTBE, BTEX and TPH as Gasoline

Sample Name:	AR-2(10)	Units:	ug/L (ppb)
Lab Code:	L9900868-001	*Basis:*	NA
Test Notes:	†		

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Xylenes, Total	EPA 5030	8021B	1.0	1	NA	3/1/99	ND	
TPH as Gasoline	EPA 5030	8015M	50	1	NA	3/1/99	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	10	1	NA	3/1/99	ND	

† *TPH as Gasoline does not include MTBE.*

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9900868
Project:	20805-129.005/TO#24118.00/RAT8/2169 OAKLAND	**Date Collected:**	2/18/99
Sample Matrix:	Water	**Date Received:**	2/19/99

MTBE, BTEX and TPH as Gasoline

Sample Name:	AR-1(27)	Units:	ug/L (ppb)
Lab Code:	L9900868-002	Basis:	NA
Test Notes:	†		

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Xylenes, Total	EPA 5030	8021B	1.0	1	NA	3/1/99	ND	
TPH as Gasoline	EPA 5030	8015M	50	1	NA	3/1/99	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	10	1	NA	3/1/99	ND	

† TPH as Gasoline does not include MTBE.

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9900868
Project:	20805-129.005/TO#24118.00/RAT8/2169 OAKLAND	**Date Collected:**	2/18/99
Sample Matrix:	Water	**Date Received:**	2/19/99

MTBE, BTEX and TPH as Gasoline

Sample Name:	A-2(9)	Units:	ug/L (ppb)
Lab Code:	L9900868-003	Basis:	NA
Test Notes:	†		

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Xylenes, Total	EPA 5030	8021B	1.0	1	NA	3/1/99	ND	
TPH as Gasoline	EPA 5030	8015M	50	1	NA	3/1/99	93	O1
Methyl *tert*-Butyl Ether	EPA 5030	8021B	10	1	NA	3/1/99	26	

†	TPH as Gasoline does not include MTBE.
O1	Chromatogram contains discrete peaks which are not characteristic of Gasoline.

IS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9900868
Project:	20805-129.005/TO#24118.00/RAT8/2169 OAKLAND	**Date Collected:**	2/18/99
Sample Matrix:	Water	**Date Received:**	2/19/99

MTBE, BTEX and TPH as Gasoline

Sample Name:	A-5(10)	Units:	ug/L (ppb)
Lab Code:	L9900868-004	Basis:	NA
Test Notes:	†		

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030	8021B	0.5	1	NA	3/2/99	0.8	
Toluene	EPA 5030	8021B	0.5	1	NA	3/2/99	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	3/2/99	ND	
Xylenes, Total	EPA 5030	8021B	1.0	1	NA	3/2/99	1.5	
TPH as Gasoline	EPA 5030	8015M	50	1	NA	3/2/99	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	10	1	NA	3/2/99	ND	

† TPH as Gasoline does not include MTBE.

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9900868
Project:	20805-129.005/TO#24118.00/RAT8/2169 OAKLAND	**Date Collected:**	2/18/99
Sample Matrix:	Water	**Date Received:**	2/19/99

MTBE, BTEX and TPH as Gasoline

Sample Name:	ADR-1(8)	Units:	ug/L (ppb)
Lab Code:	L9900868-005	Basis:	NA
Test Notes:	†		

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030	8021B	0.5	1	NA	3/1/99	4.4	
Toluene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	3/1/99	1.3	
Xylenes, Total	EPA 5030	8021B	1.0	1	NA	3/1/99	1.3	
TPH as Gasoline	EPA 5030	8015M	50	1	NA	3/1/99	200	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	10	1	NA	3/1/99	43	

† TPH as Gasoline does not include MTBE.

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9900868
Project:	20805-129.005/TO#24118.00/RAT8/2169 OAKLAND	**Date Collected:**	2/18/99
Sample Matrix:	Water	**Date Received:**	2/19/99

MTBE, BTEX and TPH as Gasoline

Sample Name:	A-6(10)	Units:	ug/L (ppb)
Lab Code:	L9900868-006	Basis:	NA
Test Notes:	†		

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	3/1/99	1.4	
Xylenes, Total	EPA 5030	8021B	1.0	1	NA	3/1/99	1.7	
TPH as Gasoline	EPA 5030	8015M	50	1	NA	3/1/99	150	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	10	1	NA	3/1/99	35	

† TPH as Gasoline does not include MTBE.

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9900868
Project:	20805-129.005/TO#24118.00/RAT8/2169 OAKLAND	**Date Collected:**	2/18/99
Sample Matrix:	Water	**Date Received:**	2/19/99

MTBE, BTEX and TPH as Gasoline

Sample Name:	A-1(12)	Units:	ug/L (ppb)
Lab Code:	L9900868-007	Basis:	NA
Test Notes:	†		

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030	8021B	0.5	1	NA	3/1/99	87	
Toluene	EPA 5030	8021B	0.5	1	NA	3/1/99	7.1	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	3/1/99	6.4	
Xylenes, Total	EPA 5030	8021B	1.0	1	NA	3/1/99	13	
TPH as Gasoline	EPA 5030	8015M	50	1	NA	3/1/99	510	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	10	1	NA	3/1/99	52	

† TPH as Gasoline does not include MTBE.

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9900868
Project:	20805-129.005/TO#24118.00/RAT8/2169 OAKLAND	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

MTBE, BTEX and TPH as Gasoline

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	L990301-MB	Basis:	NA
Test Notes:	†		

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	3/1/99	ND	
Xylenes, Total	EPA 5030	8021B	1.0	1	NA	3/1/99	ND	
TPH as Gasoline	EPA 5030	8015M	50	1	NA	3/1/99	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	10	1	NA	3/1/99	ND	

† TPH as Gasoline does not include MTBE.

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	L9900868
Project:	20805-129.005/TO#24118.00/RAT8/2169 OAKLAND	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

MTBE, BTEX and TPH as Gasoline

Sample Name:	Method Blank	Units:	ug/L (ppb)
Lab Code:	L990302-MB	Basis:	NA
Test Notes:	†		

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Benzene	EPA 5030	8021B	0.5	1	NA	3/2/99	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	3/2/99	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	3/2/99	ND	
Xylenes, Total	EPA 5030	8021B	1.0	1	NA	3/2/99	ND	
TPH as Gasoline	EPA 5030	8015M	50	1	NA	3/2/99	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8021B	10	1	NA	3/2/99	ND	

† TPH as Gasoline does not include MTBE.

IS22/020597p

APPENDIX A

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-129.005/TO#24118.00/RAT8/2169 OAKLAND
Sample Matrix: Water

Service Request: L9900868
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: NA

Surrogate Recovery Summary
MTBE, BTEX and TPH as Gasoline

Prep Method: EPA 5030
Analysis Method: 8021B/8015M

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery 4-Bromofluorobenzene	Percent Recovery 4-Bromofluorobenzene
AR-2(10)	L9900868-001		102	109
AR-1(27)	L9900868-002		104	106
A-2(9)	L9900868-003		104	102
A-5(10)	L9900868-004		97	103
ADR-1(8)	L9900868-005		108	110
A-6(10)	L9900868-006		114	112
A-1(12)	L9900868-007		109	105
Method Blank	L990301-MB		94	106
Method Blank	L990302-MB		92	105
AR-1(27)	L9900868-002MS		113	129
AR-1(27)	L9900868-002DMS		109	128
Lab Control Sample	L990301-LCS		108	125
Lab Control Sample	L990302-LCS		111	117

CAS Acceptance Limits: 60-130 60-140

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-129.005/TO#24118.00/RAT8/2169 OAKLAND
Sample Matrix: Water

Service Request: L9900868
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 3/2/99

Matrix Spike/Duplicate Matrix Spike Summary
MTBE, BTEX and TPH as Gasoline

Sample Name: AR-1(27)
Lab Code: L9900868-002MS, L9900868-002DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Benzene	EPA 5030	8021B	0.5	40.0	40.0	ND	42.3	42.4	106	106	39-150	<1	
Toluene	EPA 5030	8021B	0.5	40.0	40.0	ND	42.5	43.1	106	108	46-148	2	
Ethylbenzene	EPA 5030	8021B	0.5	40.0	40.0	ND	43.5	45.5	109	114	32-160	5	
TPH as Gasoline	EPA 5030	8015M	50	2000	2000	ND	2140	2110	107	106	70-140	2	

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-129.005/TO#24118.00/RAT8/2169 OAKLAND
LCS Matrix: Water

Service Request: L9900868
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 3/1/99

Laboratory Control Sample Summary
MTBE, BTEX and TPH as Gasoline

Sample Name: Lab Control Sample
Lab Code: L990301-LCS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Benzene	EPA 5030	8021B	40.0	41.0	102	39-150	
Toluene	EPA 5030	8021B	40.0	41.8	104	46-148	
Ethylbenzene	EPA 5030	8021B	40.0	44.1	110	32-160	
TPH as Gasoline	EPA 5030	8015M	2000	2110	106	70-140	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-129.005/TO#24118.00/RAT8/2169 OAKLAND
LCS Matrix: Water

Service Request: L9900868
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 3/2/99

Laboratory Control Sample Summary
MTBE, BTEX and TPH as Gasoline

Sample Name: Lab Control Sample
Lab Code: L990302-LCS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Benzene	EPA 5030	8021B	40.0	41.0	102	39-150	
Toluene	EPA 5030	8021B	40.0	41.8	104	46-148	
Ethylbenzene	EPA 5030	8021B	40.0	43.9	110	32-160	
TPH as Gasoline	EPA 5030	8015M	2000	2090	104	70-140	

ARCO Products Company
Division of Atlantic/Richfield Company

S9900591 Task Order No. 7418.00

Chain of Custody

ARCO Facility no. 2169	City (Facility) Oakland	Project manager (Consultant) Glen VanderVeen	Laboratory Name CAS
ARCO engineer Paul Supple	Telephone no. (ARCO)	Telephone no. (Consultant) (408)453-7300	Fax no. (Consultant) (408)437-9526
Consultant name EMCON	Address (Consultant) 144-A Mayhew Way Walnut Creek, CA 94598		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 Incl. MTBE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM 503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org/DHS ☐ Lead EPA 7420/7421 ☐			
AR-2	(10)	2	(1)	X		X	HCL	2/18/99	1055		X												
AR-1	(11)	2	(2)	X		X	HCL	2/18/99	1235		X												
A-2	(9)	2	(3)	X		X	HCL	2/18/99	1200		X												
A-5	(10)	2	(4)	X		X	HCL	2/18/99	1105		X												
ADR-7	( )	2		X		X	HCL	→ UNABLE TO Sample well →															
ADR-1	(8)	2	(5)	X		X	HCL	2/18/99	1130		X												
A-6	(10)	2	(6)	X		X	HCL	2/18/99	1125		X												
A-1	(12)	2	(7)	X		X	HCL	2/18/99	1205		X												

Method of shipment: Sampler will deliver

Special Detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: RAT 8
2-40ml HCL
VOAs
#20805-179.00

Lab Number

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

Condition of sample:

Temperature received: Due: 3/5/99 R11 D3

Relinquished by sampler: Mike P.	Date: 2/19/99	Time: 1500	Received by: P. Bins CAS 2/19/99 1500
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by laboratory / Date / Time

Distribution: White Copy – Laboratory: Canary Copy – ARCO Environmental Engineering: Pink Copy – Consultant

APPENDIX C

FIELD DATA SHEETS

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : **21775-235.003** STATION ADDRESS : **899 West Grand Avenue, Oakland** DATE : **2/18/99**

ARCO STATION # : **2169** FIELD TECHNICIAN : **Mike Ross/ Manuel Gallegos** DAY : **Thursday**

DTW Order	WELL ID	Well Box Seal	Type Of Well Lid	Gasket Present	Lock Number	Type Of Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	A-4	OK	VAULT	NO	NONE	TEC	7.12	7.12	NR	NR	27.7	D.O. 5.0 mg/L
2	A-3	OK	VAULT	NO	NONE	TEC	9.05	9.05			28.1	water in Box D.O. 2.0 mg/L
3	AR-2	OK	VAULT	NO	NONE	TEC	9.17	9.17			24.3	
4	AR-1	OK	VAULT	NO	NONE	TEC	7.75	7.75			27.1	water in Box
5	A-2	OK	VAULT	NO	NONE	TEC	8.62	8.62			24.4	water in Box
6	A-5	OK	G-5	NO	ARCO	LWC	7.63	7.63	↓		24.0	water in Box ORC Sock SOCK IN BOTTOM
7	ADR-2	UNABLE	VAULT		NONE	TEC	ACCESS	WELL				
8	ADR-1	OK	VAULT	NO	NONE	TEC	7.80	7.80	NR		20.8	
9	A-6	OK	G-5	NO	ARCO	LWC	7.50	7.50			26.8	
10	A-1	OK	VAULT	NO	NONE	TEC	8.00	8.00	↓	↓	23.6	water in Box

SURVEY POINTS ARE TOP OF WELL CASINGS

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 21775-235.004 SAMPLE ID MW-1 (12)
PURGED BY M. Ross CLIENT NAME ARCO 2169
SAMPLED BY M. Ross LOCATION Oakland, Ca

TYPE Groundwater ✓ Surface Water ____ Leachate ____ Other ____

CASING DIAMETER (inches) 2 ____ 3 ✓ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL) NA
DEPTH OF WELL (feet) 23.8
DEPTH OF WATER (feet) 7.95

VOLUME IN CASING (gal.) 5.81
CALCULATED PURGE (gal.) 17.43
ACTUAL PURGE VOL (gal.) 18.0

DATE PURGED 2/18/99 END PURGE 1156
DATE SAMPLED 2/18/99 SAMPLING TIME 1205

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C (µmhos/cm@25°C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1151	6.0	6.97	1252	64.9	clr	clr
1153	12.0	6.81	1245	67.0	clr	clr
1156	18.0	6.79	1252	67.7	clr	clr

OTHER: D.O. 1.2 mg/L ODOR None NR (COBALT 0-100) NR (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1) NR

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

____ 2" Bladder Pump
____ Bomb Sampler
____ Dipper
____ Well Wizard™
Other D.S. Bailer
✓ Bailer (Teflon)
____ Bailer (Stainless Steel)
____ Submersible Pump
____ Dedicated

WELL INTEGRITY ok LOCK: None

REMARKS: ____

pH, E.C., Temp. Meter Calibration: Date 2/18/99 Time 1130 Meter Serial No. 600235
E.C. 1000 1000 / 997 pH 7 700 / 707 pH 10 1000 / 994 pH 4 400 / 399
Temperature °F 60.2
SIGNATURE: [signature] REVIEWED BY ____ PAGE ____ OF ____

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 21775-235.004 | SAMPLE ID A-2 (91)
PURGED BY M. Gallegos | CLIENT NAME ARCO # 2169
SAMPLED BY ↓ | LOCATION OAKLAND, CA.

TYPE Groundwater V Surface Water ___ Leachate ___ Other ___

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

CASING ELEVATION (feet/MSL)	NR	VOLUME IN CASING (gal.)	5.78
DEPTH OF WELL (feet)	24.4	CALCULATED PURGE (gal.)	17.35
DEPTH OF WATER (feet)	8.62	ACTUAL PURGE VOL (gal.)	17.5

DATE PURGED 2-18-99 | END PURGE 1154
DATE SAMPLED ↓ | SAMPLING TIME 1200

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E C (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1149	6.0	7.01	918	61.6	BRN	Heavy
1152	12.0	6.97	955	62.9	↓	↓
1154	17.5	6.91	996	63.4	↓	

OTHER: DO=15 | ODOR None | NR (COBALT 0-100) | NR (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: OK | LOCK: None

REMARKS: all samples taken

pH, E C, Temp Meter Calibration Date 2/18/99 Time ___ Meter Serial No 87M
E C 1000 1000 pH 7 7000 pH 10 10000 pH 4 4000
Temperature °F ___

SIGNATURE [signature] REVIEWED BY ___ PAGE ___ OF ___

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 21775-235.004
PURGED BY NR
SAMPLED BY M. Ross

SAMPLE ID A-5 (10)
CLIENT NAME ARCO 2169
LOCATION Oakland, Ca

TYPE Groundwater ✓ Surface Water ____ Leachate ____ Other ____

CASING DIAMETER (inches) 2 ✓ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL)	NR	VOLUME IN CASING (gal.)	NR
DEPTH OF WELL (feet)	24.0	CALCULATED PURGE (gal)	NR
DEPTH OF WATER (feet)	7.63	ACTUAL PURGE VOL (gal)	NR

DATE PURGED: NR
DATE SAMPLED: 2/18/99

END PURGE NR
SAMPLING TIME 1105

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C. (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1105	GRAB	7.46	1028	60.2	clr	clr

OTHER: D.O. 0.2 mg/L ODOR: None NR (COBALT 0-100) NR (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NR

PURGING EQUIPMENT

- ____ 2" Bladder Pump
- ____ Centrifugal Pump
- ____ Submersible Pump
- ____ Well Wizard™
- ____ Bailer (Teflon)
- ____ Bailer (PVC)
- ____ Bailer (Stainless Steel)
- ____ Dedicated

Other: NR

SAMPLING EQUIPMENT

- ____ 2" Bladder Pump
- ____ Bomb Sampler
- ____ Dipper
- ____ Well Wizard™
- ✓ Bailer (Teflon)
- ____ Bailer (Stainless Steel)
- ____ Submersible Pump
- ____ Dedicated

Other: Disposable

WELL INTEGRITY: OK LOCK: ARCO

REMARKS:
Grab Sample taken water column Below top of Screen.
ORC sock stuck at Bottom of well.

pH, E.C., Temp. Meter Calibration: Date 2/18/99 Time 1245 Meter Serial No 87M

E.C. 1000 ____/____ pH 7 ____/____ pH 10 ____/____ pH 4 ____/____

Temperature °F ____

See AR-2

SIGNATURE: [signature] REVIEWED BY ____ PAGE ____ OF ____

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 21775-235.004 | SAMPLE ID A-6(10)
PURGED BY NR | CLIENT NAME ARCO 2169
SAMPLED BY M. Ross | LOCATION Oakland, Ca

TYPE Groundwater ✓ Surface Water ____ Leachate ____ Other ____

CASING DIAMETER (inches) 2 ✓ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL)	NR	VOLUME IN CASING (gal)	NR
DEPTH OF WELL (feet)	26.8	CALCULATED PURGE (gal)	NR
DEPTH OF WATER (feet)	7.50	ACTUAL PURGE VOL (gal)	NR

DATE PURGED NR | END PURGE NR
DATE SAMPLED 2/18/99 | SAMPLING TIME 1125

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1125	GRAB	6.91	1197	63.2	clr	clr

OTHER: D.O. 1.3 mg/L ODOR: None NR (COBALT 0-100) NR (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e FB-1, XDUP-1): NR

PURGING EQUIPMENT

____ 2" Bladder Pump ____ Bailer (Teflon)
____ Centrifugal Pump ____ Bailer (PVC)
____ Submersible Pump ____ Bailer (Stainless Steel)
____ Well Wizard™ ____ Dedicated
Other: NR

SAMPLING EQUIPMENT

____ 2" Bladder Pump ✓ Bailer (Teflon)
____ Bomb Sampler ____ Bailer (Stainless Steel)
____ Dipper ____ Submersible Pump
____ Well Wizard™ ____ Dedicated
Other: Disposable

WELL INTEGRITY: OK LOCK: ARCO

REMARKS: Grab Sample taken Water Column Below top of screen

pH, E.C., Temp. Meter Calibration: Date 2/18/99 Time: 1045 Meter Serial No 6.87m
E.C. 1000 ____ / ____ pH 7 ____ / ____ pH 10 ____ / ____ pH 4 ____ / ____
Temperature °F ____
SIGNATURE: [signature] REVIEWED BY: ____ PAGE ____ OF ____

See AR-2

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 21775-235.004 | SAMPLE ID AR-1 (27')
PURGED BY M. Gallegos | CLIENT NAME ARCO # 2169
SAMPLED BY ↓ | LOCATION OAKLAND, CA.

TYPE Groundwater ✓ Surface Water ____ Leachate ____ Other ____

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

CASING ELEVATION (feet/MSL)	NR	VOLUME IN CASING (gal)	2 & 4.4
DEPTH OF WELL (feet)	27.1	CALCULATED PURGE (gal)	85.33
DEPTH OF WATER (feet)	7.75	ACTUAL PURGE VOL (gal)	35.0

DATE PURGED 2-18-99 | END PURGE 1230
DATE SAMPLED ↓ | SAMPLING TIME 1235

TIME (2400 HR)	VOLUME (gal)	pH (units)	E.C (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1225	28.5	7.60	895	62.9	Brn	Heavy
	~~57.0~~ well dry @ 35.0 Gallons					
	~~45.5~~					
1235	Refchg	7.70	928	63.4	Brn	Mod

OTHER DO = 1 | ODOR Moderate | NR (COBALT 0-100) | NR (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i e FB-1, XDUP-1) : NR

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

____ 2" Bladder Pump
____ Bomb Sampler
____ Dipper
____ Well Wizard™
X Bailer (Teflon)
____ Bailer (Stainless Steel)
____ Submersible Pump
____ Dedicated
Other ____

WELL INTEGRITY: O/C | LOCK: none

REMARKS: all Samples taken

pH, E C , Temp Meter Calibration Date 2/18/99 Time ____ Meter Serial No 87M
E C 1000 1000 pH 7 7000 pH 10 10000 pH 4 4000
Temperature °F ____

SIGNATURE [signature] REVIEWED BY ____ PAGE ____ OF ____

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 21775-235.004 SAMPLE ID AR-2C (10')
PURGED BY M. Gallegos CLIENT NAME ARCO # 2169
SAMPLED BY ↓ LOCATION OAKLAND, CA.

TYPE Groundwater ✓ Surface Water ____ Leachate ____ Other ____
CASING DIAMETER (inches) 2 ____ 3 ____ 4 ✓ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL) NR VOLUME IN CASING (gal.) NR
DEPTH OF WELL (feet) 24.3 CALCULATED PURGE (gal.) ↓
DEPTH OF WATER (feet) 9.17 ACTUAL PURGE VOL (gal.) ____

DATE PURGED 2-18-99 END PURGE ____
DATE SAMPLED ↓ SAMPLING TIME 1055

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E C (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1055	GRAB	7.22	1006	62.9	Clear	Clear

OTHER: DO = .5 ODOR: none NR (COBALT 0-100) NR (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1) NR

PURGING EQUIPMENT

____ 2" Bladder Pump ____ Bailer (Teflon)
____ Centrifugal Pump ____ Bailer (PVC)
____ Submersible Pump ____ Bailer (Stainless Steel)
____ Well Wizard™ ____ Dedicated
Other ____

SAMPLING EQUIPMENT

____ 2" Bladder Pump X Bailer (Teflon)
____ Bomb Sampler ____ Bailer (Stainless Steel)
____ Dipper ____ Submersible Pump
____ Well Wizard™ ____ Dedicated
Other ____

WELL INTEGRITY: O/C LOCK: none

REMARKS: all Samples taken

pH, E C, Temp Meter Calibration Date 2/18/99 Time 1045 Meter Serial No 87M
E C 1000/1006/1000 pH 7 7.00/7.00 pH 10 10.00/10.00 pH 4 4.00/4.00
Temperature °F ____
SIGNATURE [signature] REVIEWED BY ____ PAGE ____ OF ____

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 21775-235.004 | SAMPLE ID ADR-1 (8')
PURGED BY M. Gallegos | CLIENT NAME ARCO # 2169
SAMPLED BY ↓ | LOCATION OAKLAND, CA.

TYPE Groundwater V | Surface Water ____ | Leachate ____ | Other ____
CASING DIAMETER (inches) 2 ____ 3 ____ 4 ✓ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL)	NR	VOLUME IN CASING (gal.)	NR
DEPTH OF WELL (feet)	20.8	CALCULATED PURGE (gal.)	↓
DEPTH OF WATER (feet)	7.80	ACTUAL PURGE VOL (gal.)	↓

DATE PURGED 2-18-99 | END PURGE ____
DATE SAMPLED ↓ | SAMPLING TIME 1130

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1130	GRAB	6.90	1524	62.2	Clear	Clear

OTHER DO = .5 | ODOR Slight | NR (COBALT 0-100) | NR (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1) NR

PURGING EQUIPMENT

____ 2" Bladder Pump ____ Bailer (Teflon)
____ Centrifugal Pump ____ Bailer (PVC)
____ Submersible Pump ____ Bailer (Stainless Steel)
____ Well Wizard™ ____ Dedicated
Other ____

SAMPLING EQUIPMENT

____ 2" Bladder Pump X Bailer (Teflon)
____ Bomb Sampler ____ Bailer (Stainless Steel)
____ Dipper ____ Submersible Pump
____ Well Wizard™ ____ Dedicated
Other ____

WELL INTEGRITY OK | LOCK NONE

REMARKS: all Samples taken

pH, E.C., Temp Meter Calibration Date 2/18/99 | Time ____ | Meter Serial No 87M
E C 1000 1000 | pH 7 1700 | pH 10 1000 | pH 4 1400
Temperature °F ____

SIGNATURE [signature] | REVIEWED BY ____ | PAGE ____ OF ____

WATER SAMPLE FIELD DATA SHEET

Rev 1/97

OWT

PROJECT NO 21775-235.004 SAMPLE ID ADR-2
PURGED BY NR CLIENT NAME ARCO # 2169
SAMPLED BY NR LOCATION Oakland, Ca.

TYPE Groundwater ✓ Surface Water ____ Leachate ____ Other ____

CASING DIAMETER (inches) 2 ____ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL) NR VOLUME IN CASING (gal.) NR
DEPTH OF WELL (feet) NR CALCULATED PURGE (gal.) NR
DEPTH OF WATER (feet) NR ACTUAL PURGE VOL (gal.) NR

DATE PURGED NR END PURGE NR
DATE SAMPLED NR SAMPLING TIME NR

TIME (2400 HR)	VOLUME (gal.)	pH (units)	E.C (µmhos/cm@25°c)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
	UNABLE TO GET LID OPEN - 2 BOLTS STUCK IN LID.					

OTHER: NR ODOR NR NR (COBALT 0-100) NR (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1) NR

PURGING EQUIPMENT

____ 2" Bladder Pump ____ Bailer (Teflon)
____ Centrifugal Pump ____ Bailer (PVC)
____ Submersible Pump ____ Bailer (Stainless Steel)
____ Well Wizard™ ____ Dedicated
Other: NR

SAMPLING EQUIPMENT

____ 2" Bladder Pump ____ Bailer (Teflon)
____ Bomb Sampler ____ Bailer (Stainless Steel)
____ Dipper ____ Submersible Pump
____ Well Wizard™ ____ Dedicated
Other NR

WELL INTEGRITY: NR LOCK: NR

REMARKS:

pH, E.C., Temp. Meter Calibration Date NR Time ____ Meter Serial No ____
E.C. 1000 ____ / ____ pH 7 ____ / ____ pH 10 ____ / ____ pH 4 ____ / ____
Temperature °F ____
SIGNATURE: [signature] REVIEWED BY ____ PAGE ____ OF ____

EMCON Associates - Field Services

1921 Ringwood Avenue

San Jose, California

1999

Historical Monitoring Well Data

ARCO 2169

21775-235.004

	Gallons
First	70.50
Second	0.00
Third	0.00
Fourth	0.00

Well ID	Quarter	Date	Purge Volume (gallons)	Did well dry	Well Contained Product	
A-1	First	02/18/99	18.00	NO	NO	
	Second	05/11/98	0.00	GRAB	NO	
	Third	07/30/98	0.00	GRAB	NO	
	Fourth	10/09/98	0.00	GRAB	NO	
A-2	First	02/18/99	17.50	NO	NO	
	Second	05/11/98	0.00	NA	NO	
	Third	07/30/98	0.00	NA	NO	
	Fourth	10/09/98	0.00	NA	NO	
A-3	First	02/18/99	0.00	NA	NO	
	Second	05/11/98	0.00	NA	NO	
	Third	07/30/98	0.00	NA	NO	
	Fourth	10/09/98	0.00	NA	NO	
A-4	First	02/18/99	0.00	NA	NO	
	Second	05/11/98	0.00	NA	NO	
	Third	07/30/98	0.00	NA	NO	
	Fourth	10/09/98	0.00	NA	NO	
A-5	First	02/18/99	0.00	GRAB	NO	
	Second	05/11/98	0.00	IW	IW	
	Third	07/30/98	0.00	IW	IW	
	Fourth	10/09/98	0.00	IW	IW	
A-6	First	02/18/99	0.00	GRAB	NO	
	Second	05/11/98	0.00	GRAB	NO	
	Third	07/30/98	0.00	GRAB	NO	
	Fourth	10/09/98	0.00	GRAB	NO	
AR-1	First	02/18/99	35.00	YES	NO	
	Second	05/11/98	0.00	NA	NO	
	Third	07/30/98	0.00	GRAB	NO	
	Fourth	10/09/98	0.00	GRAB	NO	
AR-2	First	02/18/99	0.00	GRAB	NO	
	Second	05/11/98	0.00	GRAB	NO	
	Third	07/30/98	0.00	GRAB	NO	
	Fourth	10/09/98	0.00	GRAB	NO	
ADR-1	First	02/18/99	0.00	GRAB	NO	
	Second	05/11/98	0.00	GRAB	NO	
	Third	07/30/98	0.00	NA	NO	
	Fourth	10/09/98	0.00	NA	NO	
ADR-2	First	02/18/99	0.00	IW	IW	Steam water (gal)
	Second	05/11/98	0.00	NA	NO	
	Third	07/30/98	0.00	NA	NO	
	Fourth	10/09/98	0.00	NA	NO	

ARCO Products Company

Division of Atlantic/Richfield Company

Chain of Custody

Task Order No. 74119.00

ARCO Facility no. 7169	City (Facility) Oakland	Project manager (Consultant) Glen Vandeckeen	Laboratory Name CES
ARCO engineer Paul Supple	Telephone no. (ARCO)	Telephone no. (Consultant) (510) 457-7000 / Fax no. (Consultant) (510) 457-9071	Contract Number
Consultant name EMCON	Address (Consultant) 1414-A Hayden Way Walnut Creek, CA 9451[illegible]		

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH Gas, 1,2 DCE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM 503E	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 ☐			
AR-7(10)		2		X		X	HCl	2/18/94	1055		X												
AR-1(07)		2		X		X	HCl	2/18/94	1235		X												
A-2(07)		2		X		X	HCl	2/18/94	1200		X												
A-5(10)		2		X		X	HCl	2/18/94	1105		X												
~~ADR-[illegible]~~		~~2~~		~~X~~		~~X~~	~~HCl~~	→ UNABLE TO SAMPLE WELL →															
MW-1(10)		2		X		X	HCl	2/18/94	1130		X												
A-6(10)		2		X		X	HCl	2/18/94	1125		X												
A-1(02)		2		X		X	HCl	2/18/94	1205		X												

Method of shipment: Sampler will deliver

Special Detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: PAT 9, 2-40ml HCl VOAs, #2[illegible]5-1900

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:	
Relinquished by sampler [illegible]	Date 2/19/94 Time [illegible]	Received by [illegible] CHS 2/19/94 1500	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date / Time