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September 22, 2000

SNB
744

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

Subject: *Quarterly Groundwater Monitoring Report, Second Quarter 2000*
ARCO Service Station No. 2111
1156 Davis Street
San Leandro, California
Delta Project No. D000-306

Dear Mr. Supple:

Delta Environmental Consultants, Inc. is submitting the attached report that presents the results of the second quarter 2000 groundwater monitoring at ARCO Products Company Service Station No. 2111 located at 1156 Davis Street, San Leandro, California. The monitoring program complies with the Alameda County Health Care Services Agency requirements regarding underground tank investigations.


The interpretations contained in this report represent our professional opinions and are based, in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeological and engineering practices at this time and location. Other than this, no warranty is implied or intended.

If you have any questions concerning this project, please contact Steven W. Meeks at (916) 536-2613.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.


Trevor L. Atkinson
Project Engineer


Steven W. Meeks, P.E.
Project Manager
California Registered Civil Engineer No. C057461



TLA (LRP001.306.doc)
Enclosures

cc: Mr. Amir Gholami – Alameda County Health Care Services Agency
Mr. Mike Bakaldin, San Leandro Fire Department, Hazardous Materials Program

Date: September 22, 2000

ARCO QUARTERLY GROUNDWATER MONITORING REPORT

Station No.: 2111 Address: 1156 Davis Street, San Leandro, CA
ARCO Environmental Engineer/Phone No.: Paul Supple 925-299-8891
Consulting Co./Contact Person Delta Environmental Consultants, Inc.
Steven W. Meeks, P.E.
Consultant Project No.: D000-306
Primary Agency/Regulatory ID No. Alameda County Health Care Services Agency

WORK PERFORMED THIS QUARTER

1. Performed quarterly groundwater monitoring and sampling for second quarter 2000
2. Prepared and submitted quarterly groundwater monitoring and sampling report for second quarter 2000.

WORK PROPOSED FOR NEXT QUARTER

1. Perform quarterly groundwater monitoring and sampling for third quarter 2000.
2. Design and implement remediation piping during tank upgrade activities in September and October 2000 for possible future site remediation.

QUARTERLY MONITORING:

Current Phase of Project	<u>Quarterly groundwater monitoring</u>
Frequency of Groundwater Sampling:	<u>Quarterly: MW-2 through MW-7</u>
Frequency of Groundwater Monitoring:	<u>Quarterly (groundwater)</u>
Is Free Product (FP) Present On-Site:	<u>No</u>
FP Recovered this Quarter:	<u>None</u>
Cumulative FP Recovered to Date:	<u>0.381 gallons</u>
Bulk Soil Removed This Quarter:	<u>None</u>
Bulk Soil Removed to Date:	<u>Unknown</u>
Current Remediation Techniques:	<u>Bailing free product as needed</u>
Approximate Depth to Groundwater:	<u>15.34</u>
Groundwater Gradient:	<u>0.006 West-Northwest</u>

DISCUSSION:

- Due to the lost groundwater samples collected on June 26, 2000, the site was resampled on July 20, 2000 for second quarter 2000 monitoring.
- Free product was not present in the monitoring wells during the June 26 and July 20, 2000 monitoring events other than sheens (<0.01' thick) observed in monitoring well MW-2.
- A general remediation piping/conduit plan is currently being prepared for possible future use. The remediation piping/conduits are anticipated to be installed during the tank replacement activities scheduled to occur in mid September to early October 2000.
- Interim quarterly pumping activities from monitoring well MW-2 are proposed to occur in the third quarter 2000.

ATTACHMENTS:

- Table 1 Groundwater Elevation and Analytical Data
- Table 2 Groundwater Flow Direction and Gradient
- Figure 1 Groundwater Analytical Summary Map
- Figure 2 Groundwater Elevation Contour Map
- Appendix A Sampling and Analysis Procedures
- Appendix B Historical Groundwater Elevation Analytical Data Table
Groundwater Flow Direction and Gradient Table
- Appendix C Certified Analytical Reports with Chain-of-Custody Documentation
- Appendix D Field Data Sheet

TABLE 1

GROUNDWATER ANALYTICAL DATA

ARCO Service Station No. 2111
 1156 Davis Street
 San Leandro, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH as Gasoline (µg/L)	MTBE (µg/L)
MW-1	6/26/00	39.60	16.46	23.14	NA	NA	NA	NA	NA	NA
	07/20/00		16.89	22.71	110	<0.5	<0.5	2.7	360	2,100
MW-2	6/26/00	37.99	14.60	23.39 ^a	NA	NA	NA	NA	NA	NA
	07/20/00		15.14	22.85	2,300	18,000	2,500	19,000	95,000	13,000
MW-3	6/26/00	39.32	15.96	23.36	NA	NA	NA	NA	NA	NA
	07/20/00		16.42	22.90	<0.5	<0.5	<0.5	<1.0	<50	130
MW-4	6/26/00	38.10	14.59	23.51	NA	NA	NA	NA	NA	NA
	07/20/00		15.04	23.06	7.9	<0.5	<0.5	1.1	97	51
MW-5	6/26/00	37.21	14.27	22.94	NA	NA	NA	NA	NA	NA
	07/20/00		14.69	22.52	<0.5	<0.5	<0.5	<1.0	55	14,000
MW-6	6/26/00	37.11	13.46	23.65	NA	NA	NA	NA	NA	NA
	07/20/00		13.94	23.17	<0.5	<0.5	<0.5	<1.0	<50	<3.0

TABLE 1

GROUNDWATER ANALYTICAL DATA

ARCO Service Station No. 2111
 1156 Davis Street
 San Leandro, California

Well Number	Date Sampled	Top of Riser Elevation (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	TPH as Gasoline (µg/L)	MTBE (µg/L)
MW-7	6/26/00	38.68	14.34	24.34	NA	NA	NA	NA	NA	NA
	07/20/00		15.26	23.42	5.4	<0.5	2.8	5.9	14,000	71,000

* Product sheen noted

TPH = Total Petroleum Hydrocarbons

MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8021B unless otherwise noted

µg/L = Micrograms per liter

NM = Not measured

NC = Not calculated

Note: Please refer to Appendix B for Historical Groundwater Elevation and Analytical Data Tables developed by IT Corporation

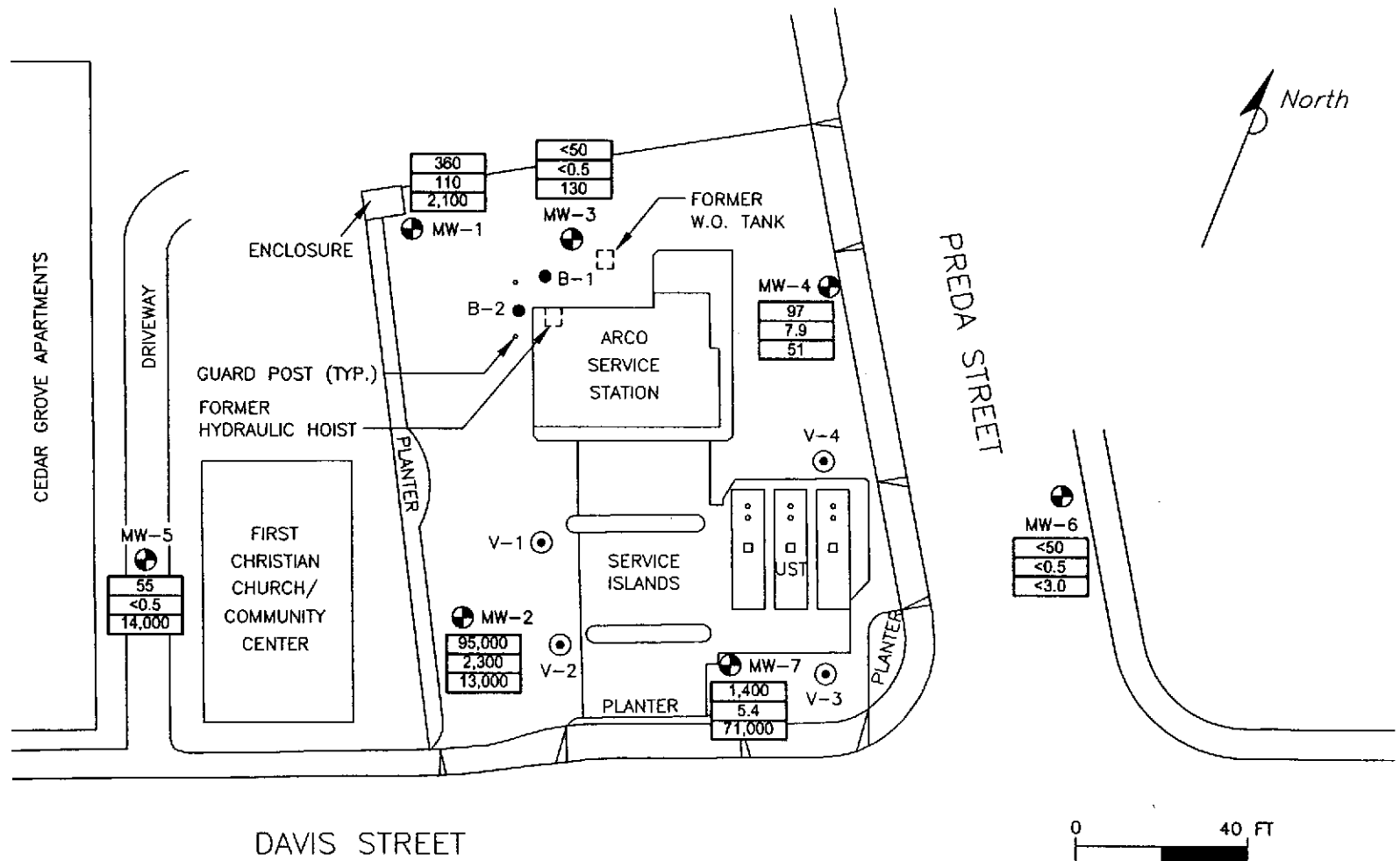
TABLE 2

GROUNDWATER FLOW DIRECTION AND GRADIENT

ARCO Service Station No. 2111
1156 Davis Street
San Leandro, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
7/20/00	West-Northwest	0.006

Note: Please refer to Appendix B for Historical Groundwater Elevation and Analytical Data
Tables developed by IT Corporation



LEGEND:


- MW-1 MONITORING WELL LOCATION
- ⊙ V-1 VAPOR EXTRACTION WELL LOCATION
- B-1 SOIL BORING LOCATION

<50	TPH AS GASOLINE IN MICROGRAMS PER LITER
<0.5	BENZENE IN MICROGRAMS PER LITER
<3.0	MTBE IN MICROGRAMS PER LITER

NS NOT SAMPLED

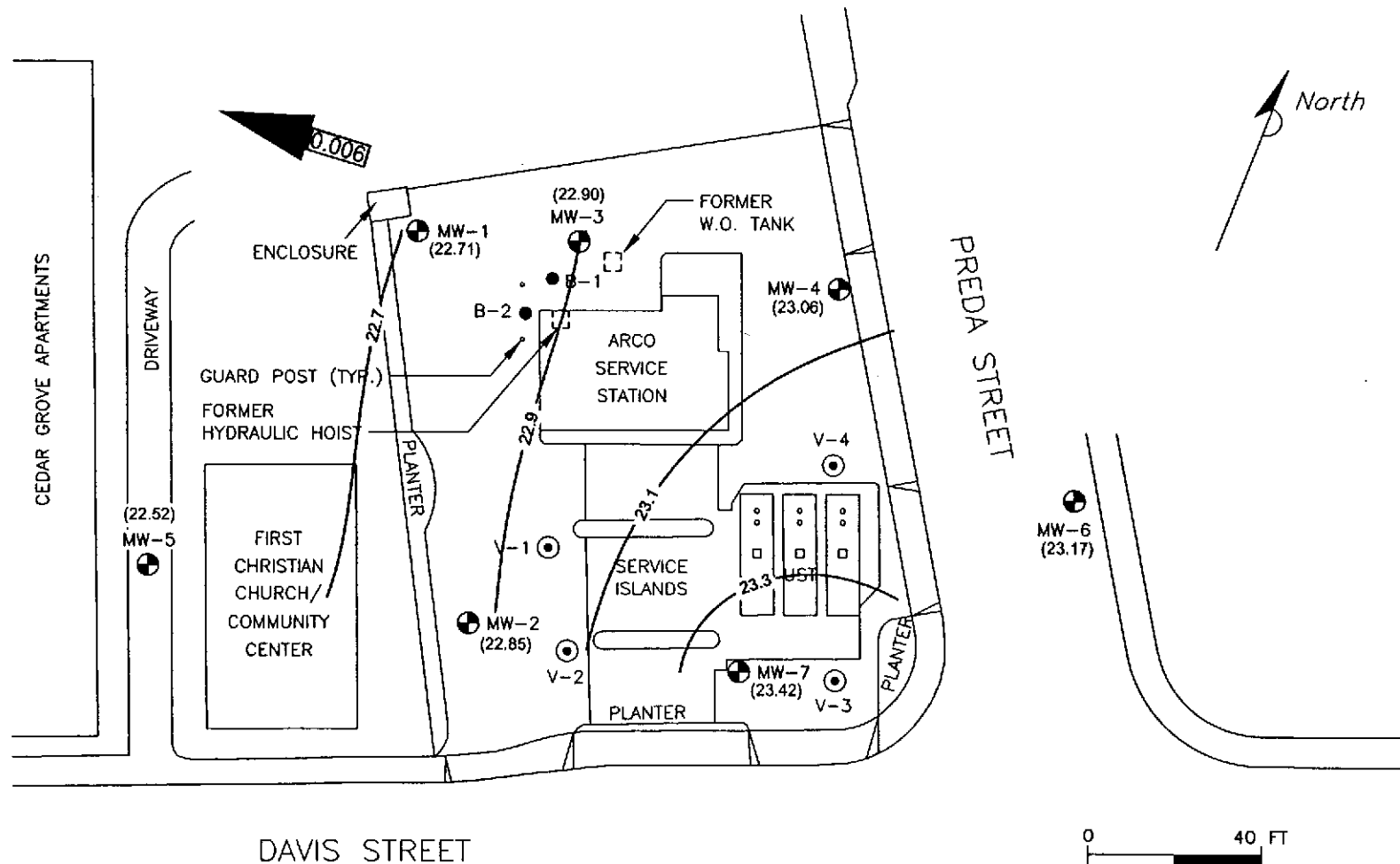
FIGURE 1
GROUND WATER ANALYTICAL SUMMARY
SECOND QUARTER 2000
ARCO SERVICE STATION NO. 2111
1156 DAVIS STREET
SAN LEANDRO, CALIFORNIA

PROJECT NO. D000-306	DRAWN BY TLA 8/30/00
FILE NO. 2111-1	PREPARED BY TLA
REVISION NO. 1	REVIEWED BY



Delta
Environmental
Consultants, Inc.

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LEGEND:

- ⊕ MW-1 MONITORING WELL LOCATION
- ⊙ V-1 VAPOR EXTRACTION WELL LOCATION
- B-1 SOIL BORING LOCATION
- (22.71) GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
- 22.9 - WATER TABLE CONTOUR IN FEET ABOVE MSL
- GROUND WATER FLOW DIRECTION
- 0.006 → APPROXIMATE GROUND WATER FLOW GRADIENT

FIGURE 2
GROUND WATER ELEVATION CONTOUR MAP
SECOND QUARTER 2000
ARCO SERVICE STATION NO. 2111
1156 DAVIS STREET
SAN LEANDRO, CALIFORNIA

PROJECT NO. D000-306	DRAWN BY TLA 8/31/00
FILE NO. 2111-1	PREPARED BY TLA
REVISION NO. 1	REVIEWED BY



APPENDIX A

Sampling and Analysis Procedures

FIELD METHODS AND PROCEDURES

1.0 GROUND WATER AND LIQUID-PHASE HYDROCARBON DEPTH ASSESSMENT

A water/liquid-phase hydrocarbon (LPH) interface probe was used to assess the thickness of LPH, if present, and a water level indicator was used to measure ground water depth in monitoring wells that did not contain LPH. Depth to ground water was measured from the top of each monitoring well casing. The tip of the water level indicator was subjectively analyzed for LPH sheen. All measurements and physical observations were recorded in the field.

2.0 SUBJECTIVE ANALYSIS OF GROUND WATER

Prior to purging, a water sample was collected from the monitoring well for subjective analysis. The sample was retrieved by gently lowering a clean, disposable bailer to approximately one-half the bailer length past the air/liquid interface. The bailer was then retrieved and the sample contained within the bailer was examined for LPH and the appearance of a LPH sheen.

3.0 MONITORING WELL PURGING AND SAMPLING

Monitoring wells were purged using a centrifugal pump or disposable bailers until pH, temperature, and conductivity of the purge water had stabilized and a minimum of three to four well volumes of water had been removed. Ground water removed from the wells was stored in 55-gallon barrels at the site. The barrels were labeled with corresponding monitoring well numbers and the date of purging. After purging, ground water levels were allowed to stabilize. A ground water sample was then removed from each of the wells using a dedicated disposable bailer. If the well was purged dry, it was allowed to sufficiently recharge and a sample was collected. Samples were collected in air-tight vials, appropriately labeled, and stored on ice from the time of collection through the time of delivery to the laboratory. A chain-of-custody form was completed to document possession of the samples. Ground water samples were transported to the laboratory and analyzed within the EPA-specified holding times for the requested analyses. Purge water will be collected from the storage barrels in a vacuum truck and transported to an appropriate facility for treatment and/or disposal.

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 previously stated in the first paragraph of this sub-section. 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.

APPENDIX B

Historical Groundwater Elevation and Analytical Data Table
and
Groundwater Flow Direction and Gradient Table

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

**ARCO Service Station 2111
1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged Y/NP
MW-1	08-01-95	39.60	17.45	ND	22.15	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
MW-1	12-14-95	39.60	17.09	ND	22.51	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	03-21-96	39.60	14.72	ND	24.88	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	05-24-96	39.60	15.94	ND	23.66	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	08-09-96	39.60	17.89	ND	21.71	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	11-06-96	39.60	18.66	ND	20.94	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	03-24-97	39.60	16.13	ND	23.47	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	05-27-97	39.60	17.23	ND	22.37	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	08-07-97	39.60	18.68	ND	20.92	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	11-10-97	39.60	19.19	ND	20.41	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	02-16-98	39.60	12.61	ND	26.99	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	04-15-98	39.60	14.30	ND	25.30	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	07-24-98	39.60	16.40	ND	23.20	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	10-19-98	39.60	17.90	ND	21.70	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-1	01-28-99	39.60	16.85	ND	22.75	01-28-99	<20,000	580	<200	<200	320	14,000	--	--	--	--
MW-1	06-25-99	39.60	17.35	ND	22.25	06-25-99	730	140	5	3	2	7,700	--	--	0.79	NP
MW-1	08-25-99	39.60	18.20	ND	21.40	08-25-99	390	66	8.5	<2.5	8.6	3,700	--	--	1.56	NP
MW-1	11-10-99	39.60	17.77	ND	21.83	11-10-99	360	70	13	2.2	13	980	--	--	0.30	NP
MW-1	02-09-00	39.60	16.25	ND	23.35	02-09-00	190	4.5	0.9	<0.5	12	3,500	--	--	0.53	NP
MW-2	08-01-95	37.99	15.67	ND	22.32	08-01-95	23,000	1,300	310	500	3,500	--	--	--	--	--
MW-2	12-14-95	37.99	15.36	ND	22.63	12-14-95	7,300	900	25	180	1,000	<200	--	--	--	--
MW-2	03-21-96	37.99	12.84	ND	25.15	03-21-96	9,600	850	30	280	1,400	250	--	--	--	--
MW-2	05-24-96	37.99	14.03	ND	23.96	05-24-96	2,300	300	<5	73	310	<25	--	--	--	--
MW-2	08-09-96	37.99	16.10	ND	21.89	08-09-96	2,800	290	6	75	320	50	--	--	--	--

**Table 1
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Petroleum Hydrocarbons and Their Constituents**

**ARCO Service Station 2111
1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged Y/NP
MW-2	11-06-96	37.99	16.98	ND	21.01	11-06-96	750	76	<1	15	51	110	--	--	--	--
MW-2	03-24-97	37.99	14.22	ND	23.77	03-24-97	790	18	<1	2	6	280	--	--	--	--
MW-2	05-27-97	37.99	15.42	ND	22.57	05-28-97	750	14	<1	<1	10	150	--	--	--	--
MW-2	08-07-97	37.99	16.92	ND	21.07	08-07-97	360	31	<2.5	<2.5	15	260	--	--	--	--
MW-2	11-10-97	37.99	17.52	ND	20.47	11-10-97	1,300	82	<5	14	49	550	--	--	--	--
MW-2	02-16-98	37.99	12.04	ND	25.95	02-16-98	<2,500	<25	<25	<25	<25	4,200	--	--	--	--
MW-2	04-15-98	37.99	12.34	ND	25.65	04-15-98	<10,000	<100	<100	<100	<100	7,300	--	--	--	--
MW-2	07-24-98	37.99	14.45	ND	23.54	07-24-98	<2,500	<25	<25	<25	<25	1,500	--	--	--	--
MW-2	10-19-98	37.99	16.08	ND	21.91	10-19-98	<1,000	18	<10	<10	<10	1,100	--	--	--	--
MW-2	01-28-99	37.99	15.59	0.02	22.41 [1]	01-28-99	160,000	3,000	24,000	4,400	31,000	23,000	--	--	--	--
MW-2	06-25-99	37.99	19.20	3.73[4]	21.51 [1]	06-25-99	120,000	6,900	21,000	2,600	19,000	18,000	17,000[3]	--	0.49	NP
MW-2	08-25-99	37.99	16.49	0.02	21.51 [1]	08-25-99	92,000	2,200	16,000	3,200	19,000	11,000	9,400[3]	--	0.84	NP
MW-2	11-10-99	37.99	16.08	ND	21.91	11-10-99	56,000	2,400	5,900	1,500	10,000	17,000	21,000[3]	--	0.41	NP
MW-2	02-09-00	37.99	14.85	ND	23.14	02-09-00	1,700	270	14	17	21	70,000	55,000[3]	--	0.97	NP
MW-3	08-01-95	39.32	17.00	ND	22.32	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	600	76[2]	--
MW-3	12-14-95	39.32	16.70	ND	22.62	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50	--
MW-3	03-21-96	39.32	14.17	ND	25.15	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50	--
MW-3	05-24-96	39.32	15.30	ND	24.02	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	<50	--
MW-3	08-09-96	39.32	17.58	ND	21.74	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	<500	--	--
MW-3	11-06-96	39.32	18.33	ND	20.99	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-3	03-24-97	39.32	15.44	ND	23.88	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-3	05-27-97	39.32	16.75	ND	22.57	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-3	08-07-97	39.32	18.35	ND	20.97	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--
MW-3	11-10-97	39.32	18.83	ND	20.49	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	--	--

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water teet	Free Product Thickness teet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-3	02-16-98	39.32	11.99	ND	27.33	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-3	04-15-98	39.32	13.75	ND	25.57	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-3	07-24-98	39.32	15.90	ND	23.42	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-3	10-19-98	39.32	17.45	ND	21.87	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-3	01-28-99	39.32	16.40	ND	22.92	01-28-99	<100	14	4	<1	6	100	..	..	..	..
MW-3	06-25-99	39.32	17.92	ND	21.40	06-25-99	83	9.0	1.4	<0.5	2.5	220	..	..	1.11	NP
MW-3	08-25-99	39.32	17.79	ND	21.53	08-25-99	240	41	12	3.7	9.9	160	..	..	1.13	NP
MW-3	11-10-99	39.32	17.37	ND	21.95	11-10-99	620	100	9.7	4.1	21	150	..	..	0.24	NP
MW-3	02-09-00	39.32	15.77	ND	23.55	02-09-00	<50	<0.5	0.7	<0.5	<1	180	..	..	0.62	NP
MW-4	08-01-95	38.10	15.65	ND	22.45	08-01-95	<50	<0.5	<0.5	<0.5	<0.5	..	..	..	..	..
MW-4	12-14-95	38.10	15.35	ND	22.75	12-14-95	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	03-21-96	38.10	12.74	ND	25.36	03-21-96	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	05-24-96	38.10	14.03	ND	24.07	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	08-09-96	38.10	16.10	ND	22.00	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	11-06-96	38.10	17.00	ND	21.10	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	03-24-97	38.10	14.21	ND	23.89	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	05-27-97	38.10	15.38	ND	22.72	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	08-07-97	38.10	16.95	ND	21.15	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	11-10-97	38.10	17.53	ND	20.57	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	02-16-98	38.10	10.65	ND	27.45	02-16-98	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	04-15-98	38.10	12.20	ND	25.90	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	07-24-98	38.10	14.47	ND	23.63	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	10-19-98	38.10	16.20	ND	21.90	10-19-98	<50	<0.5	<0.5	<0.5	<0.5	3	..	..	..	..
MW-4	01-28-99	38.10	15.02	ND	23.08	01-28-99	340	52	5.5	<0.5	74	31	..	..	..	..

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

**ARCO Service Station 2111
1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged Y/NP
MW-4	06-25-99	38.10	15.57	ND	22.53	06-25-99	510	78	4.1	0.5	18	94	--	--	0.90	NP
MW-4	08-25-99	38.10	16.43	ND	21.67	08-25-99	660	130	21	6.4	39	110	--	--	1.01	NP
MW-4	11-10-99	38.10	16.02	ND	22.08	11-10-99	510	98	5.1	3.1	15	69	--	--	0.28	NP
MW-4	02-09-00	38.10	14.30	ND	23.80	02-09-00	<50	<0.5	0.9	<0.5	<1	55	--	--	0.67	NP
MW-5	03-21-96	37.21	12.60	ND	24.61	03-22-96	<50	<0.5	<0.5	<0.5	<0.5	82	--	--		
MW-5	05-24-96	37.21	13.71	ND	23.50	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	7	--	--		
MW-5	08-09-96	37.21	15.60	ND	21.61	08-09-96	<50	<0.5	<0.5	<0.5	<0.5	8	--	--		
MW-5	11-06-96	37.21	16.36	ND	20.85	11-06-96	<50	<0.5	<0.5	<0.5	<0.5	100	--	--		
MW-5	03-24-97	37.21	13.87	ND	23.34	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	460	--	--		
MW-5	05-27-97	37.21	14.71	ND	22.50	05-28-97	<100	<1	<1	<1	<1	120	--	--		
MW-5	08-07-97	37.21	16.90	ND	20.31	08-07-97	<250	<2.5	<2.5	<2.5	<2.5	250	--	--		
MW-5	11-10-97	37.21	16.88	ND	20.33	11-10-97	<1,000	<10	<10	<10	<10	770	--	--		
MW-5	02-16-98	37.21	10.56	ND	26.65	02-16-98	<200	<2	<2	<2	<2	230	--	--		
MW-5	04-15-98	37.21	12.20	ND	25.01	04-15-98	<500	<5	<5	<5	<5	900	--	--		
MW-5	07-24-98	37.21	14.20	ND	23.01	07-24-98	<500	<5	<5	<5	<5	570	--	--		
MW-5	10-19-98	37.21	15.74	ND	21.47	10-19-98	<250	<2.5	<2.5	<2.5	<2.5	300	--	--		
MW-5	01-28-99	37.21	14.60	ND	22.61	01-28-99	<500	8	<5	<5	<5	290	--	--		
MW-5	06-25-99	37.21	15.10	ND	22.11	06-25-99	<50	<0.5	<0.5	<0.5	<0.5	1,300	--	--	0.76	NP
MW-5	08-25-99	37.21	15.91	ND	21.30	08-25-99	<50	<0.5	<0.5	<0.5	<0.5	6,700	--	--	0.98	NP
MW-5	11-10-99	37.21	15.52	ND	21.69	11-10-99	130	2.0	7.0	1.3	21	5,000	--	--	0.21	NP
MW-5	02-09-00	37.21	14.03	ND	23.18	02-09-00	92	<0.5	0.8	<0.5	1.0	7,900	--	--	0.51	NP
MW-6	03-21-96	37.11	11.55	ND	25.56	03-22-96	<50	<0.5	1.9	<0.5	<0.5	<3	--	--		
MW-6	05-24-96	37.11	12.80	ND	24.31	05-24-96	<50	<0.5	<0.5	<0.5	<0.5	6	--	--		

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents

ARCO Service Station 2111
1156 Davis Street, San Leandro, California

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-6	08-09-96	37.11	Not surveyed			08-09-96	Not sampled: Car parked on well									
MW-6	11-06-96	37.11	Not surveyed			11-06-96	Not sampled: Car parked on well									
MW-6	03-24-97	37.11	13.06	ND	24.05	03-24-97	<50	<0.5	<0.5	<0.5	<0.5	∅	--	--	--	--
MW-6	05-27-97	37.11	14.30	ND	22.81	05-28-97	<50	<0.5	<0.5	<0.5	<0.5	∅	--	--	--	--
MW-6	08-07-97	37.11	16.40	ND	20.71	08-07-97	<50	<0.5	<0.5	<0.5	<0.5	∅	--	--	--	--
MW-6	11-10-97	37.11	16.53	ND	20.58	11-10-97	<50	<0.5	<0.5	<0.5	<0.5	∅	--	--	--	--
MW-6	02-16-98	37.11	Not surveyed			02-16-98	Not sampled: Car parked on well									
MW-6	04-15-98	37.11	10.95	ND	26.16	04-15-98	<50	<0.5	<0.5	<0.5	<0.5	∅	--	--	--	--
MW-6	07-24-98	37.11	13.30	ND	23.81	07-24-98	<50	<0.5	<0.5	<0.5	<0.5	∅	--	--	--	--
MW-6	10-19-98	37.11	Not surveyed			10-19-98	Not sampled: Car parked on well									
MW-6	01-28-99	37.11	13.92	ND	23.19	01-28-99	<50	<0.5	<0.5	<0.5	<0.5	∅	--	--	--	--
MW-6	06-25-99	37.11	15.47	ND	21.64	06-25-99	<50	<0.5	<0.5	<0.5	<0.5	∅	--	--	0.74	NP
MW-6	08-25-99	37.11	15.39	ND	21.72	08-25-99	<50	<0.5	3.4	0.6	3.7	∅	--	--	0.92	NP
MW-6	11-10-99	37.11	14.92	ND	22.19	11-10-99	<50	<0.5	<0.5	<0.5	<1	∅	--	--	0.31	NP
MW-6	02-09-00	37.11	13.30	ND	23.81	02-09-00	<50	<0.5	0.9	<0.5	1.3	∅	--	--	0.79	NP
MW-7	03-21-96	38.68	13.32	ND	25.36	03-22-96	32,000	870	450	970	4,900	280	--	--	--	--
MW-7	05-24-96	38.68	14.58	ND	24.10	05-24-96	22,000	570	40	42	1,900	<200[2]	--	--	--	--
MW-7	08-09-96	38.68	15.33	ND	23.35	08-09-96	14,000	390	<10	180	470	<200[2]	--	--	--	--
MW-7	11-06-96	38.68	16.95	ND	21.73	11-06-96	9,500	440	<10	210	150	<100[2]	--	--	--	--
MW-7	03-24-97	38.68	14.65	ND	24.03	03-24-97	6,400	420	<10	260	13	480	--	--	--	--
MW-7	05-27-97	38.68	15.58	ND	23.10	05-28-97	5,000	420	<5	230	10	460	--	--	--	--
MW-7	08-07-97	38.68	17.10	ND	21.58	08-07-97	3,900	350	<5	200	10	330	--	--	--	--
MW-7	11-10-97	38.68	18.05	ND	20.63	11-10-97	5,600	590	10	370	43	540	--	--	--	--
MW-7	02-16-98	38.68	12.03	ND	26.65	02-16-98	<5,000	390	<50	<50	61	4,300	--	--	--	--

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

**ARCO Service Station 2111
1156 Davis Street, San Leandro, California**

Well Designation	Water Level Field Date	Top of Casing Elevation ft-MSL	Depth to Water feet	Free Product Thickness feet	Groundwater Elevation ft-MSL	Water Sample Field Date	TPHG LUFT Method µg/L	Benzene EPA 8021B* µg/L	Toluene EPA 8021B* µg/L	Ethylbenzene EPA 8021B* µg/L	Total Xylenes EPA 8021B* µg/L	MTBE EPA 8021B* µg/L	MTBE EPA 8260 µg/L	TRPH EPA 418.1 LUFT Method µg/L	Dissolved Oxygen mg/L	Purged/Not Purged P/NP
MW-7	04-15-98	38.68	13.02	ND	25.66	04-15-98	<10,000	<100	<100	<100	<100	8,900	--	--		
MW-7	07-24-98	38.68	14.18	ND	24.50	07-24-98	5,800	180	<50	74	<50	4,200	--	--		
MW-7	10-19-98	38.68	15.99	ND	22.69	10-19-98	<2,500	54	<25	72	<25	3,000	--	--		
MW-7	01-28-99	38.68	15.69	ND	22.99	01-28-99	4,500	560	250	<50	94	6,200	--	--		
MW-7	06-25-99	38.68	15.36	ND	23.32	06-25-99	3,900	520	160	46	100	45,000	63,000[3]	--	0.56	NP
MW-7	08-25-99	38.68	16.71	ND	21.97	08-25-99	3,400	730	77	51	110	62,000	76,000[3]	--	0.90	NP
MW-7	11-10-99	38.68	16.76	ND	21.92	11-10-99	15,000	340	19	13	20	55,000	91,000[3]	--	0.37	NP
MW-7	02-09-00	38.68	14.45	0.03	24.25 [1]	02-09-00	Not sampled: free product present									

ft-MSL: elevation in feet, relative to mean sea level
 TPHG: total petroleum hydrocarbons as gasoline, California DHS LUFT Method
 MTBE: Methyl tert-butyl ether
 TRPH: total recoverable petroleum hydrocarbons
 TPHD: total petroleum hydrocarbons as diesel, California DHS LUFT Method
 *: EPA method 8020 prior to 11/10/99
 EPA: United States Environmental Protection Agency
 µg/L: micrograms per liter
 mg/L: milligrams per liter
 ND: none detected
 --: not available or not analyzed
 <: less than laboratory detection limit stated to the right
 [1]: [corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water
 [2]: chromatogram fingerprint is not characteristic of diesel
 [3]: also analyzed for fuel oxygenates
 [4]: this value is suspected to be erroneous based on subsequent check by bailer (following day). See discussion

**Table 2
Groundwater Flow Direction and Gradient**

**ARCO Service Station 2111
1156 Davis Street, San Leandro, California**

Date Measured	Average Flow Direction	Average Hydraulic Gradient
08-01-95	NR	NR
12-14-95	West	0.002
03-21-96	West-Southwest	0.005
05-24-96	West	0.003
08-09-96	West-Northwest	0.01
11-06-96	West-Northwest	0.007
03-24-97	West	0.005
05-27-97	North-Northwest	0.006
08-07-97	West	0.009
11-10-97	West	0.002
02-16-98	South-Southwest	0.013
04-15-98	West-Southwest	0.014
07-24-98	Northwest	0.01
10-19-98	West	0.008
01-28-99	Southwest	0.01
06-25-99	North-Northwest	0.017
08-25-99	West-Northwest	0.005
11-10-99	West-Southwest	0.002
02-09-00	West-Northwest	0.015

NR: not recorded

APPENDIX C

Certified Analytical Reports
And
Chain-of-Custody Documentation

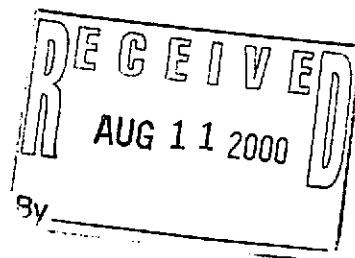


AUG 10 2000

August 3, 2000

Service Request No.: S2002054

Mr. Jay Johnson
Delta Environmental Consultants
3164 Gold Camp Dr. Suite 200
Rancho Cordova, CA 95670



RE: TO#2599300/RAT#8/2111 SAN LEANDRO

Dear Mr. Johnson:

Enclosed are the results of the sample(s) submitted to our laboratory on July 21, 2000. All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply to the sample(s) analyzed. Columbia Analytical Services is not responsible for use of less than the complete report. Signature of this CAS Analytical Report confirms that pages 2 through 15, following, have been thoroughly reviewed and approved for release.

Columbia Analytical Services is certified for environmental analyses by the California Department of Health Services (certificate number: 2352, expiration: January 31, 2001).

If you have any questions, please call me at (408) 748-9700.

Respectfully submitted,

Columbia Analytical Services, Inc.

Greg Jordan
Laboratory Director

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
TTLIC	Total Threshold Limit Concentration
VOA	Volatile Organic Analyte(s)

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: 7/20/00
 Date Received: 7/21/00

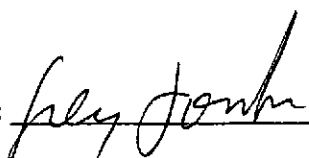
BTEX, MTBE and TPH as Gasoline

Sample Name: MW-1-16
 Lab Code: S2002054-001
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/24/00	360	
Benzene	EPA 5030	8021B	0.5	1	NA	7/24/00	110	
Toluene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/24/00	2.7	
Methyl tert -Butyl Ether	EPA 5030	8021B	3	1	NA	7/24/00	2100	

Approved By:



Date:

8/4/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: 7/20/00
 Date Received: 7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-2-15
 Lab Code: S2002054-002
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	100	NA	7/25/00	95000	
Benzene	EPA 5030	8021B	0.5	100	NA	7/25/00	2300	
Toluene	EPA 5030	8021B	0.5	100	NA	7/25/00	18000	
Ethylbenzene	EPA 5030	8021B	0.5	100	NA	7/25/00	2500	
Xylenes, Total	EPA 5030	8021B	1	100	NA	7/25/00	19000	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	100	NA	7/25/00	13000	

Approved By:

Date:

8/4/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: 7/20/00
 Date Received: 7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-3-16
 Lab Code: S2002054-003
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/25/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/25/00	ND	
Methyl tert-Butyl Ether	EPA 5030	8021B	3	1	NA	7/25/00	130	

Approved By:

Date:

8/4/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

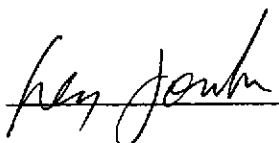
Service Request: S2002054
 Date Collected: 7/20/00
 Date Received: 7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-4-15
 Lab Code: S2002054-004
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/25/00	97	
Benzene	EPA 5030	8021B	0.5	1	NA	7/25/00	7.9	
Toluene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/25/00	1.1	
Methyl tert -Butyl Ether	EPA 5030	8021B	3	1	NA	7/25/00	51	

Approved By: 

Date: 8/4/00

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: 7/20/00
 Date Received: 7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-S-14
 Lab Code: S2002054-005
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/24/00	55	
Benzene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/24/00	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	100	NA	7/25/00	14000	

Approved By: _____

Frederick J. ...

Date: _____

8/4/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: TO#2599300/RAT#8/2111 SAN LEANDRO
Sample Matrix: Water

Service Request: S2002054
Date Collected: 7/20/00
Date Received: 7/21/00

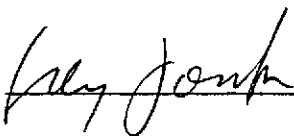
BTEX, MTBE and TPH as Gasoline

Sample Name: MW-6-13
Lab Code: S2002054-006
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/24/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/24/00	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	1	NA	7/24/00	ND	

Approved By:



Date:

8/4/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: 7/20/00
 Date Received: 7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name: MW-7-15
 Lab Code: S2002054-007
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/25/00	1400	
Benzene	EPA 5030	8021B	0.5	1	NA	7/25/00	5.4	
Toluene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/25/00	2.8	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/25/00	5.9	
Methyl tert -Butyl Ether	EPA 5030	8021B	3	200	NA	7/25/00	71000	

Approved By: *[Signature]*

Date: 8/4/00

LS22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: 7/19/00
 Date Received: 7/21/00

BTEX, MTBE and TPH as Gasoline

Sample Name: TB
 Lab Code: S2002054-008
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/25/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/25/00	ND	
Methyl tert -Butyl Ether	EPA 5030	8021B	3	1	NA	7/25/00	ND	

Approved By: Wey Joubert

Date: 8/4/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: NA
 Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
 Lab Code: S200724-WB1
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/24/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/24/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/24/00	ND	
Methyl tert -Butyl Ether	EPA 5030	8021B	3	1	NA	7/24/00	ND	

Approved By: *frey joub* Date: 8/4/00

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: NA
 Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
 Lab Code: S200725-WB1
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	50	1	NA	7/25/00	ND	
Benzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Toluene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Ethylbenzene	EPA 5030	8021B	0.5	1	NA	7/25/00	ND	
Xylenes, Total	EPA 5030	8021B	1	1	NA	7/25/00	ND	
Methyl <i>tert</i> -Butyl Ether	EPA 5030	8021B	3	1	NA	7/25/00	ND	

Approved By:

Greg Jordan

Date:

8/4/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: NA
 Date Received: NA
 Date Extracted: NA
 Date Analyzed: 7/24/00

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

Sample Name: BATCH QC
 Lab Code: S2002053-001MS, S2002053-001DMS
 Test Notes:

Units: ug/L (ppb)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level		Sample Result	Spike Result		Percent Recovery		CAS Acceptance Limits	Relative Percent Difference
				MS	DMS		MS	DMS	MS	DMS		
Benzene	EPA 5030	8021B	0.5	25	25	ND	24.7	24.5	99	98	75-135	<1
Toluene	EPA 5030	8021B	0.5	25	25	ND	27.4	24.8	110	99	73-136	10
Ethylbenzene	EPA 5030	8021B	0.5	25	25	ND	24.1	23.4	96	94	69-142	3
Gasoline	EPA 5030	CA/LUFT	50	500	500	ND	537	506	107	101	75-135	6

Approved By: *Felix Joubert*

Date: 8/4/00

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 LCS Matrix: Water

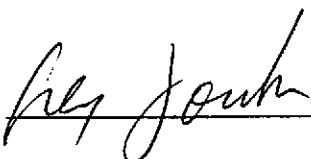
Service Request: S2002054
 Date Collected: NA
 Date Received: NA
 Date Extracted: NA
 Date Analyzed: 7/24/00

Laboratory Control Sample Summary
 BTEX and TPH as Gasoline

Sample Name: Lab Control Sample
 Lab Code: S200724-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	25	23.8	95	75-135	
Toluene	EPA 5030	8021B	25	24.1	96	73-136	
Ethylbenzene	EPA 5030	8021B	25	23.5	94	69-142	
Gasoline	EPA 5030	CA/LUFT	500	472	94	75-135	

Approved By: 

Date: 8/4/00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
 Project: TO#2599300/RAT#8/2111 SAN LEANDRO
 Sample Matrix: Water

Service Request: S2002054
 Date Collected: NA
 Date Received: NA
 Date Extracted: NA
 Date Analyzed: NA

Surrogate Recovery Summary
 BTEX, MTBE and TPH as Gasoline

Prep Method: EPA 5030
 Analysis Method: 8021B CA/LUFT

Units: PERCENT
 Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery	
			a,a,a-Trifluorotoluene	a,a,a-Trifluorotoluene
MW-1-16	S2002054-001		102	108
MW-2-15	S2002054-002		97	106
MW-3-16	S2002054-003		102	108
MW-4-15	S2002054-004		105	112
MW-5-14	S2002054-005		104	107
MW-6-13	S2002054-006		102	107
MW-7-15	S2002054-007		113	144 S1
TB	S2002054-008		104	109
Method Blank	S200724-WB1		101	103
Method Blank	S200725-WB1		104	99
BATCH QC	S2002053-001MS		103	116
BATCH QC	S2002053-001DMS		103	120
Lab Control Sample	S200724-LCS		101	119

CAS Acceptance Limits: 70-130 70-130

S1 Surrogate recovery out of control limits due to matrix interference.

Approved By: Key Joubert Date: 8/4/00

ARCO Facility no. **2111** City (Facility) **SAN LEANDRO** Project manager (Consultant) **Jay Johnson**
 ARCO engineer **Paul Supple** Telephone no. (ARCO) _____ Telephone no. (Consultant) _____ Fax no. (Consultant) _____
 Consultant name **Stratus** Address (Consultant) _____

Laboratory name **Columbia**
Contract number _____

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX EPA 802/8020/8015	TPH Modified 8015 EPA 1602/8020/8015	TPH EPA 418.1/SM503E	EPA 601/801D	EPA 624/824D	EPA 625/827D	TCLP Metals VOA <input type="checkbox"/> VOA <input type="checkbox"/> Semi Metals <input type="checkbox"/>	CAM Metals EPA 6010/7000 TTL <input type="checkbox"/> STL <input type="checkbox"/>	Lead Org./DHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	SOX 8260	
			Soil	Water	Other	Ice	Acid													
MW-1-16	①	2		X		X	X	7-20-00	1338	X										X
MW-2-15	②	1		↓		↓	↓	↓	1345	↓										↓
MW-3-16	③	1		↓		↓	↓	↓	1400	↓										↓
MW-4-15	④	1		↓		↓	↓	↓	1413	↓										↓
MW-5-14	⑤	1		↓		↓	↓	↓	1420	↓										↓
MW-6-13	⑥	1		↓		↓	↓	↓	1435	↓										↓
MW-7-15	⑦	1		↓		↓	↓	↓	1444	↓										↓
TB	⑧	1		↓		↓	↓	7-19	1000	↓										↓

Method of shipment **Courier**

Special detection Limit/reporting _____

Special QA/QC _____

Remarks _____

Due: 8/4/00

Lab number **52002054**

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 Tyler Brasher	Date 7-21-00	Time 12:00	Received by Denise Zeltner	Date 7-21-00	Time 12:00
Relinquished by _____	Date _____	Time _____	Received by _____	Date _____	Time _____
Relinquished by _____	Date _____	Time _____	Received by laboratory _____	Date _____	Time _____

COPY

DOULOS ENVIRONMENTAL COMPANY
GROUNDWATER/LIQUID LEVEL DATA
(measurements in feet)

MW-2

Project Address:

Avco # 2111

Date: 7-20-00

1156 Davis Street

Project No.: Avco # 2111

Recorded by:

SAN LEANDRO CA.

Well No	Time	Well Elev. TOC	Depth to Gr. Water	Measured Total Depth	Gr. Water Elevation	Depth to Product	Product Thickness	Comments
MW-1	1256		16.89					D.O. - 0.82
MW-2	1301		15.14				seen	D.O. - 0.74
MW-3	1307		16.42					D.O. - 1.26
MW-4	1314		15.04					D.O. - 0.97
MW-5	1319		14.69					D.O. - 0.99
MW-6	1324		13.94					D.O. - 0.81
MW-7	1329		15.26					D.O. - 0.96
								*

Notes:

client: Arco # 2111

Sampling Date: 7-20-00

site: 1156 Davis Street

Project No.: _____

SAN LEANDRO CA.

Well Designation: MW-1

Is setup of traffic control devices required? NO YES time: _____ hours
 Is there standing water in well box? NO YES Above TOC Below TOC
 Is top of casing cut level? NO YES If no, see remarks
 Is well cap sealed and locked? NO YES If no, see remarks
 Height of well casing riser (in inches): 5
 Well cover type: 8" UV _____ 12" UV _____ 12" EMCO _____ 8" BK _____
 12" BK _____ 12" DWP _____ 12" CNI _____ 36" CNI _____ Other 12" M&D
 General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
 _____ 2" PVC bailer _____ Dedicated bailer
 _____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer: Teflon bailer: _____

Well Diameter: 2" _____ 4" 6" _____ 8" _____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.
Initial Measurement Recharge Measurement
 Time: 1256 Time: N/A Calculated purge: N/A
 Depth of well: _____ Depth to water: _____ Actual purge: _____
 Depth to water: 16.89

Start purge: N/A Sampling time: 1338

Time	Temp.	E.C.	pH	Turbidity	Volume
<i>No Data</i>					

Sample appearance: _____ Lock: Master

Equipment replaced: (Check all that apply) Note condition of replaced item
 2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
 4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
 6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: Broke Lid

Signature: _____

Client: Amco # 2111

Sampling Date: 7-20-00

Site: 1156 DAVIS Street
SAN LEANDRO CA.

Project No.: _____

Well Designation: MW-2

Is setup of traffic control devices required? NO YES time: _____ hours
 Is there standing water in well box? NO YES Above TOC Below TOC
 Is top of casing cut level? NO YES If no, see remarks
 Is well cap sealed and locked? NO YES If no, see remarks
 Height of well casing riser (in inches): 3"
 Well cover type: 8" UV _____ 12" UV _____ 12" EMCO _____ 8" BK _____
 12" BK _____ 12" DWP _____ 12" CNI _____ 36" CNI _____ Other 12 M & D
 General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
 _____ 2" PVC bailer _____ Dedicated bailer
 _____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer: Teflon bailer: _____

Well Diameter: 2" _____ 4" 6" _____ 8" _____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.
Initial Measurement Recharge Measurement
 Time: 1301 Time: N/A Calculated purge: N/A
 Depth of well: _____ Depth to water: _____ Actual purge: _____
 Depth to water: 15.14

Start purge: N/A Sampling time: 1345

Time	Temp.	E.C.	pH	Turbidity	Volume
<u>No Sample</u>					

Sample appearance: clear Lock:

Equipment replaced: (Check all that apply) Note condition of replaced item
 2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
 4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
 6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: Smells gww & lean

Signature: _____

Client: Arco # 2111

Sampling Date: 7-20-00

Site: 1156 DAVIS Street

Project No.: _____

SAN LEANDRO CA.

Well Designation: NW-3

Is setup of traffic control devices required? NO YES time: _____ hours
 Is there standing water in well box? NO YES Above TOC Below TOC
 Is top of casing cut level? NO YES If no, see remarks
 Is well cap sealed and locked? NO YES If no, see remarks
 Height of well casing riser (in inches): 6
 Well cover type: 8" UV _____ 12" UV _____ 12" EMCO _____ 8" BK _____
 12" BK _____ 12" DWP _____ 12" CNI _____ 36" CNI _____ Other 12 M+D
 General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
 _____ 2" PVC bailer _____ Dedicated bailer
 _____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer: X Teflon bailer: _____

Well Diameter: 2" _____ 4" X 6" _____ 8" _____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.
Initial Measurement Recharge Measurement
 Time: 1307 Time: N/A Calculated purge: N/A
 Depth of well: _____ Depth to water: _____ Actual purge: _____
 Depth to water: 16.42

Start purge: N/A Sampling time: 1400

Time	Temp.	E.C.	pH	Turbidity	Volume
<u>No Sample</u>					

Sample appearance: Clear Lock: Master

Equipment replaced: (Check all that apply) Note condition of replaced item
 2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
 4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
 6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____

Client: Arco # 2111

Sampling Date: 7-20-00

Site: 1156 Davis Street

Project No.: _____

SAN LEANDRO CA.

Well Designation: MW-4

Is setup of traffic control devices required? NO YES time: _____ hours
 Is there standing water in well box? NO YES Above TOC Below TOC
 Is top of casing cut level? NO YES If no, see remarks
 Is well cap sealed and locked? NO YES If no, see remarks
 Height of well casing riser (in inches): 13"
 Well cover type: 8" UV _____ 12" UV _____ 12" EMCO _____ 8" BK _____
 12" BK _____ 12" DWP _____ 12" CNI _____ 36" CNI _____ Other 12 MFD
 General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
 _____ 2" PVC bailer _____ Dedicated bailer
 _____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer: Teflon bailer: _____

Well Diameter: 2" _____ 4" 6" _____ 8" _____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.
Initial Measurement Recharge Measurement
 Time: 1314 Time: N/A Calculated purge: N/A
 Depth of well: _____ Depth to water: _____ Actual purge: _____
 Depth to water: 15.04

Start purge: N/A Sampling time: 1413

Time	Temp.	E.C.	pH	Turbidity	Volume
<i>No purge</i>					

Sample appearance: clear Lock: marks

Equipment replaced: (Check all that apply) Note condition of replaced item
 2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
 4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
 6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____

Client: Arco # 2111

Sampling Date: 7-20-00

Site: 1156 Davis Street
SAN LEANDRO CA.

Project No.: _____

Well Designation: MW-5

Is setup of traffic control devices required? NO YES time: _____ hours
 Is there standing water in well box? NO YES Above TOC Below TOC
 Is top of casing cut level? NO YES If no, see remarks
 Is well cap sealed and locked? NO YES If no, see remarks
 Height of well casing riser (in inches): _____
 Well cover type: 8" UV _____ 12" UV _____ 12" EMCO _____ 8" BK _____
 12" BK _____ 12" DWP _____ 12" CNI _____ 36" CNI _____ other ~~EMCO~~ 8" BK
 General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
 _____ 2" PVC bailer _____ Dedicated bailer
 _____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer: Teflon bailer: _____

Well Diameter: 2" 4" 6" _____ 8" _____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.
 Initial Measurement _____ Recharge Measurement _____
 Time: 1319 Time: N/A Calculated purge: N/A
 Depth of well: _____ Depth to water: _____ Actual purge: _____
 Depth to water: 14.69

Start purge: N/A Sampling time: 1420

Time	Temp.	E.C.	pH	Turbidity	Volume
<u>No Sample</u>					

Sample appearance: _____ Lock: Master

Equipment replaced: (Check all that apply) Note condition of replaced item
 2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
 4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
 6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____

Client: Arco # 2111

Sampling Date: 7-20-00

Site: 1156 Davis Street
San Leandro CA

Project No.: _____

Well Designation: NW-6

Is setup of traffic control devices required? NO YES time: _____ hours
 Is there standing water in well box? NO YES Above TOC Below TOC
 Is top of casing cut level? NO YES If no, see remarks
 Is well cap sealed and locked? NO YES If no, see remarks
 Height of well casing riser (in inches): 0"
 Well cover type: 8" UV _____ 12" UV 12" EMCO _____ 8" BK _____
 12" BK _____ 12" DWP _____ 12" CNI _____ 36" CNI _____ Other _____
 General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
 _____ 2" PVC bailer _____ Dedicated bailer
 _____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer: Teflon bailer: _____

Well Diameter: 2" 4" _____ 6" _____ 8" _____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.
Initial Measurement Recharge Measurement
 Time: 1324 Time: _____ Calculated purge: _____
 Depth of well: _____ Depth to water: _____ Actual purge: _____
 Depth to water: 13.94

Start purge: N/A Sampling time: 1435

Time	Temp.	E.C.	pH	Turbidity	Volume

Sample appearance: clear Lock: mask

Equipment replaced: (Check all that apply) Note condition of replaced item
 2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
 4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
 6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____

Client: Arco # 2111

Sampling Date: 7-20-00

Site: 1156 DAVIS Street
SAN LEANDRO CA.

Project No.: _____

Well Designation: MW-7

Is setup of traffic control devices required? NO YES time: _____ hours
 Is there standing water in well box? NO YES Above TOC Below TOC
 Is top of casing cut level? NO YES If no, see remarks
 Is well cap sealed and locked? NO YES If no, see remarks
 Height of well casing riser (in inches): _____
 Well cover type: 8" UV _____ 12" UV _____ 12" EMCO _____ 8" BK _____
 12" BK _____ 12" DWP _____ 12" CNI _____ 36" CNI _____ Other _____
 General condition of wellhead assembly: Excellent Good Fair Poor

Purging Equipment: N/A 2" disposable bailer _____ Submersible pump
 _____ 2" PVC bailer _____ Dedicated bailer
 _____ 4" PVC bailer _____ Centrifugal pump

Sampled with: Disposable bailer: _____ Teflon bailer: _____

Well Diameter: 2" _____ 4" _____ 6" _____ 8" _____

Purge Vol. Multiplier: 0.16 0.65 1.47 2.61 gal/ft.
Initial Measurement Recharge Measurement
 Time: 1329 Time: _____ Calculated purge: N/A
 Depth of well: _____ Depth to water: _____ Actual purge: N/A
 Depth to water: 15.26

Start purge: N/A Sampling time: 1444

Time	Temp.	E.C.	pH	Turbidity	Volume
<u>No Sample</u>					

Sample appearance: _____ Lock: _____

Equipment replaced: (Check all that apply) Note condition of replaced item
 2" Locking Cap: _____ Lock #3753: _____ 7/32 Allenhead: _____
 4" Locking Cap: _____ Lock-Dolphin: _____ 9/16 Bolt: _____
 6" Locking Cap: _____ Pinned Allenhead (DWP): _____

Remarks: _____

Signature: _____