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

Date May 25, 1995
Project 0805-131.03

To:

Ms. Juliet Shin
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harborbay Parkway, Suite 250
Alameda, California 94502-6577

We are enclosing:

Copies	Description
1	First quarter 1995 groundwater monitoring report for ARCO service station 6002, Oakland, California

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

Comments:

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

David Larsen
Project Coordinator

cc: Kevin Graves, RWQCB - SFBR
Michael Whelan, ARCO Products Company
David Larsen, EMCON
File

ARCO Products Company
Environmental Engineering
2155 South Bascom Avenue, Suite 202
Campbell, California 95008

Date: May 25, 1995

Re: ARCO Station # 6002 • 6235 Seminary Avenue • Oakland, CA
First Quarter 1995 Groundwater Monitoring Report

" I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached proposal or report are true and correct."

Submitted by:

Michael R. Whelan
Environmental Engineer

ARCO Products Company is a Division of AtlanticRichfieldCompany

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

May 23, 1995
Project 0805-131.03

Mr. Michael Whelan
ARCO Products Company
2155 South Bascom Avenue, Suite 202
Campbell, California 95008

Re: First quarter 1995 groundwater monitoring program results, ARCO service station 6002, Oakland, California

Dear Mr. Whelan:

This letter presents the results of the first quarter 1995 groundwater monitoring program at ARCO Products Company (ARCO) service station 6002, 6235 Seminary Avenue, Oakland, California (Figure 1). The quarterly monitoring program complies with Alameda County Health Care Services Agency (ACHCSA) requirements regarding underground tank investigations.

BACKGROUND

In January 1994, RESNA conducted an initial subsurface environmental investigation to assess the extent of gasoline-hydrocarbons impact on the subsurface soils and groundwater at the site. As part of the investigation, RESNA installed one groundwater monitoring well (MW-1) and two vadose wells (VW-1 and VW-2).

In June 1994, GeoStrategies, Inc., installed four additional groundwater monitoring wells (MW-2 through MW-5) as part of a second phase of subsurface investigation.

Groundwater monitoring and sampling at this site was initiated in January 1994. There are currently five groundwater monitoring wells and two vadose wells on site. For additional background information please refer to *Additional On-Site Subsurface Investigation and Second Quarter 1994 Groundwater Monitoring Report* (GeoStrategies, Inc., August 29, 1994).

Wells MW-1 through MW-5 are monitored quarterly.

MONITORING PROGRAM FIELD PROCEDURES AND RESULTS

The first quarter 1995 groundwater monitoring event was performed by EMCON on March 15, 1995. Field work this quarter included (1) measuring depths to groundwater and subjectively analyzing groundwater for the presence of floating product in wells MW-1 through MW-5, (2) purging and subsequently sampling groundwater monitoring wells MW-1 through MW-5 for laboratory analysis, and (3) directing a state-certified

laboratory to analyze the groundwater samples. Copies of all field data sheets from the first quarter 1995 groundwater monitoring event are included in Appendix A.

ANALYTICAL PROCEDURES

Groundwater samples collected during first quarter 1995 monitoring were analyzed for total petroleum hydrocarbons as gasoline (TPHG), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Groundwater samples were prepared for analysis by U.S. Environmental Protection Agency (USEPA) method 5030 (purge and trap). Groundwater was analyzed for TPHG by the methods accepted by the Department of Toxic Substances Control, California Environmental Protection Agency (Cal-EPA), and referenced in the *Leaking Underground Fuel Tank* (LUFT) *Field Manual* (State Water Resources Control Board, October 1989). Samples were analyzed for BTEX by USEPA method 8020, as described in *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (EPA SW-846, November 1986, third edition). These methods are recommended for samples from petroleum-hydrocarbon-impacted sites in the *Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites* (August 10, 1990).

MONITORING PROGRAM RESULTS

Results of the first quarter 1995 groundwater monitoring event are summarized in Table 1 and illustrated in Figure 2. Historical groundwater elevation data, including top-of-casing elevations, depth-to-water measurements, calculated groundwater elevations, floating-product thickness measurements, and groundwater flow direction and gradient data, are summarized in Table 2. Table 3 summarizes historical laboratory data for TPHG and BTEX analyses. Copies of the first quarter 1995 analytical results and chain-of-custody documentation are included in Appendix B.

MONITORING PROGRAM EVALUATION

Groundwater elevation data collected on March 15, 1995, indicate that groundwater beneath the site flows west-southwest at an approximate hydraulic gradient of 0.08 foot per foot. Figure 2 illustrates groundwater contours and analytical data for the first quarter of 1995.

Groundwater samples collected from wells MW-2, MW-3, and MW-4 did not contain detectable concentrations of TPHG or BTEX. Groundwater samples collected from wells MW-1 and MW-5 contained 13,000 and 21,000 micrograms per liter (µg/L). TPHG, and 1,200 and 870 µg/L benzene, respectively.

LIMITATIONS

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

SITE STATUS UPDATE

This update reports site activities performed during the first quarter of 1995 and the anticipated site activities for the second quarter of 1995.

First Quarter 1995 Activities

- Prepared and submitted quarterly groundwater monitoring report for fourth quarter 1994.
- Performed quarterly groundwater monitoring for first quarter 1995.
- Prepared and submitted workplan for additional assessment.

Work Anticipated for Second Quarter 1995

- Prepare and submit quarterly groundwater monitoring report for first quarter 1995.
- Perform quarterly groundwater monitoring for second quarter 1995.
- Perform additional assessment.

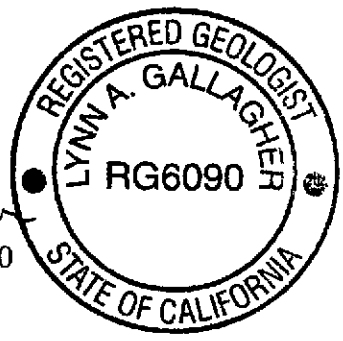
Please call if you have questions.

Sincerely,

EMCON

David Larsen
Project Coordinator

Lynn A. Gallagher, R.G. 6090
Project Geologist



Attachments:

Table 1 -	Groundwater Monitoring Data, First Quarter 1995
Table 2 -	Historical Groundwater Elevation Data
Table 3 -	Historical Groundwater Analytical Data (TPHG and BTEX)
Figure 1 -	Site Location
Figure 2 -	Groundwater Data, First Quarter 1995
Appendix A -	Field Data Sheets, First Quarter 1995 Groundwater Monitoring Event
Appendix B -	Analytical Results and Chain-of-Custody Documentation, First Quarter 1995

cc: Juliet Shin, ACHCSA
Kevin Graves, RWQCB - SFBR

Table 1
Groundwater Monitoring Data
First Quarter 1995
Summary Report

ARCO Service Station 6002
6235 Seminary Avenue, Oakland, California

Date: 05-04-95
Project Number: 0805-131.03

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot		µg/l	µg/l	µg/l	µg/l	µg/l
MW-1	03-15-95	247.06	7.37	239.69	ND	WSW	0.08	03-15-95	13000	1200	44	770	1100
MW-2	03-15-95	249.30	8.25	241.05	ND	WSW	0.08	03-15-95	<50	<0.5	<0.5	<0.5	<0.5
MW-3	03-15-95	248.35	6.76	241.59	ND	WSW	0.08	03-15-95	<50	<0.5	<0.5	<0.5	<0.5
MW-4	03-15-95	242.91	9.37	233.54	ND	WSW	0.08	03-15-95	<50	<0.5	<0.5	<0.5	<0.5
MW-5	03-15-95	244.82	11.99	232.83	ND	WSW	0.08	03-15-95	21000	870	22	1600	1900

TOC = Top of casing
ft-MSL = Elevation in feet, relative to mean sea level
MWN = Ground-water flow direction and gradient apply to the entire monitoring well network
TPHG = Total petroleum hydrocarbons as gasoline
µg/l = Micrograms per liter
ND = None detected
WSW = West-southwest

esj/h:\6002\6002mdb.xls\Table 1:dcl
0805-131.03

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 6002
6235 Seminary Avenue, Oakland, California

Date: 05-04-95
Project Number: 0805-131.03

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-1	01-21-94	247.06	7.82	239.24	ND	NR	NR
MW-1	07-08-94	247.06	8.32	238.74	ND	W	0.08
MW-1	09-24-94	247.06	8.84	238.22	ND	WSW	0.08
MW-1	11-21-94	247.06	7.27	239.79	ND	SW	0.07
MW-1	03-15-95	247.06	7.37	239.69	ND	WSW	0.08
MW-2	07-08-94	249.30	9.51	239.79	ND	W	0.08
MW-2	09-24-94	249.30	10.02	239.28	ND	WSW	0.08
MW-2	11-21-94	249.30	7.83	241.47	ND	SW	0.07
MW-2	03-15-95	249.30	8.25	241.05	ND	WSW	0.08
MW-3	07-08-94	248.35	7.75	240.60	ND	W	0.08
MW-3	09-24-94	248.35	8.14	240.21	ND	WSW	0.08
MW-3	11-21-94	248.35	6.80	241.55	ND	SW	0.07
MW-3	03-15-95	248.35	6.76	241.59	ND	WSW	0.08
MW-4	07-08-94	242.91	10.97	231.94	ND	W	0.08
MW-4	09-24-94	242.91	11.81	231.10	ND	WSW	0.08
MW-4	11-21-94	242.91	9.14	233.77	ND	SW	0.07
MW-4	03-15-95	242.91	9.37	233.54	ND	WSW	0.08
MW-5	07-08-94	244.82	12.94	231.88	ND	W	0.08
MW-5	09-24-94	244.82	13.60	231.22	ND	WSW	0.08
MW-5	11-21-94	244.82	12.45	232.37	ND	SW	0.07
MW-5	03-15-95	244.82	11.99	232.83	ND	WSW	0.08

TOC = Top of casing
ft-MSL = Elevation in feet, relative to mean sea level
MWN = Ground-water flow direction and gradient apply to the entire monitoring well network
ND = None detected
NR = Not reported; data not available or not measurable
W = West
WSW = West-southwest
SW = Southwest

Table 3
Historical Groundwater Analytical Data
Summary Report

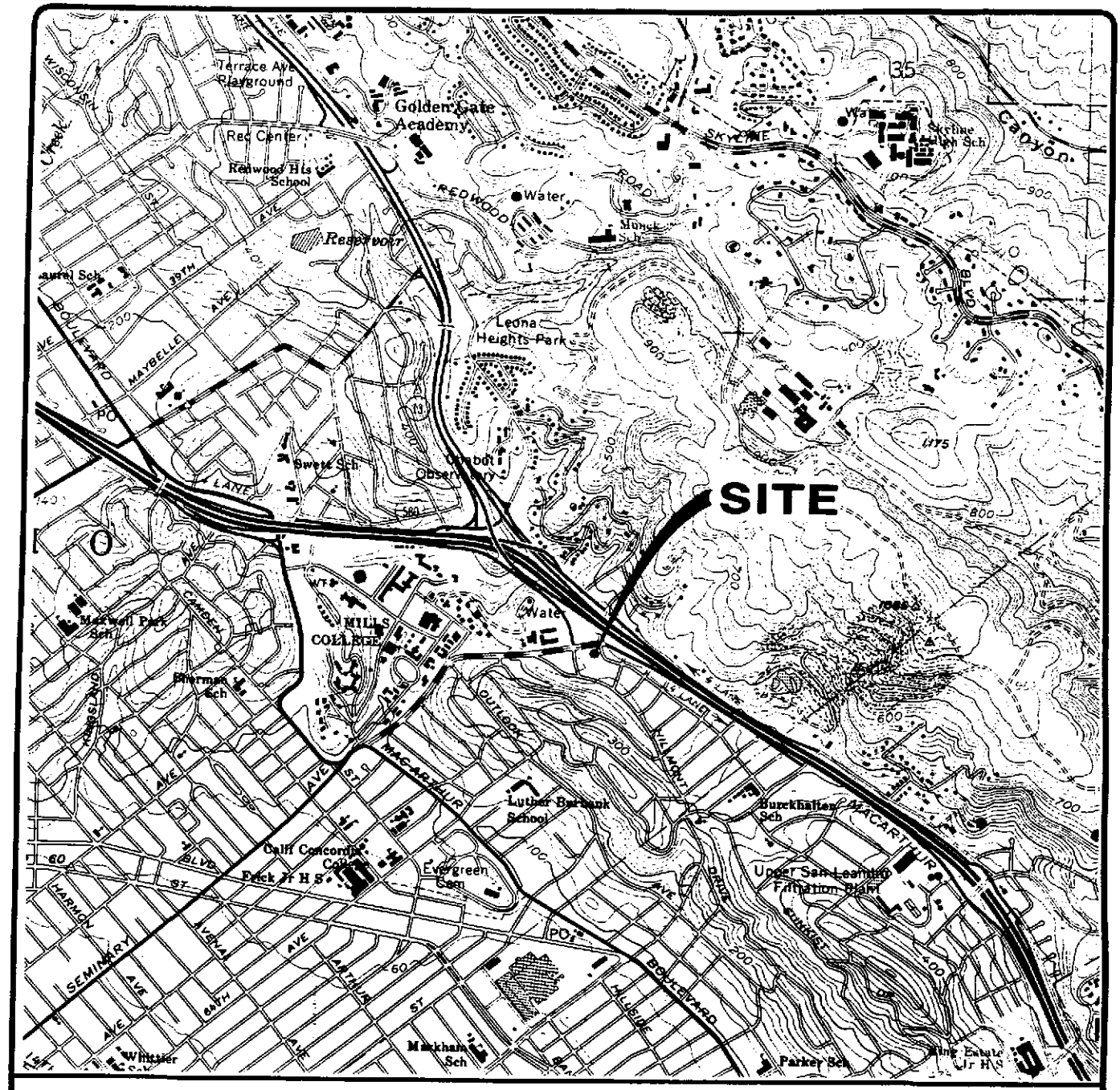
ARCO Service Station 6002
6235 Seminary Avenue, Oakland, California

Date: 05-04-95
Project Number: 0805-131.03

Well Designation	Water Sample Field Date	TPHG µg/l	Benzene µg/l	Toluene µg/l	Ethyl-benzene µg/l	Total Xylenes µg/l
MW-1	01-21-94	18000	1300	1600	250	1900
MW-1	07-08-94	21000	5200	<50	1000	1500
MW-1	09-24-94	13000	2900	37	830	640
MW-1	11-21-94	12000	2800	160	640	1300
MW-1	03-15-95	13000	1200	44	770	1100
MW-2	07-08-94	<50	<0.5	<0.5	<0.5	<0.5
MW-2	09-24-94	<50	<0.5	<0.5	<0.5	<0.5
MW-2	11-21-94	<50	<0.5	<0.5	<0.5	<0.5
MW-2	03-15-95	<50	<0.5	<0.5	<0.5	<0.5
MW-3	07-08-94	<50	<0.5	<0.5	<0.5	<0.5
MW-3	09-24-94	<50	<0.5	<0.5	<0.5	<0.5
MW-3	11-21-94	<50	<0.5	<0.5	<0.5	<0.5
MW-3	03-15-95	<50	<0.5	<0.5	<0.5	<0.5
MW-4	07-08-94	<50	<0.5	<0.5	<0.5	<0.5
MW-4	09-24-94	140	<0.5	<0.5	<0.9	<0.5
MW-4	11-21-94	<50	<0.5	<0.5	<0.5	<0.5
MW-4	03-15-95	<50	<0.5	<0.5	<0.5	<0.5
MW-5	07-08-94	41000	3300	<50	2200	2900
MW-5	09-24-94	28000	4000	<50	2400	2100
MW-5	11-21-94	38000	3100	<50	3100	4100
MW-5	03-15-95	21000	870	22	1600	1900

TPHG = Total petroleum hydrocarbons as gasoline
µg/l = Micrograms per liter

152753



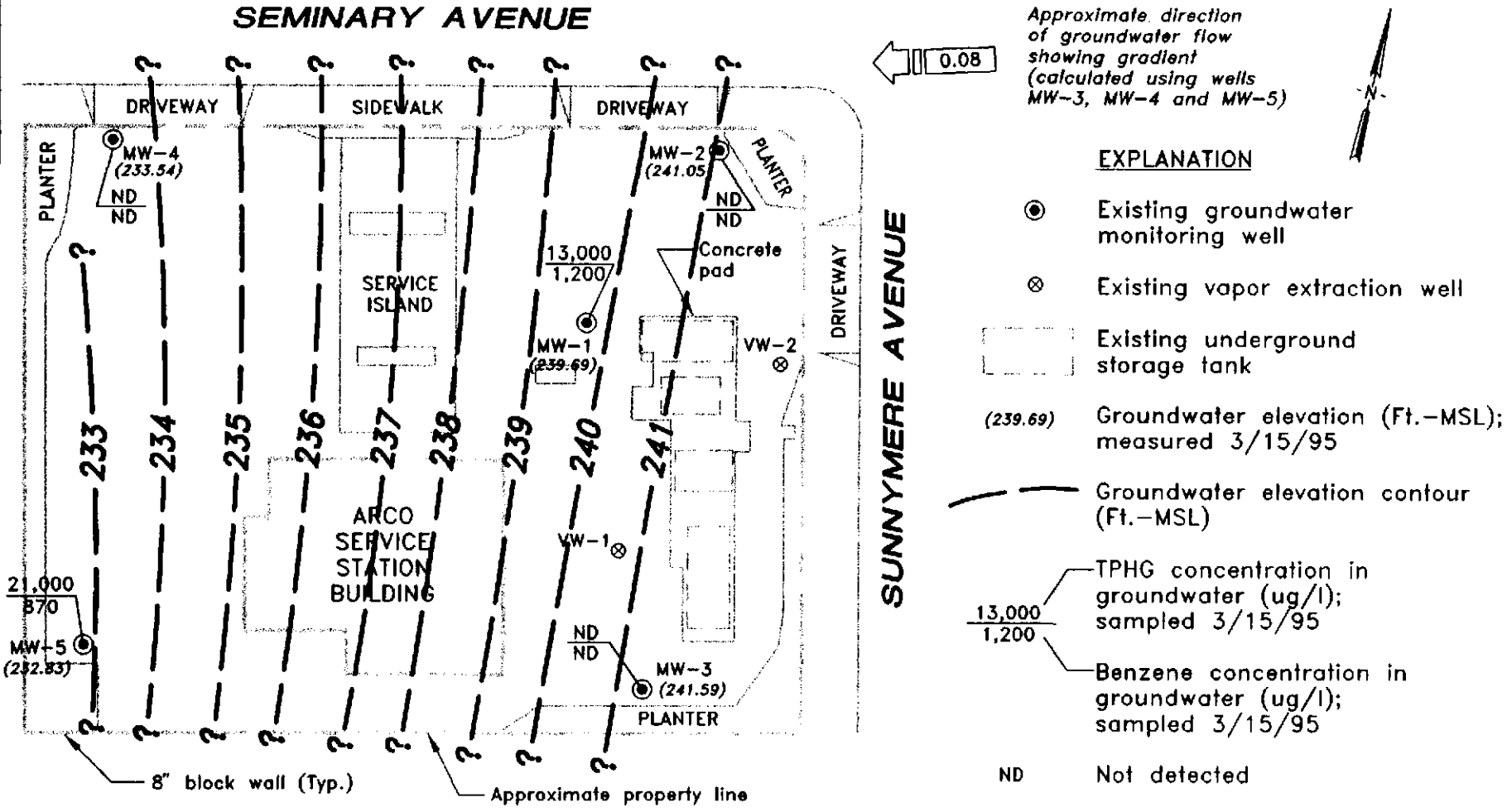
EMCON Associates

ARCO PRODUCTS COMPANY
SERVICE STATION 6002, 6235 SEMINARY AVE.
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

SITE LOCATION

FIGURE 1

PROJECT NO. 805-131.01



Base map modified from GSI, 1994.

emcon

ARCO PRODUCTS COMPANY
SERVICE STATION 6002, 6235 SEMINARY AVENUE
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

GROUNDWATER DATA
FIRST QUARTER 1995

FIGURE NO.
2
PROJECT NO.
805-131.03

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 1775-241.01 STATION ADDRESS : 6235 Seminary Avenue DATE : 3/15/95

ARCO STATION # : 6002 FIELD TECHNICIAN : D. Granbelin DAY : Wednesday

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-1	No	Yes	NA	2kA	X	7.37	7.37	ND	ND	24.2	Water in Box above TOC
2	MW-2	Yes	Yes	↓	2kA	X	8.25	8.25	ND	ND	17.5	
3	MW-3	Yes	Yes	↓	2kA	X	6.76	6.76	ND	ND	24.3	
4	MW-4	↓	↓	↓	↓	↓	9.37	9.37	ND	ND	22.1	
5	MW-5	↓	↓	↓	↓	↓	11.99	11.99	ND	ND	24.5	

SURVEY POINTS ARE TOP OF WELL CASINGS

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-24.01 SAMPLE ID: MW-1

PURGED BY: D. Gamblin CLIENT NAME: ARCO 6002

SAMPLED BY: D Gamblin LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 10.99

DEPTH TO WATER (feet): 7.37 CALCULATED PURGE (gal.): 32.99

DEPTH OF WELL (feet): 24.2 ACTUAL PURGE VOL. (gal.): 33.0

DATE PURGED: 3/15/95 Start (2400 Hr) 1117 End (2400 Hr) 1126

DATE SAMPLED: 3/15/95 Start (2400 Hr) 1129 End (2400 Hr) 1130

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1119	11.0	6.33	595	62.1	Clear	Light
1121	22.0	6.54	706	62.8	Clear	Light
1126	33.0	6.60	689	63.5	Clear	Light

D. O. (ppm): NR ODOR: ~~NR~~ Light

COLOR (COBALT 0 - 500): NR

TURBIDITY (NTU 0 - 200 or 0 - 1000): NR

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good / Water in Box above TOC LOCK #: 2KA

REMARKS: ___

Meter Calibration: Date: 3/15/95 Time: 1048 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: D. Gamblin Reviewed By: JB Page 1 of ___

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-241.01 SAMPLE ID: MW-2

PURGED BY: D. Gamblin CLIENT NAME: ARCO 6002

SAMPLED BY: D. Gamblin LOCATION: ARCO Oakland, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 6.04

DEPTH TO WATER (feet): 8.25 CALCULATED PURGE (gal.): 18.13

DEPTH OF WELL (feet): 17.5 ACTUAL PURGE VOL. (gal.): 18.5

DATE PURGED: 3/15/95 Start (2400 Hr) 1139 End (2400 Hr) 1144

DATE SAMPLED: 3/15/95 Start (2400 Hr) 1148 End (2400 Hr) 1149

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmnos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1140	6.5	6.45	356	62.3	Tan	Light
1142	12.5	6.25	359	63.5	Tan	Heavy
1144	18.5	6.18	357	63.1		

D. O. (ppm): NR ODOR: None COLOR: NR (COBALT 0 - 500) TURBIDITY: NR (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT

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

SAMPLING EQUIPMENT

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

WELL INTEGRITY: Good LOCK #: 2KA

REMARKS: ___

Meter Calibration: Date: 3/15/95 Time: 1048 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: [signature] Reviewed By: JB Page 2 of 5

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775.241.01 SAMPLE ID: MW-3

PURGED BY: Joe Williams CLIENT NAME: ARCO 6002

SAMPLED BY: Joe Williams LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 11.46

DEPTH TO WATER (feet): 6.76 CALCULATED PURGE (gal.): 34.38

DEPTH OF WELL (feet): 24.3 ACTUAL PURGE VOL. (gal.): 34.5

DATE PURGED: 3/15/95 Start (2400 Hr) 1054 End (2400 Hr) 1105

DATE SAMPLED: 3/15/95 Start (2400 Hr) 1109 End (2400 Hr) 1110

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1057	11.5	6.71	414	61.4	Tan	Moderate
1102	23.0	6.44	406	61.4	Tan	Moderate
1105	34.5	6.48	406	61.5	Tan	Moderate

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

COLOR (COBALT 0 - 500): NR

TURBIDITY (NTU 0 - 200 or 0 - 1000): NR

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT

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

Other: ___

SAMPLING EQUIPMENT

- ___ 2" Bladder Pump
- ___ DDL Sampler
- ___ Dipper
- ___ Well Wizard™
- X Bailer (Teflon®)
- ___ Bailer (Stainless Steel)
- ___ Submersible Pump
- ___ Dedicated

Other: ___

WELL INTEGRITY: Good LOCK #: 2kA

REMARKS: ___

Meter Calibration: Date: 3-15-95 Time: 1048 Meter Serial #: 900 Temperature °F: 64.9

(EC 1000 989 / 1000) (DI ___) (pH 7 703 / 200) (pH 10 1001 / 10.00) (pH 4 3.99 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 3 of 5

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775.241.01 SAMPLE ID: MW-4

PURGED BY: D. Gambelin CLIENT NAME: ARCO 6002

SAMPLED BY: D. Gambelin LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 8.32

DEPTH TO WATER (feet): 9.37 CALCULATED PURGE (gal.): 24.95

DEPTH OF WELL (feet): 22.1 ACTUAL PURGE VOL. (gal.): 25.0

DATE PURGED: 3/15/95 Start (2400 Hr) 1204 End (2400 Hr) 1211

DATE SAMPLED: 3/15/95 Start (2400 Hr) 1214 End (2400 Hr) 1215

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmnos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1206	8.5	6.09	358	64.4	Tan	Light
1209	17.0	6.09	351	64.8	Tan	Light
1211	25.0	6.17	366	65.2	Tan	Light

D. O. (ppm): NR ODOR: None NR (COBALT 0 - 500) NR (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
X Centrifugal Pump	___ Bailer (PVC)	___ DDL Sampler	___ Bailer (Stainless Steel)
___ Submersible Pump	___ Bailer (Stainless Steel)	___ Dipper	___ Submersible Pump
___ Well Wizard™	___ Dedicated	___ Well Wizard™	___ Dedicated
Other: ___		Other: ___	

WELL INTEGRITY: Good LOCK #: 2KA

REMARKS: ___

Meter Calibration: Date: 3/15/95 Time: 1048 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: Dan Gambelin Reviewed By: JB Page 4 of 5

Rev. 3, 2/94

WATER SAMPLE FIELD DATA SHEET

EMCON ASSOCIATES

PROJECT NO: 1775-241.01 SAMPLE ID: MW-5

PURGED BY: D. Gamboa CLIENT NAME: ARCO 6002

SAMPLED BY: D. Gamboa LOCATION: Oakland, CA

TYPE: Ground Water X Surface Water ___ Treatment Effluent ___ Other ___

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 8.17

DEPTH TO WATER (feet): 11.99 CALCULATED PURGE (gal.): 24.52

DEPTH OF WELL (feet): 24.5 ACTUAL PURGE VOL. (gal.): 25.0

DATE PURGED: 3/15/95 Start (2400 Hr) 1222 End (2400 Hr) 1229

DATE SAMPLED: 3/15/95 Start (2400 Hr) 1233 End (2400 Hr) 1234

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1223	8.5	6.26	638	65.0	Tan	Light
1226	17.0	6.43	652	66.4	Tan	Light
1229	25.0	6.42	668	66.6	Tan	Light

D. O. (ppm): NR ODOR: Light

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

TURBIDITY (visual): NR (NTU 0 - 200 or 0 - 1000)

Field QC samples collected at this well: NR

Parameters field filtered at this well: NR

PURGING EQUIPMENT

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

Other: ___

SAMPLING EQUIPMENT

- ___ 2" Bladder Pump
- X Bailer (Teflon®)
- ___ DDL Sampler
- ___ Dipper
- ___ Well Wizard™
- ___ Bailer (Stainless Steel)
- ___ Submersible Pump
- ___ Dedicated

Other: ___

WELL INTEGRITY: Good LOCK #: 2KA

REMARKS: ___

Meter Calibration: Date: 3/15/95 Time: 1048 Meter Serial #: 9010 Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: [signature] Reviewed By: [signature] Page 5 of 5

Columbia
Analytical
Services inc.

March 29, 1995

Service Request No. S950327

John Young
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Re: **ARCO Facility No. 6002 / EMCON Project No. 1775-241.01**

Dear Mr. Young:

Attached are the results of the water sample(s) submitted to our lab on March 16, 1995. For your reference, these analyses have been assigned our service request number S950327.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and CAS is not responsible for use of less than the complete report. Results apply only to the samples analyzed.

Please call if you have any questions.

Respectfully submitted:

COLUMBIA ANALYTICAL SERVICES, INC.

Steven L. Green
Project Chemist

Annelise J. Bazar
Regional QA Coordinator

SLG/ajb

001

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
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
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is 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
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 MRL
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL, but greater than or equal to the MDL

1921 Ringwood Avenue • San Jose, California 95131 • Telephone 408/437-2400 • Fax 408/437-9356

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON	**Service Request:**	S950327
Project:	ARCO Facility No. 6002 / EMCON Project No. 1775-241.01	**Date Collected:**	3/15/95
Sample Matrix:	Water	**Date Received:**	3/16/95
		Date Extracted:	NA
		Date Analyzed:	3/23,24/95

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Analyte:	**TPH as Gasoline**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Xylenes, Total**
Units:	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)	ug/L (ppb)
Method Reporting Limit:	50	0.5	0.5	0.5	0.5
Sample Name / **Lab Code**					
MW-1 (24) / S950327-001	13,000	1,200	44	770	1,100
MW-2 (17) / S950327-002	ND	ND	ND	ND	ND
MW-3 (24) / S950327-003	ND	ND	ND	ND	ND
MW-4 (22) / S950327-004	ND	ND	ND	ND	ND
MW-5 (24) / S950327-005	21,000	870	22	1,600	1,900
Method Blank / S950323-WB	ND	ND	ND	ND	ND
Method Blank / S950324-WB	ND	ND	ND	ND	ND

Approved By: _____ Date: 3/30/95

5ABTXGAS/061694

003

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Facility No. 6002 / EMCON Project No. 1775-241.01
Sample Matrix: Water

Service Request: S950327
Date Collected: 3/15/95
Date Received: 3/16/95
Date Extracted: NA
Date Analyzed: 3/23,24/95

Surrogate Recovery Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method

Sample Name	Lab Code	Percent Recovery α,α,α-Trifluorotoluene
MW-1 (24)	S950327-001	96
MW-2 (17)	S950327-002	99
MW-3 (24)	S950327-003	101
MW-4 (22)	S950327-004	100
MW-5 (24)	S950327-005	101
MW-2 (17) MS	S950327-002MS	97
MW-2 (17) DMS	S950327-002DMS	103
Method Blank	S950323-WB	99
Method Blank	S950324-WB	89

CAS Acceptance Limits: 69-116

Approved By: _____ Date: 3/30/95

SUR1/062994

005

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON
Project: ARCO Facility No. 6002 / EMCON Project No. 1775-241.01

Service Request: S950327
Date Analyzed: 3/24/95

Initial Calibration Verification (ICV) Summary
BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Benzene	25	25.0	100	85-115
Toluene	25	24.1	96	85-115
Ethylbenzene	25	24.2	97	85-115
Xylenes, Total	75	71.4	95	85-115
Gasoline	250	253	101	90-110

Approved By: _____ Date: 3/30/95

ICV25AL/060194

006

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON	**Service Request:**	S950327
Project:	ARCO Facility No. 6002 / EMCON Project No. 1775-241.01	**Date Collected:**	3/15/95
Sample Matrix:	Water	**Date Received:**	3/16/95
		Date Extracted:	NA
		Date Analyzed:	3/24/95

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

Sample Name: MW-2 (17)
Lab Code: S950327-002

	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
Analyte	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**
Benzene	25	25	ND	25.5	25.3	102	101	75-135	1
Toluene	25	25	ND	24.5	24.4	98	98	73-136	<1
Ethylbenzene	25	25	ND	24.7	24.6	99	98	69-142	<1

Approved By: _____ Date: 3/30/95

DMS1S/060194

007

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 17075.00

Chain of Custody

ARCO Facility no. 6002	City (Facility) OAKLAND	Project manager (Consultant) John Young	Laboratory name CAS
ARCO engineer Michael Whelan	Telephone no. (ARCO)	Telephone no. (Consultant) 453-7300	Fax no. (Consultant) 453-0452
Consultant name EMCON	Address (Consultant) 1921 Ringwood Avenue San Jose		Contract number

Method of shipment: Sampler will deliver

Special detection Limit/reporting: lowest possible

Special QA/QC: Normal

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 EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Semi Metals ☐ VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW1(24)	1	2		X		X	HCl	3/15	1129		X											
MW2(17)	2	↓		X		X	↓	↓	1148		X											
MW3(24)	3			X		X			1109		X											
MW4(22)	4			X		X			1214		X											
MW5(24)	5	↓		X		X	↓	↓	1233		X											

Remarks: 1775-241.01

Lab number: 9503277

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:	
Relinquished by sampler	Date 3-16-95 Time 10:10	Received by	
Relinquished by	Date Time	Received by	
Relinquished by	Date Time	Received by laboratory	Date 3/6-95 Time 10:12

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