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

ARCO
HAZMAT

91 SEP -6 PM 3:53

Date: August 30, 1994
Project 0C75-005.24

To:

Ms. Susan Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

We are enclosing:

Copies	Description
1	Second Quarter 1994 Groundwater Monitoring Report for ARCO Service Station 6148

For your: X Use; Approval; Review; Information

Sent by: Regular Mail; Standard Air; Courier; X Other Certified Mail

Comments: Please call with any questions or comments.

John C. Young
Project Manager

EMCON Associates
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August 26, 1994
Project 0C75-005.24

Mr. Michael Whelan
Environmental Engineer
ARCO Products Company
Post Office Box 5811
San Mateo, California 94420

Re: Second quarter 1994 groundwater monitoring program results, ARCO service station 6148, Oakland, California

Dear Mr. Whelan:

This letter presents the results of the second quarter 1994 groundwater monitoring program at ARCO Products Company (ARCO) service station 6148, 5131 Shattuck Avenue, Oakland, California (Figure 1).

MONITORING PROGRAM RESULTS

The second quarter 1994 groundwater monitoring event was performed by Integrated Wastestream Management, Inc. (IWM) on April 29, 1994. Wells MW-1 through MW-7 are monitored quarterly. Groundwater samples collected during second quarter monitoring were analyzed for total petroleum hydrocarbons as gasoline (TPHG), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Groundwater samples from selected monitoring wells were also analyzed for total recoverable petroleum hydrocarbons (TRPH) and halogenated volatile organic compounds (Table 1). Certified analytical reports, chain-of-custody documentation, and field data sheets are presented in Appendix A. Depths to groundwater and analytical data are presented in Table 1. Figure 2 presents groundwater elevation data along with TPHG and benzene concentrations from the April 29, 1994 monitoring event.

SITE STATUS UPDATE

This update reports site activities performed during the second quarter of 1994 and the anticipated site activities for the third quarter of 1994.

Second Quarter 1994 Activities

- Quarterly groundwater monitoring report for first quarter 1994 prepared and submitted by RESNA Industries Inc.
- IWM performed second quarter 1994 groundwater monitoring event.

Work Anticipated Third Quarter 1994

- Prepare and submit quarterly groundwater monitoring report for second quarter 1994.
- Perform quarterly groundwater monitoring for third quarter 1994.

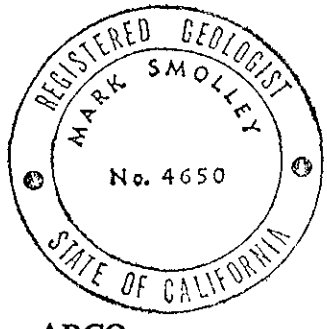
Please call if you have questions.

Sincerely,

EMCON Associates

John C. Young
Project Manager

Mark Smolley, R.G. #4650
Senior Project Geologist



Attachments: Table 1 - Summary of Groundwater Sample Analyses for ARCO Facility A-6148
Figure 1 - Site Location
Figure 2 - Site Plan
Appendix A - Certified Analytical Report, Chain-of-Custody Documentation and Field Data Sheets

I NTEGRATED
W ASTESTREAM
M ANAGEMENT

A6148Q2.XLS

Table 1

Summary of Ground Water Sample Analyses for ARCO Facility A-6148, Oakland, California

WELL NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
DATE SAMPLED	4/29/94	4/29/94	4/29/94	4/29/94	4/29/94	4/29/94	4/29/94
DEPTH TO WATER	17.31	16.95	17.14	15.36	16.41	13.66	14.10
SHEEN	NONE	NONE	NONE	NONE	NONE	NONE	NONE
PRODUCT THICKNESS	NA	NA	NA	NA	NA	NA	NA
TPHg	350	11,000	22,000	ND	7,600	ND	ND
BTEX							
BENZENE	99	1,400	1,400	4.2	2,400	0.6	ND
TOLUENE	1.3	1,200	620	ND	27	ND	ND
ETHLYBENZENE	3.9	360	910	ND	130	ND	ND
XYLENES	11	1,400	3,400	ND	44	ND	ND
EPA 418.1							
PETROLEUM HYDROCARBONS	NA	NA	10	NA	NA	NA	NA
EPA 5030/601							
cis-1,2-Dichloroethene	ND	2.2	ND	ND	2.4	<2.5 #	ND
Chloroform	0.5	ND	ND	ND	ND	7.2	1.1
TCE	1.3	1.9	ND	ND	2.7	6.6	ND
PCE	13	9.4	1.7	1.9	10	95	3.4

FOOTNOTES:

Concentrations reported in ug/L (ppb).

TPHg = Total Purgeable Petroleum Hydrocarbons (USEPA Method 8015 Modified)

BTEX Distinction (USEPA Method 8020)

PCE = Tetrachloroethene (USEPA Method 8010)

DCE = cis-1, 2-Dichloroethene (USEPA Method 8010)

TCE = Trichloroethene (USEAP Method 8010)

ND = Not Detected.

= Raised MRL due to high analyte concentration requiring dilution.

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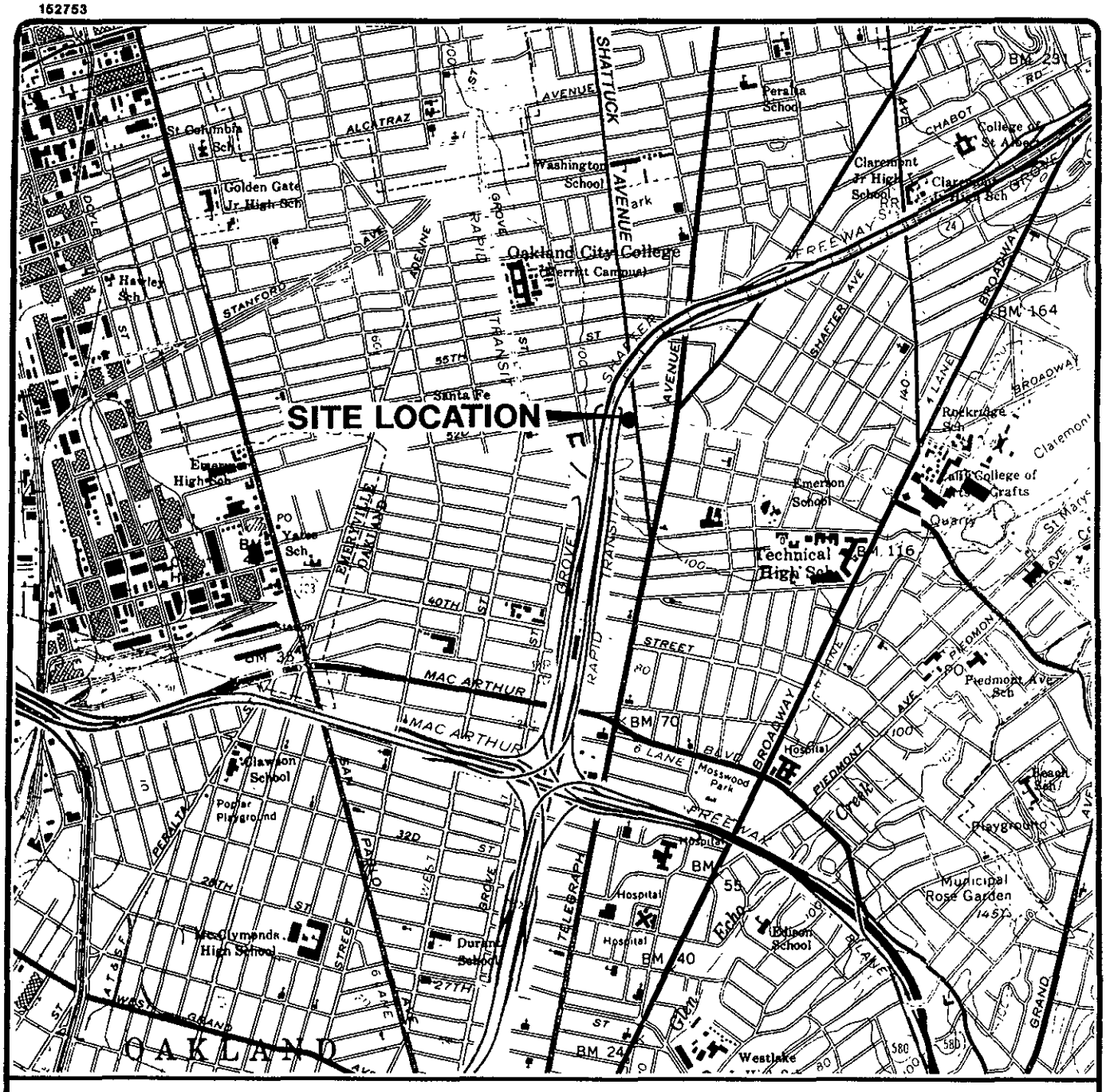

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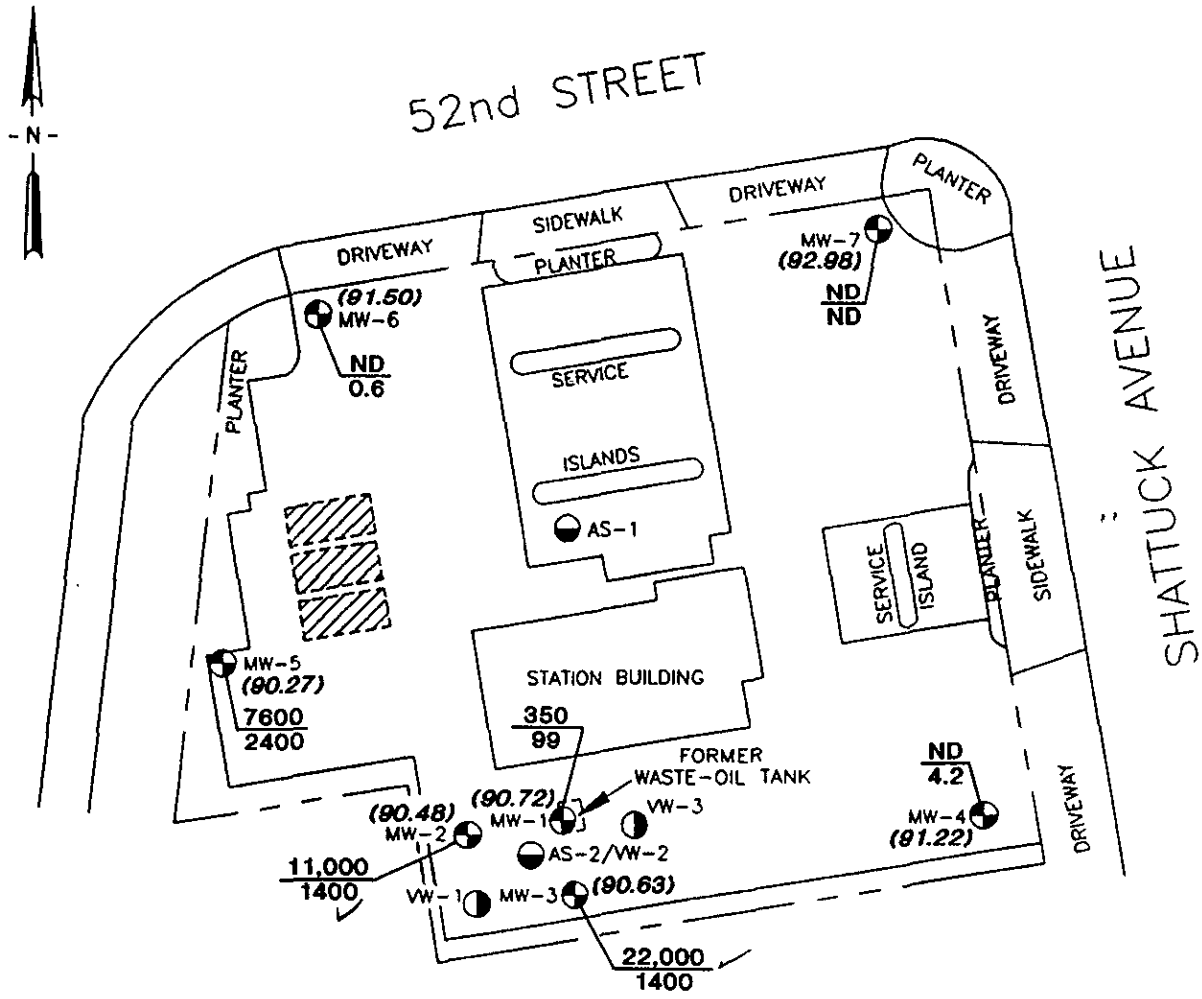
ARCO PRODUCTS COMPANY
SERVICE STATION 6148, 5131 SHATTUCK AVENUE
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

SITE LOCATION

FIGURE
1
PROJECT NO.
C75-05.24

185812



EXPLANATION

- Groundwater monitoring well
- Vapor extraction well
- Air sparge/vapor extraction well
- Existing underground gasoline storage tank
- *(92.98)* Groundwater elevation (Ft.-MSL); measured 4/29/94
- 350 — TPHG concentration in groundwater (ppb)
- 99 — Benzene concentration in groundwater (ppb)
- ND = Not detected

SCALE: 0 40 FEET
(Approximate)

Base map modified from RESNA, 1994.

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ARCO PRODUCTS COMPANY
SERVICE STATION 6148, 5131 SHATTUCK AVENUE
QUARTERLY GROUNDWATER MONITORING
OAKLAND, CALIFORNIA

SITE PLAN

FIGURE 2

PROJECT NO. C75-05.24

APPENDIX A

CERTIFIED ANALYTICAL REPORT, CHAIN-OF-CUSTODY DOCUMENTATION AND FIELD DATA SHEETS

Columbia Analytical Services, Inc.

May 13, 1994

Service Request No. SJ940509

Gina Austin
Tom DeLon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: **ARCO Facility No. 6148**

Dear Ms. Austin/Mr. DeLon:

Attached are the results of the water samples submitted to our lab on April 29, 1994. For your reference, these analyses have been assigned our service request number SJ940509.

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.

Keoni A. Murphy
Laboratory Manager

Annelise J. Bazar
Regional QA Coordinator

KAM/ajb

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COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
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
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
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
NR	Not Requested
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
VPH	Volatile Petroleum Hydrocarbons

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	5/12/94
		Date Analyzed:	5/13/94
		Service Request:	SJ940509

Total Recoverable Petroleum Hydrocarbons
EPA Method 418.1
mg/L (ppm)

Sample Name	Lab Code	MRL	Result
MW-3 (21)	SJ940409-4	0.5	10
Method Blank	SJ940512-WMB	0.5	ND

Approved By: Kevin A Murphy Date: May 13, 1994

IAMRL_DE/0415094

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940509

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: µg/L(ppb)

		Sample Name:	MW-1 (21)	MW-2 (20)	MW-3 (21)
		Lab Code:	SJ940509-2	SJ940509-3	SJ940509-4
		Date Analyzed:	5/5/94	5/5/94	5/5/94
Analyte	**MRL**				
Benzene	0.5		99	1,400	1,400
Toluene	0.5		1.3	1,200	620
Ethylbenzene	0.5		3.9	360	910
Total Xylenes	0.5		11	1,400	3,400
TPH as Gasoline	50		350	11,000	22,000

Approved By: _____ Date: May 13, 1994

3S22/041594

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940509

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: µg/L(ppb)

	Sample Name:	MW-4 (15.4)	MW-5 (18.5)	MW-6 (13.7)
	Lab Code:	SJ940509-5	SJ940509-6	SJ940509-7
	Date Analyzed:	5/5/94	5/6/94	5/5/94
Analyte	**MRL**			
Benzene	0.5	4.2	2,400	0.6
Toluene	0.5	ND	27	ND
Ethylbenzene	0.5	ND	130	ND
Total Xylenes	0.5	ND	44	ND
TPH as Gasoline	50	ND	7,600	ND

Approved By: _____ Date: May 13, 1994

3S22/041594

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940509

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
Units: µg/L(ppb)

		Sample Name:	MW-7 (14.3)	Method Blank	Method Blank
		Lab Code:	SJ940509-8	SJ940505-WMB	SJ940506-WMB
		Date Analyzed:	5/5/94	5/5/94	5/6/94
Analyte	**MRL**				
Benzene	0.5		ND	ND	ND
Toluene	0.5		ND	ND	ND
Ethylbenzene	0.5		ND	ND	ND
Total Xylenes	0.5		ND	ND	ND
TPH as Gasoline	50		ND	ND	ND

Approved By: _____ Date: May 13, 1994

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No. 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940509

Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Units: µg/L (ppb)

	Sample Name:	**MW-1 (21)**	**MW-2 (20)**	**MW-3 (21)**
	Lab Code:	SJ940509-2	SJ940509-3	SJ940509-4
	Date Analyzed:	5/9/94	5/9/94	5/9/94
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	1	ND	ND	ND
Chloromethane	1	ND	ND	" ND
Vinyl Chloride	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Trichlorofluoromethane (CFC 11)	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
Trichlorotrifluoroethane (CFC 113)	0.5	ND	ND	ND
Methylene Chloride	0.5	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	2.2	ND
1,1-Dichloroethane	0.5	ND	ND	ND
Chloroform	0.5	0.5	ND	ND
1,1,1-Trichloroethane (TCA)	0.5	ND	ND	ND
Carbon Tetrachloride	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
Trichloroethene (TCE)	0.5	1.3	1.9	ND
1,2-Dichloropropane	0.5	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
2-Chloroethyl Vinyl Ether	5	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND
cis-1,3-Dichloropropene	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Tetrachloroethene (PCE)	0.5	13	9.4	1.7
Dibromochloromethane	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	0.5	ND	ND	ND
1,3-Dichlorobenzene	1	ND	ND	ND
1,4-Dichlorobenzene	1	ND	ND	ND
1,2-Dichlorobenzene	1	ND	ND	ND

Approved By: Karen A Murphy Date: May 13, 1994

3S44/041894

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No. 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940509

Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Units: µg/L (ppb)

		Sample Name:	**MW-4 (15.4)**	**MW-5 (18.5)**	**MW-6 (13.7) ***
		Lab Code:	SJ940509-5	SJ940509-6	SJ940509-7
		Date Analyzed:	5/9/94	5/9/94	5/9/94
Analyte	**MRL**				
Dichlorodifluoromethane (CFC 12)	1		ND	ND	<5
Chloromethane	1		ND	ND	<5
Vinyl Chloride	0.5		ND	ND	<2.5
Bromomethane	0.5		ND	ND	<2.5
Chloroethane	0.5		ND	ND	<2.5
Trichlorofluoromethane (CFC 11)	0.5		ND	ND	<2.5
1,1-Dichloroethene	0.5		ND	ND	<2.5
Trichlorotrifluoroethane (CFC 113)	0.5		ND	ND	<2.5
Methylene Chloride	0.5		ND	ND	<2.5
trans-1,2-Dichloroethene	0.5		ND	ND	<2.5
cis-1,2-Dichloroethene	0.5		ND	2.4	<2.5
1,1-Dichloroethane	0.5		ND	ND	<2.5
Chloroform	0.5		ND	ND	7.2
1,1,1-Trichloroethane (TCA)	0.5		ND	ND	<2.5
Carbon Tetrachloride	0.5		ND	ND	<2.5
1,2-Dichloroethane	0.5		ND	ND	<2.5
Trichloroethene (TCE)	0.5		ND	2.7	6.6
1,2-Dichloropropane	0.5		ND	ND	<2.5
Bromodichloromethane	0.5		ND	ND	<2.5
2-Chloroethyl Vinyl Ether	5		ND	ND	<25
trans-1,3-Dichloropropene	0.5		ND	ND	<2.5
cis-1,3-Dichloropropene	0.5		ND	ND	<2.5
1,1,2-Trichloroethane	0.5		ND	ND	<2.5
Tetrachloroethene (PCE)	0.5		1.9	10	95
Dibromochloromethane	0.5		ND	ND	<2.5
Chlorobenzene	0.5		ND	ND	<2.5
Bromoform	0.5		ND	ND	<2.5
1,1,2,2-Tetrachloroethane	0.5		ND	ND	<2.5
1,3-Dichlorobenzene	1		ND	ND	<5
1,4-Dichlorobenzene	1		ND	ND	<5
1,2-Dichlorobenzene	1		ND	ND	<5

* Raised MRL due to high analyte concentration requiring sample dilution.

Approved By: Kevin A Murphy Date: May 13, 1994

3S44/041894

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No. 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Service Request:	SJ940509

Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Units: µg/L (ppb)

		Sample Name:	**MW-7 (14.3)**	**Method Blank**
		Lab Code:	SJ940509-8	SJ940509-WMB
		Date Analyzed:	5/9/94	5/9/94
Analyte	**MRL**			
Dichlorodifluoromethane (CFC 12)	1		ND	ND
Chloromethane	1		ND	ND
Vinyl Chloride	0.5		ND	ND
Bromomethane	0.5		ND	ND
Chloroethane	0.5		ND	ND
Trichlorofluoromethane (CFC 11)	0.5		ND	ND
1,1-Dichloroethene	0.5		ND	ND
Trichlorotrifluoroethane (CFC 113)	0.5		ND	ND
Methylene Chloride	0.5		ND	ND
trans-1,2-Dichloroethene	0.5		ND	ND
cis-1,2-Dichloroethene	0.5		ND	ND
1,1-Dichloroethane	0.5		ND	ND
Chloroform	0.5		1.1	ND
1,1,1-Trichloroethane (TCA)	0.5		ND	ND
Carbon Tetrachloride	0.5		ND	ND
1,2-Dichloroethane	0.5		ND	ND
Trichloroethene (TCE)	0.5		ND	ND
1,2-Dichloropropane	0.5		ND	ND
Bromodichloromethane	0.5		ND	ND
2-Chloroethyl Vinyl Ether	5		ND	ND
trans-1,3-Dichloropropene	0.5		ND	ND
cis-1,3-Dichloropropene	0.5		ND	ND
1,1,2-Trichloroethane	0.5		ND	ND
Tetrachloroethene (PCE)	0.5		3.4	ND
Dibromochloromethane	0.5		ND	ND
Chlorobenzene	0.5		ND	ND
Bromoform	0.5		ND	ND
1,1,2,2-Tetrachloroethane	0.5		ND	ND
1,3-Dichlorobenzene	1		ND	ND
1,4-Dichlorobenzene	1		ND	ND
1,2-Dichlorobenzene	1		ND	ND

Approved By: _____ Date: May 13, 1994

3S44/041894

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APPENDIX A

LABORATORY QC RESULTS

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Analyzed:**	5/13/94
Project:	ARCO Facility No 6148	**Service Request:**	SJ940509

Initial Calibration Verification (ICV) Summary
Total Recoverable Petroleum Hydrocarbons
EPA Method 418.1
Units: ppm

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Hydrocarbon Mixture	40	39	98	90-110

Approved By: Karen A Murphy Date: May 13 1994

ICV24041594

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	5/12/94
		Date Analyzed:	5/13/94
		Service Request:	SJ940509

Matrix Spike/Duplicate Matrix Spike Summary
Total Recoverable Petroleum Hydrocarbons
EPA Method 418.1
Units: mg/L (ppm)

Sample Name: Batch QC
Lab Code: SJ940518-1

Analyte	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
Hydrocarbon Mix	8.0	8.0	2.0	10.0	9.6	100	95	57-127	4

Approved By: _____ Date: May 13, 1994

DMS1S/041594

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Date Analyzed:	5/5,6/94
		Service Request:	SJ940509

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-Trifluorotolulene
MW-1 (21)	SJ940509-2	109
MW-2 (20)	SJ940509-3	110
MW-3 (21)	SJ940509-4	105
MW-4 (15.4)	SJ940509-5	107
MW-5 (18.5)	SJ940509-6	105
MW-6 (13.7)	SJ940509-7	105
MW-7 (14.3)	SJ940509-8	110
MW-7 (14.3)MS	SJ940509-8MS	106
MW-7 (14.3)DMS	SJ940509-8DMS	106
Method Blank	SJ940505-WMB	96
Method Blank	SJ940506-WMB	106

CAS Acceptance Limits: 69-116

Approved By: Kevin Murphy Date: May 13, 1994

SUR1/041594

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Analyzed:**	5/5/94
Project:	ARCO Facility No 6148	**Service Request:**	SJ940509

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	25.1	100	85-115
Toluene	25	25.2	101	85-115
Ethylbenzene	25	24.9	100	85-115
Total Xylenes	75	76.2	102	85-115
TPH as Gasoline	250	246	98	90-110

Approved By: Keon A Murphy Date: May 13, 1994

ICV24/041594

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Date Analyzed:	5/5/94
		Service Request:	SJ940509

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

Sample Name: MW-7 (14.3)
Lab Code: SJ940509-8

Analyte	Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent
	MS	DMS	Result	MS	DMS	MS	DMS	Limits	Difference
Benzene	25	25	ND	24.8	24.7	99	99	75-135	<1
Toluene	25	25	ND	24.9	24.7	100	99	73-136	<1
Ethylbenzene	25	25	ND	24.4	24.4	98	98	69-142	<1

Approved By: Kevin A Murphy Date: May 13, 1994

DMS1S/041594

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No. 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Date Analyzed:	5/9/94
		Service Request:	SJ940509

Surrogate Recovery Summary
Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Units: µg/L (ppb)

Sample Name	Lab Code	Percent Recovery 4-Bromofluorobenzene
MW-1 (21)	SJ940509-2	100
MW-2 (20)	SJ940509-3	104
MW-3 (21)	SJ940509-4	101
MW-4 (15.4)	SJ940509-5	100
MW-5 (18.5)	SJ940509-6	105
MW-6 (13.7)	SJ940509-7	104
MW-7 (14.3)	SJ940509-8	103
MW-4 (15.4)MS	SJ940509-5MS	101
MW-4 (15.4)DMS	SJ940509-5DMS	114
Method Blank	SJ940509-WMB	118

CAS Acceptance Limits: 76-138

Approved By: _____ Date: May 13, 1994

SUR1/041594

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Client: IWM
Project: ARCO Facility No. 6148

Date Analyzed: 4/19/94
Service Request: SJ940509

Initial Calibration Verification (ICV) Summary
Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Units: ppb

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Chloromethane	100	114	114	D-193
Vinyl Chloride	100	104	104	28-163
Bromomethane	100	76	76	D-144
Chloroethane	100	110	110	46-137
Trichlorofluoromethane (CFC 11)	100	110	110	21-156
1,1-Dichloroethene	100	122	122	28-167
Methylene Chloride	100	116	116	25-162
trans-1,2-Dichloroethene	100	117	117	38-155
1,1-Dichloroethane	100	107	107	47-132
Chloroform	100	107	107	49-133
1,1,1-Trichloroethane (TCA)	100	107	107	41-138
Carbon Tetrachloride	100	102	102	43-143
1,2-Dichloroethane	100	104	104	51-147
Trichloroethene (TCE)	100	109	109	35-146
1,2-Dichloropropane	100	109	109	44-156
Bromodichloromethane	100	103	103	42-172
trans-1,3-Dichloropropene	100	112	112	22-178
cis-1,3-Dichloropropene	100	90	90	22-178
1,1,2-Trichloroethane	100	103	103	39-136
Tetrachloroethene (PCE)	100	107	107	26-162
Dibromochloromethane	100	102	102	24-191
Chlorobenzene	100	115	115	38-150
Bromoform	100	97	97	13-159
1,1,2,2-Tetrachloroethane	100	105	105	8-184
1,3-Dichlorobenzene	100	105	105	7-187
1,4-Dichlorobenzene	100	118	118	42-143
1,2-Dichlorobenzene	100	113	113	D-208

Approved By: _____ Date: May 13, 1994

ICV41/041594

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Collected:**	4/29/94
Project:	ARCO Facility No. 6148	**Date Received:**	4/29/94
Sample Matrix:	Water	**Date Extracted:**	NA
		Date Analyzed:	5/9/94
		Service Request:	SJ940509

Matrix Spike/Duplicate Matrix Spike Summary
Halogenated Volatile Organic Compounds
EPA Methods 5030/601
Units: µg/L (ppb)

Sample Name: MW-4 (15.4)
Lab Code: SJ940509-5

Analyte	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
1,1-Dichloroethene	10	10	ND	10.7	10.0	107	100	69-142	7
Trichloroethene	10	10	ND	11.3	11.4	113	114	42-148	<1
Tetrachloroethene	10	10	1.92	12.8	12.8	109	109	80-136	<1

Approved By: Robert A Murphy Date: May 13, 1994

DMS1S/041594

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APPENDIX B

CHAIN OF CUSTODY

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

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. IWM-94-5CC

Chain of Custody

ARCO Facility no. A6148	City (Facility) OAKLAND	Project manager (Consultant) TOM DeJon / Thon Young	Laboratory name Columbia
ARCO engineer Kyle Christie	Telephone no. (ARCO) 415 571 2434	Telephone no. (Consultant) 408/942 8955	Fax no. (Consultant) 408/942 1499
Consultant name IWM / RESNA	Address (Consultant) 950 Ames ave. Milp CA 95035		Contract number 07077

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid HCl	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 as EPA 418.1/M8440E	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 ☐	BTEX 35/10/8270	VOC's 8240/601
FB-1	1	2		✓		✓	✓	4-29-94	615		✓	✓										✓
MW-1	2	4		✓		✓	✓		759		✓	✓										✓
MW-2	3	4		✓		✓	✓		820		✓	✓										✓
MW-3	4	8		✓		✓	✓		915		✓	✓		✓							✓	✓
MW-4	5	4		✓		✓	✓		740		✓	✓										✓
MW-5	6	4		✓		✓	✓		906		✓	✓										✓
MW-6	7	4		✓		✓	✓		832		✓	✓										✓
MW-7	8	4		✓		✓	✓		805		✓	✓										✓

Special detection Limit/reporting

Special QA/QC

Method of shipment CBS COURIER

Remarks: Hold on FB's

Lab number SJ94-0509

Turnaround time

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

Condition of sample: OKAY		Temperature received: COOL	
Relinquished by sampler: [signature]	Date 4/29/94 Time 1600	Received by: [signature] CBS/SS	4/29/94 1600
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
APPC-3292 (2-91)

K>673; 8270

RECEIVED MAY 1 2 1994

Columbia Analytical Services inc.

May 11, 1994

Service Request No.: K942656S

Tom Delon
IWM
950 Ames Avenue
Milpitas, CA 95035

Re: **ARCO/6148-Oakland/Project TO# IWM-94-5CC/SJ940509**

Dear Tom:

Enclosed are the results of the sample(s) submitted to our laboratory on May 3, 1994. For your reference, these analyses have been assigned our service request number K942656S.

All analyses were performed consistent with our laboratory's quality assurance program. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (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. My extension is 243.

Respectfully submitted,

Columbia Analytical Services, Inc

Richard Craven
Project Chemist

Columbia Analytical Services, Inc.

Kevin DeWhitt
Quality Assurance Coordinator

RAC/td

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-1068

COLUMBIA ANALYTICAL SERVICES, Inc.

Acronyms

ASTM	American Society for Testing and Materials
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
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Received:**	05/03/94
Project:	ARCO/6148-Oakland/#TO# IWM-94-5CC	**Date Extracted:**	05/04/94
Sample Matrix:	Water	**Date Analyzed:**	05/05/94
		Work Order No.:	K942656S

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: MW-3
Lab Code: K2656-1

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	25	ND	2,6-Dinitrotoluene	10	ND
Aniline	25	ND	Diethyl Phthalate	10	ND
Bis(2-chloroethyl) Ether	10	ND	4-Chlorophenyl Phenyl Ether	10	ND
1,2-Dichlorobenzene	10	ND	Fluorene	10	ND
1,3-Dichlorobenzene	10	ND	4-Nitroaniline	25	ND
1,4-Dichlorobenzene	10	ND	N-Nitrosodiphenylamine	10	ND
Bis(2-chloroisopropyl) Ether	10	ND	4-Bromophenyl Phenyl Ether	10	ND
N-Nitrosodi-n-propylamine	10	ND	Hexachlorobenzene	10	ND
Hexachloroethane	10	ND	Phenanthrene	10	ND
Nitrobenzene	10	ND	Anthracene	10	ND
Isophorone	10	ND	Di-n-butyl Phthalate	10	ND
Bis(2-chloroethoxy)methane	10	ND	Fluoranthene	10	ND
1,2,4-Trichlorobenzene	10	ND	Pyrene	10	ND
Naphthalene	10	110	Butylbenzyl Phthalate	10	ND
4-Chloroaniline	10	ND	3,3'-Dichlorobenzidine	25	ND
Hexachlorobutadiene	10	ND	Benz(a)anthracene	10	ND
2-Methylnaphthalene	10	50	Bis(2-ethylhexyl) Phthalate	10	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	10	ND
2-Chloronaphthalene	10	ND	Di-n-octyl Phthalate	10	ND
2-Nitroaniline	25	ND	Benzo(b)fluoranthene	10	ND
Dimethyl Phthalate	10	ND	Benzo(k)fluoranthene	10	ND
Acenaphthylene	10	ND	Benzo(a)pyrene	10	ND
3-Nitroaniline	25	ND	Indeno(1,2,3-c,d)pyrene	10	ND
Acenaphthene	10	ND	Dibenz(a,h)anthracene	10	ND
Dibenzofuran	10	ND	Benzo(g,h,i)perylene	10	ND
2,4-Dinitrotoluene	10	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	10	ND	2,4-Dichlorophenol	10	ND
2-Chlorophenol	10	ND	4-Chloro-3-methylphenol	10	ND
Benzyl Alcohol	10	ND	2,4,6-Trichlorophenol	10	ND
2-Methylphenol	10	ND	2,4,5-Trichlorophenol	10	ND
3- and 4-Methylphenol♦	10	ND	2,4-Dinitrophenol	25	ND
2-Nitrophenol	10	ND	4-Nitrophenol	25	ND
2,4-Dimethylphenol	10	ND	2-Methyl-4,6-dinitrophenol	25	ND
Benzoic Acid	25	ND	Pentachlorophenol	25	ND

♦ Quantified as 4-methylphenol.

Approved by Richard A Lamm Date 5/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	IWM	**Date Received:**	NA
Project:	ARCO/6148-Oakland/#TO# IWM-94-5CC	**Date Extracted:**	05/04/94
Sample Matrix:	Water	**Date Analyzed:**	05/05/94
		Work Order No.:	K942656S

Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: Method Blank
Lab Code: K940504-MB1

Base Neutral Analyte	MRL	Result	Base Neutral Analyte	MRL	Result
N-Nitrosodimethylamine	25	ND	2,6-Dinitrotoluene	10	ND
Aniline	25	ND	Diethyl Phthalate	10	ND
Bis(2-chloroethyl) Ether	10	ND	4-Chlorophenyl Phenyl Ether	10	ND
1,2-Dichlorobenzene	10	ND	Fluorene	10	ND
1,3-Dichlorobenzene	10	ND	4-Nitroaniline	25	ND
1,4-Dichlorobenzene	10	ND	N-Nitrosodiphenylamine	10	ND
Bis(2-chloroisopropyl) Ether	10	ND	4-Bromophenyl Phenyl Ether	10	ND
N-Nitrosodi-n-propylamine	10	ND	Hexachlorobenzene	10	ND
Hexachloroethane	10	ND	Phenanthrene	10	ND
Nitrobenzene	10	ND	Anthracene	10	ND
Isophorone	10	ND	Di-n-butyl Phthalate	10	ND
Bis(2-chloroethoxy)methane	10	ND	Fluoranthene	10	ND
1,2,4-Trichlorobenzene	10	ND	Pyrene	10	ND
Naphthalene	10	ND	Butylbenzyl Phthalate	10	ND
4-Chloroaniline	10	ND	3,3'-Dichlorobenzidine	25	ND
Hexachlorobutadiene	10	ND	Benz(a)anthracene	10	ND
2-Methylnaphthalene	10	ND	Bis(2-ethylhexyl) Phthalate	10	ND
Hexachlorocyclopentadiene	10	ND	Chrysene	10	ND
2-Chloronaphthalene	10	ND	Di-n-octyl Phthalate	10	ND
2-Nitroaniline	25	ND	Benzo(b)fluoranthene	10	ND
Dimethyl Phthalate	10	ND	Benzo(k)fluoranthene	10	ND
Acenaphthylene	10	ND	Benzo(a)pyrene	10	ND
3-Nitroaniline	25	ND	Indeno(1,2,3-c,d)pyrene	10	ND
Acenaphthene	10	ND	Dibenz(a,h)anthracene	10	ND
Dibenzofuran	10	ND	Benzo(g,h,i)perylene	10	ND
2,4-Dinitrotoluene	10	ND			

Acid Analyte	MRL	Result	Acid Analyte	MRL	Result
Phenol	10	ND	2,4-Dichlorophenol	10	ND
2-Chlorophenol	10	ND	4-Chloro-3-methylphenol	10	ND
Benzyl Alcohol	10	ND	2,4,6-Trichlorophenol	10	ND
2-Methylphenol	10	ND	2,4,5-Trichlorophenol	10	ND
3- and 4-Methylphenol♦	10	ND	2,4-Dinitrophenol	25	ND
2-Nitrophenol	10	ND	4-Nitrophenol	25	ND
2,4-Dimethylphenol	10	ND	2-Methyl-4,6-dinitrophenol	25	ND
Benzoic Acid	25	ND	Pentachlorophenol	25	ND

♦ Quantified as 4-methylphenol.

Approved by Richard A Crumm Date 5/11/94

APPENDIX A

LABORATORY QC RESULTS

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Received:**	05/03/94
Project:	ARCO/6148-Oakland/#TO# IWM-94-5CC	**Date Extracted:**	05/04/94
Sample Matrix:	Water	**Date Analyzed:**	05/05/94
		Work Order No.:	K942656S

Surrogate Recovery Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270

Sample Name	**Lab Code**	Percent Recovery					
		2FP	PHL	TBP	NBZ	FBP	TPH
Method Blank	K940504-MB1	47	33	87	71	75	86
Laboratory Control Sample	K940504-LCS	50	33	88	75	74	79
MW-3	K2656-1	33	12	69	57	74	84
MW-3	K2656-1MS	55	25	74	67	75	82
MW-3	K2656-1DMS	50	25	70	64	74	78
EPA Acceptance Criteria		21-100	10-94	10-123	35-114	43-116	33-141

2FP 2-Fluorophenol
PHL Phenol-D_6
TBP 2,4,6-Tribromophenol
NBZ Nitrobenzene-D_5
FBP 2-Fluorobiphenyl
TPH Terphenyl-D_{14}

Approved by *[signature]* Date 5/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Received:**	05/03/94
Project:	ARCO/6148-Oakland/#TO# IWM-94-5CC	**Date Extracted:**	05/04/94
Sample Matrix:	Water	**Date Analyzed:**	05/05/94
		Work Order No.:	K942656S

Matrix Spike/Duplicate Matrix Spike Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Sample Name: MW-3
Lab Code: K2656-1

Analyte	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	EPA Acceptance Criteria	Relative Percent Difference
Phenol	380	380	ND	140	130	37	34	12-89	7
2-Chlorophenol	380	380	ND	160	160	42	42	27-123	<1
1,4-Dichlorobenzene	190	190	ND	120	120	63	63	36-97	<1
N-Nitrosodi-n-propylamine	190	190	ND	120	110	63	58	41-116	9
1,2,4-Trichlorobenzene	190	190	ND	140	140	74	74	39-98	<1
4-Chloro-3-methylphenol	380	380	ND	240	230	63	61	23-97	4
Acenaphthene	190	190	ND	150	150	79	79	46-118	<1
4-Nitrophenol	380	380	ND	220	210	58	55	10-80	5
2,4-Dinitrotoluene	190	190	ND	140	130	74	68	24-96	7
Pentachlorophenol	380	380	ND	94	99	25	26	9-103	5
Pyrene	190	190	ND	160	150	84	79	26-127	6

Approved by Richard A Rauen Date 5/11/94

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	IWM	**Date Extracted:**	05/04/94
Project:	ARCO/6148-Oakland/#TO# IWM-94-5CC	**Date Analyzed:**	05/05/94
LCS Matrix:	Water	**Work Order No.:**	K942656S

Laboratory Control Sample Summary
Base Neutral/Acid Semivolatile Organic Compounds
EPA Methods 3510/8270
µg/L (ppb)

Analyte	True Value	Result	Percent Recovery	EPA Percent Recovery Acceptance Criteria
Phenol	100	33	33	5-112
2-Chlorophenol	100	89	89	23-134
1,4-Dichlorobenzene	100	62	62	20-124
N-Nitrosodi-n-propylamine	100	66	66	D-230
1,2,4-Trichlorobenzene	100	70	70	44-142
4-Chloro-3-methylphenol	100	78	78	22-147
Acenaphthene	100	73	73	47-145
4-Nitrophenol	100	37	37	D-132
2,4-Dinitrotoluene	100	72	72	39-139
Pentachlorophenol	100	95	95	14-176
Pyrene	100	79	79	52-115

D Detected; result must be greater than zero.

Approved by Richard A Brown Date 5/11/94

APPENDIX B

CHAIN OF CUSTODY INFORMATION

K26565

ARCO Products Company

Division of AtlanticRichfieldCompany

Task Order No. IWM-94-5CC

Chain of Custody

ARCO Facility no. 6148 | City (Facility) OAKLAND | Project manager (Consultant) TOM DeLon / Jhon Young | Laboratory name Columbia

ARCO engineer Kyle Christie | Telephone no. (ARCO) 415 571 2434 | Telephone no. (Consultant) 408/942 8955 | Fax no. (Consultant) 408/942 1499

Consultant name IWM / Resna | Address (Consultant) 950 Ames ave. Milp CA 95035

Contract number 07077

Method of shipment CAS courier

	Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid HCL	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~~ TOG EPA 418.1/SM503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals ☐ VOA ☐ Semi VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐	BNA's 3510/8270	VOCs 5030/601
	FB-1	1	2		✓		✓	✓	4-29-94	645		✓	✓										✓
21	MW-1	2	4		✓		✓	✓	〃	759		✓	✓										✓
20	MW-2	3	4		✓		✓	✓	〃	820		✓	✓										✓
21	MW-3	4	8		✓		✓	✓	〃	915		✓	✓		✓							✓	✓
54	MW-4	5	4		✓		✓	✓	〃	740		✓	✓										✓
85	MW-5	6	4		✓		✓	✓	〃	406		✓	✓										✓
37	MW-6	7	4		✓		✓	✓	〃	832		✓	✓										✓
43	MW-7	8	4		✓		✓	✓	〃	805		✓	✓										✓

Special detection Limit/reporting

Special QA/QC

Remarks: Hold on FB's

Lab number SJ94-0509

Condition of sample: OKAY

Temperature received: COOL

Relinquished by sampler: [signature] | Date 4/29/94 | Time 1600 | Received by: [signature] CAS/SJ 4/29/94 1600

Relinquished by: [signature] CAS/SJ | Date 5/2/94 | Time 1600 | Received by

Relinquished by | Date | Time | Received by laboratory: Ruth Higley | Date 5-3-94 | Time 0930

Turnaround time

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

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

APPC-3292 (2-91)

I NTEGRATED
W ASTESTREAM
M ANAGEMENT, INC.

1994

RESNA
SAN JOSE

1994

RESNA
SAN JOSE

May 20, 1994

Mr. John Young
RESNA Industries
3315 Almaden Expressway, Suite 34
San Jose, CA 95118

Dear Mr. Young:

Attached are the field data sheets and analytical results for quarterly ground water sampling at ARCO Facility No. A-6148 in Oakland, California. Integrated Wastestream Management measured the depth to water and collected samples from wells at this site on April 29, 1994.

Sampling was carried out in accordance with the protocols described in the "Request for Bid for Quarterly Sampling at ARCO Facilities in Northern California".

Please call us if you have any questions.

Sincerely,
Integrated Wastestream Management

Tom DeLon
Project Manager

Walter H. Howe
Registered Geologist

REGISTERED GEOLOGIST
WALTER H. HOWE
No. 730
Exp. 6/'94
STATE OF CALIFORNIA

950 AMES AVENUE MILPITAS, CA. 95035 (408) 942-8955

I NTEGRATED
W ASTESTREAM
M ANAGEMENT

A6148Q2.XLS

Summary of Ground Water Sample Analyses for ARCO Facility A-6168, Oakland, California

WELL NUMBER	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
DATE SAMPLED	4/29/94	4/29/94	4/29/94	4/29/94	4/29/94	4/29/94	4/29/94
DEPTH TO WATER	17.31	16.95	17.14	15.36	16.41	13.66	14.10
SHEEN	NONE	NONE	NONE	NONE	NONE	NONE	NONE
PRODUCT THICKNESS	NA	NA	NA	NA	NA	NA	NA
TPHg	350	11,000	22,000	ND	7,600	ND	ND
BTEX							
BENZENE	99	1,400	1,400	4.2	2,400	0.6	ND
TOLUENE	1.3	1,200	620	ND	27	ND	ND
ETHLYBENZENE	3.9	360	910	ND	130	ND	ND
XYLENES	11	1,400	3,400	ND	44	ND	ND
EPA 418.1							
PETROLEUM HYDROCARBONS	NA	NA	10	NA	NA	NA	NA
EPA 5030/601							
cis-1,2-Dichloroethene	ND	2.2	ND	ND	2.4	<2.5 #	ND
Chloroform	0.5	ND	ND	ND	ND	7.2	1.1
TCE	1.3	1.9	ND	ND	2.7	6.6	ND
PCE	13	9.4	1.7	1.9	10	95	3.4

FOOTNOTES:

Concentrations reported in ug/L (ppb).
TPHg = Total Purgeable Petroleum Hydrocarbons (USEPA Method 8015 Modified)
BTEX Distinction (USEPA Method 8020)
PCE = Tetrachloroethene (USEPA Method 8010)

DCE = cis-1, 2-Dichloroethene (USEPA Method 8010)
TCE = Trichloroethene (USEAP Method 8010)
ND = Not Detected.

= Raised MRL due to high analyte concentration requiring dilution.

950 AMES AVENUE MILPITAS, CA 95035 (408) 942-8955

FIELD REPORT

Depth To Water / Floating Product Survey

Site Arrival Time: 0730

Site Departure Time: 945

Weather Conditions: clear

DTW: Well Box or Well Casing (circle one)

Project No.: _____ **Location:** 531 Hesperian OAK **Date:** April 29, 1994

Client / Station#: Cisco 6113 **Field Technician:** Vince / Cisco **Day of Week:** Friday

DTW ORDER	WELL ID	SURFACE SEAL	LID SECURE	GASKET	LOCK	EXPANDING CAP	TOTAL DEPTH (Feet)	FIRST DEPTH TO WATER (Feet)	SECOND DEPTH TO WATER (Feet)	DEPTH TO FLOATING PRODUCT (Feet)	FLOATING PRODUCT THICKNESS (Feet)	SHEEN (Y=YES, N=NO)	COMMENTS	MATERIALS
5	MW-1	OK	yes	OK	OK	OK	26.12	17.31	17.31	N/A	N/A	N	4"	
6	MW-2	OK	yes	OK	OK	OK	26.13	16.95	16.95	N/A	N/A	N	4" NO sheen observed	
7	MW-3	OK	yes	OK	OK	OK	26.14	17.14	17.14	N/A	N/A	N	4" TO 26.20 correction	
2	MW-4	OK	yes	OK	OK	OK	26.7	15.36	15.36	N/A	N/A	N	4" H2O in well box	15/16
4	MW-5	OK	yes	OK	OK	OK	25.38	16.41	16.41	N/A	N/A	N	4"	15/16
3	MW-6	OK	yes	OK	OK	OK	27.3	13.66	13.66	N/A	N/A	N	4"	15/16
1	MW-7	OK	yes	OK	OK	OK	27.6	14.10	14.10	N/A	N/A	N	4"	15/16

PAGE 2 OF 3 DATE: 4-29-94 CLIENT/STATION #: ARCO 6143 ADDRESS: 5131 Shattuck Ave OAK

WELL ID: [illegible] TD 26.7 - DTW [illegible] X Gal./Linear Ft [illegible] X Casing Volume 3 = Calculated Purge 22.15

DATE PURGED: 4-29-94 START (2400 HR): 728 END (2400 HR): 733

DATE SAMPLED: 4-29-94 TIME (2400 HR): 740 DTW: 15.[illegible]

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
729	4	7.52	0.41	64.2	CLEAR
730	12	7.21	0.38	63.4	CLEAR
732	18	6.93	0.40	63.3	CLEAR
733	23	6.83	0.40	63.0	CLEAR

Total purge: 23

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

WELL ID: MW-7 TD [illegible] - DTW 14.10 X Gal./Linear Ft. 0.66 X Casing Volume 3 = Calculated Purge 26.73

DATE PURGED: 4-29-94 START (2400 HR): 750 END (2400 HR): 758

DATE SAMPLED: 4-29-94 TIME (2400 HR): 805 DTW: 14.3

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
751	4	6.81	0.34	67.1	CLEAR
754	13	6.70	0.34	66.9	CLEAR
756	20	6.64	0.34	66.7	CLOUDY
758	27	6.60	0.34	66.5	CLOUDY

Total purge: 27

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

WELL ID: MW-6 TD 27.3 - DTW 13.66 X Gal./Linear Ft. 0.66 X Casing Volume 3 = Calculated Purge 27.00

DATE PURGED: 4-29-94 START (2400 HR): 819 END (2400 HR): 826

DATE SAMPLED: 4-29-94 TIME (2400 HR): 832 DTW: 13.7

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
820	5	6.86	0.34	66.7	CLEAR
822	16	6.78	0.35	66.1	CLEAR
824	22	6.75	0.35	66.3	CLEAR
826	27	6.72	0.36	66.1	CLEAR

Total purge: 27

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

WELL ID: MW-5 TD 25.38 - DTW 16.41 X Gal./Linear Ft. 0.66 X Casing Volume 3 = Calculated Purge 17.76

DATE PURGED: 4-29-94 START (2400 HR): 842 END (2400 HR): 858

DATE SAMPLED: 4-29-94 TIME (2400 HR): 906 DTW: 18.5

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
843	3	6.90	0.90	67.6	CLEAR
847	9	6.68	0.47	67.3	CLEAR
851	13	6.73	0.50	66.9	CLEAR
858	18	6.95	0.48	66.7	CLEAR

Total purge: 18

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.

REMARKS:

PRINT NAME: Francisco Olsungor SIGNATURE: Francisco Olsungor

CASING DIAMETER (inches):	2	3	4	6	8	12	Other:
GALLON/LINEAR FOOT:	0.17	0.38	0.66	1.5	2.6	5.8	Other:

PAGE 1 OF 3 DATE: 4-29-94 CLIENT/STATION #: Arco 6146 ADDRESS: 5131 Shattuck Ave OAK

WELL ID: MW-1 TD 26.12 DTW 17.31 x 0.66 (Gal./Linear Ft.) x 3 (Casing Volume) = 17.44 (Calculated Purge)

DATE PURGED: 4-29-94 START (2400 HR): 750 END (2400 HR) 757
DATE SAMPLED: 4-29-94 TIME (2400 HR): 759 DTW: 21

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
752	3	7.76	0.37	60.9	clear
754	9	7.60	0.37	64.6	clear
756	14	7.35	0.37	64.5	clear
757	18	7.22	0.38	64.3	clear
Total purge:	19	7.18	0.39	64.3	clear

PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

WELL ID: MW-2 TD 26.13 DTW 16.95 x 0.66 (Gal./Linear Ft.) x 3 (Casing Volume) = 18.17 (Calculated Purge)

DATE PURGED: 4-29-94 START (2400 HR): 808 END (2400 HR) 814
DATE SAMPLED: 4-29-94 TIME (2400 HR): 820 DTW: 20

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
809	2	6.75	0.36	64.7	clear
812	8	6.74	0.37	65.6	clear
816	13	6.72	0.37	65.4	clear
Total purge:	13				

PURGING EQUIP.: Centrifugal Pump / Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS: well pumped dry at 13 gallons. NO Sheen observed prior to purging

WELL ID: MW-3 TD 26.20 DTW 17.14 x 0.66 (Gal./Linear Ft.) x 3 (Casing Volume) = 17.93 (Calculated Purge)

DATE PURGED: 4-29-94 START (2400 HR): 840 END (2400 HR) 851
DATE SAMPLED: 4-29-94 TIME (2400 HR): 915 DTW: 21

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
841	3	6.72	0.38	64.6	clear
844	9	6.62	0.42	65.6	clear
847	14	6.63	0.46	65.5	clear
851	17	6.59	0.53	65.4	clear
Total purge:	17				

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS: well pumped dry at 13 and 15 gallons. and again at 17 gallons.

WELL ID: ____ TD ____ DTW ____ x ____ (Gal./Linear Ft.) x ____ (Casing Volume) = ____ (Calculated Purge)

DATE PURGED: ____ START (2400 HR): ____ END (2400 HR) ____
DATE SAMPLED: ____ TIME (2400 HR): ____ DTW: ____

TIME (2400 HR)	VOLUME (GAL)	pH (UNITS)	(E.C. X 1,000) (UMHOS/CM@25 C)	TEMP. (F)	COLOR (VISUAL)
Total purge:					

PURGING EQUIP.: Centrifugal Pump Bailer Disp. SAMPLING EQUIP: Bailer Disp.
REMARKS:

PRINT NAME: Vince Valdes SIGNATURE: Vince Valdes

CASING DIAMETER (inches):	2	3	4	6	8	12	Other:
GALLON/LINEAR FOOT:	0.17	0.38	0.66	1.5	2.6	5.8	Other: