Pinnacle
ENVIRONMENTAL SOLUTIONS

a division of EMCON

July 24, 1998
Project 20805-131.013

STID 3942
RE

Mr. Jeffrey Enebly
6267 Sunnymere Avenue
Oakland, California 94605

Re: First quarter 1998 laboratory analytical results, groundwater samples, 6267 Sunnymere Avenue, Oakland, California

Dear Mr. Enebly:

Enclosed please find a copy of the first quarter 1998 groundwater monitoring results for ARCO service station 6002, Oakland, California. Included are the laboratory analytical results for the groundwater sample collected from well MW-8 during the first quarter of 1998. This well is located at 6267 Sunnymere Avenue, Oakland, California. The groundwater sample was collected on February 25, 1998, during quarterly sampling of the ARCO Products Company service station 6002, 6235 Seminary Avenue, Oakland.

Please call if you have questions.

Sincerely,

Pinnacle

Glen VanderVeen
Project Manager

Attachments: Figure 1 -Generalized Site Plan
Attachment A - Copy of Certified Analytical Report and Chain-of-Custody Documentation, Well MW-8, First Quarter 1998

cc: Thomas Peacock, ACHCSA
Paul Supple, ARCO Products Company
File

144-A Mayhew Way Walnut Creek, California 94596 (510) 977-9020 (510) 977-9030 Fax

ATTACHMENT A

COPY OF CERTIFIED ANALYTICAL REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION, WELL MW-8, FIRST QUARTER 1998

Columbia Analytical Services, Inc.

March 11, 1998 Service Request No.: S9800406

Gary Messerotes
EMCON
1921 Ringwood Avenue
San Jose, CA 95131

RE: 20805-131.012/TO#22312.00/6002 OAKLAND

Dear Mr. Messerotes:

The following pages contain analytical results for sample(s) received by the laboratory on February 26, 1998. Results of sample analyses are followed by Appendix A which contains sample custody documentation and quality assurance deliverables requested for this project. The work requested has been assigned the Service Request No. listed above. To help expedite our service, please refer to this number when contacting the laboratory.

Analytical results were produced by procedures consistent with Columbia Analytical Services' (CAS) Quality Assurance Manual (with any deviations noted). Signature of this CAS Analytical Report below confirms that pages 2 through 10, following, have been thoroughly reviewed and approved for release in accord with CAS Standard Operating Procedure ADM-DatRev3.

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

Sincerely,

Steven L. Green
Project Chemist

Bernadette T. Cox for

Greg Anderson
Regional QA Coordinator

COLUMBIA ANALYTICAL SERVICES, Inc.
Acronyms

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9800406
Project:	20805-131.012/TO#22312.00/6002 OAKLAND	**Date Collected:**	2/25/98
Sample Matrix:	Water	**Date Received:**	2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-7(13)	Units:	ug/L (ppb)
Lab Code:	S9800406-001	Basis:	NA
Test Notes:			

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	3/7/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	3/7/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	3/7/98	0.6	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	3/7/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	3/7/98	0.7	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	3/7/98	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9800406
Project:	20805-131.012/TO#22312.00/6002 OAKLAND	**Date Collected:**	2/25/98
Sample Matrix:	Water	**Date Received:**	2/26/98

BTEX, MTBE and TPH as Gasoline

Sample Name:	MW-8(10)	Units:	ug/L (ppb)
Lab Code:	S9800406-002	Basis:	NA
Test Notes:			

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	2/26/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/26/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/26/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/26/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/26/98	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	2/26/98	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	ARCO Products Company	**Service Request:**	S9800406
Project:	20805-131.012/TO#22312.00/6002 OAKLAND	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

BTEX, MTBE and TPH as Gasoline

Sample Name:	Method Blank	**Units:**	ug/L (ppb)
Lab Code:	S980226-WB2	**Basis:**	NA
Test Notes:			

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	2/26/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	2/26/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	2/26/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	2/26/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	2/26/98	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	2/26/98	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: ARCO Products Company
Project: 20805-131.012/TO#22312.00/6002 OAKLAND
Sample Matrix: Water

Service Request: S9800406
Date Collected: NA
Date Received: NA

BTEX, MTBE and TPH as Gasoline

Sample Name: Method Blank
Lab Code: S980306-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	3/6/98	ND	
Benzene	EPA 5030	8020	0.5	1	NA	3/6/98	ND	
Toluene	EPA 5030	8020	0.5	1	NA	3/6/98	ND	
Ethylbenzene	EPA 5030	8020	0.5	1	NA	3/6/98	ND	
Xylenes, Total	EPA 5030	8020	0.5	1	NA	3/6/98	ND	
Methyl *tert*-Butyl Ether	EPA 5030	8020	3	1	NA	3/6/98	ND	

1S22/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-131.012/TO#22312.00/6002 OAKLAND
Sample Matrix: Water

Service Request: S9800406
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: 8020 CA/LUFT

Units: PERCENT
Basis: NA

Sample Name	Lab Code	Test Notes	Percent Recovery 4-Bromofluorobenzene	Percent Recovery a,a,a-Trifluorotoluene
MW-7(13)	S9800406-001		100	78
MW-8(10)	S9800406-002		93	105
BATCH QC	S9800489-005MS		96	88
BATCH QC	S9800489-005DMS		99	90
Method Blank	S980226-WB2		97	98
Method Blank	S980306-WB1		100	83
CAS Acceptance Limits:			69-116	69-116

SUR2/020397p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: ARCO Products Company
Project: 20805-131.012/TO#22312.00/6002 OAKLAND
Sample Matrix Water

Service Request: S9800406
Date Collected: NA
Date Received: NA
Date Extracted: NA
Date Analyzed: 3/6/98

Matrix Spike/Duplicate Matrix Spike Summary
TPH as Gasoline

Sample Name: BATCH QC
Lab Code: S9800489-005MS, S9800489-005DMS
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level MS	Spike Level DMS	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Limits	Relative Percent Difference	Result Notes
Gasoline	EPA 5030	CA/LUFT	50	250	250	ND	240	270	96	108	75-135	12	

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	ARCO Products Company	**Service Request:**	**S9800406**
Project:	20805-131.012/TO#22312.00/6002 OAKLAND	**Date Analyzed:**	**2/26/98**

Initial Calibration Verification (ICV) Summary
BTEX, MTBE and TPH as Gasoline

Sample Name:	ICV	Units:	ug/L (ppb)
Lab Code:	ICV1	Basis:	NA
Test Notes:			

ICV Source:

Analyte	Prep Method	Analysis Method	True Value	Result	CAS Percent Recovery Acceptance Limits	Percent Recovery	Result Notes
TPH as Gasoline	EPA 5030	CA/LUFT	250	230	90-110	92	
Benzene	EPA 5030	8020	25	25	85-115	100	
Toluene	EPA 5030	8020	25	25	85-115	100	
Ethylbenzene	EPA 5030	8020	25	24	85-115	96	
Xylenes, Total	EPA 5030	8020	75	70	85-115	93	
Methyl *tert*-Butyl Ether	EPA 5030	8020	25	26	85-115	104	

ICV/032196

...oducts Company
...sion of Atlantic/Richfield Company

Task Order No. 22312.00

Chain of Custody

Facility no.	6002
City (Facility)	Oakland
Project manager (Consultant)	Gary Messerotes
ARCO engineer	Paul Supple
Telephone no. (ARCO)	
Telephone no. (Consultant)	(408) 453-7300
Fax no. (Consultant)	(408) ~~453-0452~~ 437-9526
Consultant name	EMCON
Address (Consultant)	1921 Ringwood Ave. San Jose, CA 95131
Laboratory Name	CAS
Contract Number	

Sample I.D.	Lab no.	Container no.	Matrix: Soil	Matrix: Water	Matrix: Other	Preservation: Ice	Preservation: Acid	Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH incl. MTBE EPA M602/8020/8015	TPH Modified 8015 Gas ☐ Diesel ☐	Oil and Grease 413.1 ☐ 413.2 ☐	TPH EPA 418.1/SM 503E	EPA 601/8010	EPA 624/8240	EPA 625/8270	TCLP Metals☐ VOA☐ Semi VOA☐	CAM Metals EPA 6010/7000 TTLC☐ STLC☐	Lead Org/DHS☐ Lead EPA 7420/7421☐			
MW-7(13)	1	2		X		X	HCl	2-25-98	1255		X												
MW-8(10)	2	2		X		X	HCl	↓	1225		X												

Method of shipment: Sampler will deliver

Special Detection Limit/reporting: Lowest Possible

Special QA/QC: As Normal

Remarks: 2-40ml HCl VOAs RAT 8 separate CAR #20805-131.02

Lab Number: S9800406

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	Date	Time	Received by	Date	Time
Relinquished by sampler: [signature]	2-26-98	1515	[signature] CAS	2/26/98	1515
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

R 11/02