

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
FAX: (408) 264-2435

TRANSMITTAL

TO: Mr. Rob Weston
Alameda County Health Care Services
80 Swan Way, Romm 200
Oakland, California 94621

DATE: February 4, 1993
PROJECT NUMBER: 62019.03
SUBJECT: Final - Fourth Quarter 1992,
Quarterly Groundwater Monitoring at
ARCO Station 2162, 15135 Hesperian Blvd.,
Oakland, California.

FROM: Lou Leet
TITLE: Environmental Scientist

WE ARE SENDING YOU:

COPIES	DATED	NO.	DESCRIPTION
1	2/4/93	62019.03	Final - Quarterly Groundwater Monitoring at the above subject site.

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REMARKS: cc: Mr. Michael Whelan, ARCO Products Company
 Mr. John Jang, RWQCB, San Francisco Bay Region
 Mr. Mike Bakaldin, City of San Leandro Fire Department
 Mr. Joel Coffman, RESNA Industries Inc.

Copies: 1 to RESNA project file no. 62019.03

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
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FAX: (408) 264-2435

LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Fourth Quarter 1992
at
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

62019.03

Feb. 4, 1993

3315 Almaden Expressway, Suite 34
San Jose, CA 95118
Phone: (408) 264-7723
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February 4, 1993
0128MWHE
62019.03

Mr. Michael Whelan
Environmental Engineer
ARCO Products Company
P.O. Box 5811
San Mateo, California 94402

Subject: Letter Report on Fourth Quarter 1992 Groundwater Monitoring at ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) prepared this letter report which summarizes the results of the fourth quarter 1992 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, at the above-referenced site. The objectives of this quarterly groundwater monitoring are to evaluate changes in the groundwater flow direction and gradient, and changes in concentrations of petroleum hydrocarbons in the local groundwater associated with former gasoline underground-storage tanks at the site. Field work and laboratory analyses of groundwater samples during this quarter performed were under the direction of EMCON, and included measuring depths to water, subjectively analyzing groundwater for the presence of petroleum product, collecting groundwater samples from the wells for laboratory analyses, and directing a State-certified laboratory to analyze the groundwater samples. Field procedures and acquisition of field data were performed under the direction of EMCON; warrant of their field data and evaluation of their field protocols are beyond RESNA's scope of work. RESNA's scope of work was limited to interpretation of field and laboratory analyses data, which included evaluating trends in reported hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site.

ARCO Station 2162 is an operating auto repair and self-service gasoline station located in a residential area on the southwestern corner of the intersection of Hesperian Boulevard and Ruth Court in San Leandro, California. The location of the site is shown on the Site Vicinity Map, Plate 1. The locations of the existing tanks and other pertinent facilities at the site are shown on the Generalized Site Plan, Plate 2.

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

February 4, 1993
62019.03

The results of previous environmental investigations at the site are presented in the reports listed in the references section. The locations of the groundwater and vadose monitoring wells and pertinent site features are shown on the Generalized Site Plan, Plate 2.

Groundwater Sampling and Gradient Evaluation

Depth-to-water (DTW) measurements and groundwater sampling were performed in the four onsite wells by EMCON field personnel on October 16, 1992. The results of EMCON's field work at the site, including DTW measurements and subjective analysis for the presence of product in the groundwater in MW-1 through MW-4, are presented on EMCON's Field Reports. These data are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations for product in the groundwater from MW-1 through MW-4 for this quarter and previous quarterly groundwater monitoring at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. EMCON's DTW measurements were used to evaluate groundwater elevations. Evidence of product or sheen was not reported on EMCON's Field Reports during this quarter (see Appendix A). The groundwater gradient interpreted from the October 1992 groundwater monitoring episode is shown on the Groundwater Gradient Map, Plate 3. The interpreted groundwater gradient and flow direction was approximately 0.01 to the southwest.

EMCON's Water Sample Field Data Sheets, Field Reports, and Summary of Groundwater Monitoring Data are included in Appendix A. The purge water was removed from the site by a licensed hazardous waste hauler.

Laboratory Methods and Analyses

Under the direction of EMCON, water samples collected from the wells were analyzed by Columbia Analytical Services, Inc. located in San Jose, California (Hazardous Waste Testing Laboratory Certification No. 1426). The water samples from MW-1 through MW-4 were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) using modified Environmental Protection Agency (EPA) Methods 5030/8020/California Department of Health Services (DHS) leaking underground fuel tank (LUFT) Method. Concentrations of TPHg and benzene in the groundwater are shown on Plate 4, TPHg/Benzene Concentrations in Groundwater. The Chain of Custody Records and Laboratory Analysis Reports are included in Appendix A. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater.

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

February 4, 1993
62019.03

RESNA recommends that, in addition to quarterly groundwater sampling, monthly groundwater monitoring be initiated at this site.

RESNA recommends that copies of this report be forwarded to:

Mr. John Jang
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

Mr. Rob Weston
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

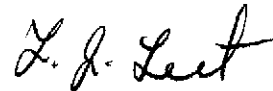
Mr. Mike Bakaldin
City of San Leandro Fire Department
Hazardous Materials Division
835 East 14th Street
San Leandro, California 94577

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California


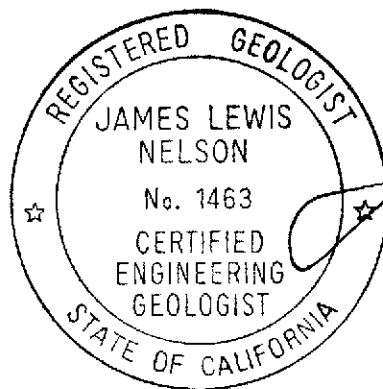
February 4, 1993
62019.03

If you have any questions or comments, please call us at (408) 264-7723.

Sincerely,
RESNA Industries Inc.



Lou Leet
Environmental Scientist



James L. Nelson
Certified Engineering
Geologist No. 1463

Enclosures: References

- Plate 1, Site Vicinity Map
- Plate 2, Generalized Site Plan
- Plate 3, Groundwater Gradient Map, October 16, 1992
- Plate 4, TPHg/Benzene Concentrations in Groundwater, October 16, 1992

Table 1, Cumulative Groundwater Monitoring Data

Table 2, Cumulative Results of Laboratory Analyses of Groundwater
Samples

Appendix A: EMCON's Field Reports Depth to Water/Floating Product
Survey Results, Summary of Groundwater Monitoring Data,
Certified Analytical Reports with Chain-of-Custody, and Water
Sample Field Data Sheets.

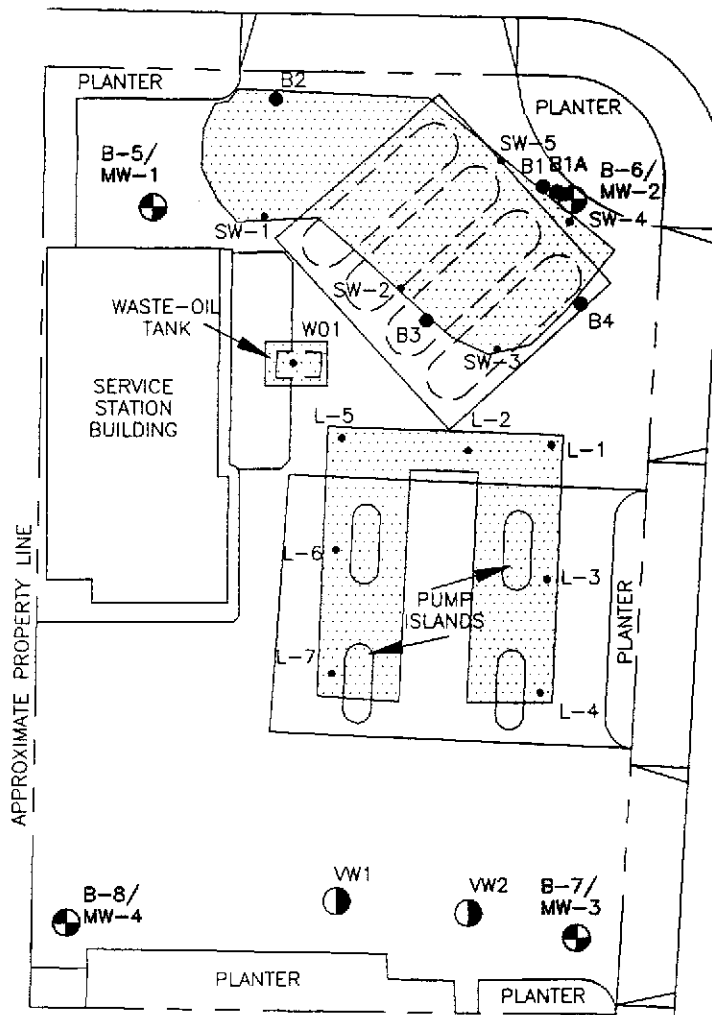
Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

February 4, 1993
62019.03


REFERENCES


- Department of Health Services, State of California. October 24, 1990. Summary of Drinking Water Standards.
- Hickenbottom, Kelvin and Muir, Kenneth, June 1988. Geohydrology and Groundwater Quality Overview of the East Bay Plain Area, Alameda County, California. Alameda County Flood Control and Water Conservation District, Report 205 (j).
- Maslonkowski, D.P. 1984. Groundwater in the San Leandro and San Lorenzo Alluvial Cones of the East Bay Plan of Alameda County. Alameda County Flood control and Water Conservation District, California
- RESNA. July 7, 1992. Work Plan for Subsurface Investigation at ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.01
- RESNA. September 6, 1992. Site Safety Plan Subsurface Environmental Investigation at ARCO Station 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.02
- RESNA. February __, 1993. Subsurface Investigation at ARCO 2162, 15135 Hesperian Boulevard, San Leandro, California. 62019.02
- Roux Associates, August 28, 1991. Letter Report - Limited Soil Performance Test, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, California. Doc #A101W02.1.1
- Roux Associates, August 28, 1991. Preliminary Tank Replacement Assessment, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, California. #A101W01.1.5
- Roux Associates, August 28, 1991. Letter Report Limited Soil Performance Test, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, California. #A101W02.1.1
- Roux Associates, July 7, 1992. Underground Storage Tank Replacement and Soil Sampling, ARCO Facility No. 2162, 15135 Hesperian Boulevard, San Leandro, California. #A117W01.1.8


RUTH COURT



EXPLANATION


B-8/
MW-4  = Monitoring well RESNA September 1992

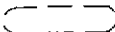
VW2  = Vapor extraction well
(Roux Associates, Inc., 1991)

B4  = Soil boring
(Roux Associates, Inc., 1991)

L-7 • = Product line sample

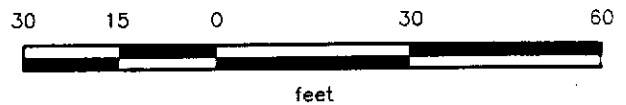
SW-5 • = Sidewall soil sample

 = Former underground storage tank
and product line excavations

 = Existing underground storage tank



Approximate Scale



Source: Modified from site plan provided by Roux Associates,
and survey data from John Koch, licensed
land surveyor (9/16/92)

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GENERALIZED SITE PLAN
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

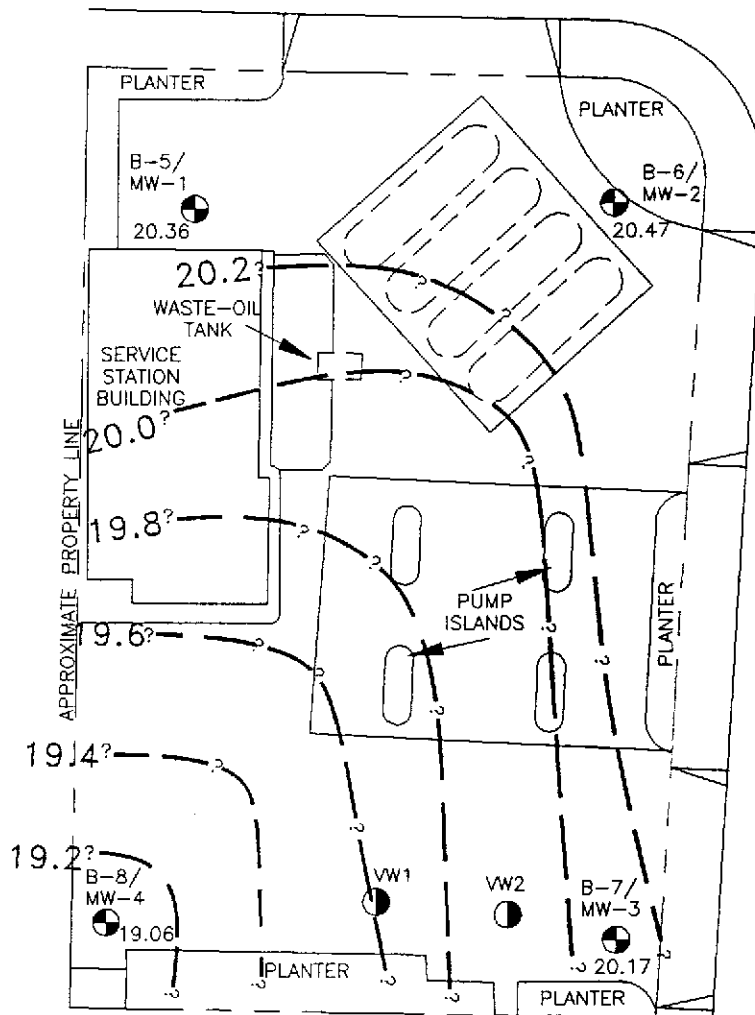
PLATE

2

PROJECT 62019.03

RUTH COURT

APPROXIMATE
DIRECTION OF
GROUNDWATER FLOW
(October 16, 1992)



HESPERIAN BOULEVARD

EXPLANATION

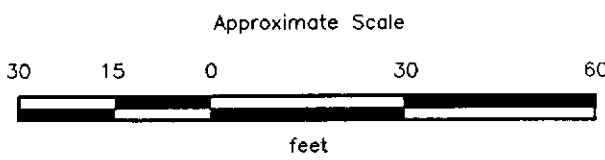
B-8/MW-4 = Boring/Monitoring well RESNA September 1992

VW2 = Vapor extraction well (Roux Associates, Inc., 1991)

= Existing underground storage tank

20.2 = Line of equal elevation of groundwater in feet above mean sea level (MSL)

20.47 = Elevation of groundwater in feet above MSL October 16, 1992



Source: Modified from site plan provided by Roux Associates. and survey data from John Koch, licensed land surveyor (9/16/92)

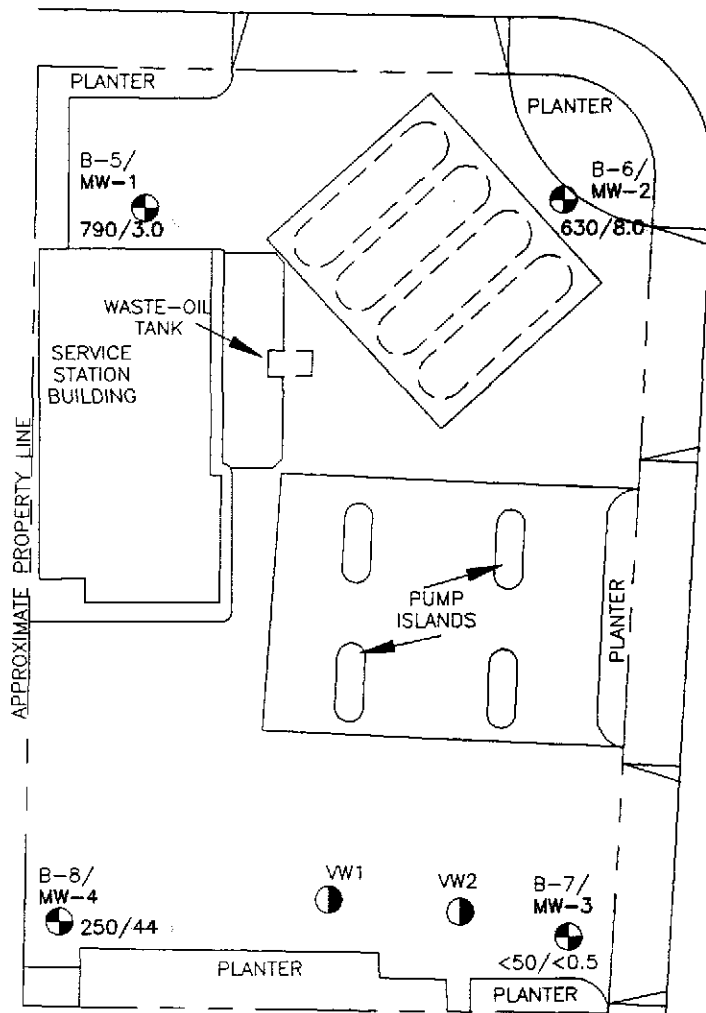


GROUNDWATER GRADIENT MAP
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

PLATE
3

PROJECT 62019.03

RUTH COURT



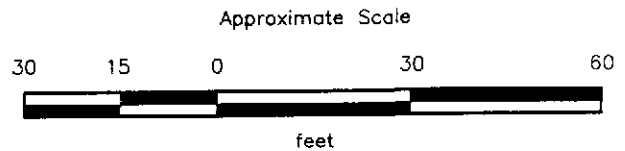
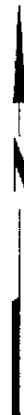
EXPLANATION

B-8/MW-4 = Boring/Monitoring well RESNA September 1992

VW2 = Vapor extraction well (Roux Associates, Inc., 1991)

= Existing underground storage tank

790/30 = Concentration of TPHg/Benzene in groundwater, in ppb, October 16, 1992



Source: Modified from site plan provided by Roux Associates, and survey data from John Koch, licensed land surveyor (9/16/92)

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**TPHg/ [REDACTED] CONCENTRATIONS
IN GROUNDWATER
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California**

**PLATE
4**

PROJECT 62019.03

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

February 4, 1993
62019.03

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

Well Date	Well Elevation	Depth to Water	Water Elevation	Floating Product
<u>MW-1</u>				
09/30/92	31.19	10.68	20.51	None
10/16/92		10.83	20.36	None
<u>MW-2</u>				
09/30/92	30.38	9.74	20.64	None
10/16/92		9.91	20.47	None
<u>MW-3</u>				
09/30/92	30.30	9.93	20.37	None
10/16/92		10.13	20.17	None
<u>MW-4</u>				
09/30/92	30.39	11.15	19.24	None
10/16/92		11.33	19.06	None

All measurements in feet.

Well elevation datum is top of casing (TOC) if feet above mean sea level (msl). Survey datum is City of San Leandro = 1973 Adjusted National Geodetic Vertical Datum.

Depth-to-water (DTW) = measured from top of casing.

Water elevation = TOC minus DTW.

Floating product = Subjective evidence of floating product noted.

Wells surveyed by John Koch, Licensed Surveyor, on 9/16/92.

Quarterly Groundwater Monitoring Report
ARCO Station 2162, San Leandro, California

February 4, 1993
62019.03

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 2162
15135 Hesperian Boulevard
San Leandro, California

Well Date	TPHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes
MW-1					
09/30/92	1,100	6.2	<0.50	6.9	<0.50
10/16/92	790	3.0	0.8	5.6	2.9
MW-2					
09/30/92	1,000	9.6	<0.50	45	110
10/16/92	630	8.0	<1.0*	37	64
MW-3					
09/30/92	<50	<0.50	<0.50	<0.50	<0.50
10/16/92	<50	<0.50	<0.50	<0.50	<0.50
MW-4					
09/30/92	330	81	<0.50	<0.50	<0.50
10/16/92	250	44	<0.5	<0.5	0.7
MCL:	---	1	---	680	1,750
DWAL:	---	---	100	---	---

Results in micrograms per liter (μ/L) = parts per billion (ppb).

TPHg: Total petroleum hydrocarbons as gasoline by EPA method 5030/8020/California DHS LUFT.
BTEX:B: Benzene, T: Toluene, E: Ethylbenzene, X: Total Xylene isomers; measured by EPA method 5030/8020/California DHS LUFT Method

<: Results reported as less than the detection limit.

*: Raised method reporting limit (MRL) due to high analyte concentration requiring sample dilution.

MCL: State Maximum Contaminant Level (DHS October 1990).

DWAL: State recommended Drinking Water Action Level (DHS October 1990).

APPENDIX A

**EMCON'S FIELD REPORTS
DEPTH TO WATER/FLOATING PRODUCT SURVEY RESULTS,
SUMMARY OF GROUNDWATER MONITORING DATA,
CERTIFIED ANALYTICAL REPORTS WITH CHAIN-OF-CUSTODY,
AND WATER SAMPLE FIELD DATA SHEETS**

6501700



EMCON
ASSOCIATES
Consultants in Wastes
Management and
Environmental Control

RECEIVED

NOV 9 - 1992

RESNA
SAN JOSE

Date November 5, 1992
Project OG70-055.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Almaden Expressway, Suite 34
San Jose, California 95118

We are enclosing:

Copies	Description
<u>1</u>	<u>Depth To Water / Floating Product Survey Results</u>
<u>1</u>	<u>Summary of Groundwater Monitoring Data</u>
<u>1</u>	<u>Certified Analytical Reports with Chain-of-Custody</u>
<u>4</u>	<u>Water Sample Field Data Sheets</u>

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the fourth quarter 1992 monitoring event at ARCO service station 2162, 15135 Hesperian Blvd, San Lorenzo, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Reviewed by:



Jim Butera JB

Robert Porter
Robert Porter, Senior Project
Engineer.



Summary of Groundwater Monitoring Data
 Fourth Quarter 1992
 ARCO Service Station 2162
 15135 Hesperian Boulevard, San Leandro, California
 micrograms per liter ($\mu\text{g/l}$) or parts per billion (ppb)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH ¹ as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl- benzene (ppb)	Total Xylenes (ppb)
MW-1(15)	10/16/92	10.83	ND, ²	790.	3.0	0.8	5.6	2.9
MW-2(15)	10/16/92	9.91	ND.	630.	8.0	<1.	37.	64.
MW-3(14)	10/16/92	10.13	ND.	<50.	<0.5	<0.5	<0.5	<0.5
MW-4(16)	10/16/92	11.33	ND.	250.	44.	<0.5	<0.5	0.7

1. TPH. = Total petroleum hydrocarbons

2. ND. = Not detected



October 30, 1992

Jim Butera
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Re: EMCON Project No. OG70-055.01
Arco Facility No. 2162

Dear Mr. Butera:

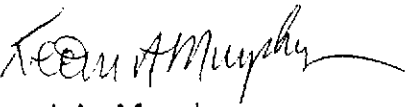
Enclosed are the results of the water samples submitted to our lab on October 19, 1992. For your reference, our service request number for this work is SJ92-1287.


All analyses were performed in accordance with the laboratory's quality assurance program.

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-055.01
 ARCO Facility No. 2162

Date Received: 10/19/92
 Work Order No.: SJ92-1287
 Sample Matrix: Water

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

Sample Name: MW-1 (15) MW-2 (15) MW-3 (14)
 Date Analyzed: 10/23/92 10/22/92 10/21/92

Analyte	MRL			
Benzene	0.5	3.0	8.0	ND
Toluene	0.5	0.8	<1. *	ND
Ethylbenzene	0.5	5.6	37.	ND
Total Xylenes	0.5	2.9	64.	ND
TPH as Gasoline	50	790.	630.	ND

TPH Total Petroleum Hydrocarbons
 MRL Method Reporting Limit
 ND None Detected at or above the method reporting limit
 * Raised MRL due to high analyte concentration requiring sample dilution.

Approved by: K. O. Murphy Date: October 30, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-055.01
 ARCO Facility No. 2162

Date Received: 10/19/92
 Work Order No.: SJ92-1287
 Sample Matrix: Water

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

Sample Name: MW-4 (16) Method Blank Method Blank
 Date Analyzed: 10/23/92 * 10/21/92 10/22/92

<u>Analyte</u>	<u>MRL</u>			
Benzene	0.5	44.	ND	ND
Toluene	0.5	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Total Xylenes	0.5	0.7	ND	ND
TPH as Gasoline	50	250.	ND	ND

TPH Total Petroleum Hydrocarbons

MRL Method Reporting Limit

ND None Detected at or above the method reporting limit

* This sample was part of the analytical batch started on October 23, 1992. However, it was analyzed after midnight so the actual date analyzed is October 24, 1992.

Approved by: *Kedon Murphy*

Date: October 30, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-055.01
ARCO Facility No. 2162

Date Received: 10/19/92
Work Order No.: SJ92-1287
Sample Matrix: Water

BTEX and TPH as Gasoline
EPA Methods 5030/8020/California DHS LUFT Method
 $\mu\text{g/L}$ (ppb)

Sample Name: Method Blank
Date Analyzed: 10/23/92

<u>Analyte</u>	<u>MRL</u>	
Benzene	0.5	ND
Toluene	0.5	ND
Ethylbenzene	0.5	ND
Total Xylenes	0.5	ND
TPH as Gasoline	50	ND

TPH Total Petroleum Hydrocarbons
MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by: Kevin Murphy Date: October 30, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
 Project: EMCON Project No. 0G70-055.01
 ARCO Facility No. 2162

Date Received: 10/19/92
 Work Order #: SJ92-1287

Initial Calibration Verification
 BTEX and TPH as Gasoline
 EPA Methods 5030/8020/DHS LUFT Method
 Nanograms

Date Analyzed: 10/21/92

<u>Analyte</u>	<u>True Value</u>	<u>Result</u>	<u>Percent Recovery</u>	<u>CAS Percent Recovery Acceptance Criteria</u>
Benzene	250.	262.	105.	85-115
Toluene	250.	269.	108.	85-115
Ethylbenzene	250.	260.	104.	85-115
Total Xylenes	750.	751.	100.	85-115
TPH as Gasoline	2,500.	2,412.	96.	90-110

Date Analyzed: 10/22/92

<u>Analyte</u>	<u>True Value</u>	<u>Result</u>	<u>Percent Recovery</u>	<u>CAS Percent Recovery Acceptance Criteria</u>
Benzene	250.	268.	107.	85-115
Toluene	250.	274.	109.	85-115
Ethylbenzene	250.	264.	106.	85-115
Total Xylenes	750.	760.	101.	85-115
TPH as Gasoline	2,500.	2,454.	98.	90-110

TPH Total Petroleum Hydrocarbons

Approved by: Kedra Murphy

Date: October 30, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-055.01
ARCO Facility No. 2162

Date Received: 10/19/92
Work Order #: SJ92-1287

Initial Calibration Verification
BTEX and TPH as Gasoline
EPA Methods 5030/8020/DHS LUFT Method
Nanograms

Date Analyzed: 10/23/92

<u>Analyte</u>	<u>True Value</u>	<u>Result</u>	<u>Percent Recovery</u>	<u>CAS Percent Recovery Acceptance Criteria</u>
Benzene	250.	267.	107.	85-115
Toluene	250.	272.	109.	85-115
Ethylbenzene	250.	261.	104.	85-115
Total Xylenes	750.	750.	100.	85-115
TPH as Gasoline	2,500.	2,509.	100.	90-110

TPH Total Petroleum Hydrocarbons

Approved by:

Keen Murphy

Date:

October 30, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-055.01
ARCO Facility No. 2162

Date Received: 10/19/92
Work Order No.: SJ92-1287
Sample Matrix: Water

Matrix Spike/Duplicate Matrix Spike Summary
TPH as Gasoline
EPA Methods 5030/California DHS LUFT Method
 $\mu\text{g/L}$ (ppb)

Date Analyzed: 10/21/92

Percent Recovery

<u>Analyte</u>	<u>Spike Level</u>	<u>Sample Result</u>	<u>Spike Result</u>		<u>MS</u> <u>DMS</u>		<u>CAS</u>
			<u>MS</u>	<u>DMS</u>	<u>MS</u>	<u>DMS</u>	<u>Acceptance Criteria</u>
TPH as Gasoline	250.	ND	265.	265.	106.	106.	70-130

TPH Total Petroleum Hydrocarbons
ND None Detected at or above the method reporting limit

Approved by: K. Ann Murphy Date: October 30, 1992

ARCO Facility no. 2162 City (Facility) San Leandro Project manager (Consultant) Jim Butera
 ARCO engineer Kyle Christie Telephone no. (ARCO) 571-2434 Telephone no. (Consultant) 453-0719 Fax no. (Consultant) 453-0452
 Consultant name EMCCON ASSOCIATES Address (Consultant) 1938 Junction Ave San Jose

Laboratory name
CAS
Contract number
07077

Sample I.D.	Lab no.	Container no.	Matrix			Preservation		Sampling date	Sampling time	BTEX 602/EPA 8020	BTEX/TPH EPA 1632/8020/8015	TPH Modified 8015 Gas <input type="checkbox"/> Diesel <input type="checkbox"/>	Oil and Grease 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/>	TPH EPA 416.1/SM503E	EPA 601/8010	EPA 624/6240	EPA 625/8270	TCIP Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	Semi Metals <input type="checkbox"/> VOA <input type="checkbox"/> VOA <input type="checkbox"/>	CAM Metals EPA 601/7000 TLC <input type="checkbox"/> STLC <input type="checkbox"/>	Lead Org./DHS <input type="checkbox"/> Lead EPA 7420/7421 <input type="checkbox"/>	
			Soil	Water	Other	Ice	Acid															
MW-1(15) r2		2		X		X	HCl	10-16-92	1055		X											
MW-2(15) 3-4		2		X		X	HCl		1135		X											
MW-3(14) 5-6		2		X		X	HCl		1221		X											
MW-4(14) 7-8		2		X		X	HCl		1308		X											

Method of shipment
Sampler will deliver

Special detection Limit/reporting
Lowest Possible

Special QA/QC
As Normal

Remarks
2-40 ml HCl
VOA'S

0670-055.01

Lab number
5192-1287

Turnaround time
Priority Rush 1 Business Day
Rush 2 Business Days
Expedited 5 Business Days
Standard 10 Business Days

Condition of sample: OK Temperature received: cool
 Relinquished by sampler: Joe Wall Date: 10-19-92 Time: 9:10 Received by: _____
 Relinquished by: _____ Date: _____ Time: _____ Received by: _____
 Relinquished by: _____ Date: _____ Time: _____ Received by laboratory: Unkempt Date: 10-19-92 Time: 9:15



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

PROJECT NO: 0670-055-01

SAMPLE ID: MW-1

PURGED BY: J. Williams

CLIENT NAME: ARCO 2167

SAMPLED BY: J. Williams

LOCATION: 15135 Hesperian Blvd
San Leandro CA

TYPE: Ground Water Surface Water Treatment Effluent Other

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

CASING ELEVATION (feet/MSL): 412 VOLUME IN CASING (gal.): 2.39

DEPTH TO WATER (feet): 10.83 CALCULATED PURGE (gal.): 16.95

DEPTH OF WELL (feet): 16.0 ACTUAL PURGE VOL (gal.): 17.0

DATE PURGED: 10-16-92 Start (2400 Hr) 1035 End (2400 Hr) 1050

DATE SAMPLED: 10-16-92 Start (2400 Hr) 1055 End (2400 Hr) -

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	EC. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1039</u>	<u>3.5</u>	<u>6.94</u>	<u>916</u>	<u>70.9</u>	<u>GREY</u>	<u>HEAVY</u>
<u>1042</u>	<u>7</u>	<u>6.95</u>	<u>924</u>	<u>70.3</u>	<u>GREY</u>	<u>HEAVY</u>
<u>1045</u>	<u>10.5</u>	<u>7.00</u>	<u>920</u>	<u>70.2</u>	<u>GREY</u>	<u>HEAVY</u>
<u>1047</u>	<u>14</u>	<u>7.02</u>	<u>922</u>	<u>70.3</u>	<u>GREY</u>	<u>HEAVY</u>
<u>1050</u>	<u>17</u>	<u>7.01</u>	<u>921</u>	<u>70.3</u>	<u>GREY</u>	<u>HEAVY</u>

D. O. (ppm): NR ODOR: STROWS NR NR
(COBALT 0 - 100) (NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailer (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailer (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailer (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailer (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
| Other: _____ | | Other: _____ | |

WELL INTEGRITY: OK LOCK #: 3059

REMARKS: _____

Meter Calibration: Date: 10-16-92 Time: 10:00 Meter Serial #: 9111 Temperature °F: 16.9

(EC 1000 1086 / 1000) (DI _____) (pH 7.00 / 7.00) (pH 10 10.10 / 10.00) (pH 4 3.98 / _____)

Location of previous calibration: MW-1

Signature: [Signature] Reviewed By: [Signature] Page 1 of 4



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/9

PROJECT NO: 0670-055-01

SAMPLE ID: MW-2

PURGED BY: J. Williams

CLIENT NAME: ARCO 2167

SAMPLED BY: J. Williams

LOCATION: 15135 Hesperian Blv
San Leandro CA

TYPE: Ground Water Surface Water Treatment Effluent Other

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 4.00

DEPTH TO WATER (feet): 9.90 CALCULATED PURGE (gal.): 20.00

DEPTH OF WELL (feet): 16.0 ACTUAL PURGE VOL (gal.): 20.0

DATE PURGED: 10-16-92 Start (2400 Hr) 1112 End (2400 Hr) 1130

DATE SAMPLED: 10-16-92 Start (2400 Hr) 1137 End (2400 Hr) 1135

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1116</u>	<u>4</u>	<u>7.21</u>	<u>843</u>	<u>70.3</u>	<u>GREY</u>	<u>HEAVY</u>
<u>1119</u>	<u>8</u>	<u>7.21</u>	<u>841</u>	<u>70.4</u>	<u>GREY</u>	<u>HEAVY</u>
<u>1123</u>	<u>17</u>	<u>7.37</u>	<u>831</u>	<u>70.3</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1126</u>	<u>16</u>	<u>7.41</u>	<u>819</u>	<u>70.2</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1130</u>	<u>20</u>	<u>7.47</u>	<u>812</u>	<u>70.2</u>	<u>BROWN</u>	<u>HEAVY</u>

D. O. (ppm): NR ODOR: STRONG NR NR
(COBALT 0 - 100) (NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> ODL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
- Other: _____ Other: _____

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 10-16-92 Time: 1000 Meter Serial #: 9111 Temperature °F: _____
(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-1

Signature: [Signature] Reviewed By: JB Page 2 of 4



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/9

PROJECT NO: 0670-055-01

SAMPLE ID: MW-3

PURGED BY: S Will. Williams

CLIENT NAME: ARCO 2167

SAMPLED BY: S Will. Williams

LOCATION: 15135 Hesperia Rd.
SAN LEANDRO CA

TYPE: Ground Water Surface Water Treatment Effluent Other

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 3.18

DEPTH TO WATER (feet): 10.14 CALCULATED PURGE (gal.): 15.94

DEPTH OF WELL (feet): 15.0 ACTUAL PURGE VOL (gal.): 16.0

DATE PURGED: 10-16-92 Start (2400 Hr) 1154 End (2400 Hr) 1216

DATE SAMPLED: 10-16-92 Start (2400 Hr) 1218 End (2400 Hr) 1221

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (umhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
<u>1202</u>	<u>9.5</u>	<u>7.11</u>	<u>736</u>	<u>72.2</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1206</u>	<u>7</u>	<u>7.21</u>	<u>719</u>	<u>72.8</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1209</u>	<u>10</u>	<u>7.27</u>	<u>702</u>	<u>73.0</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1213</u>	<u>13</u>	<u>7.37</u>	<u>690</u>	<u>72.8</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1216</u>	<u>16</u>	<u>7.40</u>	<u>689</u>	<u>72.8</u>	<u>BROWN</u>	<u>HEAVY</u>

D. O. (ppm): NR ODOR: None NR NR
(COBALT 0 - 100) (NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailor (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailor (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailor (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailor (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailor (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
- Other: _____ Other: _____

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 10-11-92 Time: 1000 Meter Serial #: 9111 Temperature °F: _____
(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-1

Signature: S Will. Williams Reviewed By: JB Page 3 of 4



EMCON ASSOCIATES

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

PROJECT NO: 0670-055-01

SAMPLE ID: MW-4

PURGED BY: J Williams

CLIENT NAME: ARCO 2162

SAMPLED BY: J Williams

LOCATION: 15135 Hesperian Bl
SAN LINDRO CA

TYPE: Ground Water Surface Water Treatment Effluent Other

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 3.85

DEPTH TO WATER (feet): 11.32 CALCULATED PURGE (gal.): 19.28

DEPTH OF WELL (feet): 17.2 ACTUAL PURGE VOL (gal.): 20.0

DATE PURGED: 10-16-92 Start (2400 Hr) 1249 End (2400 Hr) 1304

DATE SAMPLED: 10-16-92 Start (2400 Hr) 1306 End (2400 Hr) 1308

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	EC. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (Visual)	TURBIDITY (Visual)
<u>1251</u>	<u>4</u>	<u>7.16</u>	<u>926</u>	<u>72.3</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1254</u>	<u>8</u>	<u>7.27</u>	<u>942</u>	<u>71.3</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1257</u>	<u>12</u>	<u>7.43</u>	<u>937</u>	<u>71.2</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1301</u>	<u>16</u>	<u>7.32</u>	<u>934</u>	<u>71.1</u>	<u>BROWN</u>	<u>HEAVY</u>
<u>1304</u>	<u>20</u>	<u>7.32</u>	<u>934</u>	<u>71.1</u>	<u>BROWN</u>	<u>HEAVY</u>

D. O. (ppm): NR ODOR: NR NR NR
(COBALT 0 - 100) (NTU 0 - 200)

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

PURGING EQUIPMENT

SAMPLING EQUIPMENT

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 2" Bladder Pump | <input type="checkbox"/> Bailer (Teflon®) | <input type="checkbox"/> 2" Bladder Pump | <input checked="" type="checkbox"/> Bailer (Teflon®) |
| <input type="checkbox"/> Centrifugal Pump | <input checked="" type="checkbox"/> Bailer (PVC) | <input type="checkbox"/> DDL Sampler | <input type="checkbox"/> Bailer (Stainless Steel) |
| <input type="checkbox"/> Submersible Pump | <input type="checkbox"/> Bailer (Stainless Steel) | <input type="checkbox"/> Dipper | <input type="checkbox"/> Submersible Pump |
| <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated | <input type="checkbox"/> Well Wizard™ | <input type="checkbox"/> Dedicated |
- Other: _____ Other: _____

WELL INTEGRITY: OK LOCK #: 3259

REMARKS: _____

Meter Calibration: Date: 10-16-92 Time: 1000 Meter Serial #: 9111 Temperature °F: _____
(EC 1000 _____ / _____) (DI _____) (pH 7 _____ / _____) (pH 10 _____ / _____) (pH 4 _____ / _____)

Location of previous calibration: MW-1

Signature: Joe Williams Reviewed By: JB Page 4 of 4