Applied GeoSystems, Inc.
A RESNA Company

RESNA
Working To Restore Nature

TRANSMITTAL

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

TO: MR. RAVI ARULANANTHAM
ACHCSA
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621

DATE: 5/1/92
PROJECT NUMBER: 60006.03
SUBJECT: ARCO STATION 6041, 7249 VILLAGE PARKWAY, DUBLIN, CA.

FROM: LOU LEET
TITLE: STAFF GEOLOGIST

WE ARE SENDING YOU [XX] Attached [ ] Under separate cover via _____ the following items:

[ ] Shop drawings [ ] Prints [XX] Reports [ ] Specifications

[ ] Letters [ ] Change Orders [ ] _____

COPIES	DATED	NO.	DESCRIPTION
1	5/1/92	60006.03	FINAL--LETTER REPORT QUARTERLY GROUNDWATER MONITORING FIRST QUARTER 1992 AT ARCO STATION 6041, 7249 VILLAGE PARKWAY, DUBLIN, CA.

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment [ ] Approved as submitted [ ] Resubmit ___ copies for approval

[XX] As requested [ ] Approved as noted [ ] Submit___ copies for distribution

[ ] For approval [ ] Return for corrections [ ] Return ___ corrected prints

[ ] For your files [ ] _____

REMARKS:
AT THE REQUEST OF MR. MICHAEL WHELAN (ARCO PRODUCTS COMPANY) THIS REPORT HAS BEEN FORWARDED TO YOU FOR YOUR REVIEW.

Copies: 1 to project file no. 60006.03

*Revision Date: 11/21/91
*File Name: TRANSMT.PRJ

(12)

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

TO: MR. RAVI ARULANANTHAM
ALAMEDA COUNTY HEALTH CARE
SERVICES AGENCY-DEH
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94621

DATE: 3/18/92
PROJECT NUMBER: 61026.01
SUBJECT: ARCO SITE STATUS UPDATE

FROM: JOEL COFFMAN
TITLE: PROJECT GEOLOGIST

WE ARE SENDING YOU [XX] Attached [ ] Under separate cover via _____ the following items:

[ ] Shop drawings [ ] Prints [ ] Reports [ ] Specifications

[XX] Letters [ ] Change Orders [ ] _____

COPIES	DATED	NO.	DESCRIPTION
1	3/16/92		SITE STATUS UPDATE FOR ARCO STATION 6041.

THESE ARE TRANSMITTED as checked below:

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[ ] As requested [ ] Approved as noted [ ] Submit___ copies for distribution

[ ] For approval [ ] Return for corrections [ ] Return ___ corrected prints

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REMARKS: CC: CHUCK CARMEL, ARCO PRODUCTS COMPANY

Copies: 1 to project file no. 61026.01

*Revision Date: 11/21/91
*File Name: TRANSMT.PRJ

4/23/92 Called D. Moore (Deacon) received QR updates of Arco.

April 13, 1992

92 APR 14 PM 3:00

Ms. Susan Hugo
Alameda County Department of Environmental Health
80 Swan Way
Oakland, California 94621

ARCO Products Company Facilities in Alameda County

Dear Ms. Hugo:

Please find attached, Quarterly Summary Reports (QSRs) for ARCO Products Company Service Stations in Alameda County. The QSRs summarize activities conducted by ARCO at the respective sites during the first quarter of 1992; also included are projected site activities for the second quarter of 1992 and a bibliography of reports submitted for each location.

The QSRs are classified by city and address within Alameda County. We are submitting this document and attached QSRs as agreed. Please note that we are forwarding copies of the QSRs to the Regional Water Quality Control Board (RWQCB).

Please note that ARCO Products Company has reviewed the RWQCB's February 19, 1991 printout of ARCO fuel leak sites. We have evaluated each site with respect to ARCO's responsibility for investigation, monitoring, and/or remediation. Those locations for which ARCO is not responsible were listed and described in the QSR package delivered to you on July 15, 1991. The attached QSRs therefore represent only those locations for which ARCO is responsible.

ARCO is planning a subsequent comprehensive QSR submittal for ARCO sites on July 15, 1992. Please do not hesitate to contact us with any questions regarding this submittal.

Sincerely yours,

Donald W. Moore for

Kyle A. Christie
Environmental Engineer

Attachments: ARCO Facility QSRs

A:\arcoqsrs\consmrg.ltr
50013-004-06

UST LEAK SITE UPDATE

Date of Last Review/Update: January 6, 1992

Current Date: April 6, 1992

SITE IDENTIFICATION

Name: ARCO Products Company 6041 Case No.:

Address: 7949 Village Parkway
Street Number Street

Dublin
City ZIP Code

County: Alameda Substance: Gasoline

Local Agency: Alameda County Health Care Services Agency

Regional Board: Regional Water Quality Control Board - San Francisco Bay Area

LEAD STAFF PERSON

ACHCSA - Larry Seto

CASE TYPE

____	Undetermined	____	Soil Only	X	Ground Water	____	Drinking Water

STATUS (Date indicates when case moved into status)

____	No Action Taken	
X	Leak Being Confirmed	Date 9/26/90
X	Preliminary Site Assessment Workplan Submitted	Date 8/22/91
X	Preliminary Site Assessment Underway	Date 9/91
____	Pollution Characterization	Date
____	Remediation Plan	Date
____	Remedial Action Underway	Date
____	Post Remedial Action Monitoring	Date
____	Case Referred to Regional Board	Date
____	Case Referred to Dept. of Health Services	Date
____	Case Closed	Date

COMMENTS/MILESTONES:

Waste-oil tank removed from site in June 1990; approximately 20 cubic yards of soil was removed. No further work necessary in area of former waste-oil tank (soil samples nondetectable).

RECENT ACTIVITIES/FINDINGS:

Last Quarter Activities: Performed monthly groundwater monitoring and reporting.

Current Quarter Activities: Submitted subsurface environmental investigation report on 2/12/92.

ANTICIPATED ACTIVITIES:

Next Quarter Activities: Continue monthly groundwater monitoring, prepare quarterly groundwater monitoring report and submit workplan for next phase investigation..

Reports documenting the site's history are listed on page 2.

REPORT	DATE	CONSULTANT
Work Plan for Subsurface Investigations and Remediation at ARCO 6041 60006.02	8/22/91	RESNA/Applied GeoSystems
Addendum One to Work Plan Subsurface Investigation at ARCO Station 6041 60006.02	8/22/91	RESNA/Applied GeoSystems
Letter Report-Limited Subsurface Investigation Related to the Removal of Waste-Oil Tank at ARCO Station 6041 60006.01	9/19/90	Applied GeoSystems

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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
First Quarter 1992
at
ARCO Station 6041
7249 Village Parkway
Dublin, California

5/1/92

60006.03

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San Jose, CA 95118
Phone: (408) 264-7723
Fax: (408) 264-2435

May 1, 1992
0406MWHE
60006.03

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

Subject: First Quarter 1992 Groundwater Monitoring Report for ARCO Station 6041, 7249 Village Parkway, Dublin, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), this letter report summarizes the results of first quarter 1992 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, California, 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 a reported minor fuel spill at the site. The field work and laboratory analyses of groundwater samples during this quarter was performed under the direction of EMCON and included measuring depths to groundwater, 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 direction of EMCON; evaluation and warrant of their field data and field protocols is beyond RESNA Industries' (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.

The operating Arco Station 6041 is located at the intersection of Village Parkway and Amador Valley Boulevard in a commercial and residential area at 7249 Village Parkway, in Dublin, California, as shown on the Site Vicinity Map, Plate 1.

Prior to the present monitoring, RESNA (formerly Applied GeoSystems [AGS]) performed the following environmental and subsurface investigations for the site. On June 6 and 7,

1990, RESNA supervised the excavation and removal of one 550-gallon waste-oil tank (AGS, September 1990). It was decided that extensive excavation of soil beneath the tank was not necessary because: 1) field observations during tank removal indicted the tank appeared to be in good condition, and 2) laboratory analyses results indicated the soil beneath the tank had not been impacted by petroleum hydrocarbons. On September 25, 1990, a spill of approximately 10 gallons (estimated by Tom Hathocox of Dogherty Regional Fire Department) was reported. In September 1991, RESNA performed a subsurface environmental investigation, which included drilling three soil borings (B-1 through B-3), collecting soil samples from the borings, constructing 4-inch-diameter groundwater monitoring wells in the borings (MW-1 through MW-3, respectively), and developing and sampling the monitoring wells (RESNA, February 1992). The location of the groundwater monitoring wells, borings, and pertinent site features are shown on the Generalized Site Plan, Plate 2.

Groundwater Sampling and Gradient Evaluation

Depth to water measurements (DTW) were performed by EMCON field personnel on January 18, February 21, and March 16, 1992. Quarterly sampling was performed by EMCON field personnel on March 16, 1992. The results of EMCON's field work on the site, including DTW measurements and subjective analysis for the presence of product in the groundwater in MW-1 through MW-3 are presented on EMCON's field report sheets, and EMCON's Summary of Groundwater Monitoring Data. These data are included in Appendix A.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations of product in the groundwater from MW-1 through MW-3 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 observed by EMCON's field personnel during this quarterly monitoring (see EMCON's field report sheets, Appendix A). Groundwater elevations in wells MW-1 through MW-3 fluctuated approximately 2 feet between January 18 and March 16, 1992. The groundwater gradients interpreted from the January, February, and March 1992 groundwater monitorings are shown on the Groundwater Gradient Maps, Plates 3 through 5. The groundwater gradients interpreted from EMCON's DTW measurements fluctuated from 0.007 to 0.024, and gradient direction was interpreted to be generally toward the south-southwest.

Groundwater monitoring wells MW-1 through MW-3 were purged and sampled by EMCON field personnel on March 16, 1992. EMCON's water sample field data sheets are included in Appendix A. Approximately five well volumes were purged from each groundwater

monitoring well prior to collecting the groundwater samples. Purge water was removed from the site by a licensed hazardous waste hauler; the Monitoring Well Purge Water Disposal Form is also included in Appendix A.

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-3 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. Concentrations of TPHg and benzene in the groundwater are shown on Plate 6, TPHg Concentrations in Groundwater and Plate 7, Benzene Concentrations in Groundwater. The Chain of Custody Records and Laboratory Analysis Reports are attached in Appendix A. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples.

Results of this quarter's groundwater monitoring indicate:

- TPHg was detected in groundwater samples from MW-2 and MW-3 at concentrations of 430 parts per billion (ppb) and from MW-1 at concentrations of 780 ppb.

- Benzene was detected in groundwater samples from MW-1 at concentrations of 22 ppb, from MW-2 at concentrations of 130 ppb, and from MW-3 at concentrations of 86 ppb. The concentrations of benzene in wells MW-1 through MW-3 exceeds the State of California Department of Health Services (DHS) Maximum Contaminant Level (MCL) of 1.0 ppb benzene for drinking water.

- Toluene was detected in the groundwater sample from MW-1 at a concentration of 12 ppb. Toluene was nondetectable in the groundwater from MW-2 and MW-3, with detection limits of 2.5 ppb and 1.0 ppb, respectively. The detection limit was reportedly raised for the sample from MW-2 due to the presence of high analyte concentration that required sample dilution. The concentration of toluene in the groundwater from MW-1 does not exceed the DHS recommended drinking water action level (DWAL) of 100 ppb.

- Ethylbenzene was detected in groundwater samples from MW-1, MW-2, and MW-3, and ranged between 22 and 45 ppb. The concentrations of ethylbenzene in wells MW-1 through MW-3 do not exceed the MCL of 680 ppb.

- Total xylenes were detected in groundwater from MW-1, MW-2, and MW-3, and ranged between 3.4 and 22 ppb. The concentrations of total xylenes in wells MW-1 through MW-3 do not exceed the MCL of 1,750 ppb.

The following general trends were noted in reported hydrocarbon concentrations in groundwater from the three monitoring wells since the last quarterly monitoring. Concentrations of TPHg and BTEX remained generally consistent in well MW-1, increased in well MW-2, and decreased in well MW-3.

Conclusions and Recommendations

Groundwater on this site has been impacted by gasoline hydrocarbons; the lateral extent of petroleum hydrocarbons has not been delineated. A forthcoming work plan will propose additional investigation for the site. Additional recommendations will be included under separate cover.

RESNA recommends monthly groundwater monitoring and quarterly groundwater sampling at the site, including analyses of groundwater for TPHg and BTEX.

Schedule

Monthly groundwater monitoring and quarterly groundwater sampling will continue to be performed by ARCO's contracted sampler. At ARCO's request, RESNA will continue to analyze and report monthly and quarterly groundwater monitoring data from this site to evaluate trends in petroleum hydrocarbons, and changes in groundwater gradient with time.

It is recommended that copies of this report be forwarded to:

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

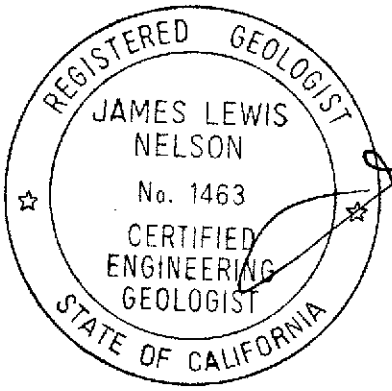
Mr. Eddy So
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

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

Sincerely,
RESNA Industries

L. L. Leet

Lou Leet
Staff Geologist



James L. Nelson
Certified Engineering
Geologist 1463

cc: H.C. Winsor, ARCO Products Company

Enclosures: References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, January 18, 1992
Plate 4, Groundwater Gradient Map, February 21, 1992
Plate 5, Groundwater Gradient Map, March 16, 1992
Plate 6, TPHg Concentrations in Groundwater, March 16, 1992
Plate 7, Benzene Concentrations in Groundwater, March 16, 1992

Table 1, Cumulative Groundwater Monitoring Data
Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples

Appendix A: EMCON's Field Reports (2), Depth To Water/Floating Product Survey Results, Summary of Groundwater Monitoring Data, Certified Analytical Reports with Chain of Custody, Water Sample Field Data Sheets

Monitoring Well Purge Water Disposal Form

REFERENCES

Alameda County Flood Control and Water Conservation District, Zone 7. January 16, 1991. Fall 1990 groundwater Level Report.

Applied GeoSystems. September 19, 1990. Letter Report Limited Environmental Investigation Related to the Removal of Waste-Oil Tank at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006-1.

California Department of Water Resources, 1974. Evaluation of Ground-Water Resources Engineering Livermore and Sunol Valleys; Bulletin No. 118-2, Appendix A.

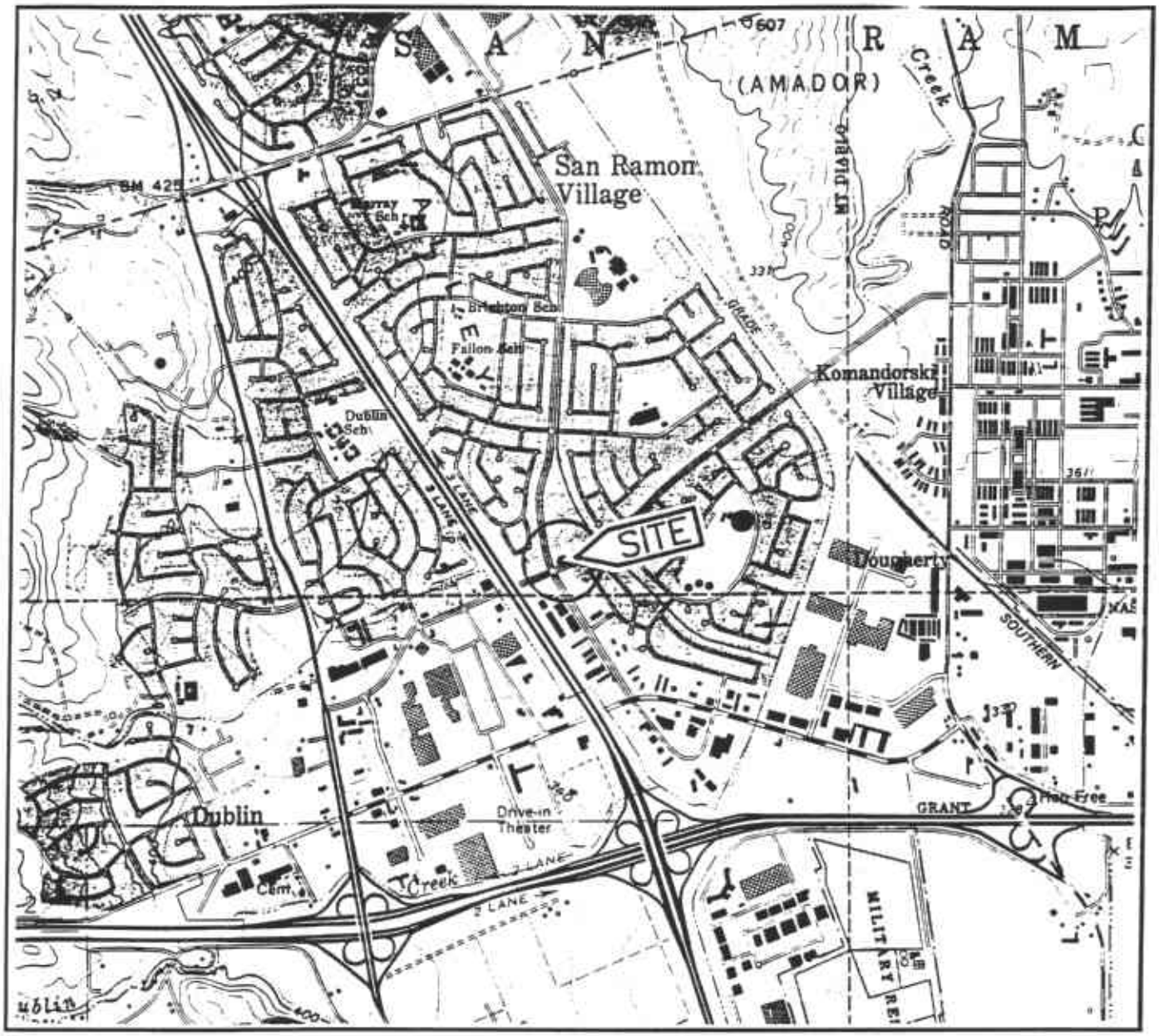
RESNA. August 22, 1991. Work Plan for Subsurface Investigation and Remediation at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.02.

RESNA. August 22, 1991. Addendum One to Work Plan for Subsurface Investigation and Remediation at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.02.

RESNA. August 30, 1991. Site Safety Plan. 60006.02S.

RESNA. February 12, 1992. Subsurface Environmental Investigation at ARCO Station 6041, 7249 Village Parkway, Dublin, California. 60006.02

RESNA. March 7, 1992. Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1992 at ARCO Station, 6041, 7249 Village Parkway, Dublin, California. 60006.03



Base: U.S. Geological Survey
7.5–Minute Quadrangle
Dublin, California
Photorevised 1980

N

LEGEND

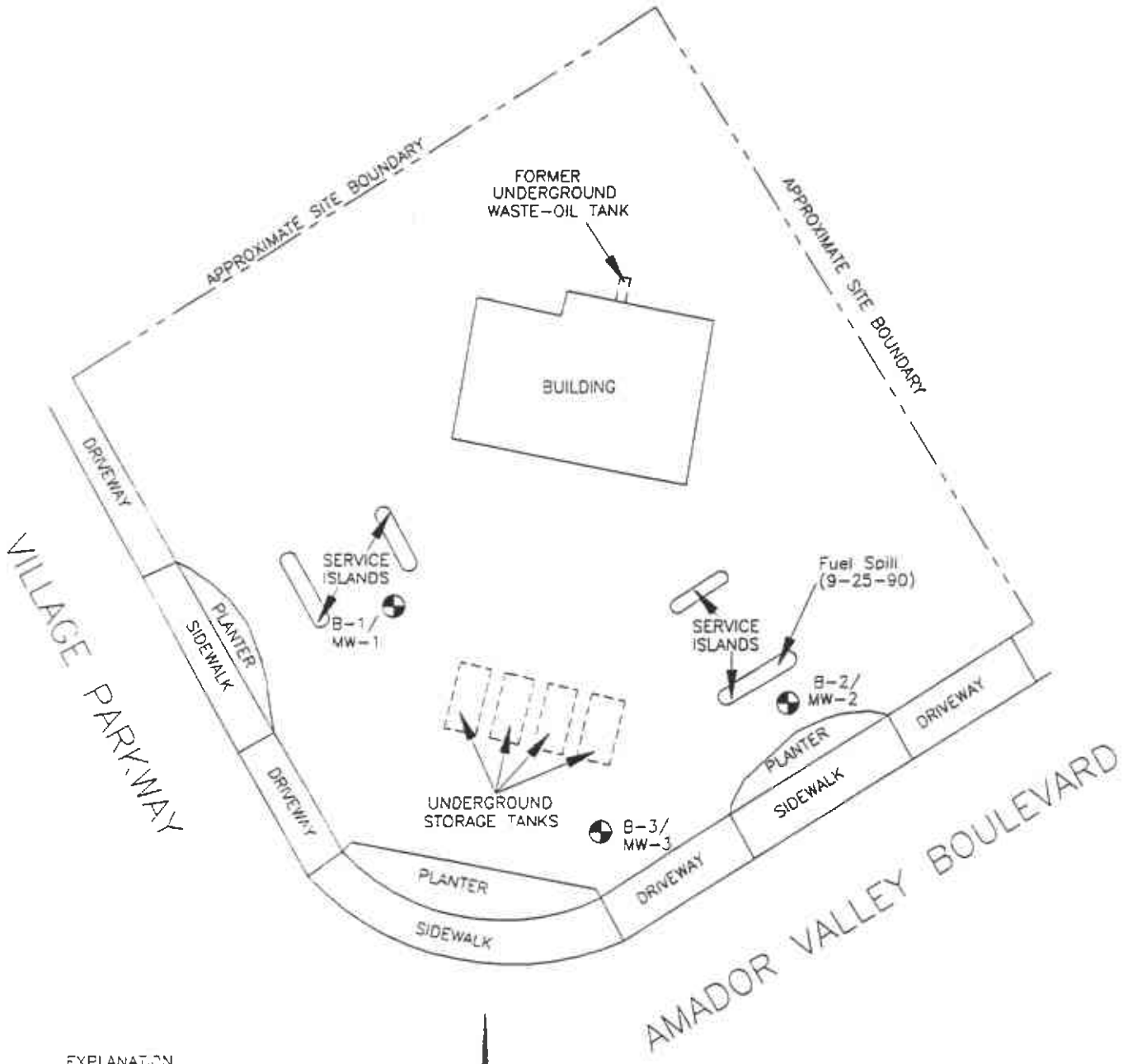
⊙ = Site Location

Approximate Scale

2000 1000 0 2000 4000

feet

RESNA **PROJECT 60006.03**	**SITE VICINITY MAP** **ARCO Service Station 6041** **7249 Village Parkway** **Dublin, California**	**PLATE** **1**



EXPLANATION

B-3/ MW-3 = Boring/groundwater monitoring well (RESNA, Sept. 1991)

N

Approximate Scale

40 20 0 40 80

feet

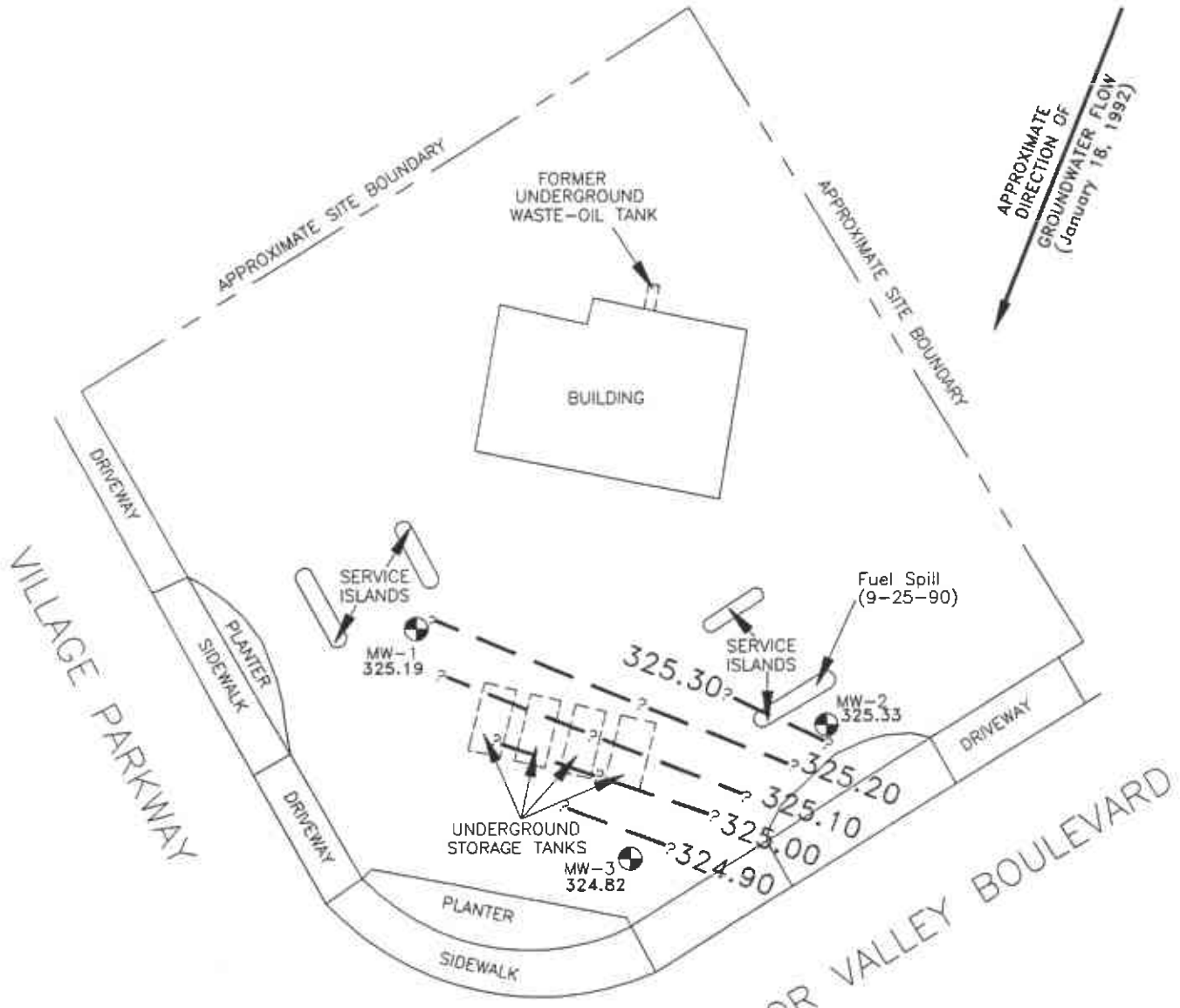
Source: Modified from plan supplied by ARCO.

RESNA

PROJECT 60006.03

GENERALIZED SITE PLAN
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE
2



EXPLANATION

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

325.33 = Elevation of groundwater in feet MSL, January 18, 1992

MW-3 = Groundwater monitoring well (RESNA, Sept. 1991)

N

Approximate Scale

40 20 0 40 80

feet

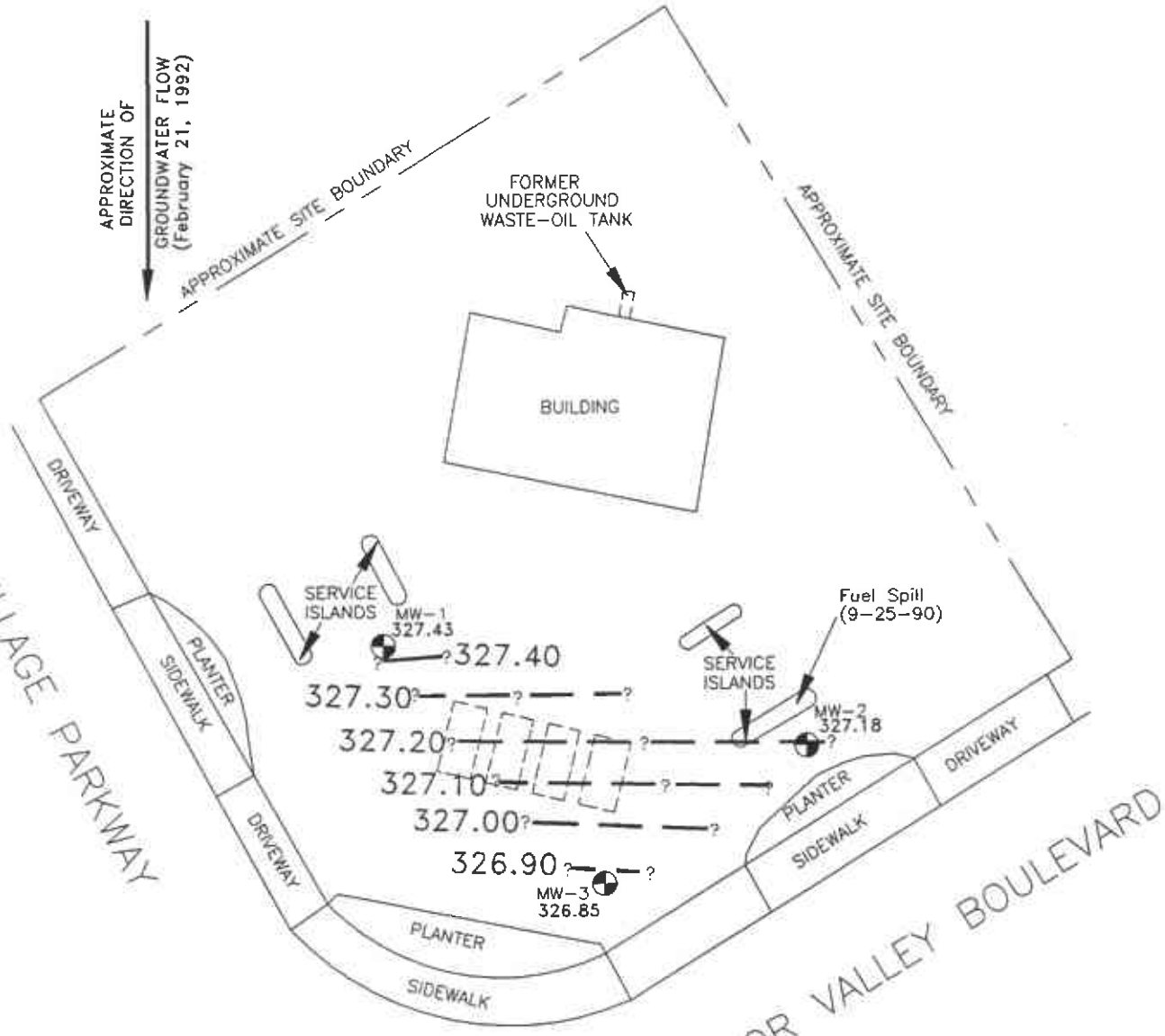
Source: Modified from plan supplied by ARCO.

RESNA

PROJECT 60006.03

GROUNDWATER GRADIENT MAP
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE
3



EXPLANATION

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

327.43 = Elevation of groundwater in feet MSL, February 21, 1992

MW-3 = Groundwater monitoring well (RESNA, Sept. 1991)

Approximate Scale

40 20 0 40 80

feet

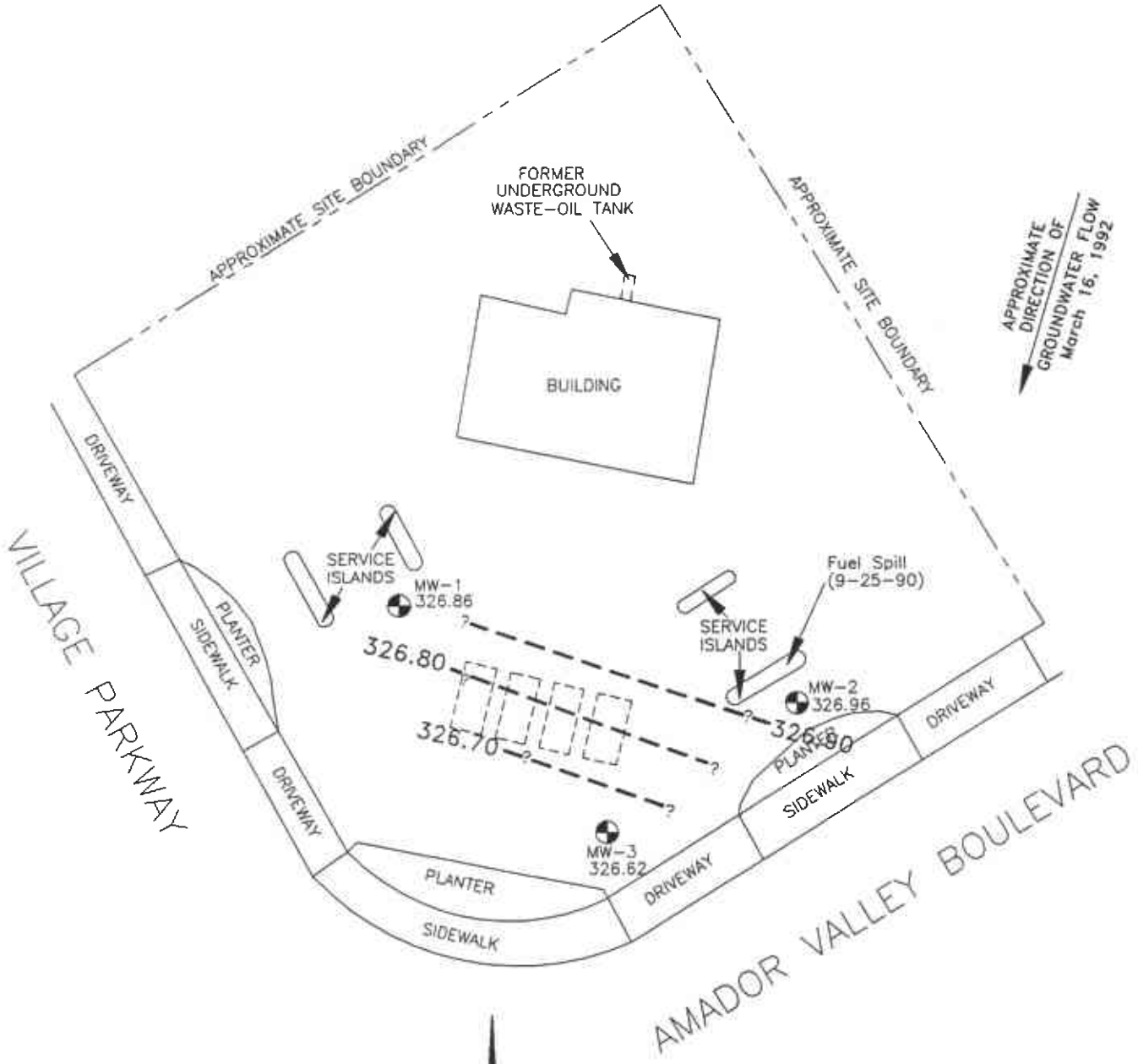
Source: Modified from plan supplied by ARCO.

RESNA

PROJECT 60006.03

GROUNDWATER GRADIENT MAP
ARCO Service Station 6041
7249 Village Parkway
Dublin, California

PLATE 4



EXPLANATION

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

326.96 = Elevation of groundwater in feet MSL, March 16, 1992

MW-3 = Groundwater monitoring well (RESNA, Sept. 1991)

N

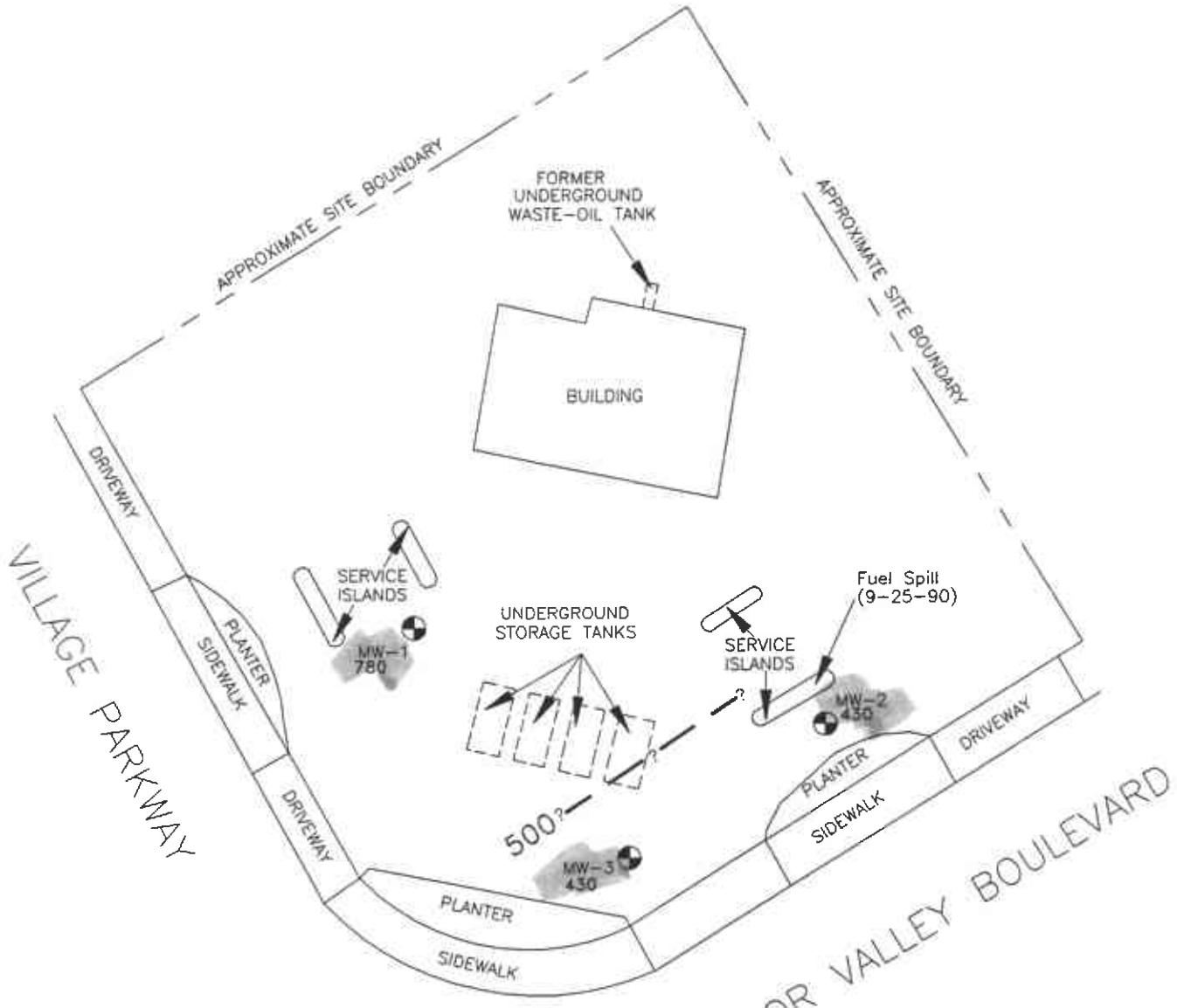
Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by ARCO.

RESNA	**GROUNDWATER GRADIENT MAP** **ARCO Service Station 6041** **7249 Village Parkway** **Dublin, California**	**PLATE** **5**
PROJECT 60006.03		



EXPLANATION

500 = Line of equal concentration of TPHg in groundwater, in ppb

780 = Concentration of TPHg in groundwater, in ppb, March 16, 1992

MW-3 = Groundwater monitoring well (RESNA, Sept. 1991)

N

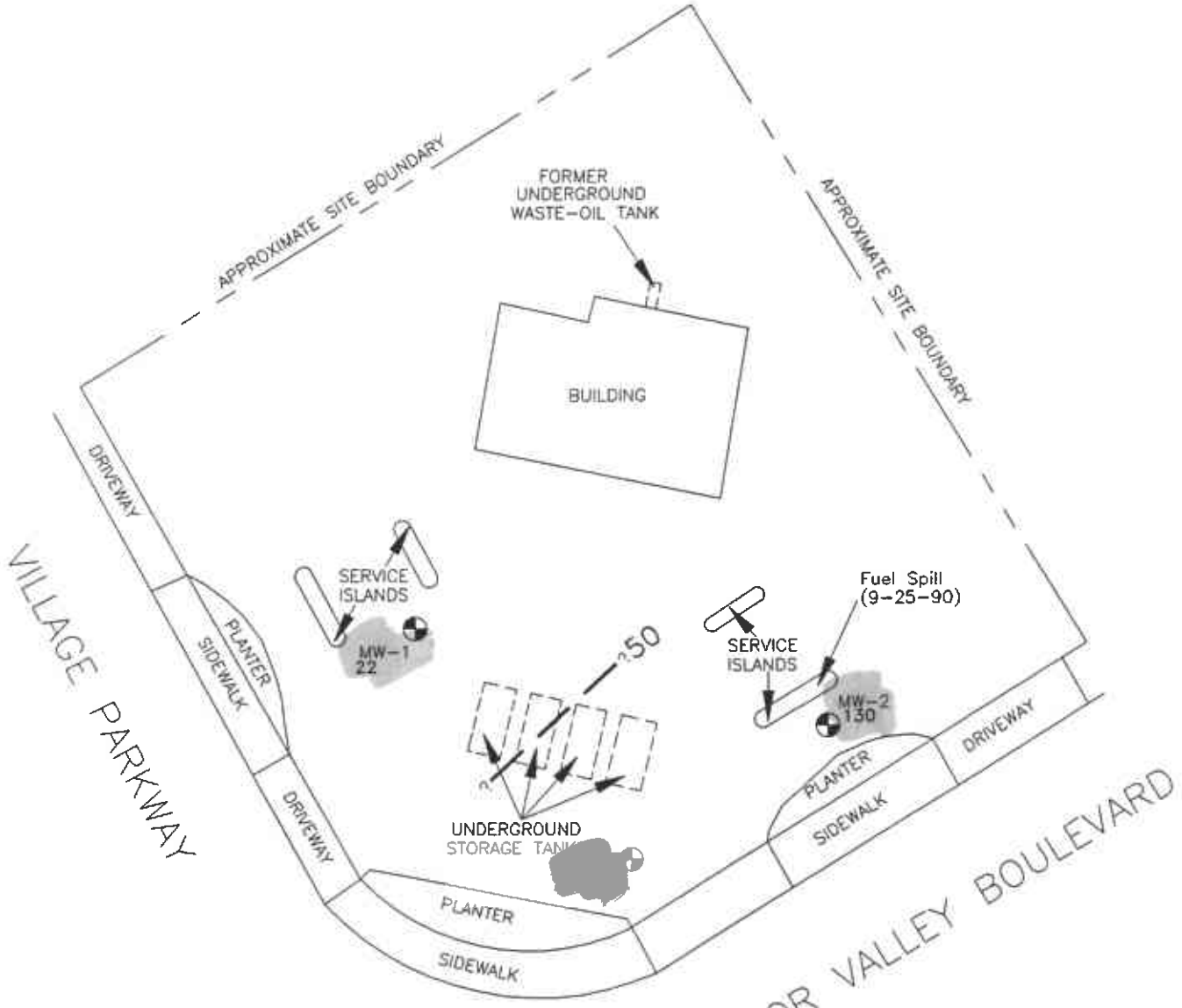
Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by ARCO.

RESNA	**TPHg CONCENTRATIONS IN GROUNDWATER ARCO Service Station 6041 7249 Village Parkway Dublin, California**	**PLATE 6**
PROJECT 60006.03		



EXPLANATION

50 = Line of equal concentration of Benzene in groundwater, in ppb

430 = Concentration of Benzene in groundwater, in ppb, March 16, 1992

MW-3 = Groundwater monitoring well (RESNA, Sept. 1991)

N

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by ARCO.

RESNA	**BENZENE CONCENTRATIONS IN GROUNDWATER ARCO Service Station 6041 7249 Village Parkway Dublin, California**	**PLATE 7**
PROJECT 60006.03		

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 6041
Dublin, California

Date Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product
MW-1				
09-20-91	336.56	11.20	325.36	None
10-22-91		11.48	325.08	None
11-27-91		11.27	325.29	None
12-16-91		11.55	325.01	None
01-18-92		11.37	325.19	None
02-21-92		9.13	327.43	None
03-16-92		9.70	326.86	None
MW-2				
09-20-91	334.80	9.22	325.58	None
10-22-91		9.66	325.14	None
11-27-91		9.48	325.32	None
12-16-91		9.76	325.04	None
01-18-92		9.47	325.33	None
02-21-92		7.62	327.18	None
03-16-92		7.84	326.96	None
MW-3				
09-20-91	335.53	10.16	325.37	None
10-22-91		10.48	325.05	None
11-27-91		10.17	325.36	None
12-16-91		10.25	325.28	None
01-18-92		10.71	324.82	None
02-21-92		8.68	326.85	None
03-16-92		8.91	326.62	None

Measurements in feet.
Wells surveyed on October 11, 1991. Datum is City of Dublin = (USGS)

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER SAMPLES
ARCO Station 6041
Dublin, California

Sample ID	TPHg	Benzene	Toluene	Ethyl-benzene	Total xylenes
MW-1					
09-20-91	410	28	36	4.3	89
12-16-91	840	50	50	3.9	12
03-16-92	780	22	12	45	22
MW-2					
09-20-91	130	6.6	0.96	1.4	1.5
12-16-91	83	0.96	<0.30	<0.30	<0.30
03-16-92	430	130	<2.5*	37	5.0
MW-3					
09-20-91	990	50	100	11	200
12-16-91	1,000	180	5.1	23	4.3
03-16-92	430	86	<1.0*	22	3.4
MCL	—	1	—	680	1,750
DWAL	—	—	100	—	—

Results in parts per billion (ppb)
Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 5030/8015/8020.
TPHg: Total petroleum hydrocarbons as gasoline (analyzed by EPA Method 5030/8015/8020).
MCL: Maximum contaminant level in drinking water (DHS, July 1989).
DWAL: Department of Health Services Recommended drinking water action level (DHS, January 1990).
*: Raised method reporting limit due to high analyte concentration requiring sample dilution, as reported by Columbia Analytical Services, Inc.
Sample Identification: MW-3
└— Monitoring well number

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, WATER SAMPLE FIELD DATA SHEETS

MONITORING WELL PURGE WATER DISPOSAL FORM

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

RECEIVED
MAR 2 - 1992
RESNA
SAN JOSE

Date February 25, 1992
Project G70-35.01

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

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Form, February 1992 monthly water level survey, ARCO station 6041, 7249 Village Parkway, Dublin, CA

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT NORTH PORTER No: 4084 EXP. 6/30/92 HYDROGEOLOGY STATE OF CALIFORNIA

Mark Knuttel MK

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-35.01 STATION ADDRESS : 7249 Village Parkway, Dublin, CA DATE : 02/21/92

ARCO STATION # : 6041 FIELD TECHNICIAN : Vince Parlock DAY : FRIDAY

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-2	Yes	Yes	OK	YES	YES	7.62	7.62	ND	ND	14.08	H2O & CHEM. SMELL
2	MW-1	Yes	Yes	OK	YES	YES	9.12	9.13	ND	NO	17.54	—
3	MW-3	YES	YES	OK	YES	YES	8.68	8.68	ND	ND	14.69	—

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

Date January 29, 1992
Project G70-35.01

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

We are enclosing:

Copies	Description
1	DTW/FP Survey Form, January 1992 monthly water level survey, ARCO station 6041, 7249 Village Parkway, Dublin, CA

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site are attached. Please call if you have any questions: (408) 453-2266.

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
ROBERT CURTIS PORTER
No: 4094
Exp. 6/30/92
INDUSTRIAL
STATE OF CALIFORNIA

Mark Knuttel MK

Robert Porter, Senior P.E. #4094

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-35.01 STATION ADDRESS : 7249 Village Parkway, Dublin, CA DATE : 1-18-92

ARCO STATION # : 6041 FIELD TECHNICIAN : M. Knuttel / J. Wafak. DAY : Saturday

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-2	ok	yes	ok	yes	yes	9.45	9.47	ND	ND	14.10	—
2	MW-1	ok	yes	ok	yes	yes	11.38	11.37	ND	ND	17.50	—
3	MW-3	ok	yes	ok	yes	yes	10.71	10.71	ND	ND	14.70	—
												1 drt Drum on site
												1d # 11892-A
												20 gallons of water

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

Date April 1, 1992
Project G70-35.01

To:
Mr. Joel Coffman
RESNA/ Applied Geosystems
3315 Alamden Expressway, Suite 34
San Jose, California 95050

We are enclosing:

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

For your: X Information Sent by: X Mail

Comments:
Enclosed are the data from the first quarter 1992 monitoring event at ARCO service station 6041, 7249 Village Parkway, Dublin, California. Please call if you have any questions: (408) 453-2266.

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER
ROBERT CURTIS PORTER
No: 4004
Exp. 6/30/92
INDUSTRIAL
STATE OF CALIFORNIA

Mark Knuttel MK

Robert Porter, Senior Project Engineer.

1938 Junction Avenue, San Jose, California 95131-2106 (408) 453-7300 Fax (408) 436-9458

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : G70-35.01 STATION ADDRESS : 7249 Village Parkway, Dublin, CA DATE : March 16, 1992

ARCO STATION # : 6041 FIELD TECHNICIAN : S. Horton DAY : Monday

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-2	Good	Yes	Good	3259	Yes	7.84	7.84	ND	ND	14.56	Water in box
2	MW-1	Good	Yes	Good	3259	Yes	9.70	9.70	ND	ND	17.53	—
3	MW-3	Good	Yes	Good	3259	Yes	8.91	8.91	ND	ND	14.69	—

Summary of Groundwater Monitoring Data
First Quarter 1992
ARCO Service Station 6041
7249 Village Parkway, Dublin, California
micrograms per liter (µg/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(17)	03/16/92	9.70	ND.[2]	780.	22.	12.	45.	22.
MW-2(14)	03/16/92	7.84	ND.	430.	130.	<2.5*	37.	5.0
MW-3(14)	03/16/92	8.91	ND.	430.	86.	<1.0*	22.	3.4
FB-1[3]	03/16/92	NA.[4]	NA.	<50	<0.5	<0.5	<0.5	<0.5

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. FB. = Field blank
4. NA. = Not applicable

Columbia Analytical Services inc.

March 27, 1992

Mark Knuttel
EMCON Associates
1921 Ringwood Avenue
San Jose, CA 95131

Re: **EMCON Project No. G70-35.01**
Arco Facility No. 6041

Dear Mr. Knuttel:

Enclosed are the results of the water samples submitted to our lab on March 17, 1992. For your reference, our service request number for this work is SJ92-0275.

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

Please call if you have any questions.

Respectfully submitted:

Keoni A. Murphy
COLUMBIA ANALYTICAL SERVICES, INC.

le/KAM

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	03/17/92
Project:	EMCON Project No. G70-35.01	**Work Order #:**	SJ92-0275
	Arco Facility No. 6041	**Sample Matrix:**	Water

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

Sample Name:		MW-2 (14)	MW-1 (17)	MW-3 (14)
Date Analyzed:		03/19/92	03/19/92	03/23/92
Analyte	**MRL**			
Benzene	0.5	130.	22.	86.
Toluene	0.5	<2.5*	12.	<1.0*
Ethylbenzene	0.5	37.	45.	22.
Total Xylenes	0.5	5.0	22.	3.4
TPH as Gasoline	50	430.	780.	430.

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 Kevin Murphy Date March 27, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	03/17/92
Project:	EMCON Project No. G70-35.01	**Work Order #:**	SJ92-0275
	Arco Facility No. 6041	**Sample Matrix:**	Water

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

Sample Name:		FB-1	Method Blank	Method Blank
Date Analyzed:		03/23/92	03/19/92	03/23/92
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

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

Approved by Kenneth Murphy Date March 27, 1992

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	EMCON Associates	**Date Received:**	03/17/92
Project:	EMCON Project No. G70-35.01	**Work Order #:**	SJ92-0275
	Arco Facility No. 6041	**Sample Matrix:**	Water

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

Sample Name	Date Analyzed	Percent Recovery α,α,α-Trifluorotoluene
MW-2 (14)	03/19/92	81.
MW-1 (17)	03/19/92	100.
MW-3 (14)	03/23/92	81.
FB-1	03/23/92	89.
Method Blank	03/19/92	85.
Method Blank	03/23/92	72.
	CAS Acceptance Criteria	70-130

TPH Total Petroleum Hydrocarbons

Approved by Kevin Murphy Date March 27, 1992

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMCGC-92-1

Chain of Custody

ARCO Facility no. 6041 | City (Facility) Dublin | Project manager (Consultant) Mark Knuttup | Laboratory name CAS

ARCO engineer Kyle Christie | Telephone no. (ARCO) 415-571-2434 | Telephone no. (Consultant) 408-453-0719 | Fax no. (Consultant) 408-453-0452 | Contract number 07077

Consultant name Emcon Associates | Address (Consultant) 1938 Junction Ave, San Jose, CA.

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 Metals ☐ Semi VOA ☐ VOA ☐	CAM Metals EPA 6010/7000 TTLC ☐ STLC ☐	Lead Org./DHS ☐ Lead EPA 7420/7421 ☐		
MW-2(14)	1-2	2		X		X	HCl	3/16/92	13:25		X											
MW-1(17)	3-4	2		X		X	HCl		14:35		X											
MW-3(14)	5-6	2		X		X	HCl		12:35		X											
FB-1	7-8	2		X		X	HCl		13:25		X											
MW-2(14)		1		X		X	HNO_3		13:25											X		

Special detection Limit/reporting: Lowest possible

Special QA/QC: as normal

Method of shipment: sampler will deliver

Remarks: G70 - 35.01 TPH-g / BTXE
2-40 ml VOA's HCl
Total Lead
1-500 ml LPE HNO_3
- NOT FILTERED -

Lab number: 5J92-0275

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	Date	Time	Received by	Date	Time
Sampler	3/17/92	9:15			
Relinquished by	Date	Time	Received by	3-17-92	9:20
Relinquished by	Date	Time	Received by laboratory	Date	Time

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 610-35.01 SAMPLE ID: MW-1

PURGED BY: S. Horton CLIENT NAME: ARCO #6041

SAMPLED BY: S. Horton LOCATION: Dublin, 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): ___ VOLUME IN CASING (gal.): 5.13

DEPTH TO WATER (feet): 9.70 CALCULATED PURGE (gal.): 25.68

DEPTH OF WELL (feet): 17.53 ACTUAL PURGE VOL. (gal.): 26.00

DATE PURGED: 3/16/92 Start (2400 Hr) 13:45 End (2400 Hr) 13:55

DATE SAMPLED: 3/16/92 Start (2400 Hr) 14:25 End (2400 Hr) 14:30

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
13:50	5.5	6.51	1918C	69.1	brown	heavy
13:55	11	6.77	1914C	67.3	"	"
—	NA	Well Dried at 13 gallons				
14:30	Recharge Diff.	6.77	19770	65.3	"	"

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X 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 #: 3259

REMARKS: ___

Meter Calibration: Date: ___ Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: Steve Horton Reviewed By: MK Page 1 of 3

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 610-35.01 SAMPLE ID: MW-2

PURGED BY: S. Horton CLIENT NAME: ARCO #6041

SAMPLED BY: S. Horton LOCATION: Dublin, 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): - VOLUME IN CASING (gal.): 4.40

DEPTH TO WATER (feet): 7.94 CALCULATED PURGE (gal.): 22.04

DEPTH OF WELL (feet): 14.56 ACTUAL PURGE VOL. (gal.): 23.50

DATE PURGED: 3/16/97 Start (2400 Hr) 12:45 End (2400 Hr) 1315

DATE SAMPLED: 3/16/97 Start (2400 Hr) 13:20 End (2400 Hr) 13:20

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:50	4.5	6.74	1996	63.1	brown	heavy
12:55	9	6.76	1976	64.2	gray	"
1:00	13.5	6.83	1956	65.6	dk gray	"
1:07	18	6.89	1955	66.3	"	"
1:15	22.5	6.89	1919	66.5	"	"

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

COLOR (COBALT 0 - 100): NR

TURBIDITY (NTU 0 - 200): NR

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X 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 #: 3259

REMARKS: ___

Meter Calibration: Date: ___ Time: ___ Meter Serial #: ___ Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: [signature] Reviewed By: MC Page 2 of 3

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 670-35.01 SAMPLE ID: MW-3

PURGED BY: S. Horton CLIENT NAME: ARCO # 6041

SAMPLED BY: S. Horton LOCATION: Dublin, 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): — VOLUME IN CASING (gal.): 3.79

DEPTH TO WATER (feet): 5.91 CALCULATED PURGE (gal.): 18.95

DEPTH OF WELL (feet): 14.69 ACTUAL PURGE VOL. (gal.): 19.00

DATE PURGED: 3/16/92 Start (2400 Hr) 12:05 End (2400 Hr) 12:30

DATE SAMPLED: 3/16/92 Start (2400 Hr) 12:30 End (2400 Hr) 12:35

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
12:10	4	6.62	3790	66.1	gray	heavy
12:15	4	6.52	3350	65.4	"	"
	NR	Well Dried at 10 gallons				
	NR recharge				"	"
12:35	NR	6.59	6490	64.9	"	"

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

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

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	___ Bailer (Teflon®)	___ 2" Bladder Pump	X Bailer (Teflon®)
___ Centrifugal Pump	X 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 #: 3259

REMARKS: ___

Meter Calibration: Date: 3/16/92 Time: 11:55 Meter Serial #: 9011 Temperature °F: 60.1

(EC 1000 1201 / 1000) (DI ___) (pH 7 7.12 / 7.00) (pH 10 9.98 / 10.09) (pH 4 4.09 ___)

Location of previous calibration: ___

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

#1002

INV # 50201-001 all stated 1/22/92

MONITORING WELL PURGE WATER DISPOSAL FORM

TO BE COMPLETED BY GENERATOR

NAME ARCO PRODUCTS

ADDRESS P.O. BOX 5811

CITY, STATE, ZIP SAN MATEO, CA 94402 PHONE NO (415)571-2434

Description of Water: Purge water generated during sampling or development of monitoring wells located at various ARCO sites. Auger rinsate generated during the installation of monitoring wells at various ARCO sites. The water may contain dissolved hydrocarbons.

	STA #	ADDRESS	GAL
1.	#2010	2110 Old Middlefield @ Rengstorf, Mountain View, CA 12-31-91	224
2.	#6041	7249 Village Parkway @ Amador, Dublin CA 1-20-92	54
3.	#0573	610 Woodside Rd @ Hudson, Redwood City, CA 1-20-92	35
4.	#2130	7906 N. El Dorado St @ Hammer Lane, Stockton, CA 1-16-92	293
5.	#2063	2924 Mc Henry Ave @ Rumble Rd, Modesto, CA 1-16-92	110
6.	#6228	2747 Pinole Valley Rd @ S of Estate Boat, Pinole, CA 1-15-92	324
7.	#6064	3611 S. Mooney Blvd @ Caldwell, Visalia, CA 1-16-92	113
8.	#2153	2800 Homestead Rd @ Kiely, Santa Clara, CA 1-9-92	106
9.	#0313	3600 Alameda De Las Pulgas @ Avy, Menlo Park, CA 12-26-91	40
10.	#2052	2407 Porter St, Soquel, CA 1-13-92	157

THE GENERATOR CERTIFIES THAT THIS WATER AS DESCRIBED IS NON-HAZARDOUS

KYLE CHRISTIE Kyle Christie by Don DeLon 1-22-92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRANSPORTER

NAME ALLIED OIL & PUMPING

ADDRESS P.O. BOX 32128

CITY, STATE, ZIP SAN JOSE, CA

PHONE NO (408)432-0333

TRUCK UNIT I.D. NO

ED TAYLOR Ed Taylor 01-22-92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TSD FACILITY

NAME GIBSON OIL & REFINING

ADDRESS 475 SEAPORT BLVD ☒ RECYCLE ☐ OTHER

CITY, STATE, ZIP REDWOOD CITY, CA 94063

PHONE NO (415)368-5511 RELEASE#11320

GIB REL # GIB-92-009

GAL 1456

BILL (E)W Bill Lake 1-22-92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE