RESNA
Working To Restore Nature

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

TRANSMITTAL

TO: Ms. Susan Hugo
Alameda County Health Care Services
80 Swan Way, Room 200
Oakland, CA 94621

DATE: September 9, 1993
PROJECT NUMBER: 69028.08
SUBJECT: ARCO Station No. 6113

FROM: Keith McVicker

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	9/9/93	Letter Report on Quarterly Groundwater Monitoring Report for Second Quarter 1993 at ARCO Station No. 6113, 785 East Stanley Boulevard, Livermore, California.

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment
[ ] Approved as submitted
[ ] Resubmit ___ copies for approval
[X] As requested
[ ] Approved as noted
[ ] Submit___ copies for distribution
[ ] For approval
[ ] Return for corrections
[ ] Return ___ corrected prints
[X] For your files

REMARKS:
Copies: 1 to RESNA project file no. 69028.08

Keith McVicker, Project Geologist

cc: Mr. Michael Whelan, ARCO
Mr. Eddy So, RWQCB
Ms. Danielle Stefani, Livermore Fire Department

93 SEP 15 PM 12:03

RESNA
Working To Restore Nature

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

ES

01-0119

LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Second Quarter 1993
SEP 1993
at
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

69028.08

RESNA
Working To Restore Nature

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

September 9, 1993
69028.08

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

Subject: Letter Report on Quarterly Groundwater Monitoring Report for Second Quarter 1993 at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California.

Mr. Whelan:

As requested by ARCO Products Company (ARCO), RESNA Industries Inc. (RESNA) has prepared this letter report summarizing the results of second quarter 1993 groundwater monitoring performed by ARCO's contractor, EMCON Associates (EMCON) of San Jose, California, at the above-referenced site. The operating ARCO Station 6113 is located on the southwestern corner of the intersection of East Stanley and Murrieta Boulevards in Livermore, California, as shown on Plate 1, Site Vicinity Map. The locations of the groundwater monitoring wells, borings, and pertinent site features are shown on Plate 2, Generalized Site Plan. Previous work is discussed in the previous subsurface investigations listed in the reference section of this report.

The purpose of this quarterly groundwater monitoring event is to evaluate changes in the groundwater flow direction and gradient, and changes in concentrations of petroleum hydrocarbons in the local groundwater associated with a former waste-oil and the gasoline underground-storage tanks (USTs) at the site. The field work and laboratory analyses of groundwater samples during this quarter were 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 the direction of EMCON. RESNA's scope of work was limited to interpretation of field and laboratory analytical data, which included evaluating trends in reported hydrocarbon concentrations in the local groundwater, the groundwater gradient, and direction of groundwater flow beneath the site.

Groundwater Sampling and Gradient Evaluation

Depth to water levels (DTW) were measured on April 30, May 14, and June 17, 1993. Quarterly sampling was performed on May 14, 1993. Results of EMCON's field work on the site, including DTW levels and subjective analyses for the presence of product in the wells, are presented on EMCON's Field Reports, Water Sample Field Data Sheets, and Summary of Groundwater Monitoring Data (Appendix A). Cumulative Groundwater Monitoring Data is summarized in Table 1.

The DTW levels, wellhead elevations, groundwater elevations, and subjective observations of product in the groundwater for this and previous quarterly groundwater monitoring events at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. The presence of floating product was noted in well MW-6 during the April 30 and May 14, 1993 field events (see EMCON's Field Reports, Appendix A). No visual evidence of floating product or hydrocarbon sheen was observed in the other wells during this quarter. Groundwater elevations in onsite wells increased an average of approximately 1.3 feet during this quarter.

EMCON's DTW levels were used to evaluate groundwater gradient and flow direction. Graphical interpretations of the groundwater gradients and flow directions for April 30, May 14, and June 17, 1993, are shown respectively on Plates 3 through 5, Groundwater Gradient Maps. These maps show a flow direction toward the north in April, May, and June with an average gradient of approximately 0.03 ft/ft, which is consistent with results from the previous quarter.

Groundwater monitoring wells MW-1 through MW-5 and MW-7 through MW-12 were purged and sampled by EMCON field personnel on May 14, 1993. Groundwater monitoring well MW-6 was not sampled because floating product came into well during purging. According to ARCO, the purge water was removed from the site by a licensed hazardous waste hauler.

Laboratory Methods and Results

Under the direction of EMCON, water samples collected from the wells were analyzed by Columbia Analytical Services, Inc., located in San Jose, California (California Hazardous Waste Testing Laboratory Certification No. 1426). The water samples from MW-1 through MW-5 and MW-7 through MW-12 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 DHS

LUFT Method. In addition, the water samples from MW-1 were analyzed for total oil and grease (TOG) using EPA Standard Method 5520 C/F. 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 Analyses 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--TPHg and BTEX and Table 3, Cumulative Results of Laboratory Analyses of Groundwater Samples--VOCs, TPHd, TOG, and Metals.

The following general trends were noted in reported hydrocarbon concentrations in groundwater beneath the site since last quarter. Concentrations of TPHg and BTEX remained less than the listed method detection limits in wells MW-1 MW-2, MW-8, MW-9, and MW-11; decreased in wells MW-3, MW-7, and MW-12; and increased in wells MW-4, MW-5, and MW-10. Groundwater monitoring well MW-6 continued to contain floating product.

Conclusions

Groundwater at this site has been impacted by gasoline-related hydrocarbons based on analytical results of groundwater samples collected from onsite wells. The highest TPHg and benzene concentrations in groundwater appear to be adjacent and immediately downgradient (to the west and north) of the existing gasoline USTs, situated in the northeastern portion of the site. The extent of gasoline hydrocarbons in the groundwater appears to be delineated to less than 50 ppb TPHg, except in the northeastern and northwestern portions of the site.

Copies of this report should be forwarded to:

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

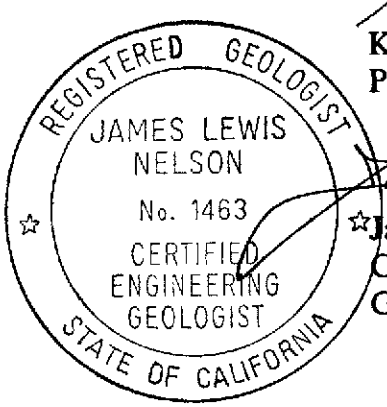
Mr. Eddy So
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

Ms. Danielle Stefani
Livermore Fire Department
4550 East Avenue
Livermore, California 94550

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

Sincerely,
RESNA Industries Inc.

Keith McVicker
Project Geologist



James L. Nelson
Certified Engineering
Geologist # 1463

Enclosures: References

Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, April 30, 1993
Plate 4, Groundwater Gradient Map, May 14, 1993
Plate 5, Groundwater Gradient Map, June 17, 1993
Plate 6, TPHg Concentrations in Groundwater, May 14, 1993
Plate 7, Benzene Concentrations in Groundwater, May 14, 1993

Table 1, Cumulative Groundwater Monitoring Data
Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples--TPHg and BTEX
Table 3, Cumulative Results of Laboratory Analyses of Groundwater Samples--VOCs, TPHd, TOG, and Metals

Appendix A: EMCON's Field Reports, Summary of Groundwater Monitoring Data, Certified Analytical Reports with Chain-of-Custody, and Water Sample Field Data Sheets.

REFERENCES

Applied GeoSystems. December 6, 1989. Limited Subsurface Environmental Investigation at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. AGS Report 69028-2.

Applied GeoSystems. August 29, 1990. Letter Report, Quarterly Ground-Water Monitoring Second Quarter 1990 at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. AGS Report 69028-3.

Applied GeoSystems. November 2, 1990. Letter Report, Quarterly Ground-Water Monitoring Third Quarter 1990 at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. AGS Report 69028-3.

Applied GeoSystems. January 27, 1991. Letter Report, Quarterly Ground-Water Monitoring Fourth Quarter 1990 at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. AGS Report 69028-3.

Applied GeoSystems. April 16, 1991. Limited Subsurface Environmental Investigation Related to the Former Waste-Oil Tank at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. AGS Report 69028-4.

Applied GeoSystems. April 24, 1991. Letter Report, Quarterly Ground-Water Monitoring First Quarter 1991 at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. AGS Report 69028-3.

Applied GeoSystems. July 11, 1991. Letter Report, Quarterly Ground-Water Monitoring Second Quarter 1991 at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. AGS Report 69028-5.

California Department of Health Services, Office of Drinking Water, October 22, 1990, "Summary of California Drinking Water Standards", Berkeley, California.

Pacific Environmental Group. April 25, 1989. ARCO Station 6113, 785 E. Stanley Boulevard, Livermore, California. Project 330-53.01

REFERENCES
(Continued)

RESNA. October 17, 1991. Work Plan for Additional Subsurface Investigation and Vapor Extraction Test at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.06

RESNA. October 18, 1991. Letter Report, Quarterly Groundwater Monitoring, Third Quarter 1991, at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.05

RESNA. March 3, 1991. Addendum to Work Plan for Additional Subsurface Investigation and Vapor Extraction Test at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.06

RESNA. March 6, 1992. Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1991, at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.05

RESNA. May 4, 1992. Letter Report, Quarterly Groundwater Monitoring, First Quarter 1992, at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.05

RESNA. September 28, 1992. Letter Report, Quarterly Groundwater Monitoring, Second Quarter 1992, at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.08

RESNA. December 7, 1992. Letter Report, Quarterly Groundwater Monitoring, Third Quarter 1992, at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.08

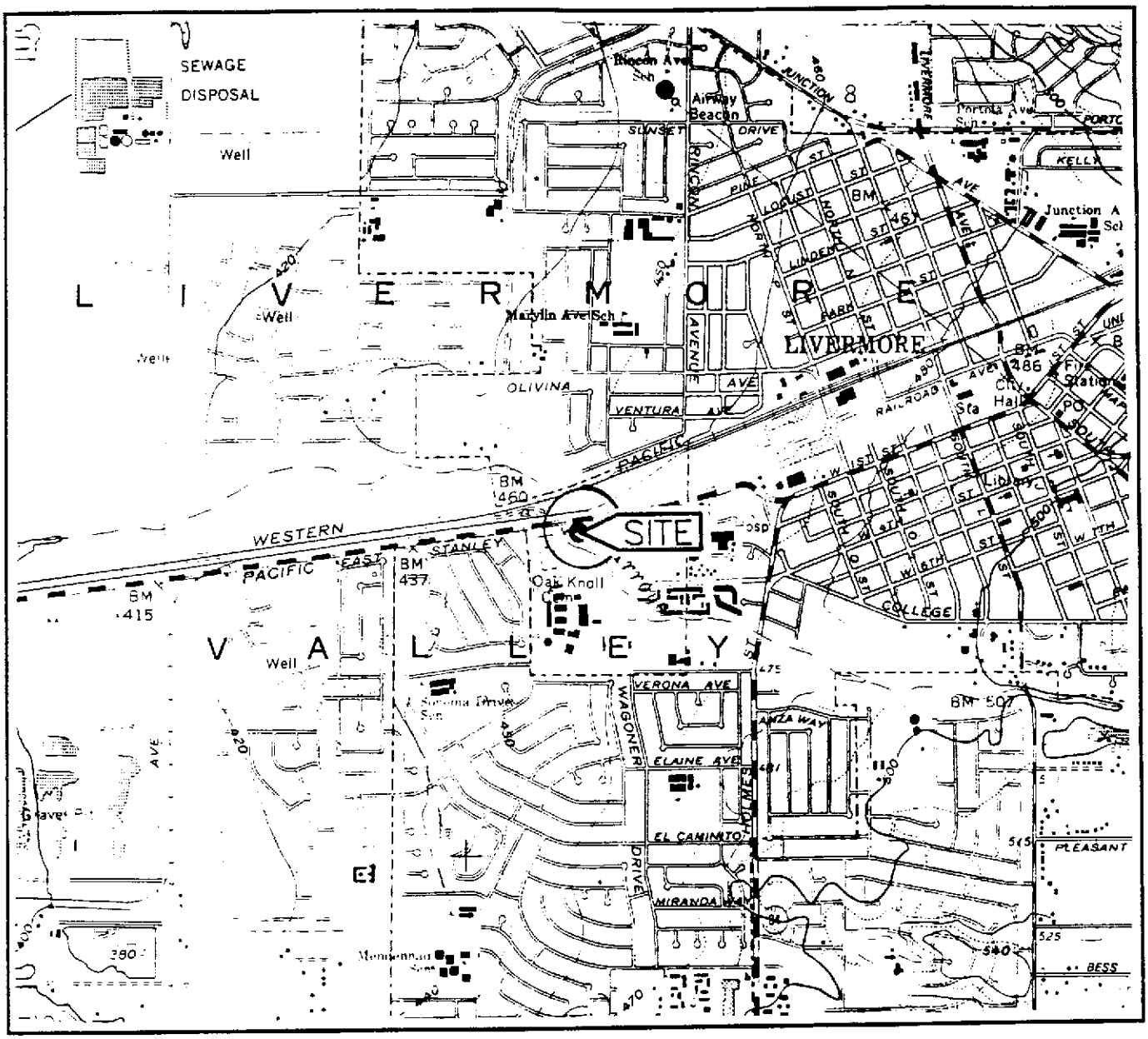
RESNA. December 21, 1992. Additional Subsurface Investigation and Vapor Extraction Test at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.07

RESNA. December 29, 1992. Addendum to Work Plan for Initial Offsite and Additional Onsite Subsurface Investigation and Aquifer Pumping Test at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.11

REFERENCES
(Continued)

RESNA. March 16, 1993. Letter Report, Quarterly Groundwater Monitoring, Fourth Quarter 1992, at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.08

RESNA. May 21, 1993. Letter Report, Quarterly Groundwater Monitoring, First Quarter 1993, at ARCO Station 6113, 785 East Stanley Boulevard, Livermore, California. 69028.08



Base: U.S. Geological Survey
7.5–Minute Quadrangles
Livermore, California.
Photorevised 1980

N

LEGEND

◉ = Site Location

Approximate Scale

2000 1000 0 2000 4000

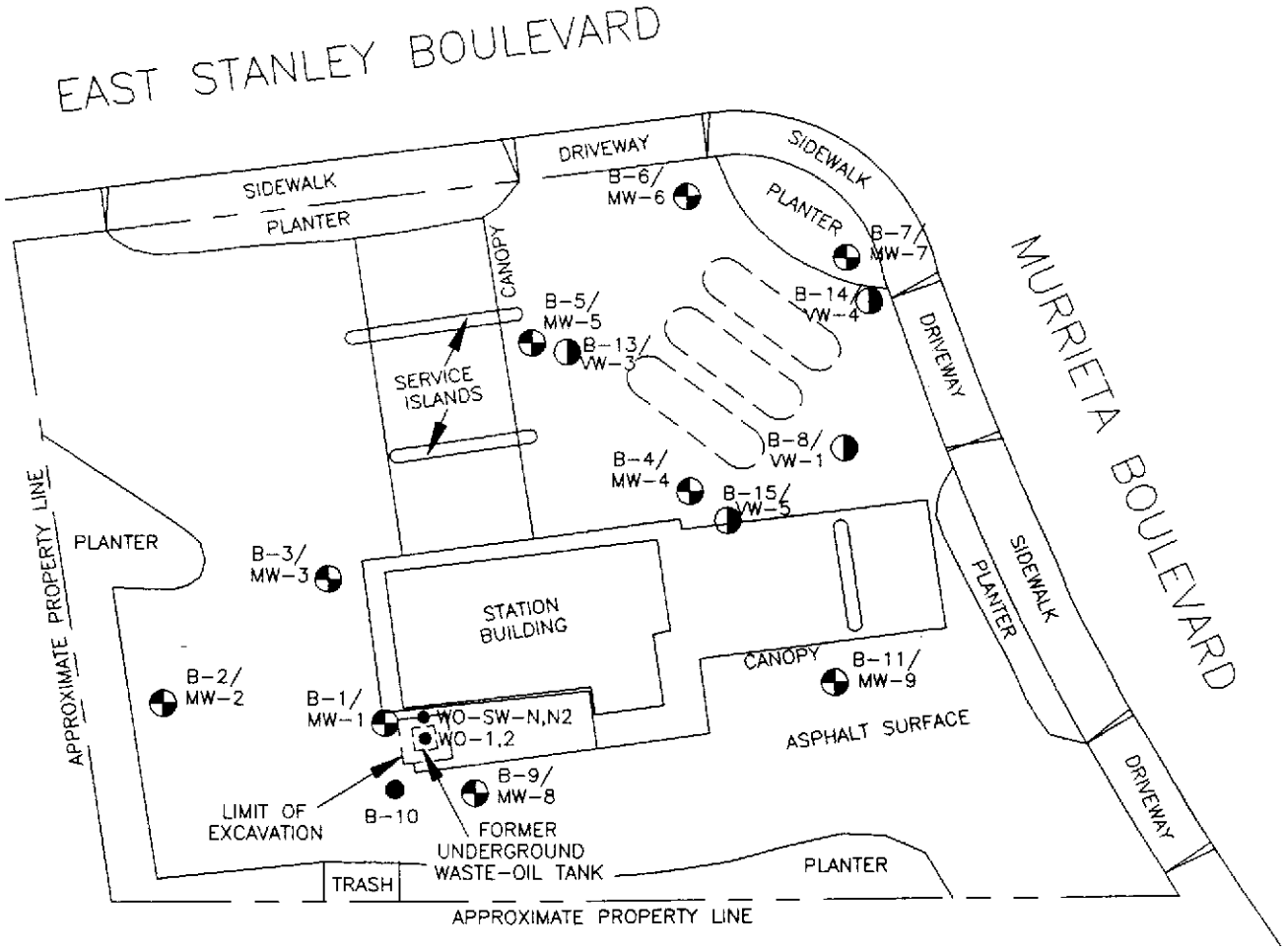
feet

RESNA
Working to Restore Nature

PROJECT 69028.08

SITE VICINITY MAP
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE
1



EXPLANATION

B-11/ MW-9 = Boring/monitoring well (RESNA, 09/89, 02/91, and 06/92)

B-15/ VW-5 = Boring/vapor extraction well (RESNA, 07/93)

B-10 = Boring (RESNA, 06/92)

WO-SW-N,N2 = Soil sample collected by Pacific (1989)

= Existing underground gasoline storage tanks

N

Approximate Scale

40 20 0 40 80

feet

Source: Modified from plan supplied by Ron Archer, Civil Engineer Inc., Feb 1991 and John Koch, Land Suveyor, June 1992 and April 1993.

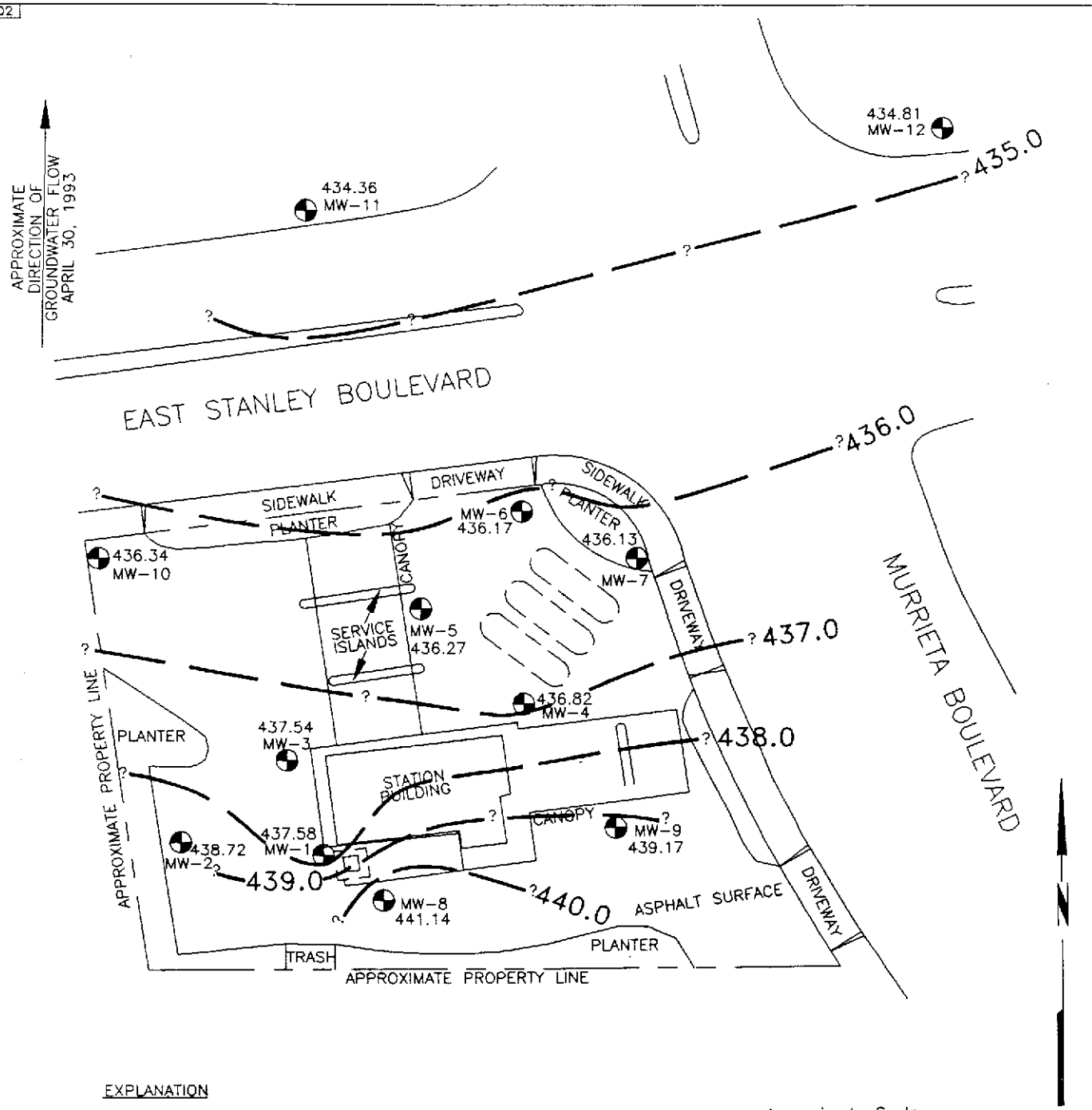
RESNA
Working to Restore Nature

PROJECT: 69028.08

GENERALIZED SITE PLAN
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE
2

69028-02



EXPLANATION

MW-12 = Monitoring well (RESNA, 09/89, 02/91, 06/92 and 03/93)

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

441.14 = Elevation of groundwater in feet above MSL, April 30, 1993

= Existing underground gasoline storage tanks

Approximate Scale

50 25 0 50 100

feet

Source: Modified from plan supplied by Ron Archer, Civil Engineer Inc., Feb. 1991; and John Koch Land Surveyor, June 1992 and April 1993.

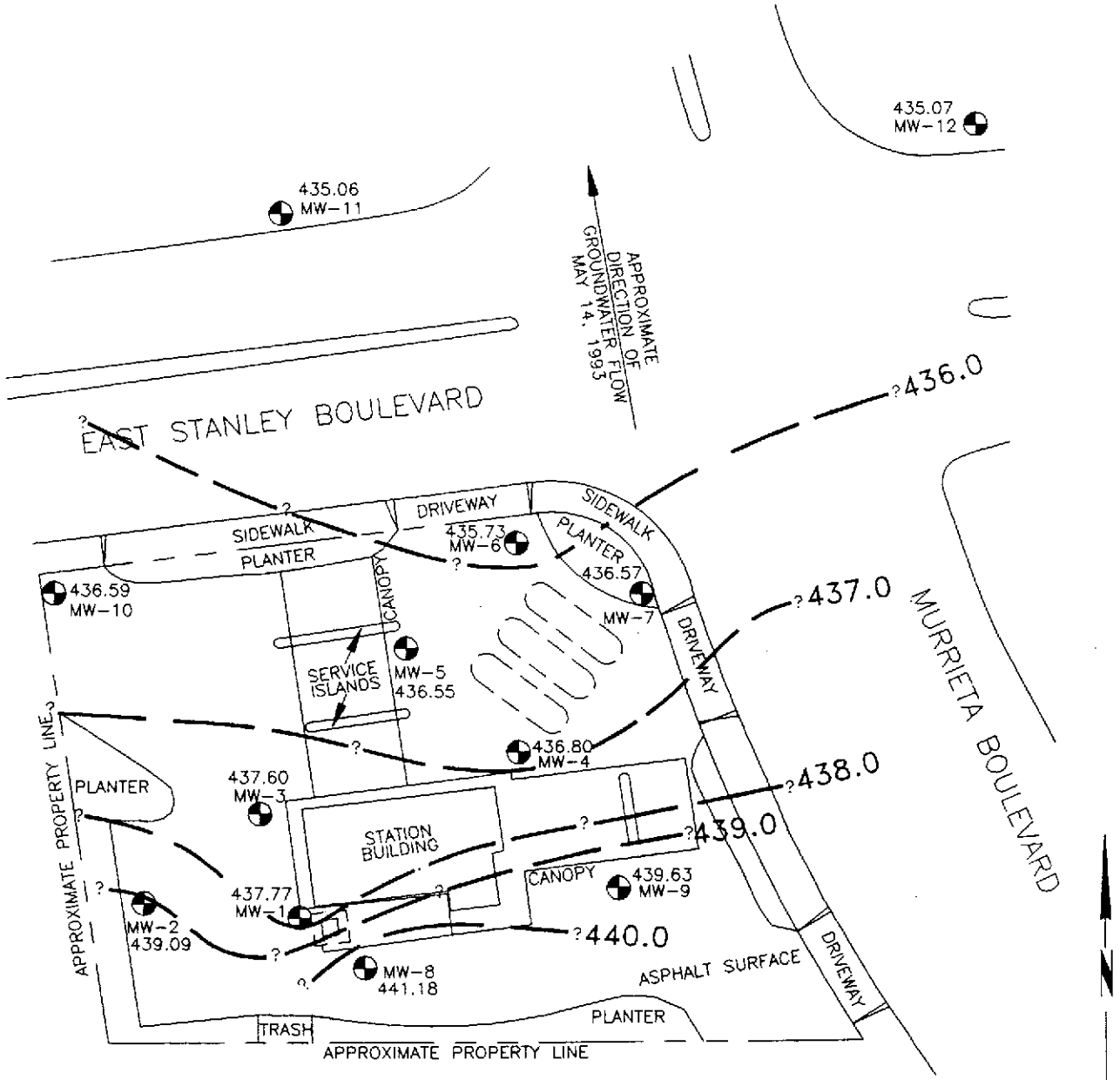
RESNA
Working to Restore Nature

PROJECT: 69028.08

GROUNDWATER GRADIENT MAP
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE
3

69028-Q2



EXPLANATION

MW-12 = Monitoring well (RESNA, 09/89, 02/91, 06/92 and 03/93)

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

441.18 = Elevation of groundwater in feet above MSL, May 14, 1993

= Existing underground gasoline storage tanks

Approximate Scale

50 25 0 50 100

feet

Source: Modified from plan supplied by Ron Archer, Civil Engineer Inc., Feb. 1991; and John Koch Land Surveyor, June 1992 and April 1993.

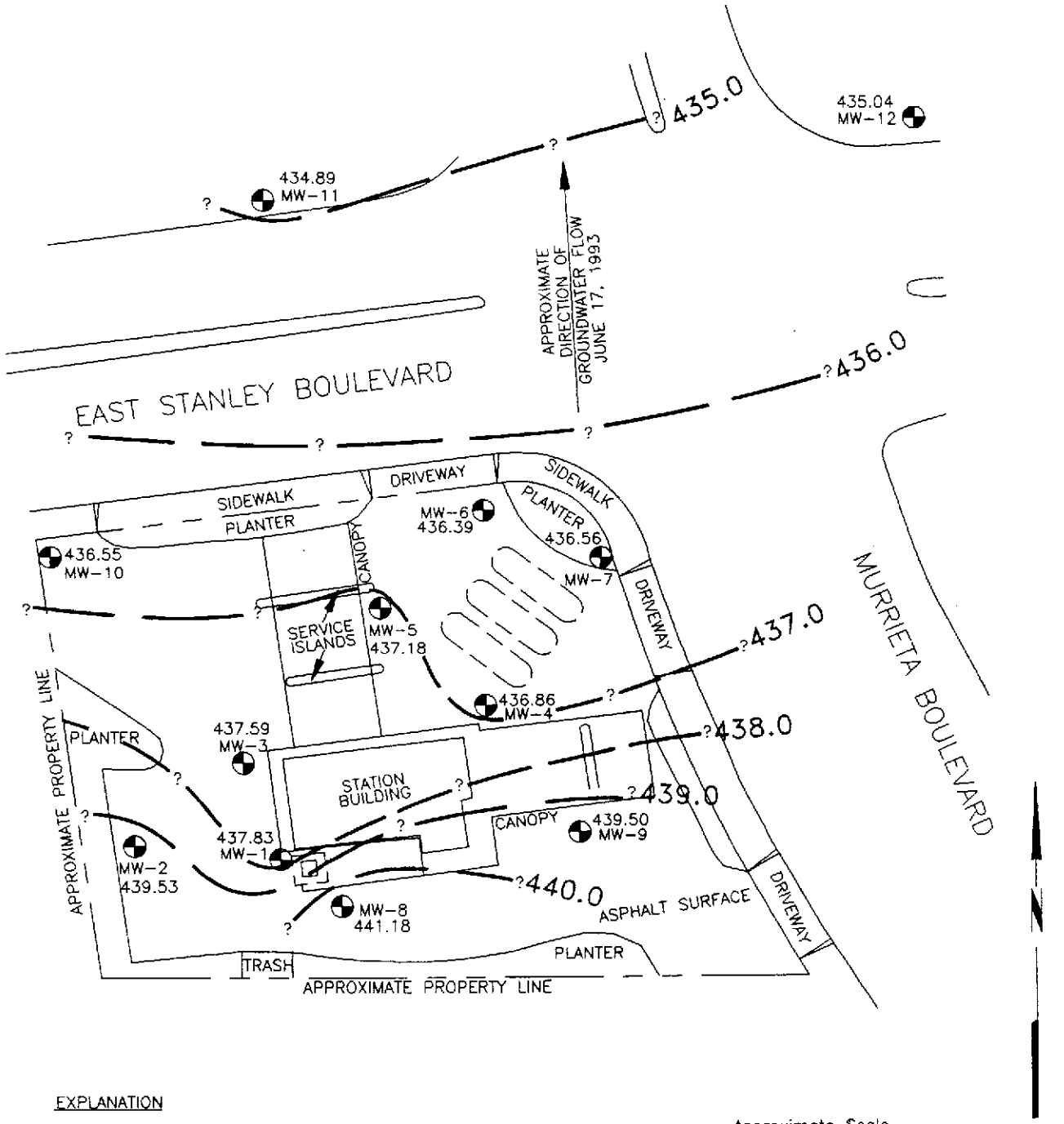
RESNA
Working to Restore Nature

PROJECT: 69028.08

GROUNDWATER GRADIENT MAP
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE
4

69028-Q2



EXPLANATION

MW-12 = Monitoring well (RESNA, 09/89, 02/91, 06/92 and 03/93)

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

441.18 = Elevation of groundwater in feet above MSL, June 17, 1993

= Existing underground gasoline storage tanks

Approximate Scale

50 25 0 50 100

feet

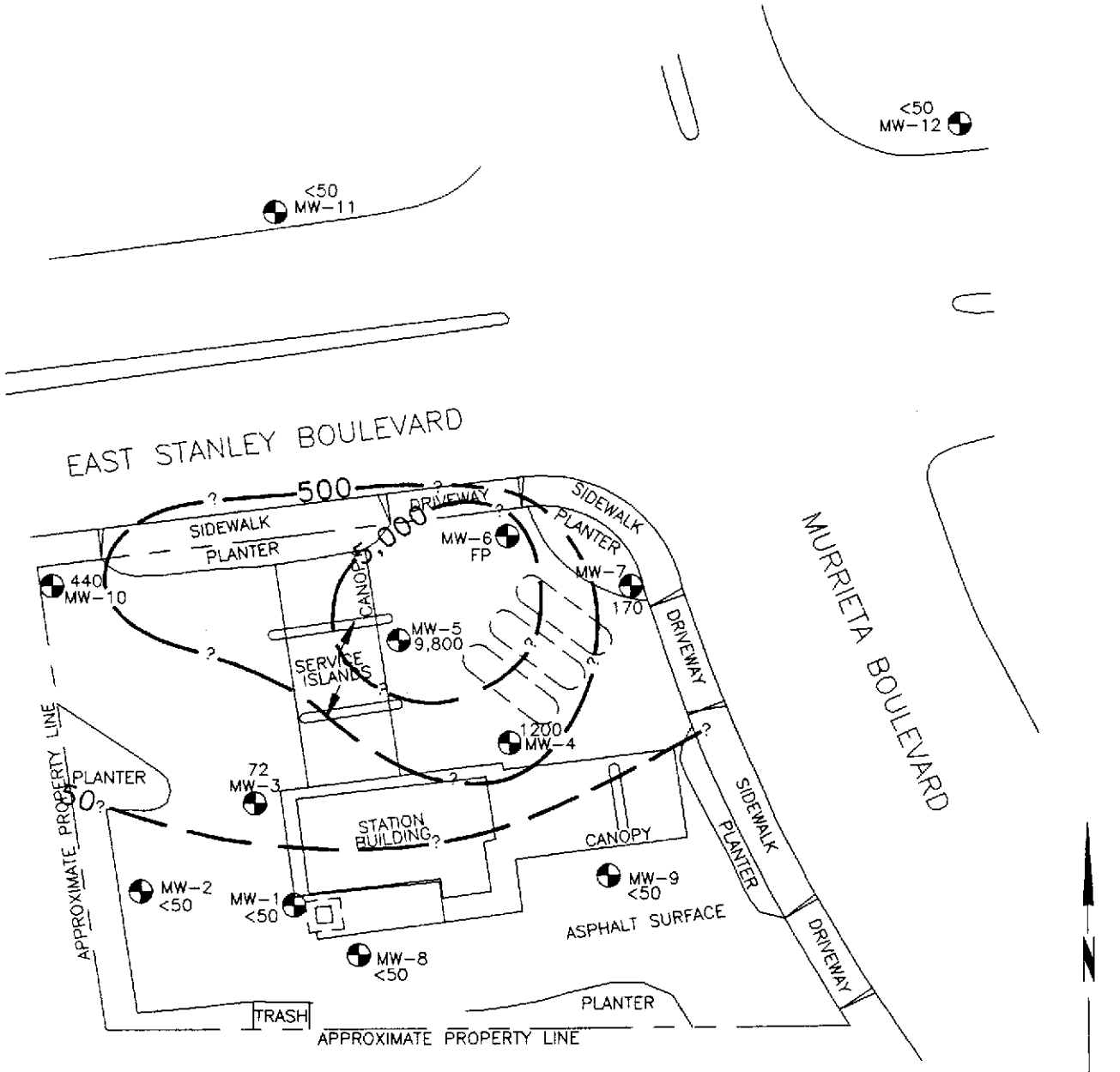
Source: Modified from plan supplied by Ron Archer, Civil Engineer Inc., Feb. 1991; and John Koch Land Surveyor, June 1992 and April 1993.

RESNA
Working to Restore Nature

PROJECT: 69028.08

GROUNDWATER GRADIENT MAP
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE
5



EXPLANATION

MW-12 = Monitoring well (RESNA, 09/89, 02/91, 06/92 and 03/93)

5,000 = Line of equal concentration of TPHg in groundwater in parts per billion (ppb)

9,800 = Concentration of TPHg in groundwater in ppb, May 14, 1993

FP = Not sampled – floating product present

= Existing underground gasoline storage tanks

Approximate Scale

50 25 0 50 100

feet

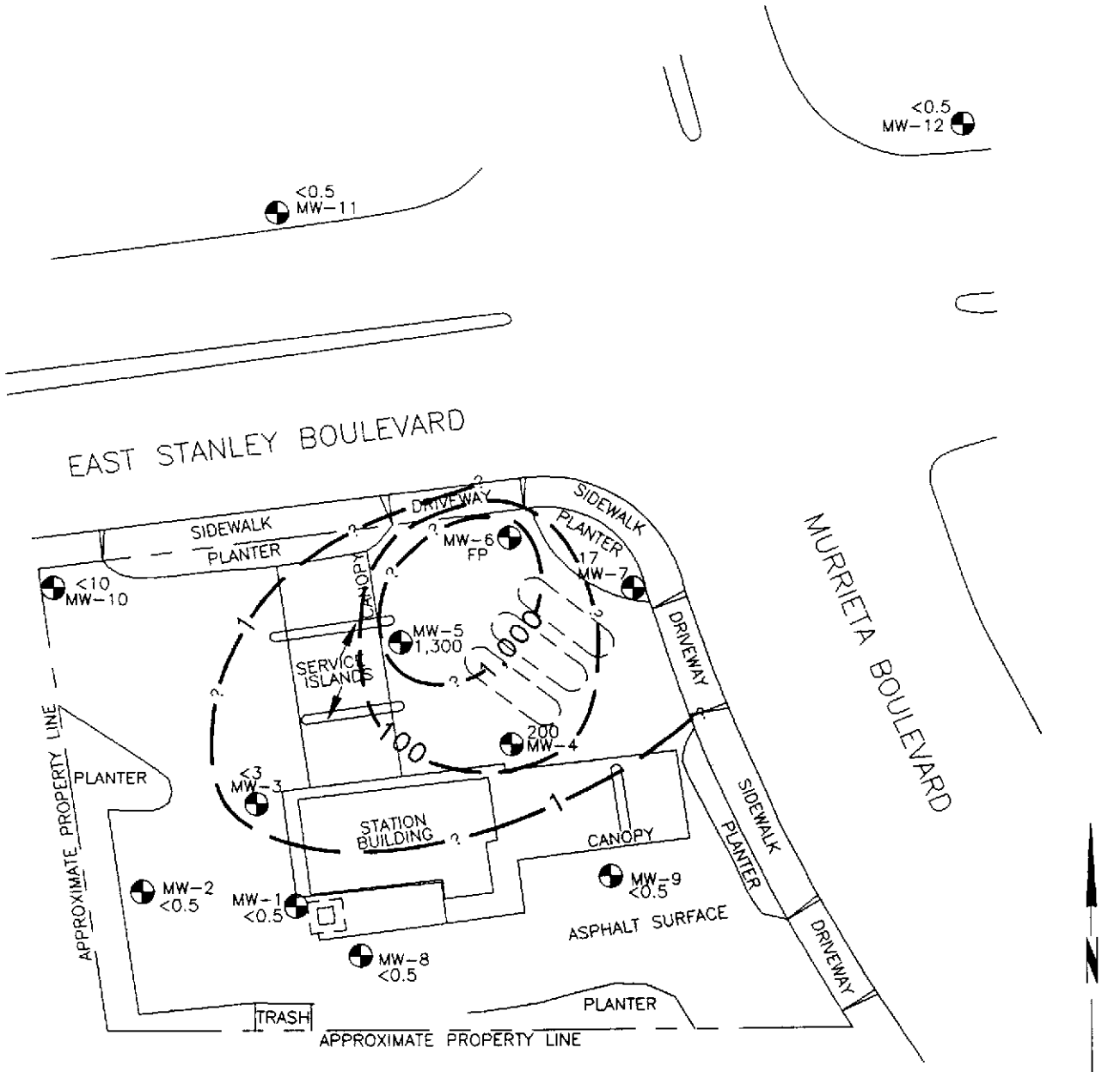
Source: Modified from plan supplied by Ron Archer, Civil Engineer Inc., Feb. 1991; and John Koch Land Surveyor, June 1992 and April 1993.

RESNA
Working to Restore Nature

PROJECT: 69028.08

TPHg CONCENTRATIONS IN GROUNDWATER
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 6



EXPLANATION

MW-12 = Monitoring well (RESNA, 09/89, 02/91, 06/92 and 03/93)

1,000 = Line of equal concentration of benzene in groundwater in parts per billion (ppb)

1,300 = Concentration of benzene in groundwater in ppb, May 14, 1993

FP = Not sampled – floating product present

= Existing underground gasoline storage tanks

Approximate Scale

50 25 0 50 100

feet

Source: Modified from plan supplied by Ron Archer, Civil Engineer Inc., Feb. 1991; and John Koch Land Surveyor, June 1992 and April 1993.

RESNA
Working to Restore Nature

PROJECT: 69028.08

BENZENE CONCENTRATIONS IN GROUNDWATER
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California

PLATE 7

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 1 of 6)

Well / Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Floating Product
MW-1				
09/20/89	457.04	21.03	436.01	None
10/12/89		19.64	437.40	None
06/21/90		21.72	435.32	None
09/20/90		19.79	437.25	None
12/18/90		19.28	437.76	None
02/21/91		22.45	434.59	None
03/20/91		19.87	437.17	None
04/10/91		19.42	437.62	None
05/20/91		25.95	431.09	None
06/20/91		32.55	424.49	None
07/25/91		38.22	418.82	None
08/13/91		40.74	416.30	None
09/12/91		43.16	413.88	None
10/22/91		Dry	Dry	None
11/13/91		Dry	Dry	None
12/21/91		Dry	Dry	None
01/18/92		Dry	Dry	None
02/21/92		Dry	Dry	None
03/19/92		36.16	420.88	None
04/24/92		38.14	418.90	None
05/20/92		40.74	416.30	None
06/29/92		43.80*	–	None
07/28/92		Dry	Dry	None
08/26/92		Dry	Dry	None
09/11/92		Dry	Dry	None
10/29/92		Dry	Dry	None
11/11/92		Dry	Dry	None
12/14/92		Not monitored due to construction activities		
01/27/93		30.10	426.94	None
02/26/93		24.72	432.32	None
03/30/93		20.87	436.17	None
04/30/93		19.46	437.58	None
05/14/93		19.27	437.77	None
06/17/93		19.21	437.83	None
MW-2				
09/20/89	457.74	20.67	437.07	None
10/12/89		18.98	438.76	None
06/21/90		21.88	435.86	None
09/20/90		19.90	437.84	None
12/18/90		19.32	438.42	None

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 2 of 6)

Well Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Floating Product
MW-2 cont.				
02/21/91	457.74	23.02	434.72	None
03/20/91		20.01	437.73	None
04/10/91		19.81	437.93	None
05/20/91		26.62	431.12	None
06/20/91		33.15	424.59	None
07/25/91		37.10	420.64	None
08/13/91		37.20	420.54	None
09/12/91		37.44*	---	None
10/22/91		37.38*	---	None
11/13/91		37.39*	---	None
12/21/91		Dry	Dry	None
01/18/92		37.65*	---	None
02/21/92		37.75*	---	None
03/19/92		35.82	421.92	None
04/24/92		36.64	421.10	None
05/20/92		37.23	420.51	None
06/29/92		37.67*	---	None
07/28/92		38.36*	---	None
08/26/92		38.26*	---	None
09/11/92		38.37*	---	None
10/29/92		Dry	Dry	None
11/11/92		Dry	Dry	None
12/14/92		Not monitored due to construction activities		
01/27/93		32.87	424.87	None
02/26/93		Not monitored due to construction activities		
03/30/93		20.47	437.27	None
04/30/93		19.02	438.72	None
05/14/93		18.65	439.09	None
06/17/93		18.21	439.53	None
MW-3				
09/20/89	456.97	20.98	435.99	None
10/12/89		19.66	437.31	None
06/21/90		21.72	435.25	None
09/20/90		19.72	437.25	None
12/18/90		19.21	437.76	None
02/21/91		22.36	434.61	None
03/20/91		19.79	437.18	None
04/10/91		19.35	437.62	None
05/20/91		25.86	431.11	None
06/20/91		32.45	424.52	None

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 3 of 6)

Well / Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Floating Product
MW-3 cont.				
07/25/91	456.97	38.06	418.91	None
08/13/91		38.40	418.57	None
09/12/91		Dry	Dry	None
10/22/91		Dry	Dry	None
11/13/91		Dry	Dry	None
12/21/92		Dry	Dry	None
01/18/92		38.90*	—	None
02/21/92		38.88*	—	None
03/19/92		36.03	420.94	None
04/24/92		37.92	419.05	None
05/20/92		38.57*	—	None
06/29/92		38.70*	—	None
07/28/92		39.05*	—	None
08/26/92		39.03*	—	None
09/11/92		39.02*	—	None
10/29/92		Dry	Dry	None
11/11/92		Dry	Dry	None
12/14/92		Not monitored due to construction activities		
01/27/93		30.36	426.61	None
02/26/93		24.96	432.01	None
03/30/93		21.45	435.52	None
04/30/93		19.43	437.54	None
05/14/93		19.37	437.60	None
06/17/93		19.38	437.59	None
MW-4				
02/21/91	456.55	22.01	434.96	None
03/20/91		20.31	436.66	None
04/10/91		19.55	437.42	None
05/20/91		25.24	431.73	None
06/20/91		Dry	Dry	None
07/25/91		Dry	Dry	None
08/13/91		Dry	Dry	None
09/12/91		Dry	Dry	None
10/22/91		Dry	Dry	None
11/13/91		Dry	Dry	None
12/21/92		Dry	Dry	None
01/18/92		Dry	Dry	None
02/21/92		Dry	Dry	None
03/19/92		Dry	Dry	None
04/24/92		Dry	Dry	None

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 4 of 6)

Well Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Floating Product
MW-4 cont.				
05/20/92	456.55	Dry	Dry	None
06/29/92		Dry	Dry	None
07/28/92		Dry	Dry	None
08/26/92		Dry	Dry	None
09/11/92		Dry	Dry	None
10/29/92		Dry	Dry	None
11/11/92		Dry	Dry	None
12/14/92		Not monitored due to construction activities		
01/27/93		Dry	Dry	None
02/26/93		23.60	432.95	None
03/30/93		20.87	435.68	None
04/30/93		19.73	436.82	None
05/14/93		19.75	436.80	None
06/17/93		19.69	436.86	None
MW-5				
06/29/92	455.84	50.53	405.31	Odor
07/28/92		54.92	400.92	None
08/26/92		59.58	396.26	None
09/11/92		60.88	394.96	None
10/29/92		61.86*	—	None
11/11/92		62.53*	—	None
12/14/92		Not monitored due to construction activities		
01/27/93		29.08	426.76	None
02/26/93		23.56	432.28	None
03/30/93		20.32	435.52	None
04/30/93		19.57	436.27	None
05/14/93		19.29	436.55	None
06/17/93		18.66	437.18	None
MW-6				
06/29/92	454.93	49.72	405.21	None
07/28/92		54.63	400.30	None
08/26/92		59.45	395.48	None
09/11/92		60.73**	394.20**	0.04
10/29/92		62.14	392.79	None
11/11/92		62.42**	392.51**	0.03
12/14/92		Not monitored due to construction activities		
01/27/93		Not monitored due to construction activities		
02/26/93		22.73	432.20	None
03/30/93		19.53	435.40	None

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 5 of 6)

Well / Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Floating Product
MW-6 cont.				
04/30/93	454.93	18.76	436.17	Trace
05/14/93		19.19**	435.74**	0.01
06/17/93		18.54	436.39	None
MW-7				
06/29/92	454.92	49.57	405.35	None
07/28/92		54.60	400.32	None
08/26/92		59.60	395.32	None
09/11/92		60.74	394.18	None
10/29/92		62.23	392.69	None
11/11/92		62.69	392.23	None
12/14/92		Not monitored due to construction activities		
01/27/93		27.97	426.95	None
02/26/93		22.57	432.35	None
03/30/93		19.29	435.63	None
04/30/93		18.79	436.13	None
05/14/93		18.35	436.57	None
06/17/93		18.36	436.56	None
MW-8				
06/29/92	456.97	50.40	406.57	None
07/28/92		55.79	401.18	None
08/28/92		60.79	396.18	None
09/11/92		61.97	395.00	None
10/29/92		63.51	393.46	None
11/11/92		64.21	392.76	None
12/14/92		Not monitored due to construction activities		
01/27/93		25.57	431.40	None
02/26/93		19.86	437.11	None
03/30/93		16.69	440.28	None
04/30/93		15.83	441.14	None
05/14/93		15.79	441.18	None
06/17/93		15.79	441.18	None
MW-9				
06/29/92	456.18	50.29	405.89	None
07/28/92		55.53	400.65	None
08/26/92		60.62	395.56	None
09/11/92		61.67	394.51	None
10/29/92		63.17	393.01	None
11/11/92		63.68	392.50	None

See notes on page 6 of 6.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 6 of 6)

Well Date	Elevation of Wellhead	Depth to Water	Elevation of Groundwater	Floating Product
MW-9 cont.				
12/14/92	456.18	Not monitored due to construction activities		
01/27/93		26.48	429.70	None
02/26/93		Not monitored due to construction activities		
03/30/93		17.77	438.41	None
04/30/93		17.01	439.17	None
05/14/93		16.55	439.63	None
06/17/93		16.68	439.50	None
MW-10				
03/30/93	456.85	21.33	435.52	None
04/30/93		20.51	436.34	None
05/14/93		20.26	436.59	None
06/17/93		20.30	436.55	None
MW-11				
03/30/93	455.07	20.78	434.29	None
04/30/93		20.71	434.36	None
05/14/93		20.01	435.06	None
06/17/93		20.18	434.89	None
MW-12				
03/30/93	455.04	21.33	433.71	None
04/30/93		20.23	434.81	None
05/14/93		19.97	435.07	None
06/17/93		20.00	435.04	None

For MW-1 through MW-3 (surveyed by Ron Archer in October 1988) and MW-4 (surveyed by Ron Archer in February 1991) wellhead elevation based on benchmark: Top of pin set in concrete in the most westerly monument at the intersection of East Stanley Boulevard and Fenton Avenue. Elevation taken as 455.896 mean sea level. City of Livermore Datum.
For MW-4 through MW-9 (surveyed by John Koch in June 1992) and MW-10 through MW-12 (surveyed by John Koch in April 1993) wellhead elevation based on benchmark: Top of pin in standard monument, at intersection of El Rancho Drive and Albatross Ave. Elevation taken as 448.218'. City of Livermore Datum.
Measurements in feet.
* Residual water.
**Adjusted water level due to product. The recorded thickness of the floating product was then multiplied by 0.80 to obtain an approximate value for the displacement of water by the floating product. This approximate displacement value was then subtracted from the measured depth to water to obtain a calculated depth to water. These calculated groundwater depths were subtracted from surveyed wellhead elevations to calculate the differences in groundwater elevations.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES – TPHg and BTEX
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 1 of 4)

Well Date	TPHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes
MW-1					
09/20/89	80	3.0	1.0	0.7	1
06/21/90	<20	<0.50	0.66	<0.50	<0.50
09/20/90	<50	<0.5	1.0	<0.5	1.8
12/18/90	<50	<0.5	1.8	<0.5	1.7
02/21/91	<50	1.2	2.3	<0.5	2.2
05/20/91	<30	<0.30	<0.30	<0.30	<0.30
08/13/91		Not sampled--dry			
11/13/91		Not sampled--dry			
03/19/92	400	<3.5*	<1.2*	<0.8*	<1.0*
06/29/92		Not sampled--residual water only			
09/11/92		Not sampled--dry			
11/12/92		Not sampled--dry			
03/30/93	<50	<0.5	<0.5	<0.5	<0.5
05/14/93	<50	<0.5	<0.5	<0.5	<0.5
MW-2					
09/20/89	<50	<0.5	<0.5	<0.5	<1
06/21/90	<20	<0.50	<0.50	<0.50	<0.50
09/20/90	<50	<0.5	0.7	<0.5	1.4
12/18/90	<50	0.6	1.5	<0.5	1.9
02/21/91	<50	<0.5	<0.5	<0.5	<0.5
05/20/91	<30	<0.30	<0.30	<0.30	<0.30
08/13/91		Not sampled--dry			
11/13/91		Not sampled--dry			
03/19/92	<50	<0.5	<0.5	<0.5	<0.5
06/29/92	<50	<0.5	<0.5	<0.5	<0.5
09/11/92		Not sampled--residual water only			
11/12/92		Not sampled--dry			
03/30/93	<50	<0.5	<0.5	<0.5	<0.5
05/14/93	<50	<0.5	<0.5	<0.5	<0.5
MW-3					
09/20/89	170	8.9	0.6	1.1	<1
06/21/90	<20	<0.50	1.0	<0.50	<0.50
09/20/90	<50	<0.5	1.0	<0.5	1.9
12/18/90	<50	<0.5	1.7	<0.5	2.0
02/21/91	<50	<0.5	<0.5	<0.5	<0.5
05/20/91	97	1.3	1.1	6.2	8.4
08/13/91		Not sampled--dry			
11/13/91		Not sampled--dry			
03/19/92	220	<1.1*	<1.9	<0.6*	<0.8*

See notes on page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER – TPHg and BTEX
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 2 of 4)

Well Date	TPHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes
MW-3 cont.					
06/29/92		Not sampled --residual water only			
09/11/92		Not sampled --residual water only		11/12/92	Notsampled–dry
03/30/93	200**	<4.0*	<0.5	<0.5	<0.5
05/14/93	72**	<3.0*	<0.5	<0.5	<0.5
MW-4					
02/21/91	3,500	410	7.6	30	47
05/20/91	1,400	150	6.0	4.4	3.1
08/13/91		Not sampled–dry			
11/13/91		Not sampled–dry			
03/19/92		Not sampled–dry			
06/29/92		Not sampled–dry			
09/11/92		Not sampled–dry			
11/12/92		Not sampled–dry			
03/31/93	680	110	5.2	3.0	7.4
05/14/93	1,200	200	6.2	15	9.2
MW-5					
06/29/92	8,900	1,700	640	310	1,100
09/11/92	13,000	2,200	1,500	130	930
11/12/92		Not sampled–residual water only			
03/31/93	9,700	1,700	430	220	880
05/14/93	9,800	1,300	820	270	1,100
MW-6					
06/29/92	8,600	1,800	460	52	450
09/11/92		Not sampled–floating product			
11/12/92		Not sampled–floating product			
03/31/93		Not sampled–floating product			
05/14/93		Not sampled–floating product			
MW-7					
06/29/92	270	38	3.7	1.1	4.4
09/11/92	420	20	0.7	<0.5	<0.5
11/12/92	470	31	1.0	<0.5	0.8
03/31/93	190	20	1.0	<0.5	<0.5
05/14/93	170	17	0.6	<0.5	0.5

See notes on page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES – TPHg and BTEX
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 3 of 4)

Well Date	TPHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes
MW-8					
06/29/92	<50	<0.5	<0.5	<0.5	<0.5
09/11/92	<50	<0.5	<0.5	<0.5	<0.5
11/12/92	<50	<0.5	<0.5	<0.5	<0.5
03/30/93	<50	<0.5	<0.5	<0.5	<0.5
05/14/93	<50	<0.5	<0.5	<0.5	<0.5
MW-9					
06/29/92	<50	<0.5	<0.5	<0.5	<0.5
09/11/92	<50	<0.5	<0.5	<0.5	<0.5
11/12/92	<50	<0.5	<0.5	<0.5	<0.5
03/31/93	<50	<0.5	<0.5	<0.5	<0.5
05/14/93	<50	<0.5	<0.5	<0.5	<0.5
MW-10					
03/31/93	230**	<0.5	<0.5	<1.0*	0.6
05/14/93	440**	<10*	<0.6*	<0.9*	<0.5
MW-11					
03/31/93	<50	<0.5	<0.5	<0.5	<0.5
05/14/93	<50	<0.5	<0.5	<0.5	<0.5

See notes on page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES – TPHg and BTEX
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 4 of 4)

Well Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW-12					
03/31/93	150	20	<0.5	<0.5	<0.5
05/14/93	<50	<0.5	<0.5	<0.5	<0.5
MCLs	None	1.0	None	680	1,750
DWAL	None	None	100	None	None

Results in parts per billion (ppb). Benzene, toluene, ethylbenzene and total xylenes by EPA Method 5030/8020/DHS LUFT Method.
TPHg = Total petroleum hydrocarbons as gasoline by EPA Method 5030/8020/DHS LUFT Method.
< = Less than the detection limits shown.
MCLs = Adopted Maximum Contaminant Levels in Drinking Water, DHS (October 1990)
DWAL = Recommended Drinking Water Action Level, DHS (October 1990)
* = Laboratory reportedly raised detection limit due to matrix interference.
** = The sample contains components eluting in the gasoline range that were quantitated as gasoline. The chromatogram does not match the typical gasoline fingerprint.

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES -- VOCs, TPHd, TOG, and Metals
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 1 of 3)

Well Date	VOCs	TPHd	TOG	Cd	Cr	Pb	Zn	Ni
MW-1								
09/20/89	NA	<50	<5,000	NA	NA	NA	NA	NA
06/21/90	NA	<100	13,000	NA	NA	NA	NA	NA
09/20/90	NA	<50	<5,000	NA	NA	NA	NA	NA
12/18/90	NA	<5,000	NA	NA	NA	NA	NA	NA
02/21/91	NA	<5,000	NA	NA	NA	NA	NA	NA
05/20/91	NA	<75,000	NA	NA	NA	NA	NA	NA
08/13/91	NS	NS	NS	NS	NS	NS	NS	NS
11/13/91	NS	NS	NS	NS	NS	NS	NS	NS
03/19/92	NA	NA	NA	NA	NA	NA	NA	NA
06/29/92	NS	NS	NS	NS	NS	NS	NS	NS
09/11/92	NS	NS	NS	NS	NS	NS	NS	NS
11/12/92	NS	NS	NS	NS	NS	NS	NS	NS
03/30/93	NA	NA	NA	NA	NA	NA	NA	NA
05/14/93	NA	NA	120,000	NA	NA	NA	NA	NA
MW-2								
09/20/89	NA	<50	<5,000	NA	NA	NA	NA	NA
06/21/90	NA	<100	<5,000	NA	NA	NA	NA	NA
09/20/90	NA	<50	<5,000	NA	NA	NA	NA	NA
12/18/90	NA	NA	<5,000	NA	NA	NA	NA	NA
02/21/91	NA	NA	<5,000	NA	NA	NA	NA	NA
05/20/91	NA	NA	<75,000	NA	NA	NA	NA	NA
08/13/91	NS	NS	NS	NS	NS	NS	NS	NS
11/13/91	NS	NS	NS	NS	NS	NS	NS	NS
03/19/92	NA	NA	NA	NA	NA	NA	NA	NA
06/29/92	NA	NA	NA	NA	NA	NA	NA	NA
09/11/92	NS	NS	NS	NS	NS	NS	NS	NS
11/12/92	NS	NS	NS	NS	NS	NS	NS	NS
03/30/93	NA	NA	NA	NA	NA	NA	NA	NA
05/14/93	NA	NA	NA	NA	NA	NA	NA	NA
MW-3								
09/20/89	NA	<50	<5,000	NA	NA	NA	NA	NA
06/21/90	NA	<100	10,000	NA	NA	NA	NA	NA
09/20/90	NA	<50	<5,000	NA	NA	NA	NA	NA
12/18/90	NA	NA	<5,000	NA	NA	NA	NA	NA
02/21/91	NA	NA	<5,000	NA	NA	NA	NA	NA
05/20/91	NA	NA	<75,000	NA	NA	NA	NA	NA

See notes on page 3 of 3.

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES – VOCs, TPHd, TOG, and Metals
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 2 of 3)

Well Date	VOCs	TPHd	TOG	Cd	Cr	Pb	Zn	Ni
MW-3 cont.								
08/13/91	NS	NS	NS	NS	NS	NS	NS	NS
11/13/91	NS	NS	NS	NS	NS	NS	NS	NS
03/19/92	NA	<50	<5,000	NA	NA	NA	NA	NA
06/29/92	NS	NS	NS	NS	NS	NS	NS	NS
09/11/92	NS	NS	NS	NS	NS	NS	NS	NS
11/12/92	NS	NS	NS	NS	NS	NS	NS	NS
03/30/93	NA	NA	NA	NA	NA	NA	NA	NA
05/14/93	NA	NA	NA	NA	NA	NA	NA	NA
MW-4								
02/21/91	NA	NA	<5,000	NA	NA	NA	NA	NA
05/20/91	NA	NA	<75,000	NA	NA	NA	NA	NA
08/13/91	NS	NS	NS	NS	NS	NS	NS	NS
11/13/91	NS	NS	NS	NS	NS	NS	NS	NS
03/19/92	NS	NS	NS	NS	NS	NS	NS	NS
06/29/92	NS	NS	NS	NS	NS	NS	NS	NS
09/29/92	NS	NS	NS	NS	NS	NS	NS	NS
11/12/92	NS	NS	NS	NS	NS	NS	NS	NS
03/31/93	NA	NA	NA	NA	NA	NA	NA	NA
05/14/93	NA	NA	NA	NA	NA	NA	NA	NA
MW-8								
06/29/92	ND*	<50	<500	<3	1,780	143	1,310	5,100
09/11/92	NA	<50	<500	13	3,580	308	2,620	10,300
11/12/92	NA	NA	NA	28	3,440	221	2,550	9,840
03/31/93	NA	NA	NA	NA	NA	NA	NA	NA
05/14/93	NA	NA	NA	NA	NA	NA	NA	NA

See notes on page 3 of 3.

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES -- VOCs, TPHd, TOG, and Metals
ARCO Station 6113
785 East Stanley Boulevard
Livermore, California
(Page 3 of 3)

Well Date	VOCs	TPHd	TOG	Cd	Cr	Pb	Zn	Ni
MW-9								
11/12/92	NA	NA	NA	10	1,080	101	859	3,070
03/31/93	NA	NA	NA	NA	NA	NA	NA	NA
05/14/93	NA	NA	NA	NA	NA	NA	NA	NA
MCL:	Varies	—	—	10	50	50	5,000	—

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

VOCs: Halogenated Volatile Organic Compounds by EPA Method 5030/601.
TPHd: Total petroleum hydrocarbons as diesel by EPA Methods 3510/California DHS LUFT Method.
TOG: Total oil and grease measured by EPA Method 5520C&F.
Cd: Cadmium by EPA Method 6010.
Cr: Chromium by EPA Method 6010.
Ni: Nickel by EPA Method 6010.
Zn: Zinc by EPA Method 6010.
Pb: Lead by EPA Method 7421.
NA: Not analyzed.
<: Results reported as less than the detection limit.
NS: Well not sampled.
ND: Not detected.
*: 31 compounds tested were nondetectable.
MCL: Adopted Maximum Contaminant Levels in Drinking Water (October 1990)

RESNA
Working to Restore Nature

APPENDIX A

EMCON'S FIELD REPORTS, SUMMARY OF GROUNDWATER MONITORING DATA, CERTIFIED ANALYTICAL REPORTS WITH CHAIN-OF-CUSTODY, AND WATER SAMPLE FIELD DATA SHEETS

EMCON Associates
1938 Junction Avenue • San Jose, California 95131-2102 • **(408) 453-0719** • Fax (408) 453-0452

Date May 4, 1993
Project 0G70-038.01

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 Results
	April 1993 monthly water level survey, ARCO
	station 6113, 785 East Stanley Blvd., Livermore, CA

For your: X Information Sent by: X Mail

Comments:
Monthly water level data for the above mentioned site could not be performed due to site construction. Please call if you have any questions: (408) 453-2266.

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4004 Exp. 4/30/96 INDUSTRIAL STATE OF CALIFORNIA

Jim Butera JB

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-038.01 STATION ADDRESS : 785 East Stanley Blvd. Livermore DATE : 4-30-93

ARCO STATION # : 6113 FIELD TECHNICIAN : J. Williams 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-1	OK	YES	YES	3259	YES	19.46	19.46	ND	ND	44.7	S
2	MW-2	OK	YES	YES	3259	YES	19.02	19.02	ND	ND	38.6	S
3	MW-8	OK	YES	YES	3259	YES	15.83	15.83	ND	ND	66.6	—
4	MW-9	OK	YES	YES	3259	YES	17.01	17.02	ND	ND	68.0	—
5	MW-11	OK	YES	YES	Dolphin	YES	20.71	20.71	ND	ND	44.5	—
6	MW-12	OK	YES	YES	Dolphin	YES	20.23	20.23	ND	ND	33.6	—
7	MW-7	OK	YES	YES	3259	YES	18.79	18.79	ND	ND	67.7	—
8	MW-3	OK	YES	YES	3259	YES	19.43	19.43	ND	ND	39.0	S
9	MW-10	OK	YES	YES	~~3259~~	YES	20.51	20.51	ND	ND	50.2	Dolphin
10	MW-4	OK	YES	YES	Dolphin	YES	19.73	19.73	ND	ND	26.6	—
11	MW-5	OK	YES	NO	NO	SLIPCAP NO	19.57	19.57	ND	ND	62.6	—
12	MW-6	OK	YES	YES	3259	YES	18.76	18.76	~~ND~~ TRACE		66.4	STRONG

SURVEY POINTS ARE TOP OF WELL CASINGS

EMCON Associates
1938 Junction Avenue • San Jose California 95131-2102 • **(408) 453-0719** • Fax (408) 453-0452

Date June 3, 1993
Project 0G70-038.01

To:
Mr. John Young
RESNA
3315 Almaden Expressway, Suite 34
San Jose, California 95118

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
12	Water Sample Field Data Sheets

For your: X Information Sent by: X Mail

Comments:

Enclosed are the data from the second quarter 1993 monitoring event at ARCO service station 6113, 785 East Stanley Blvd, Livermore, CA. Groundwater monitoring is conducted consistent with applicable regulatory guidelines. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:

REGISTERED PROFESSIONAL ENGINEER ROBERT CURTIS PORTER No: 4034 Exp. 6/30/96 INDUSTRIAL STATE OF CALIFORNIA

Robert Porter, Senior Project Engineer.

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-038.01 STATION ADDRESS : 785 East Stanley Blvd. Livermore DATE : 5-14-93

ARCO STATION # : 6113 FIELD TECHNICIAN : J. GRAHAM / K. REICHELDEFER 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-1**	OK	YES	YES	3259	YES	19.27	19.27	~~44.7~~	ND	44.7	—
2	**MW-2**	OK	YES	OK	3259	OK	18.65	18.65	ND	NA	~~6~~ 38.7	—
3	**MW-8**	OK	YES	YES	3259	YES	15.79	15.79	ND	ND	66.5	—
4	**MW-9**	OK	YES	OK	3259	OK	16.55	16.54	ND	NA	68.0	—
5	**MW-11**	OK	YES	OK	DOLPHIN	OK	20.01	20.00	ND	NA	44.5	—
6	**MW-12**	OK	YES	OK	DOLPHIN	OK	19.97	19.97	ND	NA	33.5	—
7	**MW-7**	OK	YES	YES	3259	YES	18.35	18.35	ND	ND	67.6	—
8	**MW-3**	OK	YES	YES	3259	YES	19.37	19.37	ND	ND	39.0	—
9	**MW-10**	OK	YES	OK	3259	OK	20.26	20.27	ND	NA	50.2	—
10	**MW-4**	OK	YES	YES	3283	YES	19.75	19.75	ND	ND	26.7	STRONG ODOR
11	**MW-5**	OK	YES	YES	NONE	NO	19.29	19.29	NR	ND	62.6	NEEDS BIG BOLT
12	**MW-6**	OK	YES	OK	3259	OK	19.20	19.20	19.19	0.01	66.7	STRONG ODOR

SURVEY POINTS ARE TOP OF WELL CASINGS

Summary of Groundwater Monitoring Data
Second Quarter 1993
ARCO Service Station 6113
785 East Stanley Boulevard, Livermore, California
micrograms per liter (µg/l) and milligrams per liter (mg/l)

Well ID and Sample Depth	Sampling Date	Depth To Water (feet)	Floating Product Thickness (feet)	TPH[1] as Gasoline (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	Total Oil & Grease 5520C/F (mg/l)
MW-1(43)	05/14/93	19.27	ND.[2]	<50.	<0.5	<0.5	<0.5	<0.5	120/0.7
MW-2(38)	05/14/93	18.65	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.[3]
MW-3(38)	05/14/93	19.37	ND.	72.	<3.	<0.5	<0.5	<0.5	NR.
MW-4(25)	05/14/93	19.75	ND.	1,200.	200.	6.2	15.	9.2	NR.
MW-5(61)	05/14/93	19.29	ND.	9,800.	1,300.	820.	270.	1,100.	NR.
MW-6	05/14/93	19.20	0.01	FP.[4]	FP.	FP.	FP.	FP.	NR.
MW-7(66)	05/14/93	18.35	ND.	170.	17.	0.6	<0.5	0.5	NR.
MW-8(65)	05/14/93	15.79	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.
MW-9(68)	05/14/93	16.55	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.
MW-10(50)	05/14/93	20.26	ND.	440.	<10.	<0.6	<0.9	<0.5	NR.
MW-11(44)	05/14/93	20.01	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.
MW-12(33)	05/14/93	19.97	ND.	<50.	<0.5	<0.5	<0.5	<0.5	NR.
FB-1.[5]	05/14/93	NA[6].	NA.	<50.	<0.5	<0.5	<0.5	<0.5	NR.

1. TPH. = Total petroleum hydrocarbons
2. ND. = Not detected
3. NR. = Not required to be sampled for the above parameter.
4. FP. = Floating product detected in well, no samples taken
5. FB. = Field Blank
6. NA. = Not applicable

Columbia Analytical Services, Inc.

May 28, 1993 Service Request No. SJ93-0676

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

Re: **EMCON Project No. 0G70-038.01**
ARCO Facility No. 6113

Dear Mr. Butera:

Attached are the results of the water samples submitted to our lab on May 14, 1993. For your reference, these analyses have been assigned our service request number SJ93-0676.

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/drf

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/14/93
Project:	EMCON Project No. 0G70-038.01	**Service Request No.:**	SJ93-0676
	ARCO Facility No. 6113	**Sample Matrix:**	Water

Inorganic Parameters[1]
mg/L (ppm)

Sample Name:	MW-1 (43)	Method Blank
Date Sampled:	05/14/93	

Analyte	Method	MRL		
Total Oil and Grease	SM 5520C	0.5	120.	ND
Hydrocarbons, IR	SM 5520F	0.5	0.7	ND

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit
SM *Standard Methods for the Examination of Water and Wastewater*, 17th Ed., 1989
[1] Unless otherwise noted, all analyses were performed within EPA recommended maximum holding times specified in *Test Methods for Evaluating Solid Waste*, (SW-846, 3rd Edition) and *Methods for Chemical Analysis of Water and Waste* (EPA-600/4-79-020, Revised March 1983).

Approved by: Kenneth Murphy Date: May 24, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/14/93
Project:	EMCON Project No. 0G70-038.01	**Service Request No.:**	SJ93-0676
	ARCO Facility No. 6113	**Sample Matrix:**	Water

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

Sample Name:		MW-1(43)	MW-2(38)	MW-3(38)
Date Analyzed:		05/21/93 *	05/21/93 *	05/21/93 *
Analyte	**MRL**			
Benzene	0.5	ND	ND	<3. **
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	72. ***

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 May 21, 1993. However, it was analyzed after midnight so the actual date analyzed is May 22, 1993.
** Raised MRL due to matrix interference.
*** The sample contains components eluting in the gasoline range that were quantitated as gasoline. The chromatogram does not match the typical gasoline fingerprint.

Approved by: Kenneth Murphy Date: May 28, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	Date Received:	05/14/93
Project:	EMCON Project No. 0G70-038.01	Service Request No.:	SJ93-0676
	ARCO Facility No. 6113	Sample Matrix:	Water

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

Sample Name:		MW-4(25)	MW-5(61)	MW-7(66)
Date Analyzed:		05/21/93 *	05/21/93	05/21/93 *
Analyte	**MRL**			
Benzene	0.5	200.	1,300.	17.
Toluene	0.5	6.2	820.	0.6
Ethylbenzene	0.5	15.	270.	ND
Total Xylenes	0.5	9.2	1,100.	0.5
TPH as Gasoline	50	1,200.	9,800.	170.

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 May 21, 1993. However, it was analyzed after midnight so the actual date analyzed is May 22, 1993.

Approved by: Kenneth Murphy Date: May 25, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/14/93
Project:	EMCON Project No. 0G70-038.01	**Service Request No.:**	SJ93-0676
	ARCO Facility No. 6113	**Sample Matrix:**	Water

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

Sample Name:		MW-8(65)	MW-9(68)	MW-10(50)
Date Analyzed:		05/21/93 *	05/21/93 *	05/21/93 *
Analyte	**MRL**			
Benzene	0.5	ND	ND	<10. **
Toluene	0.5	ND	ND	<0.6 **
Ethylbenzene	0.5	ND	ND	<0.9 **
Total Xylenes	0.5	ND	ND	ND
TPH as Gasoline	50	ND	ND	440. ***

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 May 21, 1993. However, it was analyzed after midnight so the actual date analyzed is May 22, 1993.
** Raised MRL due to matrix interference.
*** The sample contains components eluting in the gasoline range that were quantitated as gasoline. The chromatogram does not match the typical gasoline fingerprint.

Approved by: Kenneth Murphy Date: May 28, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/14/93
Project:	EMCON Project No. 0G70-038.01	**Service Request No.:**	SJ93-0676
	ARCO Facility No. 6113	**Sample Matrix:**	Water

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

Sample Name:		MW-11(44)	MW-12(33)	FB-1
Date Analyzed:		05/21/93 *	05/21/93 *	05/21/93 *
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
* This sample was part of the analytical batch started on May 21, 1993. However, it was analyzed after midnight so the actual date analyzed is May 22, 1993.

Approved by: Kevin Murphy Date: May 25, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	EMCON Associates	**Date Received:**	05/14/93
Project:	EMCON Project No. 0G70-038.01	**Service Request No.:**	SJ93-0676
	ARCO Facility No. 6113	**Sample Matrix:**	Water

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

Sample Name:	Method Blank
Date Analyzed:	05/21/93

Analyte	MRL	
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: Keenan Murphy Date: May 28, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-038.01
Arco Facility No. 6113

Date Received: 05/14/93
Service Request No.: SJ93-0676
Sample Matrix: Water

Continuing Calibration Summary
Inorganics
SM5520C
mg/L

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Total Oil and Grease	40.	41.1	103.	90-110

Approved by: Kevin Murphy Date: May 28, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-038.01
Arco Facility No. 6113

Date Received: 05/14/93
Service Request No.: SJ93-0676
Sample Matrix: Water

Matrix Spike Summary
Inorganic Parameters
mg/L (ppm)

Analyte	Spike Level	Sample Result	Spike Result MS	Spike Result DMS	Percent Recovery MS	Percent Recovery DMS	CAS Acceptance Criteria
Total Oil and Grease	4.	120.	152.	142.	NA	NA	56-151

NA Not Applicable because of the sample matrix. Accuracy of spike value is reduced since the sample concentration was greater than 30 times the amount spiked.

Approved by: Kenneth Murphy Date: May 24, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No. 0G70-038.01
ARCO Facility No. 6113

Date Received: 05/14/93
Service Request No.: SJ93-0676

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

Date Analyzed: 05/21/93

Analyte	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Criteria
Benzene	25.	22.8	91.	85-115
Toluene	25.	25.3	101.	85-115
Ethylbenzene	25.	24.6	98.	85-115
Total Xylenes	75.	71.5	95.	85-115
TPH as Gasoline	250.	236.	94.	90-110

TPH Total Petroleum Hydrocarbons

Approved by: Kevin O'Malley Date: May 28, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	EMCON Associates	Date Received:	05/14/93
Project:	EMCON Project No. 0G70-038.01	Service Request No.:	SJ93-0676
	ARCO Facility No. 6113	Sample Matrix:	Water

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

Sample Name	Date Analyzed	Percent Recovery α,α,α-Trifluorotoluene
MW-1(43)	05/21/93	88.
MW-2(38)	05/21/93	89.
MW-3(38)	05/21/93	94.
MW-4(25)	05/21/93	94.
MW-5(61)	05/21/93	93.
MW-7(66)	05/21/93	107.
MW-8(65)	05/21/93	88.
MW-9(68)	05/21/93	88.
MW-10(50)	05/21/93	127.
MW-11(44)	05/21/93	88.
MW-12(33)	05/21/93	88.
FB-1	05/21/93	88.
MW-5(61)	05/21/93	99.
MW-5(61)	05/21/93	102.
Method Blank	05/21/93	89.
	CAS Acceptance Criteria	70-130

TPH Total Petroleum Hydrocarbons

Approved by: Kevin Murphy Date: May 25, 1993

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: EMCON Associates
Project: EMCON Project No.0G70-038.01
ARCO Facility No. 6113

Date Received: 05/14/93
Service Request No.: SJ93-0676
Sample Matrix: Water

Matrix Spike Summary
TPH as Gasoline
EPA Methods 5030/California DHS LUFT Method
µg/L (ppb)

Sample Name: MW-5(61)
Date Analyzed: 05/21/93

			Spike Result		Percent Recovery		CAS Acceptance
Analyte	Spike Level	Sample Result	MS	DMS	MS	DMS	Criteria
TPH as Gasoline	10,000.	9,810.	19,000.	19,100.	92.	93.	56-151

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

Approved by: Kevin Murphy Date: May 24, 1993

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

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. EMC-93-5

Chain of Custody

ARCO Facility no. 6113	City (Facility) LIVERMORE	Project manager (Consultant) JIM BUTERA	Laboratory name CAS
ARCO engineer Kyle Christie	Telephone no. (ARCO) 571-2434	Telephone no. (Consultant) 453-0719	Fax no. (Consultant) 453-0452
Consultant name EMCON ASSOCIATES	Address (Consultant)		Contract number 07077

Method of shipment: SAMPLER WILL DELIVER

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 CAS	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-1 (43)	1-6	6		X		X	HCl	5-14-93	0655		X		X								
MW-2 (38)	7-8	2							0701		X										
MW-3 (38)	9-10	2							1035		X										
MW-4 (25)	11-12	2							1130		X										
MW-5 (61)	13-14	2							1250		X		NO SAMPLE	PRODUCT THICKNESS .01'							
MW-6 ( )		2									X										
MW-7 (66)	15-16	2							0950		X										
MW-8 (65)	17-18	2							0818		X										
MW-9 (68)	19-20	2							0826		X										
MW-10 (54)	21-22	2							1138		X										
MW-11 (44)	23-24	2							0925		X										
MW-12 (33)	25-26	2							1026		X										
FB-1 ( )	27-28	2							0708		X										

Special detection Limit/reporting: LOWEST POSSIBLE

Special QA/QC: AS NORMAL

Remarks: 2-40 ml HCl VOA's

4-LITER HCl GLASS

Lab number: ST93-0676

Turnaround time

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

Condition of sample: OK

Temperature received: 0001

	Date	Time
Relinquished by Sampler	5-14-93	1400
Relinquished by		
Relinquished by		

Received by

Received by

Received by laboratory: Kevin Howard — Date: 5-14-93 — Time: 1355

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

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-038.01 SAMPLE ID: MW-1 (93)

PURGED BY: IAN GRAHAM CLIENT NAME: ARCO # 6113

SAMPLED BY: IAN GRAHAM LOCATION: LIVERMORE, CA.

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 4.14

DEPTH TO WATER (feet): 19.27 CALCULATED PURGE (gal.): 12.43

DEPTH OF WELL (feet): 44.7 ACTUAL PURGE VOL. (gal.): 12.5

DATE PURGED: 5-14-93 Start (2400 Hr) 0635 End (2400 Hr) 0650

DATE SAMPLED: 5-14-93 Start (2400 Hr) 0655 End (2400 Hr) 0655

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
0640	4.0	7.10	934	58.0	BROWN	MODERATE
0645	8.0	7.05	922	59.0	"	"
0650	12.5	6.97	936	60.0	"	"

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

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: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 5-14-93 Time: 0630 Meter Serial #: 9105 Temperature °F: 66.5

(EC 1000 1050 / 1000) (DI 6.05) (pH 7 7.05 / 7.00) (pH 10 9.98 / 10.00) (pH 4 3.93 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 1 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0970-038.01 | SAMPLE ID: MW-2(38)

PURGED BY: K REICHELDERFER | CLIENT NAME: ARCO 6113

SAMPLED BY: ↓ | LOCATION: 785 E. STANLEY BLVD. LIVERMORE, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	3.27
DEPTH TO WATER (feet):	18.67	CALCULATED PURGE (gal.):	9.81
DEPTH OF WELL (feet):	38.7	ACTUAL PURGE VOL. (gal.):	10.00

DATE PURGED: 5-14-93 Start (2400 Hr) 0644 End (2400 Hr) 0656

DATE SAMPLED: 5-14-93 Start (2400 Hr) 0701 End (2400 Hr) 0703

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
0648	3.50	6.51	958	59.3	CLOUDY	LIGHT
0652	7.00	6.51	962	59.6	↓	↓
0656	10.00	6.53	969	59.9		

D. O. (ppm): NR ODOR: NONE COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): FB-1 @ 0708

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: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 5-14-93 Time: 0625 Meter Serial #: 9203 Temperature °F: 64.4

(EC 1000 992 / 1000) (DI 16.02) (pH 7 7.06 / 7.00) (pH 10 9.91 / 10.00) (pH 4 3.91 / —)

Location of previous calibration: ___

Signature: Kevin Reichelderfer Reviewed By: JB Page 2 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-038.01 SAMPLE ID: MW-3 (38)

PURGED BY: IAN GRAHAM CLIENT NAME: ARCO # 6113

SAMPLED BY: IAN GRAHAM LOCATION: LIVERMORE, CA.

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 3.19

DEPTH TO WATER (feet): 19.37 CALCULATED PURGE (gal.): 9.59

DEPTH OF WELL (feet): 39.0 ACTUAL PURGE VOL. (gal.): 10.0

DATE PURGED: 5-14-93 Start (2400 Hr) 1015 End (2400 Hr) 1030

DATE SAMPLED: 5-14-93 Start (2400 Hr) 1035 End (2400 Hr) 1035

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1020	3.0	6.83	1089	63.8	LT. BROWN	MODERATE
1025	6.0	6.83	1082	63.6	"	"
1030	~~9.5~~ 10.0	6.80	1087	63.5	"	"

D. O. (ppm): NR ODOR: NO COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

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: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 5-14-93 Time: 1030 Meter Serial #: 9105 Temperature °F: 70.8

(EC 1000 939 / 1000) (DI 6.00) (pH 7 6.96 / 7.00) (pH 10 9.95 / 10.00) (pH 4 3.93 / ___)

Location of previous calibration: ___

Signature: [signature] Reviewed By: JD Page 3 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-038.01 SAMPLE ID: MW-4(25)

PURGED BY: IAN GRAHAM CLIENT NAME: ARCO # 6113

SAMPLED BY: IAN GRAHAM LOCATION: LIVERMORE, CA.

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	4.52
DEPTH TO WATER (feet):	19.78	CALCULATED PURGE (gal.):	13.56
DEPTH OF WELL (feet):	26.7	ACTUAL PURGE VOL. (gal.):	14.0

DATE PURGED: 5-14-93 Start (2400 Hr) 1055 End (2400 Hr) 1125

DATE SAMPLED: 5-14-93 Start (2400 Hr) 1130 End (2400 Hr) 1130

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1105	4.5	6.47	1199	67.5	GREY	HEAVY
1115	9.0	6.51	1154	67.0	"	"
1125	14.0	6.51	1165	66.7	"	"

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

COLOR: NR (COBALT 0 - 100) TURBIDITY: NR (NTU 0 - 200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

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: OK LOCK #: 3253

REMARKS: ___

Meter Calibration: Date: 5-14-93 Time: 1030 Meter Serial #: 9105 Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: [signature] Reviewed By: [signature] Page 4 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-038.01 SAMPLE ID: MW-5 (61)

PURGED BY: IAN GRAHAM CLIENT NAME: ARCO # 6113

SAMPLED BY: IAN GRAHAM LOCATION: LIVERMORE, CA.

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 28.28

DEPTH TO WATER (feet): 19.30 CALCULATED PURGE (gal.): 84.86

DEPTH OF WELL (feet): 62.6 ACTUAL PURGE VOL. (gal.): 85.0

DATE PURGED: 5-14-93 Start (2400 Hr) 1200 End (2400 Hr) 1245

DATE SAMPLED: 5-14-93 Start (2400 Hr) 1250 End (2400 Hr) 1250

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1215	28.5	6.99	905	66.9	GREY	HEAVY
1230	57.0	6.84	928	65.9	"	"
1245	85.0	6.92	942	65.0	"	"

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

PURGING EQUIPMENT		SAMPLING EQUIPMENT	
___ 2" Bladder Pump	X 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: OK LOCK #: NONE

REMARKS: ___

Meter Calibration: Date: 5-14-93 Time: 1030 Meter Serial #: 9105 Temperature °F: ___

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

Location of previous calibration: MW-3

Signature: ___ Reviewed By: ___ Page 5 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-038.01 SAMPLE ID: MW-6

PURGED BY: IAN GRAHAM CLIENT NAME: ARCO # 6113

SAMPLED BY: IAN GRAHAM LOCATION: LIVERMORE, CA.

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	N/A
DEPTH TO WATER (feet):	19.20	CALCULATED PURGE (gal.):	N/A
DEPTH OF WELL (feet):	66.7	ACTUAL PURGE VOL. (gal.):	N/A

DATE PURGED: 5-14-93 Start (2400 Hr) N/A End (2400 Hr) N/A

DATE SAMPLED: 5-14-93 Start (2400 Hr) N/A End (2400 Hr) N/A

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
*	NO SAMPLE TAKEN		PRODUCT	THICKNESS	101'	

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

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

WELL INTEGRITY: OK LOCK #: 3759

REMARKS: ___

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

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

Location of previous calibration: ___

Signature: [signature] Reviewed By: [signature] Page 6 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-038.01 SAMPLE ID: MW-7 (66)

PURGED BY: IAN GRAHAM CLIENT NAME: ARCO # 6113

SAMPLED BY: IAN GRAHAM LOCATION: LIVERMORE, CA.

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 32.18

DEPTH TO WATER (feet): 18.34 CALCULATED PURGE (gal.): 96.54

DEPTH OF WELL (feet): 67.6 ACTUAL PURGE VOL. (gal.): 97.0

DATE PURGED: 5-14-93 Start (2400 Hr) 0900 End (2400 Hr) 0945

DATE SAMPLED: 5-14-93 Start (2400 Hr) 0950 End (2400 Hr) 0950

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
0915	32.5	7.18	706	65.7	BROWN	HEAVY
0930	65.0	7.18	720	64.5	"	"
0945	97.0	7.14	717	64.5	"	"

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

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: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 5-14-93 Time: 0630 Meter Serial #: 9105 Temperature °F: ___

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

Location of previous calibration: MW-1

Signature: [signature] Reviewed By: [signature] Page 7 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-038.01 SAMPLE ID: MW-8 (65')

PURGED BY: IAN GRAHAM CLIENT NAME: ARCO # 6113

SAMPLED BY: IAN GRAHAM LOCATION: LIVERMORE, CA.

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 33.13

DEPTH TO WATER (feet): 15.79 CALCULATED PURGE (gal.): 99.39

DEPTH OF WELL (feet): 66.5 ACTUAL PURGE VOL. (gal.): 99.5

DATE PURGED: 5-14-93 Start (2400 Hr) 0730 End (2400 Hr) 0815

DATE SAMPLED: 5-14-93 Start (2400 Hr) 0818 End (2400 Hr) 0818

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
0745	33.0	6.73	785	58.0	BROWN	HEAVY
0800	66.5	6.88	767	60.5	"	"
0815	99.5	6.83	767	60.5	"	"

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

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, XDUP-1): NONE

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: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 5-14-93 Time: 0630 Meter Serial #: 9105 Temperature °F: ___

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

Location of previous calibration: MW-1

Signature: [signature] Reviewed By: [signature] Page 5 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-038.01 SAMPLE ID: MW-9(68.)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 6113

SAMPLED BY: ↓ LOCATION: 785 E. STANLEY BL LIVERMORE, CA

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

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

CASING ELEVATION (feet/MSL): NR VOLUME IN CASING (gal.): 33.60

DEPTH TO WATER (feet): 16.57 CALCULATED PURGE (gal.): 100.80

DEPTH OF WELL (feet): 68.0 ACTUAL PURGE VOL (gal.): 101.00

DATE PURGED: 5-14-93 Start (2400 Hr) 0738 End (2400 Hr) 0821

DATE SAMPLED: 5-14-93 Start (2400 Hr) 0826 End (2400 Hr) 0828

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
0720	34.00	6.81	763	61.2	CLOUDY	LIGHT
0805	68.00	6.92	757	61.1	↓	↓
0821	101.00	6.84	755	61.3	↓	↓

D. O. (ppm): NR ODOR: NONE COLOR: NR (COBALT 0 - 100) TURBIDITY: 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: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 5-14-93 Time: 0625 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-2

Signature: Kevin Reichelderfer Reviewed By: ___ Page 9 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: 0670-038.01 SAMPLE ID: MW-10 (50)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 6113

SAMPLED BY: ↓ LOCATION: 785 E. STANLEY BLV LIVERMORE, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	19.53
DEPTH TO WATER (feet):	20.30	CALCULATED PURGE (gal.):	58.60
DEPTH OF WELL (feet):	50.2	ACTUAL PURGE VOL (gal.):	60.00

DATE PURGED: 5-14-93 Start (2400 Hr) 1101 End (2400 Hr) 1133

DATE SAMPLED: 5-14-93 Start (2400 Hr) 1138 End (2400 Hr) 1140

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1108	20.00	7.04	734	66.9	BROWN	HEAVY
1121	40.00	7.09	728	66.2	↓	↓
1133	60.00	7.11	735	66.7		

D. O. (ppm): NR ODOR: NONE COLOR: NR (COBALT 0 - 100) TURBIDITY: 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: OK LOCK #: 3259

REMARKS: ___

Meter Calibration: Date: 5-14-93 Time: 1055 Meter Serial #: 9203 Temperature °F: 72.9

(EC 1000 988 / 1000) (DI 9.91) (pH 7 7.03 / 7.00) (pH 10 10.01 / 10.00) (pH 4 3.92 —)

Location of previous calibration: ___

Signature: Kevin Reichelderfer Reviewed By: JP Page 10 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-038.01 | SAMPLE ID: MW-11 (44)

PURGED BY: K REICHELDERFER | CLIENT NAME: ARCO 6113

SAMPLED BY: ↓ | LOCATION: 785 E STANLEY BL LIVERMORE, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	4.00
DEPTH TO WATER (feet):	20.02	CALCULATED PURGE (gal.):	12.00
DEPTH OF WELL (feet):	44.5	ACTUAL PURGE VOL. (gal.):	6.50

DATE PURGED: 5-14-93 Start (2400 Hr) 0905 End (2400 Hr) 0916

DATE SAMPLED: 5-14-93 Start (2400 Hr) 0925 End (2400 Hr) 0927

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
0910	4.00	7.40	808	67.4	BROWN	HEAVY
0916	WELL DRIED @	6.50 GALLONS				
0929	RECHARGE	7.27	752	65.7	BROWN	HEAVY

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

COLOR (COBALT 0 - 100): NR

TURBIDITY (NTU 0 - 200): NR

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: OK LOCK #: DOLPHIN

REMARKS: 0916 - WELL DRIED @ 6.50 GALLONS DTW PRIOR TO SAMPLING: 38.05

Meter Calibration: Date: 5-14-93 Time: 0625 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-2

Signature: Kevin Reichelderfer Reviewed By: JB Page 11 of 12

WATER SAMPLE FIELD DATA SHEET

Rev. 2, 5/91

EMCON ASSOCIATES

PROJECT NO: OG70-038.01 SAMPLE ID: MW-12 (33)

PURGED BY: K REICHELDERFER CLIENT NAME: ARCO 6113

SAMPLED BY: ↓ LOCATION: 785 E. STANLEY BLVD LIVERMORE, CA

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

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

CASING ELEVATION (feet/MSL):	NR	VOLUME IN CASING (gal.):	2.21
DEPTH TO WATER (feet):	19.99	CALCULATED PURGE (gal.):	6.62
DEPTH OF WELL (feet):	33.5	ACTUAL PURGE VOL. (gal.):	7.00

DATE PURGED: 5-14-93 Start (2400 Hr) 0955 End (2400 Hr) 1022

DATE SAMPLED: 5-14-93 Start (2400 Hr) 1026 End (2400 Hr) 1028

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm @ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)
1006	2.50	6.87	882	65.3	BROWN	HEAVY
1015	5.00	6.88	853	63.6	↓	↓
1022	7.00	6.95	866	63.5	↓	↓

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

COLOR: NR (COBALT 0 - 100) TURBIDITY: 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: OK LOCK #: DOLPHIN

REMARKS: CASING IS BENT @ 21.0'; CAN ONLY USE 1" TEFLON BAILER

Meter Calibration: Date: 5-14-93 Time: 0625 Meter Serial #: 9203 Temperature °F: ___

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

Location of previous calibration: MW-2

Signature: Kevin Reichelderfer Reviewed By: JB Page 12 of 12

FIELD REPORT
DEPTH TO WATER / FLOATING PRODUCT SURVEY

PROJECT # : 0G70-038.01 STATION ADDRESS : 785 East Stanley Blvd. Livermore DATE : 6-17-93

ARCO STATION # : 6113 FIELD TECHNICIAN : J Williams DAY : Thurs

DTW Order	WELL ID	Well Box Seal	Well Lid Secure	Gasket	Lock	Locking Well Cap	FIRST DEPTH TO WATER (feet)	SECOND DEPTH TO WATER (feet)	DEPTH TO FLOATING PRODUCT (feet)	FLOATING PRODUCT THICKNESS (feet)	WELL TOTAL DEPTH (feet)	COMMENTS
1	MW-1	OK	YES	OK	3259	OK	19.21	19.21	ND	ND	44.7	
2	MW-2	OK	YES	OK	3259	OK	18.21	18.21	ND	ND	38.7	
3	MW-8	OK	YES	OK	3259	OK	15.79	15.79	ND	ND	66.6	
4	MW-9	OK	YES	OK	3259	OK	16.68	16.68	ND	ND	68.0	
5	MW-11	OK	YES	OK	Dolphin	OK	20.18	20.18	ND	ND	44.5	
6	MW-12	OK	YES	OK	Dolphin	OK	20.00	20.00	ND	ND	33.3	
7	MW-7	OK	YES	OK	3259	OK	18.36	18.36	ND	ND	67.7	
8	MW-3	OK	YES	OK	3259	OK	19.38	19.38	ND	ND	39.2	
9	MW-10	OK	YES	OK	~~3259~~ Dolphin	OK	20.30	20.30	ND	ND	50.0	
10	MW-4	OK	YES	OK	3259	OK	19.69	19.69	ND	ND	26.7	
11	MW-5	OK	YES	OK	~~none~~ Box	Slip	18.66	18.66	ND	ND	52.6	
12	MW-6	OK	YES	OK	3259	OK	18.54	18.54	ND	ND	66.7	

SURVEY POINTS ARE TOP OF WELL CASINGS

EMCON Associates

1938 Junction Avenue • San Jose, California 95131-2102 • **(408) 453-0719** • Fax (408) 453-0452

Date June 21, 1993

Project 0G70-038.01

To:

Mr. John Young

RESNA

3315 Almaden Expressway, Suite 34

San Jose, California 95118

We are enclosing:

Copies	Description
1	Depth To Water/Floating Product Survey Results
	June 1993 monthly water level survey, ARCO
	station 6113, 785 East Stanley Blvd., Livermore, CA

For your: X Information Sent by: X Mail

Comments:

Monthly water level data for the above mentioned site could not be performed due to site construction. Please call if you have any questions: (408) 453-2266.

Jim Butera JB

Reviewed by:

4/13/94

Robert Porter

Robert Porter, Senior Project Engineer.