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ALAMEDA COUNTY HEALTH CARE SERVCIES
AGENCY
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94612

DATE: 10/22/91
PROJECT NUMBER: 69013.05
SUBJECT: ARCO STATION 2152 AT 22141 CENTER STREET, CASTRO VALLEY, CALIFORNIA

FROM: LOU LEET
TITLE: GEOLOGIC TECHNICIAN

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LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Third Quarter 1991
at
ARCO Station 2152
22141 Center Street
Castro Valley, California

69013.05 10/18/91

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October 18, 1991
1016ccar
69013.05

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

Subject: Letter Report of Third Quarter 1991 Groundwater Monitoring at ARCO Station 2152, 22141 Center Street, Castro Valley, California.

Mr. Carmel:

This letter report summarizes the methods and results of third quarter 1991 groundwater monitoring performed by RESNA/Applied GeoSystems (RESNA) at the above-referenced site. The station is located on the southwestern corner of Grove Way and Center Street in Castro Valley, California, as shown on the Site Vicinity Map, Plate 1. ARCO Products Company (ARCO) has requested that RESNA perform quarterly groundwater sampling and subsequent laboratory analyses to monitor gasoline hydrocarbon concentrations associated with the former onsite underground gasoline-storage tanks and to evaluate trends related to fluctuations of these gasoline hydrocarbon concentrations. ARCO has also requested that RESNA perform monthly monitoring of groundwater levels in all onsite monitoring wells to evaluate monthly fluctuations in the groundwater gradient in the flow direction.

Previously, RESNA performed subsurface environmental investigations at the site related to the former underground-storage tanks. In August 1989, RESNA supervised the removal of five underground-storage tanks and installation of three new tanks onsite and collected soil samples for laboratory analysis in and around the former tank pit area. In October 1989, the product-dispenser lines and product-line sump associated with the former tanks were replaced. In June 1990, RESNA performed a limited environmental investigation, which included drilling six soil borings (B-4 through B-7, B-10, and B-11), collecting soil samples from the borings, and installing four groundwater monitoring wells (MW-1 through MW-4) and two vadose monitoring wells (VW-1 and VW-2). In September 1990, quarterly groundwater monitoring was initiated. On January 14 through 17 and February 21, 1991 a supplemental subsurface and remedial investigation was performed at the site, which

included nine soil borings (B-8, B-9, and B-12 through B-18), installation of three vadose wells (VW-3 through VW-5), and a vapor extraction test (RESNA/AGS, July 2, 1991). The results of these investigations are described in the reports listed in the references attached to this letter report. The locations of the groundwater and vadose monitoring wells and pertinent site features are shown on the Generalized Site Plan, Plate 2.

Groundwater Sampling and Gradient Evaluation

RESNA personnel performed monthly monitoring for depth-to-water (DTW) levels and subjective analysis for the presence of floating product in the groundwater in the wells onsite on May 2 and June 18, 1991 and performed quarterly groundwater sampling and monitoring of wells MW-1 through MW-4 on July 8, 1991. Field work consisted of measuring DTW levels in wells MW-1 through MW-4; subjectively analyzing the groundwater from these wells for the presence of gasoline hydrocarbon sheen and floating product; and purging and subsequently sampling the groundwater from all four wells for laboratory analysis. The methods utilized during this groundwater sampling episode are described in Appendix A, Groundwater Sampling Protocol.

Groundwater elevations were calculated for each well by subtracting DTW levels from the surveyed wellhead elevations. The DTW levels, wellhead elevations, and groundwater elevations for this and previous monitoring episodes at the site are summarized in Table 1, Cumulative Groundwater Monitoring Data. This quarter's monitoring data indicate an average interpreted groundwater gradient of 0.004 toward the southwest. Graphic interpretations for the May 2, June 18 and July 8, 1991 monitoring data are shown on the Groundwater Gradient Maps (Plates 3, 4, and 5, respectively). These interpreted gradients are generally consistent with the previously interpreted groundwater gradients for this site.

Groundwater samples were collected from wells MW-1 through MW-4 for subjective analysis on May 2, June 18, and July 8, 1991. No evidence of measurable floating product or hydrocarbon sheen was noted in the groundwater samples collected for subjective analysis from the monitoring wells.

Monitoring wells MW-1 through MW-4 were purged and sampled for laboratory analysis on July 8, 1991, in accordance with the attached protocol in Appendix A. Well purge data sheets for the parameters monitored are also included in Appendix A.

Laboratory Analysis

Groundwater samples collected from each of the monitoring wells (MW-1 through MW-4) were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene,

ethylbenzene, and total xylenes (BTEX) using modified Environmental Protection Agency (EPA) Methods 5030/8015/8020. All groundwater samples were delivered to Sequoia Analytical, in Redwood City, California (Hazardous Waste Testing Laboratory Certification No. 1210) under Chain of Custody protocol. The Chain of Custody Records and Laboratory Analysis Reports are attached to this letter report. Results of these and previous groundwater analyses are summarized in Table 2, Cumulative Results of Laboratory Analyses of Groundwater. The TPHg and benzene concentrations are shown on Plate 6, TPHg and Benzene Concentration Map.

Results of this quarter's laboratory analysis of groundwater samples from wells MW-1 through MW-4 indicate:

- Detectable TPHg concentrations in all four wells, ranging from 30 parts per billion (ppb) in well MW-2 to 120 ppb in MW-1; and

- Detectable BTEX concentrations in all four wells, ranging from 0.42 ppb in MW-2 to 9.6 ppb in well MW-1. Benzene exceeded the State Maximum Contaminant Level (MCL) in wells MW-1 and MW-4. These two wells are downgradient from the former underground tanks.

Conclusions and Recommendations

Concentrations of TPHg and BTEX have been nondetectable in well MW-4 since initiation of quarterly monitoring and in wells MW-1 through MW-3 for the past three quarters; however, detectable concentrations of TPHg and BTEX were present in all four of the wells this quarter. The presence of gasoline hydrocarbons this quarter may be related to the seasonal rise of water levels into a confining layer; water levels have been at their highest levels in both instances that detectable hydrocarbons were reported in the wells.

RESNA recommends continued quarterly groundwater monitoring and sampling to monitor concentrations of gasoline hydrocarbons in groundwater beneath the site. Monthly groundwater monitoring for DTW levels will be continued at the site to evaluate changes in groundwater gradient with time. Results of the vapor extraction test performed in February 1991 are presented in the Supplemental Subsurface and Remedial Investigation (RESNA/AGS, July 2, 1991, 69013-6); recommendations for additional work at the site will be included under separate cover.

Schedule

RESNA will continue the quarterly groundwater monitoring at this site to evaluate trends in gasoline hydrocarbons and changes in groundwater gradient with time. Routine well maintenance and quality control will be performed as necessary during these site visits. The next quarterly monitoring episode is scheduled for October 15, 1991.

RESNA recommends that copies of this report be forwarded to:

Mr. Scott O. Seery
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Mr. Lester Feldman
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

L. J. Leet

Lou Leet
Geological Technician

Joan E. Tiernan
Engineering Manager

cc: H.C. Winsor, ARCO Products Company

Enclosures: References
Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, May 2, 1991
Plate 4, Groundwater Gradient Map, June 18, 1991
Plate 5, Groundwater Gradient Map, July 8, 1991
Plate 6, TPHg/Benzene Concentration Map, July 8, 1991

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

Appendix A: Groundwater Sampling Protocol
Well Purge Data Sheets
Chain of Custody Record
Laboratory Analysis Reports
Uniform Hazardous Waste Manifest

REFERENCES

Applied GeoSystems. May 20, 1991. Letter Report, Quarterly Ground-Water Monitoring, Second Quarter 1991, 22141 Center Street, Castro Valley, California, AGS Report 69013-5.

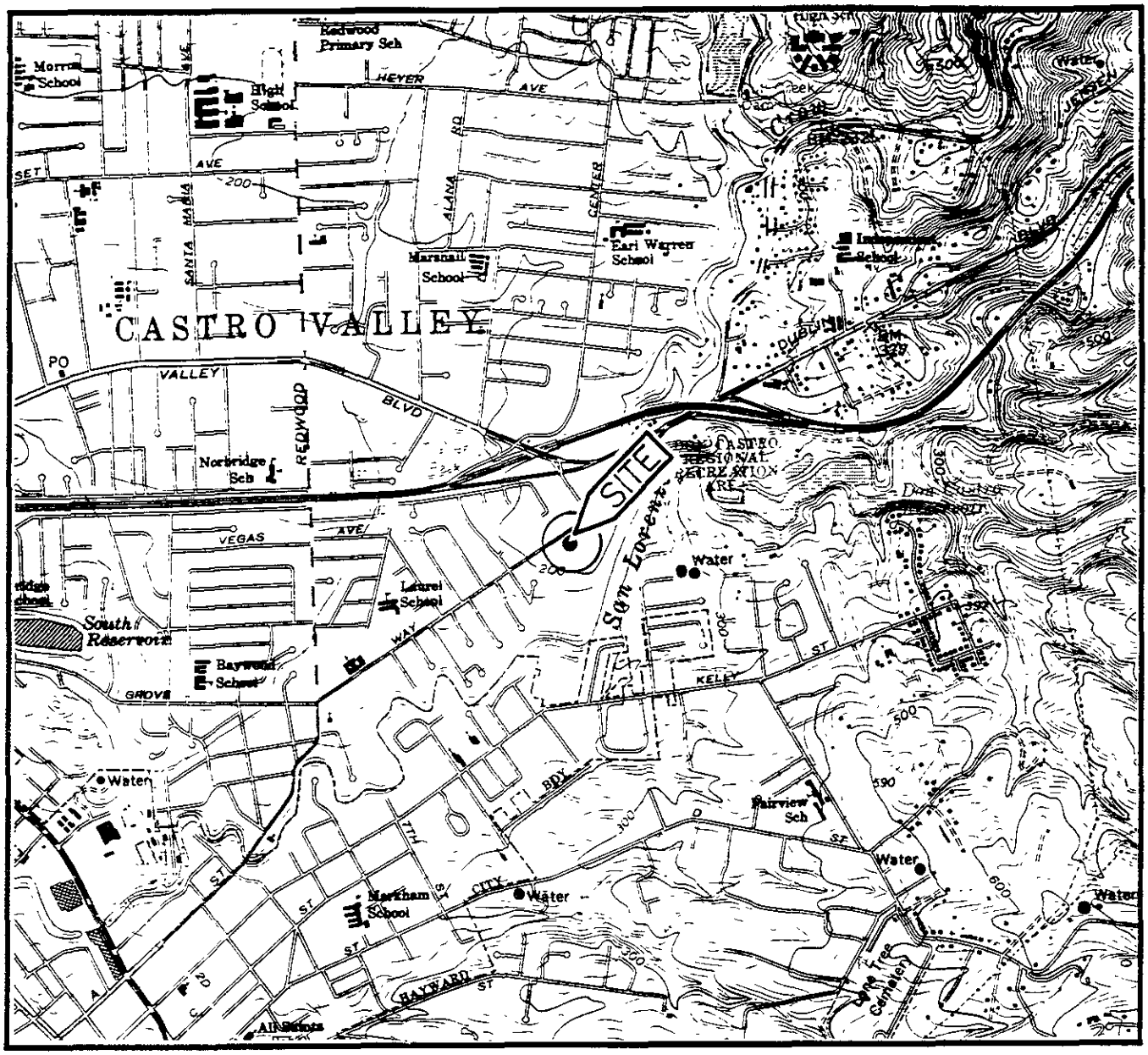
Applied GeoSystems. March 24, 1991. Letter Report, Quarterly Ground-Water Monitoring, First Quarter 1991, 22141 Center Street, Castro Valley, California, AGS Report 69013-5.

Applied GeoSystems. November 13, 1990. Environmental Subsurface Investigation at ARCO Station 2152, 22141 Center Street, Castro Valley, California: AGS Report 69013-4.

Applied GeoSystems. January 18, 1990. Limited Subsurface Environmental Investigation Related to Underground Tank Removal, 22141 Center Street, Castro Valley, California: AGS Report 69013-2.

Applied GeoSystems. May 26, 1989. Limited Environmental Site Assessment, 22141 Center Street, Castro Valley, California, AGS Report 69013-1.

RESNA/Applied GeoSystems. July 2, 1991. Supplemental Subsurface and Remedial Investigation at ARCO Station 2152, 22141 Center Street, Castro valley, California: AGS 69013-6.



Source: U.S. Geological Survey
7.5–Minute Quadrangle
Hayward, California
Photorevised 1980

N

Approximate Scale

2000 1000 0 2000 4000

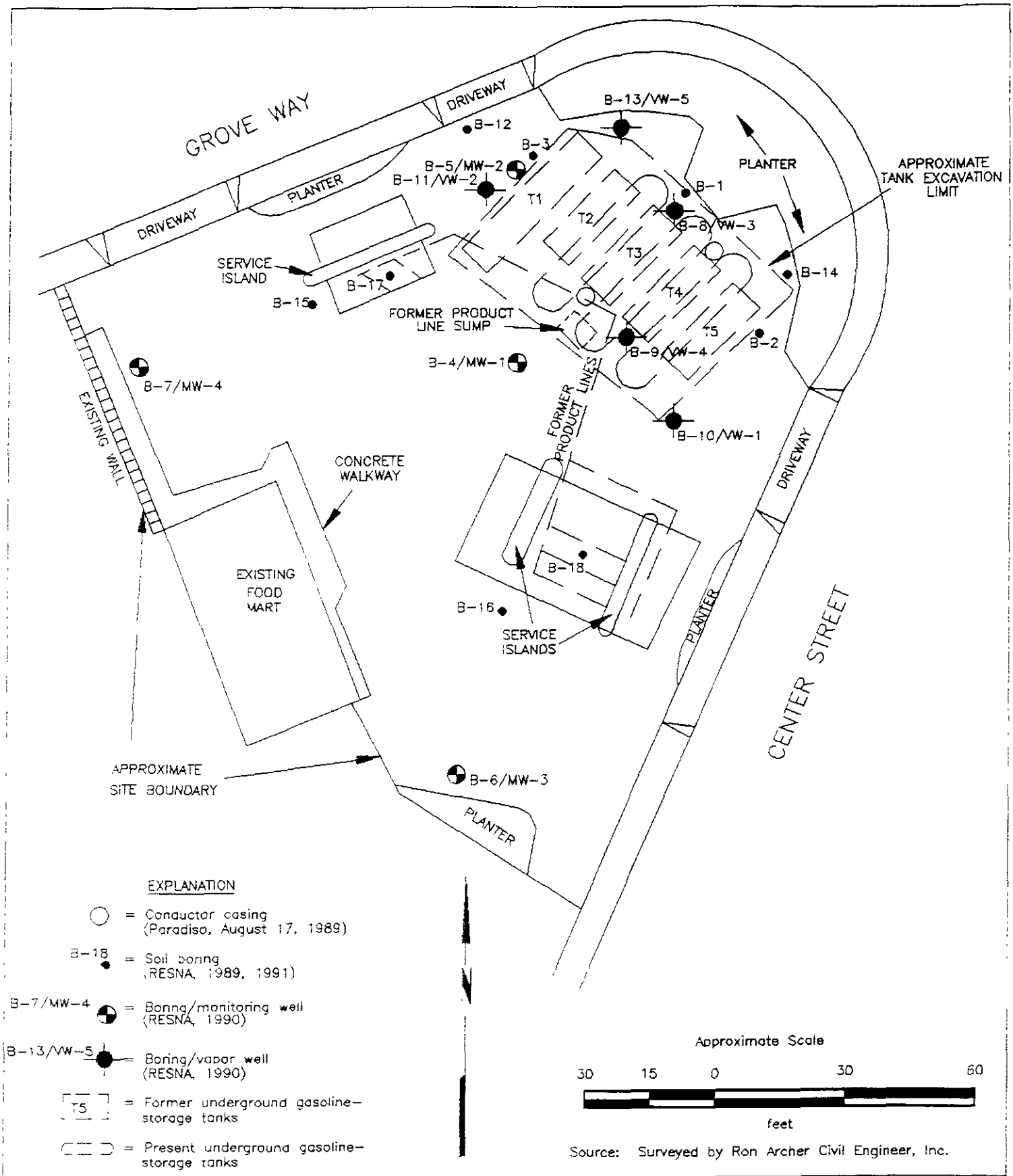
feet

Applied GeoSystems

PROJECT 69013-5

SITE VICINITY MAP
ARCO Station 2152
22141 Center Street
Castro Valley, California

PLATE 1



EXPLANATION

- ○ = Conductor casing (Paradiso, August 17, 1989)
- B-18 = Soil boring (RESNA, 1989, 1991)
- B-7/MW-4 = Boring/monitoring well (RESNA, 1990)
- B-13/VW-5 = Boring/vapor well (RESNA, 1990)
- T5 = Former underground gasoline-storage tanks
- = Present underground gasoline-storage tanks

Approximate Scale

30 15 0 30 60

feet

Source: Surveyed by Ron Archer Civil Engineer, Inc.

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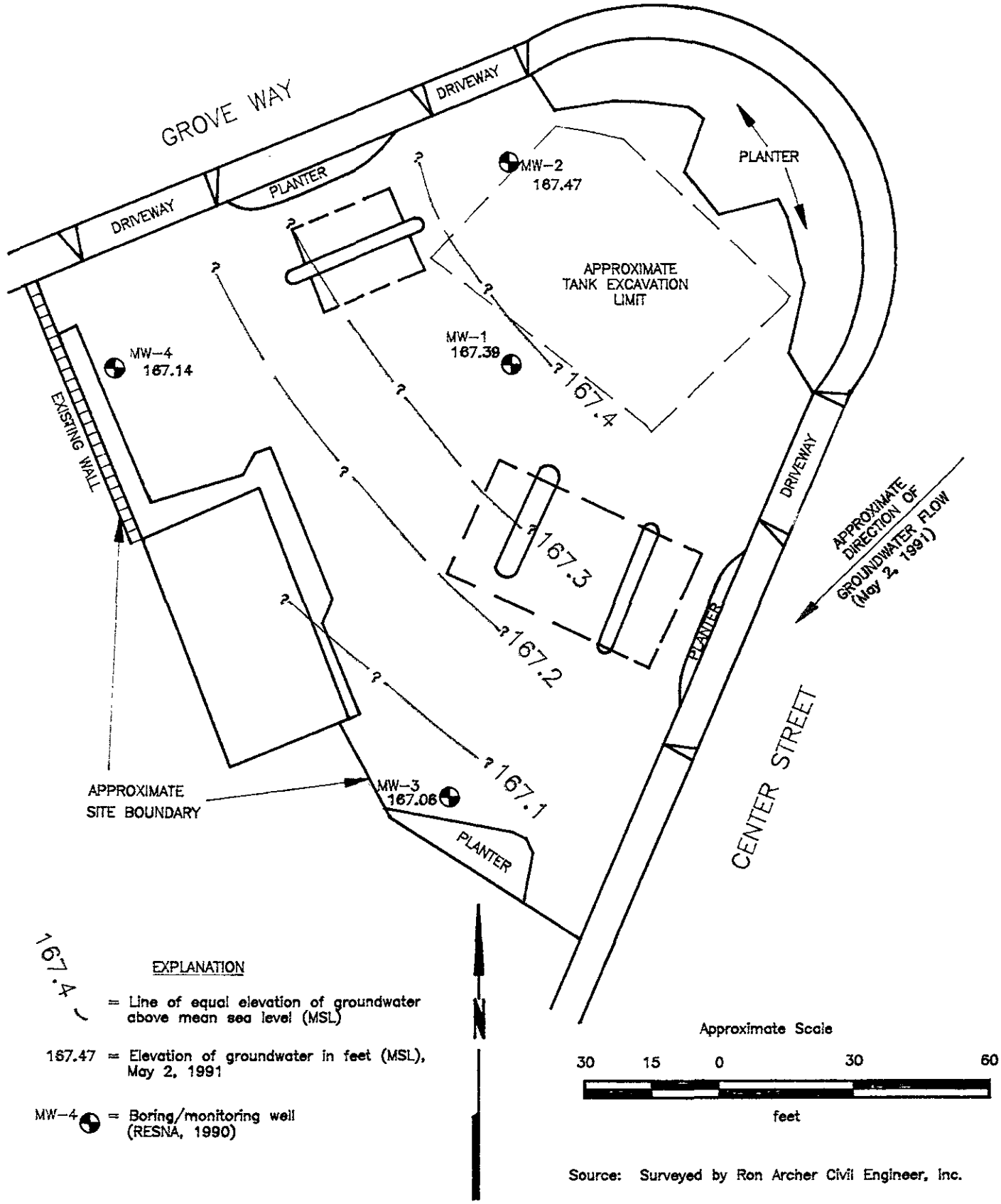
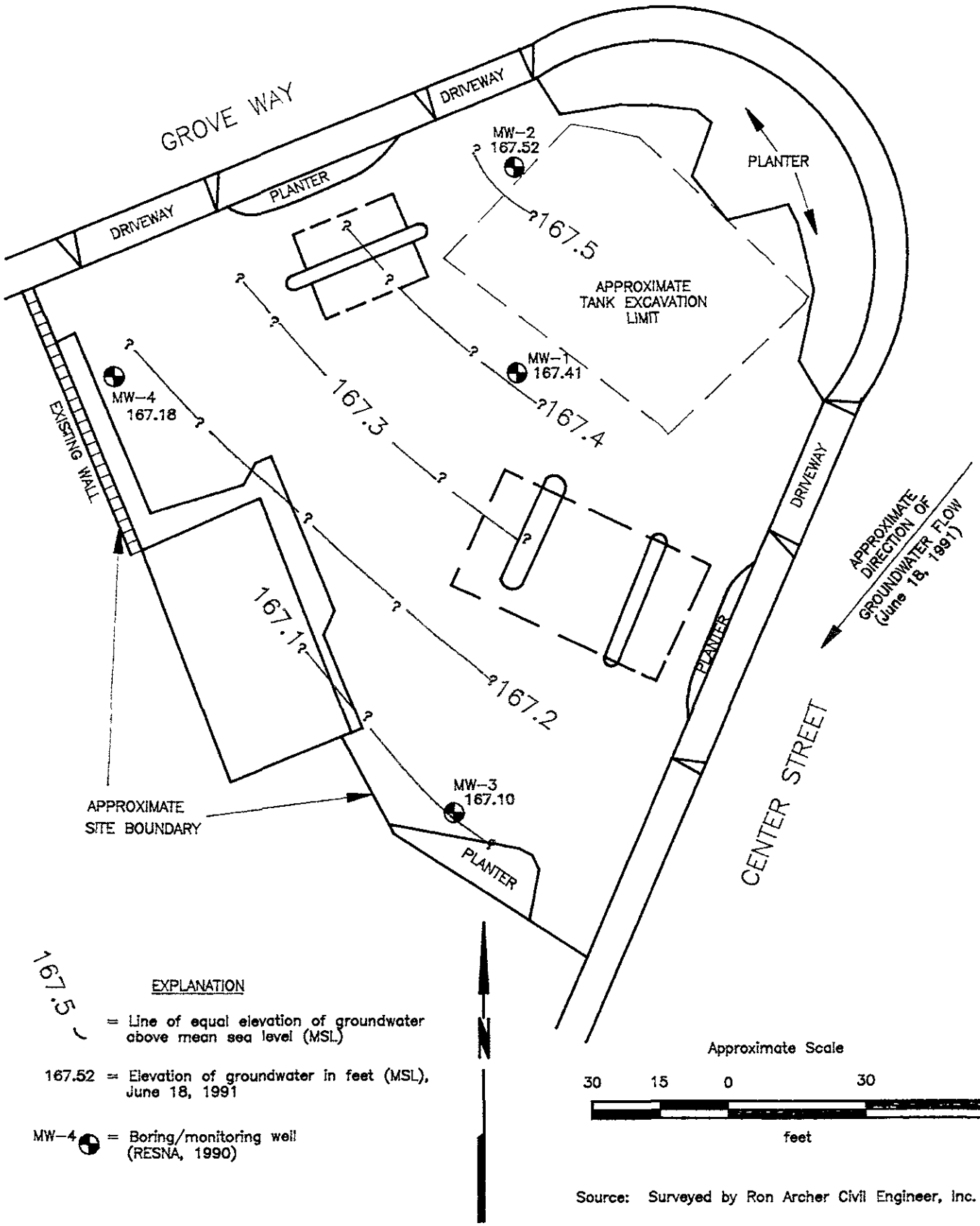
GENERALIZED SITE PLAN
ARCO Station 2152
22141 Center Street
Castro Valley, California

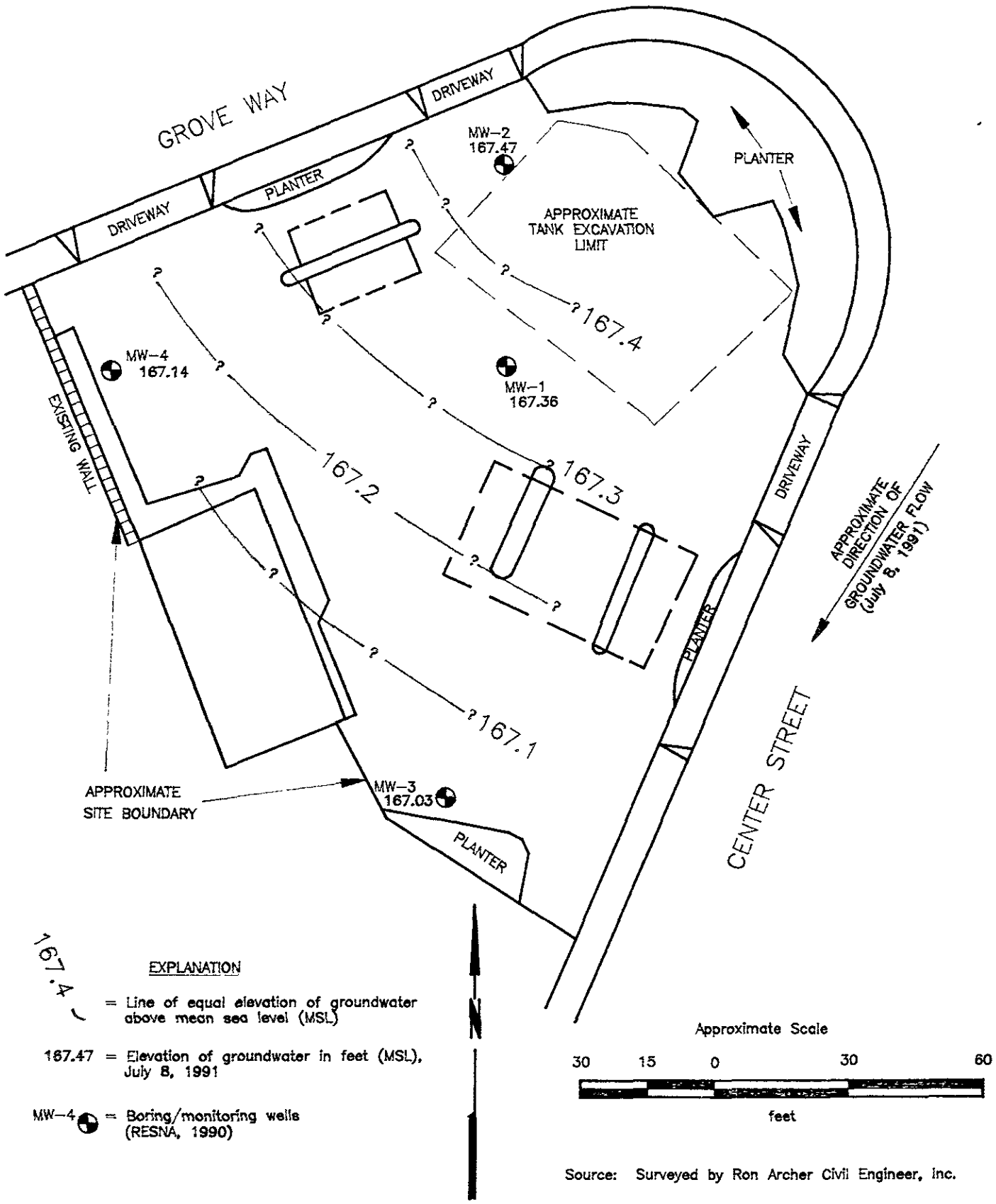
PLATE
2



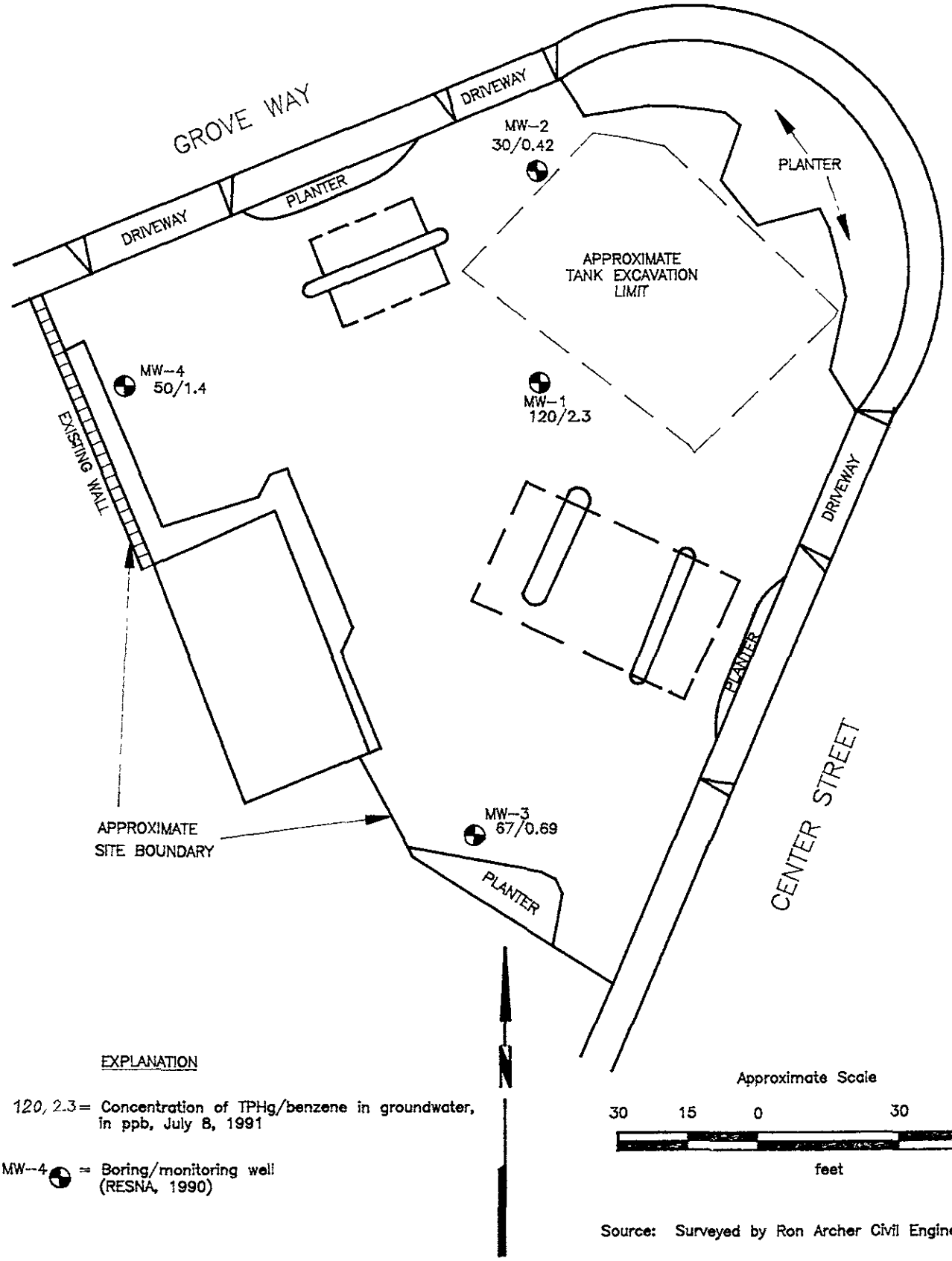
RESNA	**GROUNDWATER GRADIENT MAP** **ARCO Station 2152** **22141 Center Street** **Castro Valley, California**	**PLATE** **3**
PROJECT **69013.05**		



RESNA	**GROUNDWATER GRADIENT MAP** **ARCO Station 2152** **22141 Center Street** **Castro Valley, California**	**PLATE** **4**
PROJECT **69013.05**		



RESNA	**GROUNDWATER GRADIENT MAP** **ARCO Station 2152** **22141 Center Street** **Castro Valley, California**	**PLATE** **5**
PROJECT 69013.05		



RESNA	**TPHg/BENZENE CONCENTRATION IN GROUNDWATER ARCO Station 2152 22141 Center Street Castro Valley, California**	**PLATE 6**
PROJECT 69013.05		

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2152
Castro Valley, California
(Page 1 of 2)

Date Well Measured	Depth of Well	Well Elevation	Static Water Depth	Water Elevation
MW-1				
06/25/90	58.10	217.16	49.80	167.36
09/07/90			50.00	167.16
09/26/90			50.09	167.07
12/14/90			50.44	166.72
01/08/91			50.45	166.71
02/21/91			50.51	166.65
03/19/91			50.16	167.00
04/02/91			50.14	167.02
05/02/91	57.80		49.77	167.39
06/18/91			49.75	167.41
07/08/91			49.80	167.36
MW-2				
06/25/90	59.20	216.50	49.04	167.46
09/07/90			49.22	167.28
09/26/90			49.32	167.18
12/14/90			49.66	166.84
01/08/91			49.72	166.78
02/21/91			49.77	166.73
03/19/91			49.44	167.06
04/02/91			49.43	167.07
05/02/91	58.90		49.03	167.47
06/18/91			48.98	167.52
07/08/91			49.03	167.47
MW-3				
06/25/90	59.70	217.57	50.55	167.02
09/07/90			50.73	166.84
09/26/90			50.81	166.76
12/14/90			51.15	166.42
01/08/91			51.16	166.41
02/21/91			51.21	166.36
03/19/91			50.93	166.64
04/02/91			50.92	166.65
05/02/91	59.34		50.51	167.06
06/18/91			50.47	167.10
07/08/91			50.54	167.03

See notes on Page 2 of 2.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 2152
Castro Valley, California
(Page 2 of 2)

Date Well Measured	Depth of Well	Well Elevation	Static Water Depth	Water Elevation
MW-4				
06/25/90	60.30	215.18	48.06	167.12
09/07/90			48.25	166.93
09/26/90			48.35	166.83
12/14/90			48.68	166.50
01/08/91			48.70	166.48
02/21/91			48.76	166.42
03/19/91			48.44	166.74
04/02/91			48.43	166.75
05/02/91	60.00		48.04	167.14
06/18/91			48.00	167.18
07/08/91			48.04	167.14

Depth measurements in feet. Water elevation is mean sea level.
Static water level measured in feet below top of casing.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES
OF GROUNDWATER
ARCO Station 2152
Castro Valley, California

Well	Date	TPHg	B	T	E	X
MW-1	06/26/90	64	0.63	<0.50	<0.50	<0.50
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	120	2.3	4.6	1.3	9.6
MW-2	06/26/90	27	<0.50	<0.50	<0.50	<0.50
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	30	0.42	0.47	<0.30	0.89
MW-3	06/25/90	52	0.65	1.5	<0.50	2.0
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	67	0.69	1.5	0.65	4.7
MW-4	06/25/90	<20	<0.50	<0.50	<0.50	<0.50
	09/26/90	<50	<0.50	<0.50	<0.50	<0.50
	01/08/91	<50	<0.50	<0.50	<0.50	<0.50
	04/02/91	<50	<0.05	<0.05	<0.05	<0.05
	07/08/91	50	1.4	2.4	0.62	4.2

Results in parts per billion (ppb).
TPHg: Total petroleum hydrocarbons as gasoline
B:benzene T:toluene E:ethylbenzene X:total xylene isomers

APPENDIX A

GROUNDWATER SAMPLING PROTOCOL

The static water level in each well that contained water was measured with a Solinst® water-level indicator; this instrument is accurate to the nearest 0.01 foot. These groundwater depths were subtracted from wellhead elevations measured by Ron Archer, Civil Engineer, Inc., of Pleasanton, California, a licensed land surveyor, to calculate the differences in groundwater elevations.

Water samples collected for subjective evaluation were collected by gently lowering approximately half the length of a new, disposable bailer past the air-water interface (if possible) and collecting a sample from near the surface of the water in the well. The samples were checked for measurable floating hydrocarbon product and sheen.

Before water samples were collected from the groundwater monitoring wells, the wells were purged until stabilization of the temperature, pH, and conductivity was obtained. Approximately 3 to 8 well casing volumes of water were purged before these characteristics stabilized. The quantity of water purged from the wells was calculated as follows:

1 well casing volume = $\pi r^2 h(7.48)$ where:

r = radius of the well casing in feet.
h = column of water in the well in feet (well depth - depth to water).
7.48 = conversion constant from cubic feet to gallons

Gallons of water purged/gallons in 1 well casing volume = well casing volumes removed.

After purging, each well was allowed to recharge to within 80% of the initial water level. Water samples were then collected with an Environmental Protection Agency (EPA) new, disposable bailer. The water samples were carefully poured into 40-milliliter glass vials, which were filled to produce a positive meniscus. Each sample container was preserved with hydrochloric acid, sealed with a cap containing a Teflon® septum, and subsequently examined for air bubbles to avoid headspace which would allow volatilization to occur. The samples were promptly transported in iced storage in a thermally-insulated ice chest, accompanied by a Chain of Custody Record, to a California-certified laboratory. Purge water was removed from the site by H & H Ship Service Company, a licensed hazardous waste hauler. The Uniform Hazardous Waste Manifest is attached.

WELL PURGE DATA SHEET

Project Name: ARCO 2152 Job No. 69013.05

Date: 07/08/91 Page 1 of 4

Well No. MW-1 Time Started 10:34

Time (hr)	Gallons (cum.)	Temp. (F)	pH	Conduct. (micromho)
10:34	Started pumping.			
10:44	5	72.8	NA	2.15
10:56	10	75.6	NA	2.45
11:12	15	77.3	NA	2.57
11:26	20	72.0	NA	2.48
11:37	25	71.6	NA	2.47
11:51	30	71.3	NA	2.48
12:04	35	70.7	NA	2.48
12:18	40	70.8	NA	2.49
12:19	Stopped pumping.			

Notes:

Depth to Bottom (feet)	: 57.80
Depth to Water - initial (feet)	: 49.80
Depth to Water - final (feet)	: 49.87
% recovery	: 99%
Time Sampled	: 3:55
Gallons per Well Casing Volume	: 5.2
Gallons Purged	: 40
Well Casing Volumes Purged	: 7.7
Approximate Pumping Rate (gpm)	: 0.38

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WELL PURGE DATA SHEET

Project Name: ARCO 2152 Job No. 69013.05

Date: 07/08/91 Page 2 of 4

Well No. MW-2 Time Started 12:35

Time (hr)	Gallons (cum.)	Temp. (F)	pH	Conduct. (micromho)
12:34	Started pumping.			
12:45	5	72.3	NA	3.57
12:51	10	72.9	NA	3.55
1:03	15	71.0	NA	3.45
1:11	20	71.1	NA	3.11
1:15	25	72.3	NA	3.15
1:23	30	71.7	NA	3.10
1:28	35	71.6	NA	3.06
1:33	40	72.3	NA	3.02
1:38	45	72.3	NA	2.92
1:45	50	72.4	NA	2.91
1:47	Stopped pumping.			

Notes:

Depth to Bottom (feet) : 58.90
Depth to Water - initial (feet) : 49.03
Depth to Water - final (feet) : 49.10
% recovery : 99%
Time Sampled : 3:40
Gallons per Well Casing Volume : 6.5
Gallons Purged : 50
Well Casing Volumes Purged : 7.6
Approximate Pumping Rate (gpm) : 0.41

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WELL PURGE DATA SHEET

Project Name: ARCO 2152 Job No. 69013.05

Date: 07/08/91 Page 3 of 4

Well No. MW-3 Time Started 2:07

Time (hr)	Gallons (cum.)	Temp. (F)	pH	Conduct. (micromho)
2:07	Started pumping.			
2:11	5	75.8	NA	3.29
2:16	10	75.2	NA	3.16
2:20	15	73.9	NA	3.10
2:24	20	74.3	NA	3.07
2:28	25	73.9	NA	3.02
2:32	30	74.5	NA	2.92
2:38	35	73.6	NA	2.93
2:43	40	73.5	NA	2.94
2:47	45	73.7	NA	2.93
2:51	50	73.8	NA	2.93
2:52	Stopped pumping.			

Notes:

Depth to Bottom (feet) : 59.40
Depth to Water - initial (feet) : 50.54
Depth to Water - final (feet) : 50.60
% recovery : 99%
Time Sampled : 4:10
Gallons per Well Casing Volume : 5.8
Gallons Purged : 50
Well Casing Volumes Purged : 8.6
Approximate Pumping Rate (gpm) : 1.11

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WELL PURGE DATA SHEET

Project Name: ARCO 2152 Job No. 69013.05

Date: 07/08/91 Page 4 of 4

Well No. MW-4 Time Started 8:30

Time (hr)	Gallons (cum.)	Temp. (F)	pH	Conduct. (micromho)
8:30	Started pumping.			
8:39	5	67.1	NA	2.24
8:51	10	66.7	NA	2.10
9:02	15	66.8	NA	2.10
9:14	20	67.6	NA	2.13
9:21	25	67.5	NA	2.02
9:32	30	68.1	NA	2.16
9:43	35	68.0	NA	2.15
9:58	40	68.1	NA	2.16
10:06	45	68.0	NA	2.17
10:09	Stopped pumping.			

Notes:

Depth to Bottom (feet) : 60.00
Depth to Water - initial (feet) : 48.04
Depth to Water - final (feet) : 48.10
% recovery : 99%
Time Sampled : 3:20
Gallons per Well Casing Volume : 12
Gallons Purged : 46
Well Casing Volumes Purged : 3.8
Approximate Pumping Rate (gpm) : 0.51

RESNA

ARCO Products Company
Division of AtlanticRichfieldCompany

Chain of Custody

Task Order No. 2152-90-3

ARCO Facility no. 2152	City (Facility) CASTRO VALLEY	Project manager (Consultant) JOEL COFFMAN / LOU LEET	Laboratory name SEQUOIA
ARCO engineer CHUCK CARMEL	Telephone no. (ARCO)	Telephone no. (Consultant) 408-264-7723	Fax no. (Consultant) 408-264-2435	Contract number 907-0073
Consultant name APPLIED GEOSYSTEMS	Address (Consultant) 3315 ALMADEN EXPRESSWAY SUITE 34, SAN JOSE, CA		Method of shipment SEQUOIA COURIER

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 ☐		
W-RINSATE	1			X		X		7-8-91	3:30	HOLD												
W-48-MW4	4			X		X	X	7-8-91	3:20		X			107		56		A-D				
W-49-MW2	4			X		X	X	7-8-91	3:40		X					57						
W-49-MW1	4			X		X	X	7-8-91	3:55		X					58						
W-50-MW3	4			X		X	X	7-8-91	4:10		X					59						

Special detection Limit/reporting

Special QA/QC

Remarks
JOB NO 69013.05

Lab number

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

Condition of sample: GOOD		Temperature received: COLD	
Relinquished by sampler: L. J. Leet	Date: 9 JULY 91	Time: 12:45 PM	Received by: Kevin Van Standaroot
Relinquished by: Kevin Van Standaroot	Date: 9 JULY 91	Time: 1:45 PM	Received by:
Relinquished by:	Date: 7-9	Time: 145pm	Received by laboratory: [illegible] Date:	Time:

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

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Project: ARCO 2152, Castro Valley

Enclosed are the results from 4 water samples received at Sequoia Analytical on July 9,1991. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
1071156	Water, W-48-MW4	7/8/91	EPA 5030/8015/8020
1071157	Water, W-49-MW2	7/8/91	EPA 5030/8015/8020
1071158	Water, W-49-MW1	7/8/91	EPA 5030/8015/8020
1071159	Water, W-50-MW3	7/8/91	EPA 5030/8015/8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems	Client Project ID:	ARCO 2152, Castro Valley	Sampled:	Jul 8, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript:	Water	Received:	Jul 9, 1991
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Jul 10, 1991
Attention: Joel Coffman	First Sample #:	107-1156	Reported:	Jul 19, 1991

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons ug/L (ppb)	Benzene ug/L (ppb)	Toluene ug/L (ppb)	Ethyl Benzene ug/L (ppb)	Xylenes ug/L (ppb)
107-1156	W-48-MW4	50	1.4	2.4	0.62	4.2
107-1157	W-49-MW2	30	0.42	0.47	N.D.	0.89
107-1158	W-49-MW1	120	2.3	4.6	1.3	9.6
107-1159	W-50-MW3	67	0.69	1.5	0.65	4.7
Detection Limits:		**30**	**0.30**	**0.30**	**0.30**	**0.30**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Elizabeth W. Hackl
Project Manager

1071156.APG <1>

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems
3315 Almaden Expressway, Ste 34
San Jose, CA 95118
Attention: Joel Coffman

Client Project ID: ARCO 2152, Castro Valley
QC Sample Group: 1071156-59
Reported: Jul 19, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	L. Laikhtman	L. Laikhtman	L. Laikhtman	L. Laikhtman
Reporting Units:	ng	ng	ng	ng
Date Analyzed:	Jul 11, 1991	Jul 11, 1991	Jul 11, 1991	Jul 11, 1991
QC Sample #:	GBLK071191 MS/MSD	GBLK071191 MS/MSD	GBLK071191 MS/MSD	GBLK071191 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	100	100	100	300
Conc. Matrix Spike:	100	100	99	300
Matrix Spike % Recovery:	100	100	99	100
Conc. Matrix Spike Dup.:	100	100	110	310
Matrix Spike Duplicate % Recovery:	100	100	110	100
Relative % Difference:	0.0	0.0	11	3.3

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Elizabeth W. Hackl
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

Please print or type. Form designed for use on elite (12-pitch typewriter).

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of

3. Generator's Name and Mailing Address
ARCO
P. O. Box 5811, San Mateo, CA 94402

4. Generator's Phone (415) 571-2634/571-2428

5. Transporter 1 Company Name | 6. US EPA ID Number
H & H Ship Service Company | C A D 0 0 4 7 7 1 1 6 8

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107 | C A D 0 0 4 7 7 1 1 6 8

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	State No.
a. OIL AND WATER NON-RCRA HAZARDOUS WASTE LIQUID	001	TT	002420	G	134
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above
FUEL, OIL AND WATER
PROFILE #A1040

K. Handling Codes for Wastes Listed Above
a. 01 | b.
c. | d.

15. Special Handling Instructions and Additional Information
[illegible] OB SITE ARCO STATION #2152
[illegible] 211 Center
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
[illegible]	[illegible]	01	10	91

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
ROBERT J. [illegible]	[illegible]			

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

DHS 8022 A
EPA 8700—22
(Rev. 6-89) Previous editions are obsolete.

Do Not Write Below This Line

YELLOW: GENERATOR RETAINS