Applied GeoSystems, Inc.
A RESNA Company

RESNA
Working To Restore Nature

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

TRANSMITTAL

TO: MR. LARRY SETO
ALAMEDA COUNTY DEH
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94621

DATE: 11/22/91
PROJECT NUMBER: 60000.05
SUBJECT: ARCO STATION 771 AT 899 RINCON AVENUE, LIVERMORE, CALIFORNIA

FROM: LOU LEET
TITLE: GEOLOGIC TECHNICIAN

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

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REMARKS: THIS REPORT HAS BEEN FORWARDED TO YOU AT THE REQUEST OF MR. CHUCK CARMEL OF ARCO PRODUCTS COMPANY.

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*Revision Date: 11/21/91
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San Jose, CA 95118
Phone: (408) 264-7723
Fax: (408) 264-2435

LETTER REPORT
QUARTERLY GROUNDWATER MONITORING
Third Quarter 1991
at
ARCO Station 771
899 Rincon Avenue
Livermore, California

60000.05

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

November 21, 1991
1026ccar
60000.05

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

Subject: Third Quarter 1991 Groundwater Monitoring Report for ARCO Station 771, 899 Rincon Avenue, Livermore, California.

Mr. Carmel:

As requested by ARCO Products Company (ARCO), this letter report summarizes the methods and results of third quarter 1991 groundwater monitoring performed by RESNA at the above-referenced site. The station is located on the southwestern corner of the intersection of Rincon Avenue and Pine Street in Livermore, California, as shown on the Site Vicinity Map, Plate 1. ARCO has requested that RESNA perform monthly water level measurements and quarterly groundwater sampling to monitor gasoline hydrocarbon concentrations associated with the gasoline-storage tanks at the site, and to evaluate trends related to fluctuations of these hydrocarbon concentrations.

Prior to this quarterly monitoring period, RESNA performed assessments and investigations at the site. In February 1990, RESNA performed an environmental site assessment (Applied GeoSystems [AGS], June 1990), which included the drilling of three borings (B-1 through B-3). In December 1990, RESNA performed a supplemental subsurface investigation which included three soil borings (B-4 through B-6) and installation of monitoring wells MW-1, MW-2, and MW-3 (AGS, April 1991). In January 1991, quarterly monitoring was initiated. In July 1991, RESNA performed an additional subsurface investigation which included soil borings (B-7 through B-11) and installation of monitoring wells MW-4 through MW-7 (RESNA, October 9, 1991). The results of these investigations are presented in the reports listed in the references attached to this letter report. The locations of the soil borings, groundwater 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 of groundwater elevations and subjective analyses on June 20, July 25, August 13, and September 12, 1991; in addition, quarterly sampling was performed on July 25, 1991. Field work consisted of measuring depth-to-water (DTW) levels in wells MW-1, MW-2, and MW-3 in June, and MW-1 through MW-7 in July, August, and September; subjectively analyzing water from these wells for the presence of petroleum hydrocarbon sheen and floating product; removing floating product and sheen; and purging and sampling groundwater from monitoring wells MW-3 through MW-7 for laboratory analysis. The groundwater sampling protocol is presented in Appendix A.

Subjective analyses of groundwater monitoring wells this quarter indicated the presence of floating product up to 0.49 feet in wells MW-1, MW-2, MW-5 (no sheen or floating product was present in well MW-5 during the July monitoring and sampling), and MW-7. No evidence of petroleum hydrocarbons was noted in wells MW-3 and MW-6. Cumulative results of subjective analyses are presented in Table 1, Cumulative Groundwater Monitoring Data.

The DTW levels, wellhead elevations, and groundwater elevations for this and previous monitoring episodes at the site are summarized in Table 1. Groundwater elevations in wells containing floating product were calculated as stated in Appendix A. Groundwater gradients from June through September ranged from approximately 0.003 to 0.03, with an interpreted average groundwater gradient of approximately 0.02 toward the northwest. Groundwater gradients for June 20, July 25, August 13, and September 12, 1991 are shown on the Groundwater Gradient Maps, Plates 3, 4, 5, and 6, respectively. Due to floating product in wells MW-1, MW-2, and MW-5, these gradients are considered approximate.

Monitoring wells MW-3 through MW-7 were purged and sampled in accordance with the attached protocol. Wells MW-1 and MW-2 were not sampled due to the presence of free product, which was bailed from the wells. Floating product was measured in well MW-5 in August and September, after sampling the well in July 1991. Purge water was removed from the site by a licensed hazardous waste hauler; the Uniform Hazardous Waste Manifest is attached in Appendix A.

Laboratory Analysis

Water samples collected from wells MW-3 through MW-7 were sent to Sequoia Analytical in Redwood City, California (Hazardous Waste Testing Laboratory Certification No. 1210). The samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and total xylenes (BTEX) using modified Environmental Protection

Agency (EPA) Methods 5030/8015/8020. The Chain of Custody Records and Laboratory Analysis Reports are attached in Appendix A. Results of these and previous water analyses are summarized in Table 2, Cumulative Results of Laboratory Analysis of Groundwater Samples. Concentration contours of TPHg and benzene are shown on Plates 7 and 8, respectively.

Results of this quarter's groundwater samples analyses indicate:

- Wells MW-1, MW-2, and MW-5 contained floating product during this quarter;
- TPHg ranged from 110 parts per billion (ppb) in well MW-3 to 57,000 ppb in well MW-5;
- Concentrations of benzene exceeded the State Maximum Contaminant Level (MCL) of 1 ppb in wells MW-4 (590 ppb), MW-5 (2,300 ppb), MW-6 (3,000 ppb), and MW-7 (1,500);
- Concentrations of toluene exceeded the State Recommended Action Level (AL) of 100 ppb in wells MW-4 (730 ppb), MW-5 (4,200 ppb), MW-6 (200 ppb), and MW-7 (2,700 ppb);
- Concentrations of ethylbenzene exceeded the MCL of 680 ppb in well MW-7 (1,200 ppb); and
- Concentrations of xylene exceeded the MCL of 1750 ppb in wells MW-4 (3,500 ppb), MW-5 (14,000 ppb), and MW-7 (9,200).

Monitoring and Removal of Free Product

Floating product was measured and removed during monthly and quarterly monitoring episodes. Quantities of floating product are presented in Table 3, Approximate Cumulative Product Recovered. The total year-to-date recovered product is approximately 2.26 gallons.

Conclusions and Recommendations

Groundwater at this site has been impacted by gasoline hydrocarbons. The extent of gasoline hydrocarbons has not been delineated. A draft subsurface report, which includes a proposal for additional work was submitted to ARCO in October 1991. When ARCO's

comments have been incorporated into the report, the final report will be sent to the appropriate regulatory agencies.

RESNA recommends continued monthly site visits for water levels and floating product removal; quarterly sampling of all wells that do not contain floating petroleum hydrocarbons or sheen; and analyses for TPHg and BTEX by EPA Standard Method 5030/8015/8020. Further recommendations will be submitted under separate cover.

Schedule

RESNA will continue to measure water and product levels and remove product on a monthly basis, and sample groundwater on a quarterly basis to evaluate trends in gasoline hydrocarbons and changes in groundwater gradient over 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 30, 1991.

RESNA also recommends that copies of this letter report be forwarded to:

Mr. Larry Seto
Alameda County Department of Environmental Health
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

Mr. Randy Griffith
Livermore Fire Department
4550 East Avenue
Livermore, California 94550

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

Sincerely,
RESNA

L. J. Leet

Lou Leet
Geologic Technician

Joan E. Tiernan
Registered Civil
Engineer 044600

cc: W. C. Winsor, ARCO Product Company

Enclosures: References
Plate 1, Site Vicinity Map
Plate 2, Generalized Site Plan
Plate 3, Groundwater Gradient Map, June 20, 1991
Plate 4, Groundwater Gradient Map, July 25, 1991
Plate 5, Groundwater Gradient Map, August 13, 1991
Plate 6, Groundwater Gradient Map, September 12, 1991
Plate 7, TPHg Concentration Map, July 25, 1991
Plate 8, Benzene Concentration Map, July 25, 1991

Table 1, Cumulative Groundwater Monitoring Data
Table 2, Cumulative Results of Laboratory Analyses of Groundwater Samples
Table 3, Approximate Cumulative Product Removed

Appendix A: Groundwater Sampling Protocol
Chain of Custody Records
Laboratory Analysis Reports
Uniform Hazardous Waste Manifest

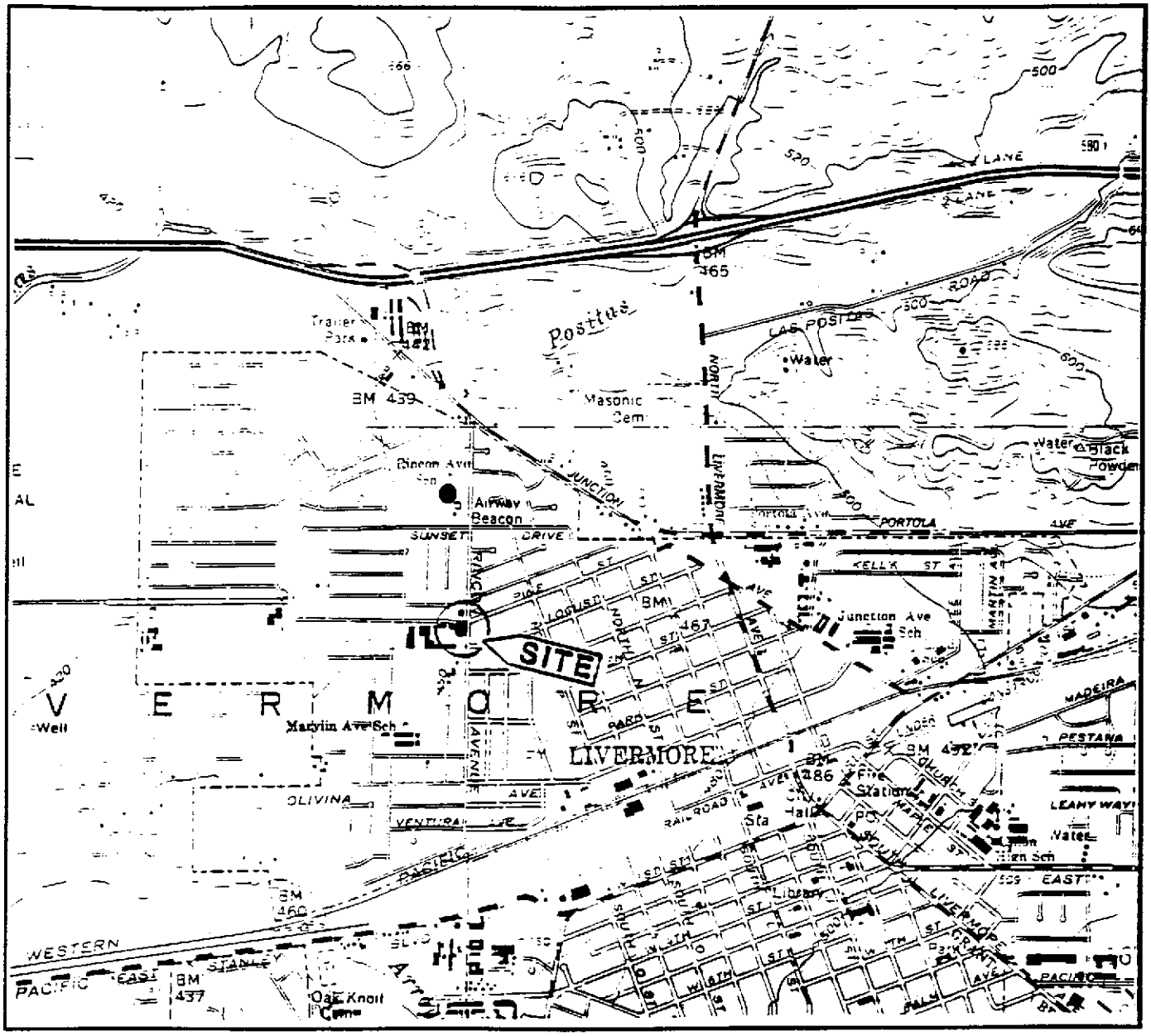
REFERENCES

Applied GeoSystems, June 22, 1990. Limited Subsurface Environmental Assessment, ARCO Station No. 771, Livermore, California. AGS 60000-1.

RESNA/Applied Geosystems, April 12, 1991. Supplemental Subsurface Investigation at ARCO Station No. 771, Livermore, California. AGS 60000.04.

RESNA/Applied GeoSystems, July 12, 1991. Letter Report Quarterly Ground-Water Monitoring Second Quarter 1991 at ARCO Station 771, 899 Rincon Avenue, Livermore, California. AGS 60000.05

RESNA/Applied GeoSystems, October 9, 1991. Draft Report on Additional Subsurface Investigation at ARCO Station 771, 899 Rincon Avenue, Livermore, California. 60000.06



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

N

LEGEND

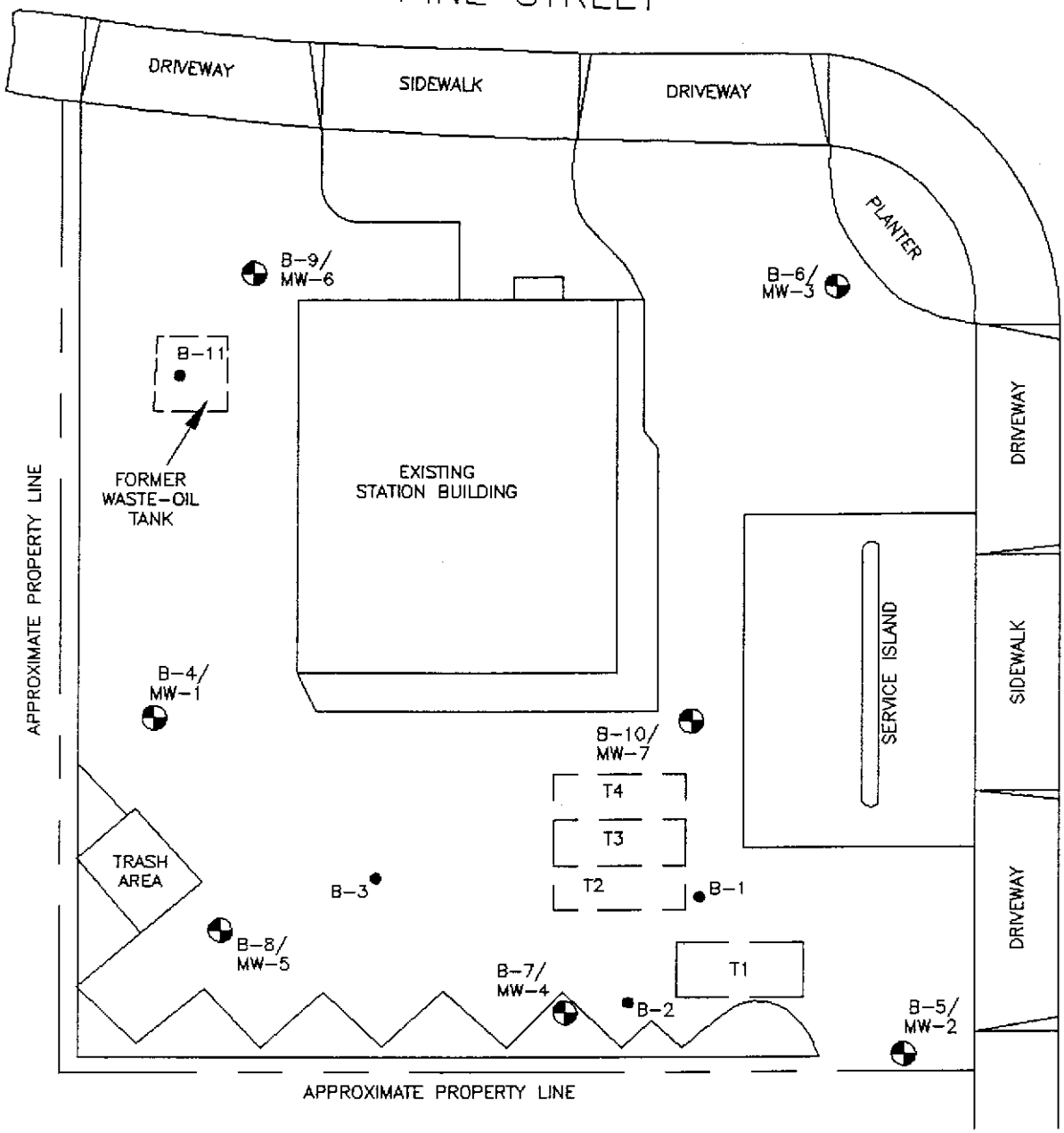
◉ = Site Location

Approximate Scale

2000 1000 0 2000 4000

feet

RESNA	**SITE VICINITY MAP** **ARCO Station 771** **899 Rincon Avenue** **Livermore, California**	**PLATE** **1**
PROJECT 60000.05		



EXPLANATION

B-10/ MW-7 = Monitoring well (RESNA, December 1990, June and July 1991)

B-11 = Soil boring (RESNA, February 1990, July 1991)

T4 = Underground gasoline-storage tank

N

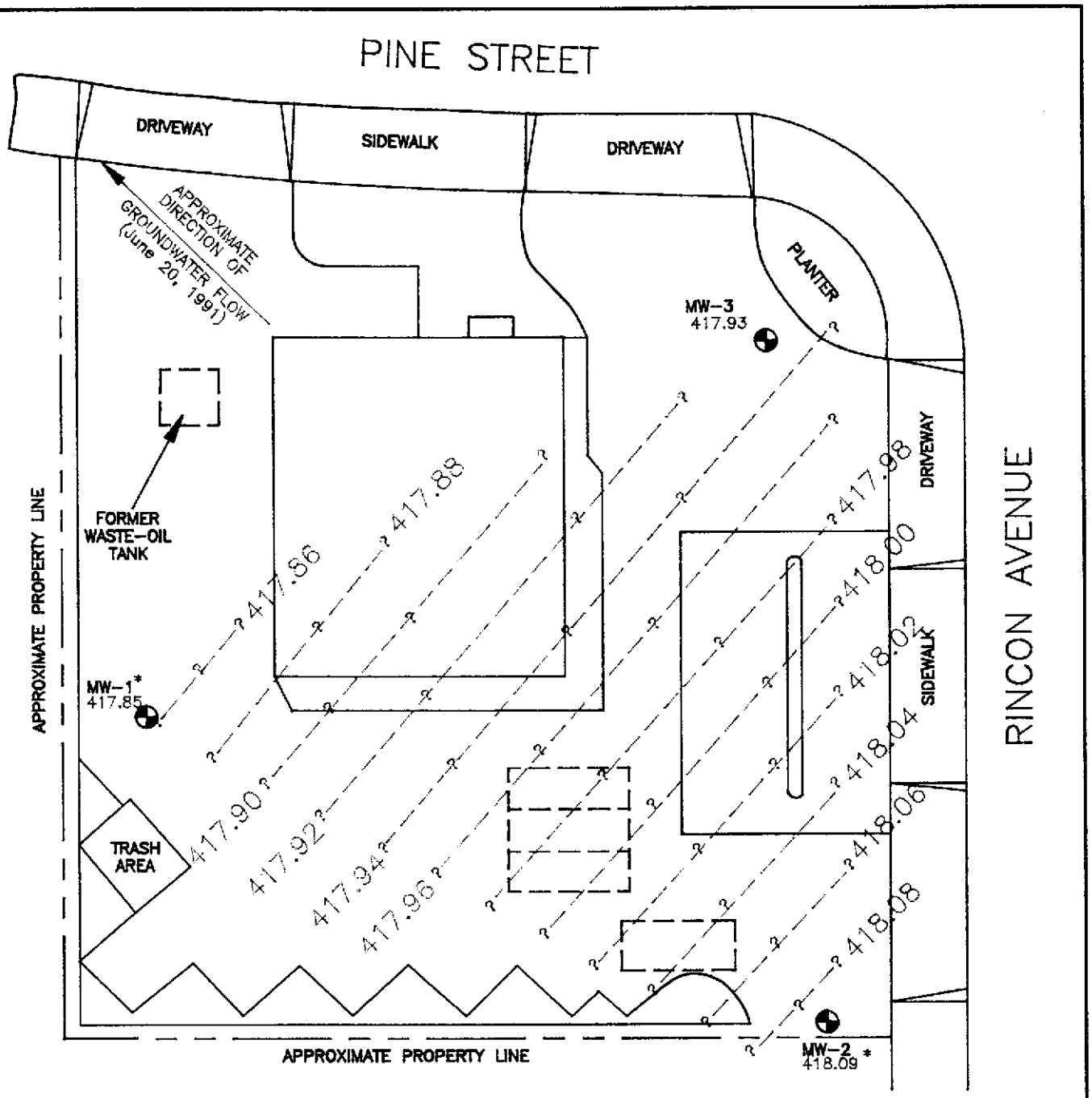
Approximate Scale

20 10 0 20 40

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

RESNA	**GENERALIZED SITE PLAN** **ARCO Station 771** **899 Rincon Avenue** **Livermore, California**	**PLATE** **2**
PROJECT 60000.05		



418.08 — = Line of equal elevation of groundwater above mean sea level (MSL)

418.09 = Elevation of groundwater in feet MSL June 20, 1991

MW-3 = Monitoring well (RESNA, December 1990)

* = Floating product or product sheen present in well

N

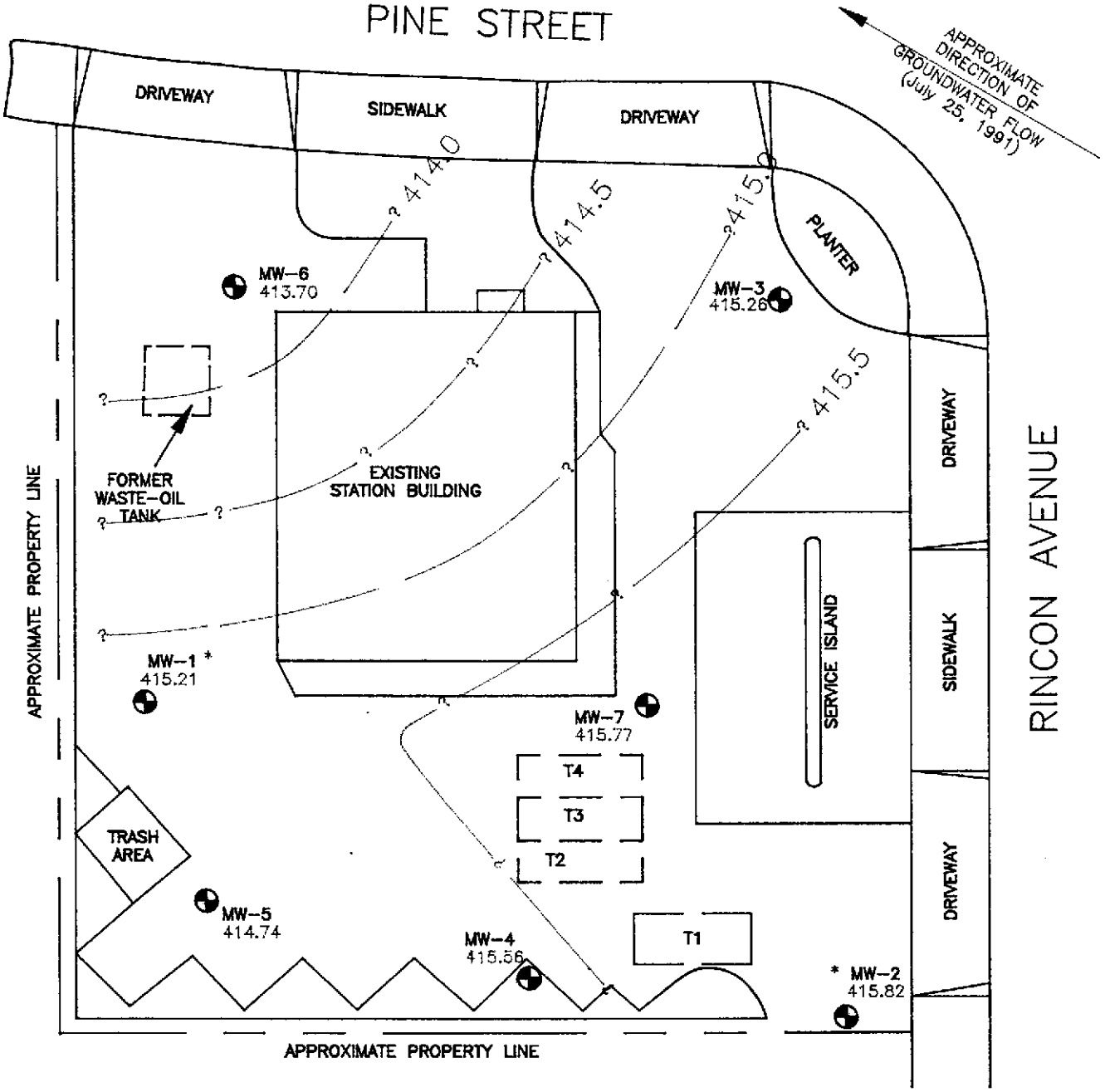
Approximate Scale

20 10 0 20 40

feet

Source: Surveyed by Ron Archer Civil Engineer, Inc.

RESNA	**GROUNDWATER GRADIENT MAP** **ARCO Station 771** **899 Rincon Avenue** **Livermore, California**	**PLATE** **3**
PROJECT 60000.05		



EXPLANATION

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

415.82 = Elevation of groundwater in feet MSL July 25, 1991

MW-7 = Monitoring well (RESNA, December 1990, June and July 1991)

T4 = Underground gasoline-storage tank

* = Product or product sheen

N

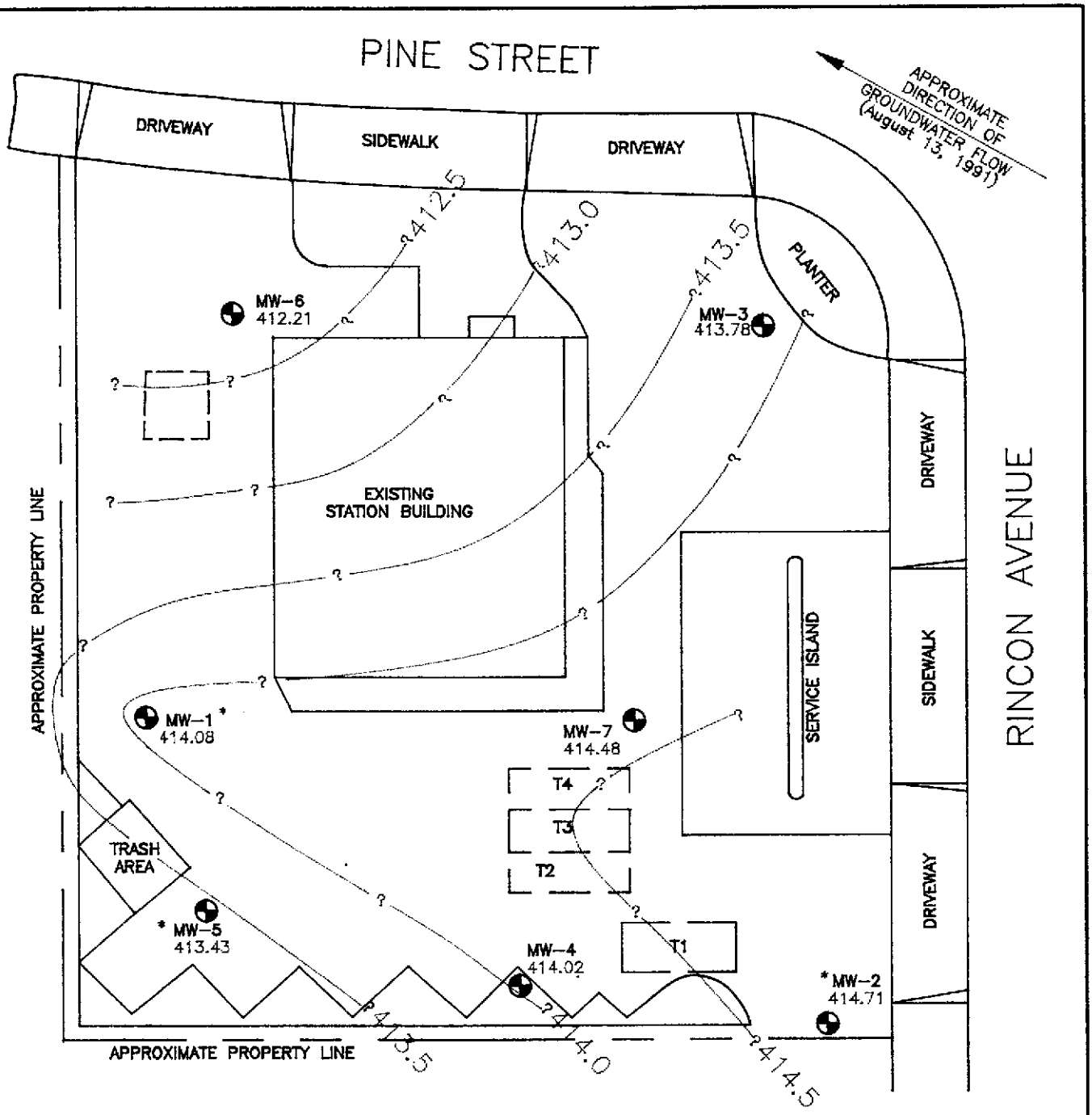
Approximate Scale

20 10 0 20 40

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

RESNA	**GROUNDWATER GRADIENT MAP** **ARCO Station 771** **899 Rincon Avenue** **Livermore, California**	**PLATE** **4**
PROJECT 60000.05		



EXPLANATION

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

414.71 = Elevation of groundwater in feet (MSL) August 13, 1991

MW-7 = Monitoring well (RESNA, December 1990, June and July 1991)

T4 = Underground gasoline-storage tank

* = Product or product sheen

N

Approximate Scale

20 10 0 20 40

feet

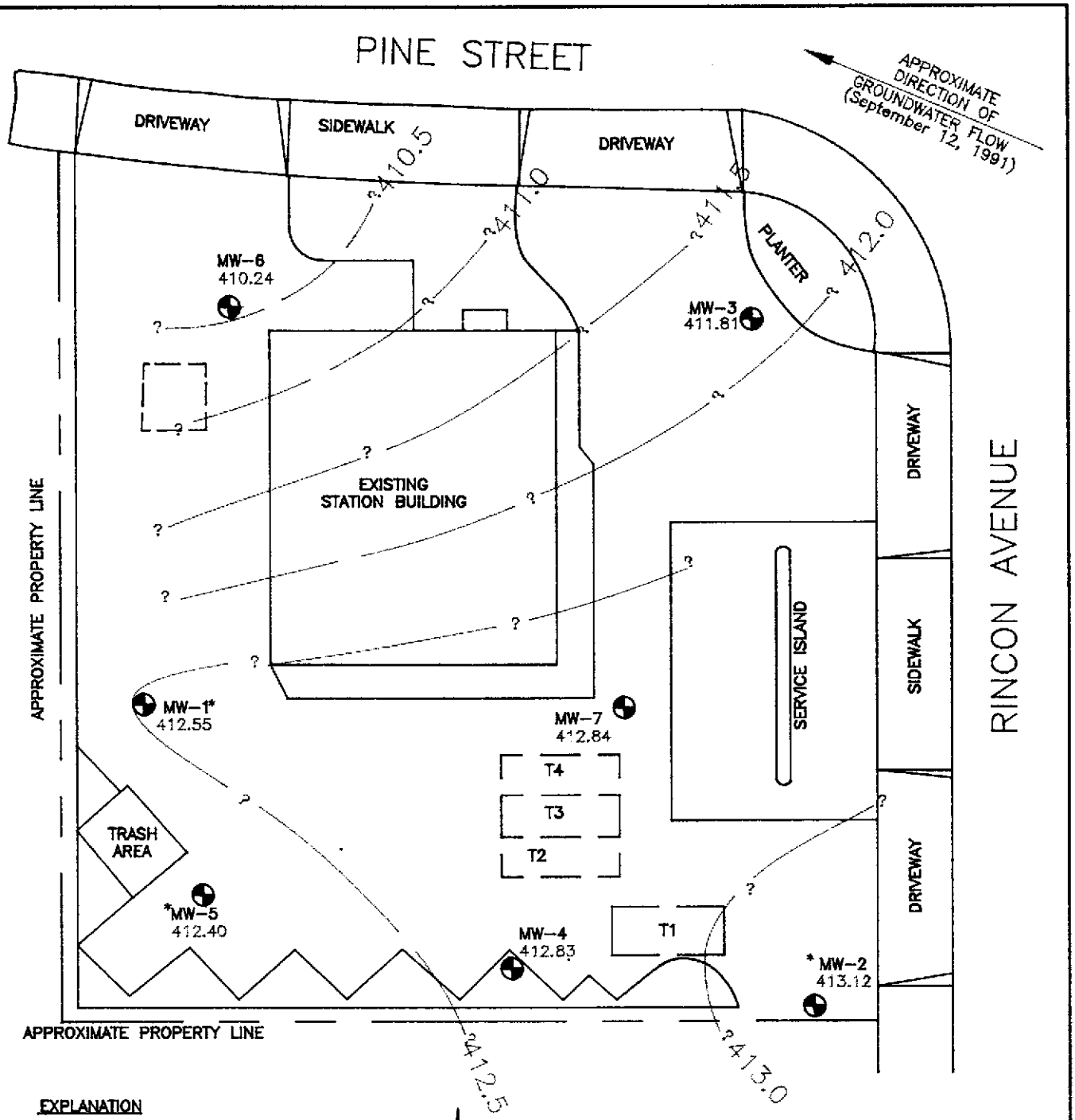
Souce: Surveyed by John Koch, Licensed Land Surveyor.

RESNA

PROJECT 60000.05

GROUNDWATER GRADIENT MAP
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 5



EXPLANATION

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

413.12 = Elevation of groundwater in feet MSL September 12, 1991

MW-7 = Monitoring well (RESNA, December 1990, June and July 1991)

T4 = Underground gasoline-storage tank

* = Product or product sheen

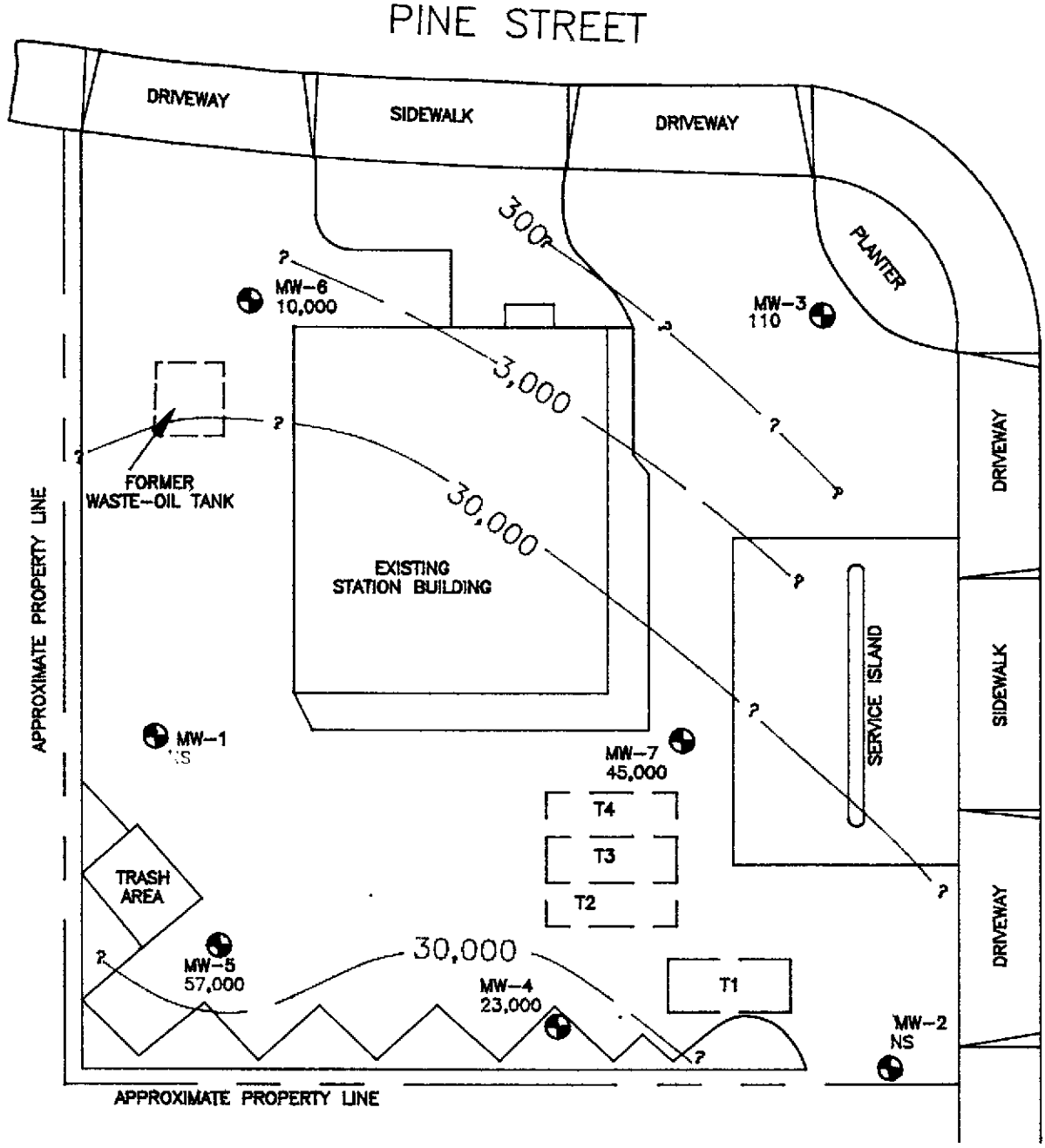
Approximate Scale

20 10 0 20 40

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

RESNA	**GROUNDWATER GRADIENT MAP** **ARCO Station 771** **899 Rincon Avenue** **Livermore, California**	**PLATE** **6**
PROJECT 60000.05		



EXPLANATION

30,000 = Line of equal concentration of TPHg in groundwater, in ppb

57,000 = Concentration of TPHg in groundwater, in ppb, July 25, 1991

MW-7 = Monitoring well (RESNA, December 1990, June and July 1991)

T4 = Underground gasoline-storage tank

NS = Not sampled due to presence of floating product or product sheen

N

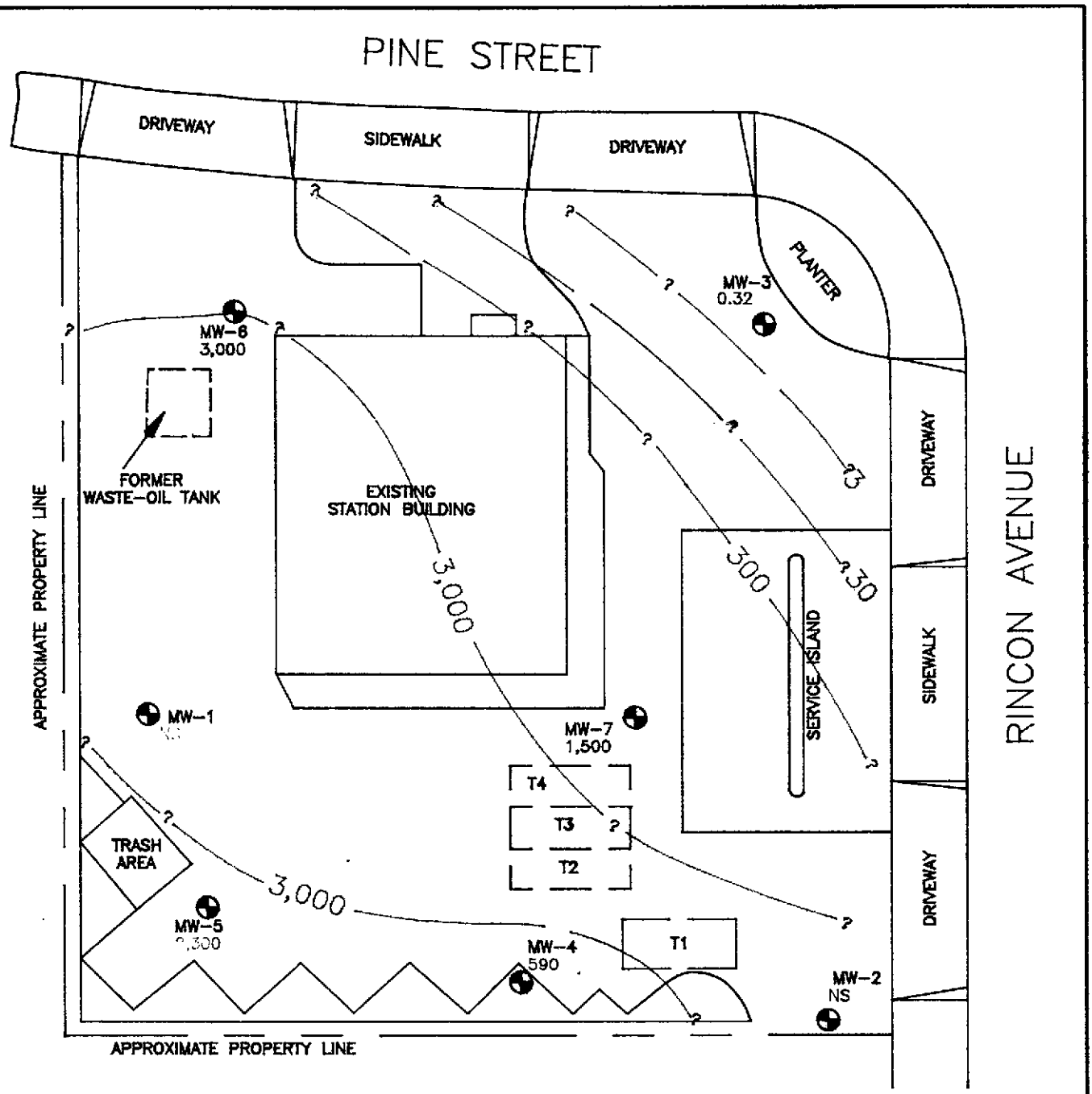
Approximate Scale

20 10 0 20 40

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

RESNA	**TPHg CONCENTRATIONS IN GROUNDWATER ARCO Station 771 899 Rincon Avenue Livermore, California**	**PLATE 7**
PROJECT 60000.05		



EXPLANATION

3,000 = Line of equal concentration of Benzene in groundwater, in ppb

3,000 = Concentration of Benzene in groundwater, in ppb, July 25, 1991

MW-7 = Monitoring well (RESNA, December 1990, June and July 1991)

T4 = Underground gasoline-storage tank

NS = Not sampled due to presence of floating product or product sheen

N

Approximate Scale

20 10 0 20 40

feet

Source: Surveyed by John Koch, Licensed Land Surveyor.

RESNA

PROJECT 60000.05

BENZENE CONCENTRATIONS IN GROUNDWATER ARCO Station 771 899 Rincon Avenue Livermore, California

PLATE 8

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 1 of 2)

Date Measured	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-1				
01-15-91	451.80**	32.77	419.03	Sheen
02-27-91		32.23	419.57	None
03-20-91		27.38	424.42	Sheen
04-10-91		26.49	425.31	None
05-20-91	451.80***	NM	NM	Sheen
06-20-91		33.95	417.85	Sheen
07-25-91		36.59*	415.21*	0.10
08-13-91		37.72*	414.08*	0.20
09-12-91		39.25*	412.55*	0.23
MW-2				
01-15-91	449.52**	30.89*	418.63*	0.16
02-27-91		29.11*	420.41*	0.02
03-20-91		24.57*	424.95*	0.02
04-10-91		22.85*	426.67*	0.05
05-20-91	449.51***	NM	NM	NM
06-20-91		31.42*	418.09*	0.15
07-25-91		33.69*	415.82*	0.49
08-13-91		34.80*	414.71*	0.47
09-12-91		36.39*	413.12*	0.45
MW-3				
01-15-91	450.29**	32.34	417.95	None
02-27-91		31.78	418.51	None
03-20-91		27.74	422.55	None
04-10-91		25.05	425.24	None
05-20-91	450.28***	27.06	423.22	None
06-20-91		32.35	417.93	None
07-25-91		35.02	415.26	None
08-13-91		36.50	413.78	None
09-12-91		38.47	411.81	None

See notes on Page 2 of 2.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 2 of 2)

Date Measured	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-4				
07-25-91	451.56***	36.07	415.49	None
08-13-91		37.54	414.02	None
09-12-91		38.73	412.83	None
MW-5				
07-25-91	451.41***	36.67	414.74	Sheen
08-13-91		37.98*	413.43*	0.01
09-12-91		39.01*	412.40*	0.05
MW-6				
07-25-91	451.38***	37.68	413.70	None
08-13-91		39.17	412.21	None
09-12-91		41.14	410.24	None
MW-7				
07-25-91	450.65***	34.88	415.77	Sheen
08-13-91		36.17	414.48	None
09-12-91		37.81	412.84	None

Measurements in feet.
Calculated DTW when floating product is present is calculated using the attached protocol (Appendix A).
* = Floating product present in well.
** = Surveyed by Ron Archer, Civil Engineer, in January 1991.
*** = Surveyed by John Koch, Licensed Land Surveyor, in July 1991.
NM = Not measured (instrument failure--interface probe).

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
ARCO Station 771
Livermore, California
(Page 1 of 2)

Sample	TPHg	B	T	E	X
MW-1					
01-15-91	Not sampled--sheen				
04-10-91	98,000	11,000	18,000	2,800	20,000
07-25-91	Not sampled--floating product				
MW-2					
01-15-91	Not sampled--floating product				
04-10-91	Not sampled--floating product				
07-25-91	Not sampled--floating product				
MW-3					
01-15-91	230	<0.5	<0.5	2.2	2.1
04-10-91	530	12	8.4	4.0	7.0
07-25-91	110	0.32	0.75	1.2	1.0
MW-4					
07-25-91	23,000	590	730	360	3,500
MW-5					
07-25-91	57,000	2,300	4,200	77	14,000
MCLs	---	1	---	680	1,750
ALs	---	---	100	---	---

See notes on Page 2 of 2.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
ARCO Station 771
Livermore, California
(Page 2 of 2)

Sample	TPHg	B	T	E	X
MW-6					
07-25-91	10,000	3,000	200	340	1,000
MW-7					
07-25-91	45,000	1,500	2,700	1,200	9,200
MCLs	---	1	---	680	1,750
ALs	---	---	100	---	---

Results in parts per billion (ppb).
TPHg: Total petroleum hydrocarbons as gasoline (measured by EPA Method 5030/8015).
B: Benzene T: toluene E: ethylbenzene X: total xylene isomers
BTEX: Measured by EPA Method 8020/602.
NS: Not sampled due to floating product or sheen.
<: Less than the laboratory detection limit.
MCL: State Maximum Contaminant Level in ppb.
AL: State Recommended Action Level in ppb.

TABLE 3
APPROXIMATE CUMULATIVE PRODUCT REMOVED
ARCO Station 771
Livermore, California

Date	Floating Product Removed (gallons)
MW-1	
01-15-91	0.1 (sheen)
02-27-91	None present
03-20-91	0.1 (sheen)
04-10-91	None present
05-20-91	0.1 (sheen)
06-20-91	0.1 (sheen)
07-25-91	0.06
08-13-91	0.12
09-12-91	0.14
MW-2	
01-15-91	0.1
02-27-91	0.01
03-20-91	0.01
04-10-91	0.03
05-20-91	0.01
06-20-91	0.5
07-25-91	0.29
08-13-91	0.28
09-12-91	0.27
MW-5	
08-13-91	0.01
09-12-91	0.03
Total:	2.26 Gallons

APPENDIX A
GROUNDWATER SAMPLING PROTOCOL
CHAIN OF CUSTODY RECORDS
LABORATORY ANALYSIS REPORTS
UNIFORM HAZARDOUS WASTE MANIFEST

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, and John Koch of Oakland, California, licensed land surveyors, to calculate the differences in groundwater elevations.

The static water level in each well that was suspected to contain floating product was measured with an ORS® interface probe; this instrument is accurate to the nearest 0.01 foot. The probe contains two different sensor units, one for detecting the liquid/air interface, and one for distinguishing between water and hydrocarbon. The thickness of the floating product and the groundwater depths were recorded. 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 is then subtracted from the measured depth to water to obtain a calculated depth to water. These calculated groundwater depths were subtracted from wellhead elevations 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 evidence of free hydrocarbon product.

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 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 volume removed.

After purging, each well was allowed to recharge to within 80% of the initial water level. Water samples were then collected with a new, disposable bailer. The water samples were

carefully poured into 40-milliliter glass vials, which were filled so as 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 by H & H Ship Services, a licensed hazardous waste hauler. The Uniform Hazardous Waste Manifest is attached.

ARCO Products Company
Division of AtlanticRichfieldCompany

Task Order No. 771-91-2

Chain of Custody

ARCO Facility no. 771-6000406	City (Facility) LIVERMORE	Project manager (Consultant) JOEL COFFMAN	Laboratory name SEQUOIA
ARCO engineer CHUCK CARMEL	Telephone no. (ARCO)	Telephone no. (Consultant) (408) 264-7723	Fax no. (Consultant) (408) 264-2435
Consultant name RESNA/APPLIEDGEOSYSTEMS	Address (Consultant) 3315 ALMADEN EXPRESSWAY, SUITE 34, SAN JOSE, CA		Contract number 07-073

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-39-MW6	4		✓	X		X	X	7-25-91	16:45		X											
W-38-MW7	4		✓	X		X	X		16:56		X											
W-36-MW3	4		✓	X		X	X				X											
W-39-MW4	4		✓	X		X	X				X											
W-39-MW5	4		✓	X		X	X				X											

Condition of sample: good

Temperature received: cool

Relinquished by sampler: C. Carlena	Date: 7-26-91	Time: 10:00	Received by:
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by laboratory: K. Ward

Date: 7/26 Time: 11:33 am

Special detection Limit/reporting:

Special QA/QC:

Remarks:

Lab number: 1074899-903

Turnaround time:

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

— Laboratory; Canary copy — ARCO Environmental Engineering; Pink copy — Consultant

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 771, Livermore
QC Sample Group: 1074899-900, 902
Reported: Aug 7, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M. Nguyen	M. Nguyen	M. Nguyen	M. Nguyen
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991
QC Sample #:	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	11	11	11	32
Matrix Spike % Recovery:	110	110	110	110
Conc. Matrix Spike Dup.:	11	11	11	33
Matrix Spike Duplicate % Recovery:	110	110	110	110
Relative % Difference:	0.0	0.0	0.0	3.1

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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

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 771, Livermore
QC Sample Group: 1074901, 903
Reported: Aug 7, 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:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991	Jul 31, 1991
QC Sample #:	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD	GBLK073191 MS/MSD
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	11	11	11	32
Matrix Spike % Recovery:	110	110	110	110
Conc. Matrix Spike Dup.:	10	10	10	32
Matrix Spike Duplicate % Recovery:	100	100	100	110
Relative % Difference:	9.5	9.5	9.5	0.0

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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

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(415) 364-9600 • FAX (415) 364-9233

Applied GeoSystems	Client Project ID:	ARCO 771, Livermore	Sampled:	Jul 25, 1991
3315 Almaden Expressway, Ste 34	Matrix Descript:	Water	Received:	Jul 26, 1991
San Jose, CA 95118	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Jul 31, 1991
Attention: Joel Coffman	First Sample #:	107-4899 A-D	Reported:	Aug 7, 1991

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

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)
107-4899	W-39-MW6	10,000	3,000	200	340	1,000
107-4900	W-39-MW7	45,000	1,500	2,700	1,200	9,200
107-4901	W-39-MW3	110	0.32	0.75	1.2	1.0
107-4902	W-39-MW4	23,000	590	730	360	3,500
107-4903	W-39-MW5	57,000	2,300	4,200	77	14,000
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

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

Project: ARCO 771, Livermore

Enclosed are the results from 5 water samples received at Sequoia Analytical on July 26,1991. The requested analyses are listed below:

1074899	Water, W-39-MW6	7/25/91	EPA 5030/8015/8020
1074900	Water, W-39-MW7	7/25/91	EPA 5030/8015/8020
1074901	Water, W-39-MW3	7/25/91	EPA 5030/8015/8020
1074902	Water, W-39-MW4	7/25/91	EPA 5030/8015/8020
1074903	Water, W-39-MW5	7/25/91	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

Form Approved OMB No. 2060—0039 (Expires 9-30-91)
Please print or type. *Form designed for use on elite (12-pitch typewriter).*

and Front of Page 7

Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: C A L 0 0 0 0 2 8 3 7 0
Manifest Document No.: 0 0 0 0 2

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ARCO
P. O. Box 5811, San Mateo, CA 94402
4. Generator's Phone (415) 571-2434/571-2428

A. State Manifest Document Number: 90546574

B. State Generator's ID: H Y H 0 3 6 - 0 1 5 6 6 0

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

C. State Transporter's ID: 200556

D. Transporter's Phone: (415) 543-4835

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

E. State Transporter's ID

F. Transporter's Phone

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

G. State Facility's ID: C A D 0 0 4 7 7 1 1 6 8

H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. OIL AND WATER NON-RCRA HAZARDOUS WASTE LIQUID	001	TT	010050	G	State 134 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

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

PROFILE #A0854

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

15. Special Handling Instructions and Additional Information
JOB #8115
24 Hr. Emergency Contact: H & H #(415) 543-4835
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.

JOB SITE: ARCO STATION, #771
899 Rincon
Livermore, California

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: EZEQUIEL CANDONA
Signature:
Month Day Year: 0 8 1 3 9 1

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: EDWARD G. MILANO
Signature: Edward G. Milano
Month Day Year: 0 8 1 3 9 1

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

Do Not Write Below This Line

8022 A
PA 6700—22
Rev. 6-89) Previous editions are obsolete.