July 31, 2003

GROUNDWATER MONITORING REPORT
Fourth Episode

796 66th Avenue
Oakland, California

Project No. 5526

Prepared For

Mr. Cory Kauffman
Cruise America, Inc.
11 West Hampton Avenue
Mesa, AZ 85210

Prepared By

AEI Consultants
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AEI

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Environmental & Civil Engineering

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July 31, 2003

Mr. Cory Kauffman
Cruise America, Inc.
11 West Hampton Avenue
Mesa, AZ 85210

Subject: **Quarterly Groundwater Monitoring Report**
Fourth Episode, 2003
796 66th Avenue
Oakland, California
Project No. 5526

Dear Mr. Kauffman:

AEI Consultants (AEI) has prepared this report on behalf of Cruise America Inc., in order to document the ongoing groundwater quality investigation (Figure 1: Site Location Map). This investigation was initiated by the property owner in accordance with the requirements of the Alameda County Health Care Services Agency (ACHCSA). The purpose of this activity is to monitor groundwater quality in the vicinity of previous underground storage tanks. This report presents the findings of the fourth episode of groundwater monitoring and sampling conducted on June 30, 2003.

I Background

The site is currently occupied by Cruise America, an RV rental and repair facility. Currently, two buildings exist on the site, surrounded by paved vehicle storage areas. Cruise America acquired the property from McGuire Huster in August 1988.

In February 1987, three underground storage tanks (USTs) were removed from the property by Applied GeoSystems. The tanks consisted of one (1) 1,000-gallon gasoline UST, one (1) 5,000-gallon gasoline UST, and one (1) 8,000-gallon diesel UST. The former locations of the tanks are shown on Figure 2. Soil sample analyses following removal of the tanks indicated that a release of both gasoline and diesel had occurred at the site.

Records were reviewed at the Oakland Fire Services Agency, Office of Emergency Services, for information regarding the investigation and/or cleanup of the release. No records were available at the Alameda County Health Care Services Agency (ACHCSA) although they had a file number for the USTs, nor were any records available at the Regional Water Quality Control Board (RWQCB).

A total of six groundwater monitoring wells and approximately 14 temporary soil borings had been installed at the site between 1987 and 1988 to investigate impacted groundwater associated with both the diesel and gasoline releases. Groundwater samples reportedly contained concentrations of 60,000 µg/l of total hydrocarbons, and fuel product sheen was observed.

A geotechnical investigation was performed on the property in July 1988 by Kaldveer Associates. According to field observations, significant hydrocarbon odor was detected in seven of the borings advanced; however, chemical analyses were not performed.

In August 1988, Purcell, Rhodes, and Associates excavated soil from the area of the former diesel UST and dispensing system. Excavation sidewall and bottom soil samples, and soil samples from the stockpiled soil reportedly contained concentrations of total petroleum hydrocarbons (TPH) ranging from non-detect to 3,400 mg/kg. The soil was reportedly aerated on the western portion of the property; however, final sampling or the disposition of the soil is not known. In addition, groundwater with free phase fuel present was reportedly removed from the excavation (assumed to be the diesel UST excavation); however, no details were available on the liquid removal.

The monitoring wells mentioned above could not be located in July 2001, and are assumed to have been decommissioned and/or buried under asphalt surfacing. Laboratory reports were incomplete or not included, and site plans were not to scale or incomplete in the reports reviewed by AEI.

In July 2001, AEI performed a Phase II investigation on the site that included advancing six (6) soil borings (labeled SB-1 through SB-6). Although low concentrations of TPH as gasoline (TPH-g) and TPH as diesel (TPH-d) were reported in the groundwater beneath the site, high levels of methyl tertiary butyl ether (MTBE) were detected in boring SB-1.

In September of 2001, AEI advanced five (5) additional soil borings (labeled SB-7 through SB-11) in order to determine the source of the high levels of MTBE found in SB-1. Samples collected from SB-7 and SB-8 did not contain MTBE above laboratory reporting limits. MTBE concentrations varied from 630 µg/L in SB-9 to 13,000 µg/L in SB-10. These data indicated a leak in the 10,000-gallon gasoline UST on the southern portion of the property as the most likely source of the MTBE.

AEI removed the 10,000-gallon gasoline UST in November of 2001. Concentrations of TPH-g in four of the five soil samples ranged from 4.1 mg/kg to 280 mg/kg. Concentrations of MTBE and benzene, toluene, ethyl benzene, and xylenes (BTEX) were also detected in the five soil samples. Elevated concentrations of TPH as gasoline and MTBE were present in the groundwater sample at 44,000 µg/L and 42,000 µg/L, respectively. Elevated concentrations of BTEX were also present in the groundwater sample.

Based on these elevated concentrations of hydrocarbon contamination, the site was referred to the Alameda County Environmental Health, Local Oversight Program (LOP) for oversight. Mr.

Barney Chan of the LOP requested a workplan to further define the extent of the hydrocarbon plume. AEI submitted the workplan on July 11, 2002 and received approval on July 17, 2002.

On September 6, 2002, six (6) borings (labeled SB-12 through SB-17) were advanced. The data from these soil borings was used to determine the placement of five groundwater-monitoring wells, which were installed on September 19, 2002.

This report presents the data from the fourth episode of sampling conducted on June 30, 2003.

II Summary of Activities

AEI measured the depth to groundwater in the five wells on June 30, 2003. Prior to sampling, the depth to water from the top of the well casings was measured with an electric water level indicator. The wells were purged with a submersible electric pump, and sampled using disposable plastic bailers. Temperature, pH, specific conductivity, oxidation-reduction potential (ORP) and dissolved oxygen (DO) were measured and the turbidity was visually noted during the purging of the wells. AEI removed at least three well volumes from each well while purging. Once the wells recharged to 90% of their original volume, a water sample was collected. Well locations are shown in Figure 2.

Water was poured from the bailers into 40 ml VOA glass vials and capped so neither headspace nor air bubbles were visible within the sample containers. Samples were shipped on ice under proper chain of custody protocol to McCampbell Analytical, Inc. of Pacheco, California (Department of Health Services Certification #1644).

Groundwater samples were submitted for chemical analysis for TPH-g (EPA Method 8015C), MTBE (EPA Method 8021B and EPA Method 8260B), benzene, toluene, ethyl benzene, and xylenes (BTEX) (EPA Method 8021B).

III Field Results

A strong hydrocarbon odor was noted while purging well MW-1. Slight hydrocarbon odors were noted while purging well MW-3, MW-4, and MW-5. A sulfurous odor was noted during the purging of well MW-2. Groundwater levels for the current monitoring episode ranged from 4.86 to 6.46 feet above mean sea level (amsl). These groundwater elevations were an average of 0.03 feet lower than the previous monitoring episode. There is not yet enough data to determine if this is a seasonal trend. The direction of the groundwater flow at the time of measurement was towards the southeast with a gradient of 0.020 ft/ft, which is consistent with previous monitoring episodes but not the last episode of 0.006 ft/ft toward the south-southeast.

Groundwater elevation data are summarized in Table 1. The groundwater elevation contours and the groundwater flow direction are shown in Figure 3. Refer to Appendix A for the Groundwater Monitoring Well Field Sampling Forms.

IV Groundwater Quality

Wells MW-4 and MW-5 are upgradient of the former gasoline UST location. Both MW-2 and MW-3 are downgradient of the former tank location and MW-1 lies within the footprint of the former UST excavation boundary.

MTBE was detected in all five of the wells using EPA analytical method 8260B. MW-1, MW-4, and MW-5 each showed significant levels of MTBE with highest concentration in MW-1 at 17,000 µg/L. MTBE was present in MW-4 and MW-5 at respective concentrations of 1,200 ug/L and 13,000 ug/L. Well MW-1 also contained elevated levels of TPH-g (830 ug/L), and toluene (6.8 ug/L); these analytes were only found in MW-1.

The presence of MTBE in wells MW-2 (9.6 ug/L) and MW-3 (1.6 ug/L) although at low levels may indicate that the plume is migrating downgradient. Dissolved hydrocarbon concentrations are shown in Figure 4, and MTBE isocontours are plotted on Figure 5.

A summary of groundwater quality data is presented in Table 2. Laboratory results and chain of custody documents are included in Attachment B.

V Conclusions and Recommendations

Hydrocarbon constituents are present in significant concentrations in the groundwater beneath the site. The most significant contaminant is MTBE. The detection of MTBE in the water samples from MW-2 and MW-3 indicate that the plume could be migrating downgradient.

Continued groundwater monitoring and sample collection are recommended to assess the mobility of the contaminants. The next monitoring episode is scheduled to occur in October of 2003.

VI References

1. *Underground Storage Tank Removal Draft Report,* March 4, 2002 issued by AEI Consultants.
2. *Site Investigation Workplan,* July 11, 2002 issued by AEI Consultants.
3. *Workplan – Site Investigation: Addendum,* August 6, 2002 issued by AEI Consultants.
4. *Monitoring Well Installation Report,* November 11, 2002 issued by AEI Consultants.
5. *Monitoring Well Installation Report,* January 15, 2003 issued by AEI Consultants
6. *Monitoring Well Installation Report,* April 16, 2003 issued by AEI Consultants

VI Report Limitation

This report presents a summary of work completed by AEI Consultants. The completed work includes observations and descriptions of site conditions encountered. Where appropriate, it includes analytical results for samples taken during the course of the work. The number and location of samples are chosen to provide the required information, but it cannot be assumed that they are representative of areas not sampled. All conclusions and/or recommendations are based on these analyses and observations, and the governing regulations. Conclusions beyond those stated and reported herein should not be inferred from this document.

These services were performed in accordance with generally accepted practices, in the environmental engineering and construction field, which existed at the time and location of the work.

If you have any questions regarding our investigation, please do not hesitate to contact us at (925) 283-6000.

Sincerely,

Peter McIntyre
Project Manager

Technical Review by:

L. M. Sawyer #4450

Lorraine M. Sawyer
Registered Geologist

Figures

Figure 1: Site Location Map
Figure 2: Site Plan
Figure 3: Water Table Elevation Map
Figure 4: Dissolved Hydrocarbons Map
Figure 5: MTBE Isocontour Map

Tables

Table 1: Groundwater Elevation Data
Table 2: Groundwater Sample Analytical Data

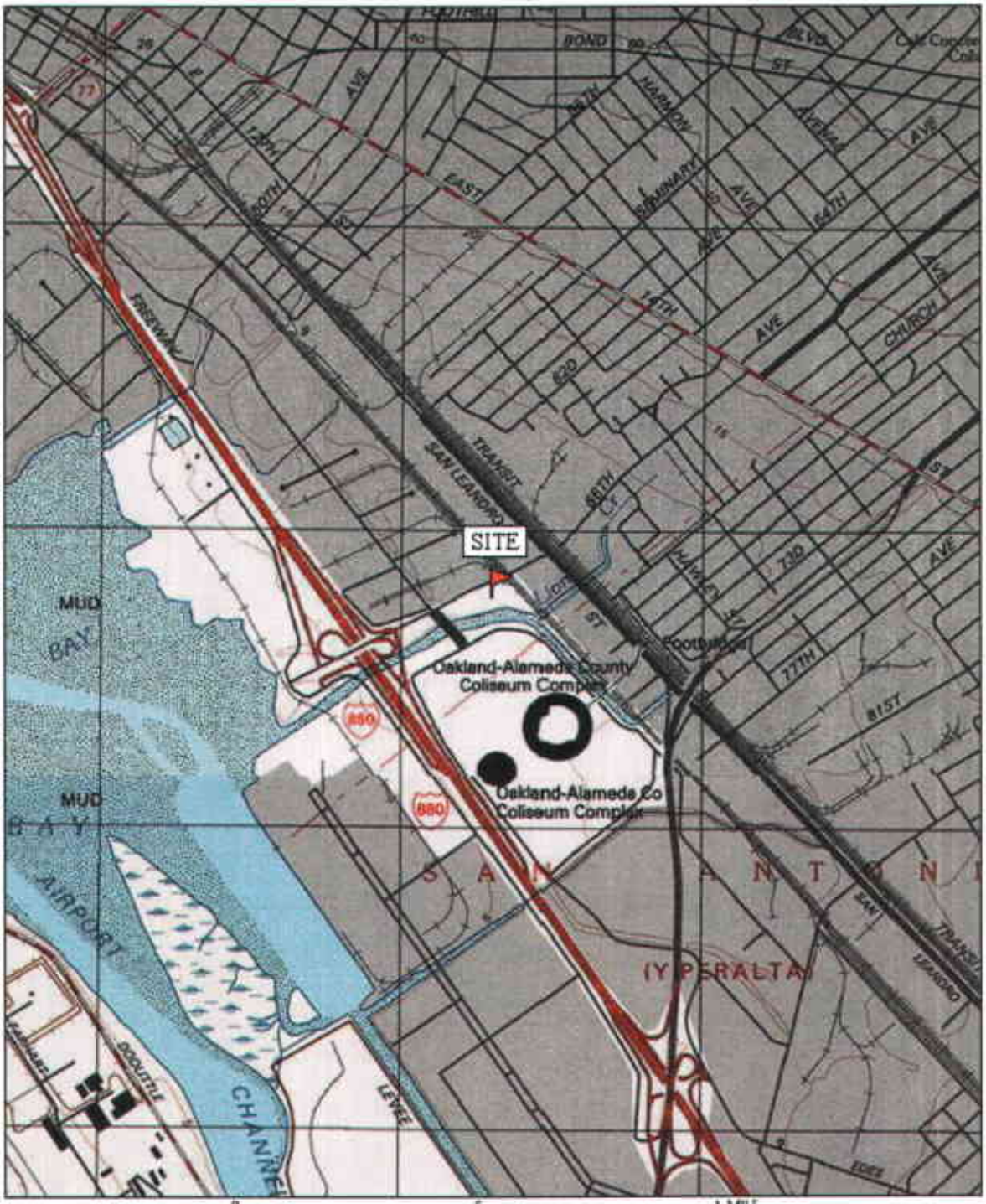
Attachments

Appendix A: Groundwater Monitoring Well Field Sampling Forms
Appendix B: Laboratory Analyses with Chain of Custody Documentation

cc: Mr. Amir Gholami
ACHCSA
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94501

Mr. Cory Kauffman
Cruise America, Inc.
11 West Hampton Avenue
Mesa, AZ 85210

San Leandro 7.5' 37°45.309' N, 122°12.182' W WGS84



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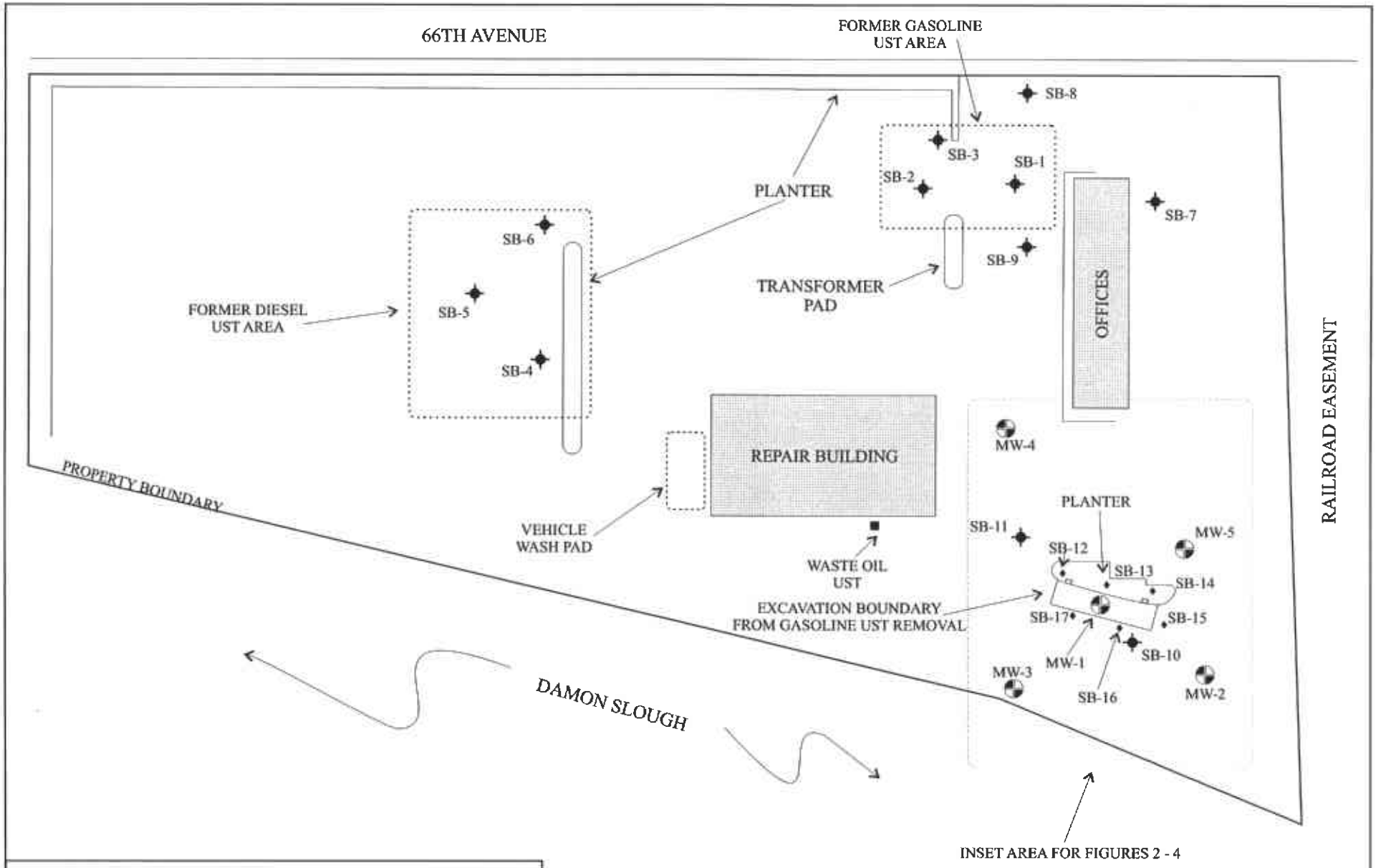
AEI CONSULTANTS	
SITE LOCATION MAP	
796 66th AVENUE OAKLAND, CALIFORNIA	**FIGURE 1** PROJECT NO. 5526



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SITE PLAN

796 66th AVENUE
OAKLAND, CALIFORNIA

FIGURE 2
AEI PROJECT NO 5526

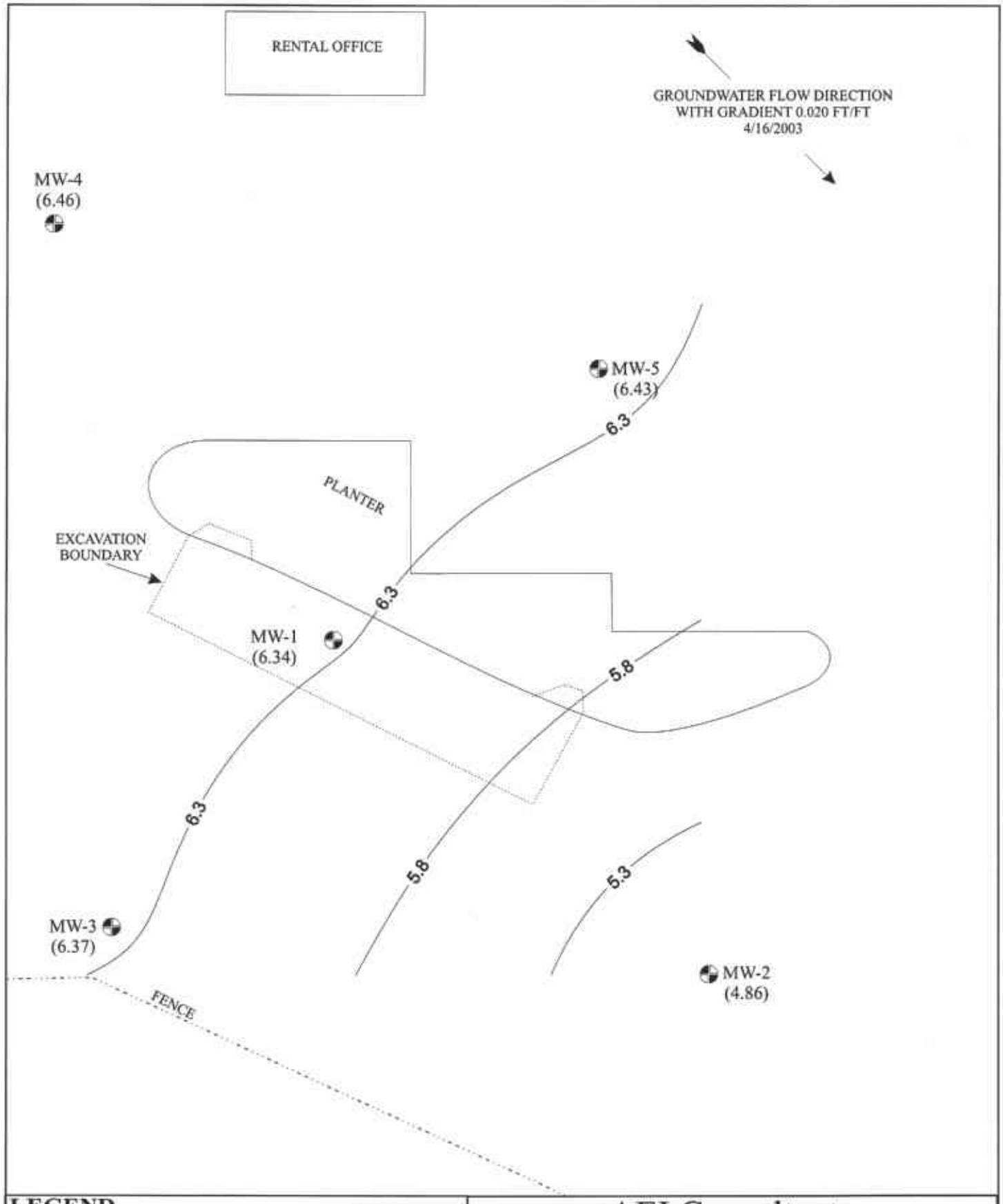
SB-X ✦ LOCATION OF BORINGS ADVANCED 7-9/01

MW-1 ◔ LOCATION OF MONITORING WELLS INSTALLED 9/02

SB-X • LOCATION OF BORINGS ADVANCED 9/02

0' 25' 50' 75'

N



LEGEND

SEE FIGURE 1 FOR MAP LOCATION

MONITORING WELL LOCATION

CONTOURS DRAWN IN SURFER v. 7.0
CONTOUR INTERVAL IS 0.5 FEET

SCALE: 1" = 20'

N

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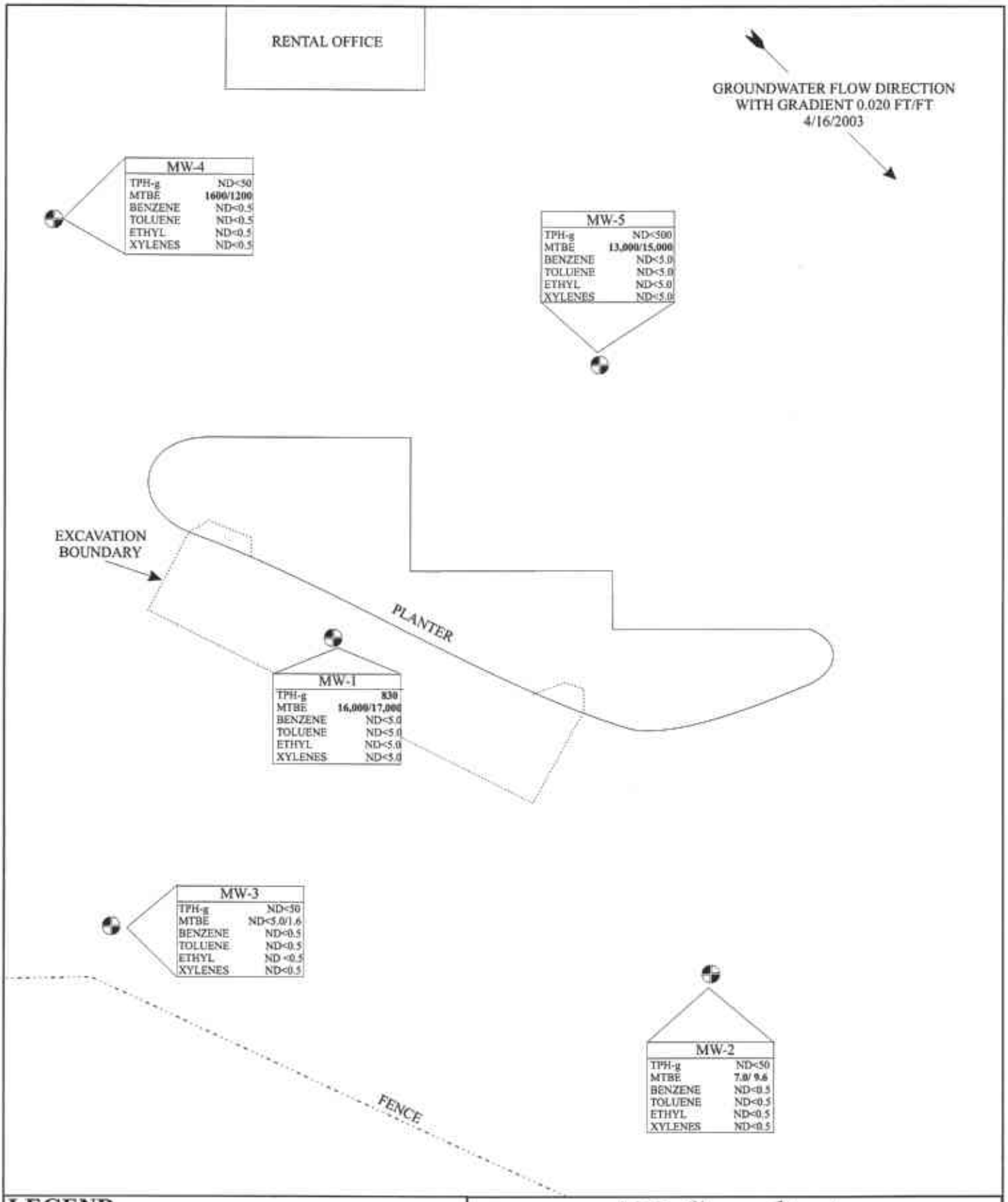
WATER TABLE ELEVATION

796 66TH AVENUE
OAKLAND, CALIFORNIA

FIGURE 3
AEI PROJECT NO 5526



LEGEND

SEE FIGURE 1 FOR MAP LOCATION

MONITORING WELL LOCATION
with results in µg/L

TPH-g Total Petroleum Hydrocarbons as gasoline
ETHYL Ethylbenzene
MTBE Methyl Tertiary Butyl Ether
Expressed as: result by EPA 8021B / result by EPA 8260

SCALE: 1" = 20'

N

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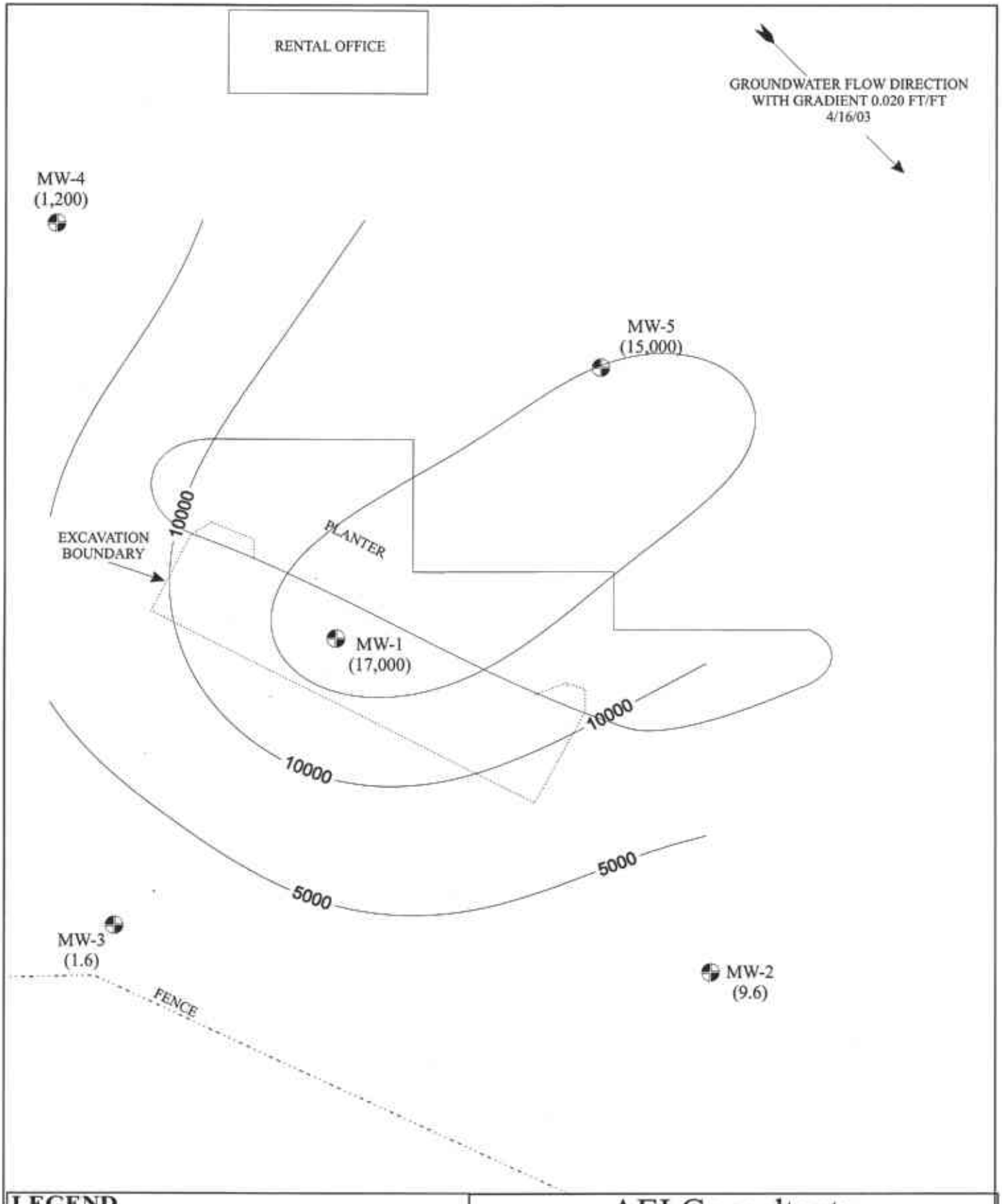
DISSOLVED HYDROCARBONS

796 66TH AVENUE
OAKLAND, CALIFORNIA

FIGURE 4
AEI PROJECT NO 5526



LEGEND

SEE FIGURE 1 FOR MAP LOCATION

MONITORING WELL LOCATION

MTBE METHYL TERTIARY BUTYL ETHER
RESULTS EXPRESSED IN ug/L

CONTOURS DRAWN LINEARLY IN SURFER v. 7.0

CONTOUR INTERVAL IS 5,000 ug/L

SCALE: 1" = 20'

N

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MTBE ISOCONTOURS

796 66TH AVENUE
OAKLAND, CALIFORNIA

FIGURE 5
AEI PROJECT NO 5526

Table 1
Groundwater Elevation Data

Well ID	Date Collected	Well Elevation ft (amsl)	Depth to Water ft (TOC)	Water Table Elevation ft (amsl)
MW-1	9/30/02	10.88	5.41	5.47
	1/2/03	10.88	4.77	6.11
	3/31/03	10.88	4.95	5.93
	4/16/03	**10.88**	**4.54**	**6.34**
MW-2	9/30/02	10.77	8.00	2.77
	1/2/03	10.77	5.91	4.86
	3/31/03	10.77	5.15	5.62
	4/16/03	**10.77**	**5.91**	**4.86**
MW-3	9/30/02	10.20	5.21	4.99
	1/2/03	10.20	5.31	4.89
	3/31/03	10.20	4.58	5.62
	4/16/03	**10.20**	**3.83**	**6.37**
MW-4	9/30/02	11.07	5.50	5.57
	1/2/03	11.07	4.90	6.17
	3/31/03	11.07	4.81	6.26
	4/16/03	**11.07**	**4.61**	**6.46**
MW-5	9/30/02	11.18	5.62	5.56
	1/2/03	11.18	5.12	6.06
	3/31/03	11.18	4.93	6.25
	4/16/03	**11.18**	**4.75**	**6.43**

Episode	Date	Average Water Table Elevation	Change From Previous	Gradient (direction)
1	9/30/02	4.87	-	0.005 (S)
2	1/2/03	5.62	0.75	0.022 (SSE)
3	3/31/03	6.12	0.50	0.006 (SSE)
4	4/16/03	6.09	-0.03	0.020 (SE)

All well elevations and depths to water are measured from the top of the casing (TOC)

ft (amsl) = feet above mean sea level

Average Water Table calculated in Excel

Table 2:
Groundwater Sample Analytical Data

Sample ID	Date	TPH-g µg/L	MTBE(µg/L) (EPA 8021)	MTBE(µg/L) (EPA 8260)	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L
MW-1	9/30/02	1,800	19,000	13,000	50	15	16	18
	1/2/03	660	7,800	8,900	24	6.4	ND<2.5	ND<2.5
	3/31/03	660	16,000	20,000	11	6.4	ND<5.0	ND<5.0
	4/16/03	**830**	**16,000**	**17,000**	**ND<5.0**	**6.8**	**ND<5.0**	**ND<5.0**
MW-2	9/30/02	ND<50	ND<5.0	0.84	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	1/2/03	ND<50	19	20	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	3/31/03	ND<50	ND<5.0	3.9	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	4/16/03	**ND<50**	**7.0**	**9.6**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
MW-3	9/30/02	ND<50	ND<5.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	1/2/03	ND<50	15	14	0.89	0.50	ND<0.5	0.72
	3/31/03	ND<50	ND<5.0	0.62	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	4/16/03	**ND<50**	**ND<5.0**	**1.6**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
MW-4	9/30/02	ND<100	790	ND<10	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	1/2/03	ND<50	420	460	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	3/31/03	ND<50	1,500	1,400	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	4/16/03	**ND<50**	**1,600**	**1,200**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
MW-5	9/30/02	ND<2,000	19,000	ND<250	ND<5.0	ND<5.0	ND<5.0	ND<5.0
	1/2/03	ND<50	7,000	7,000	ND<0.5	ND<0.5	ND<0.5	ND<0.5
	3/31/2003	ND<500	14,000	12,000	ND<5.0	ND<5.0	ND<5.0	ND<5.0
	4/16/03	**ND<500**	**13,000**	**15,000**	**ND<5.0**	**ND<5.0**	**ND<5.0**	**ND<5.0**

ND = Not detected above the Method Detection Limit (unless otherwise noted)

µg/L = micrograms per liter (ppb)

mg/L = milligrams per liter (ppm)

- = Sample not analyzed by this method

Please refer to Appendix B: Sample Analytical Documentation for further detailed lab data including reporting limits and dilution factors

APPENDIX A

GROUNDWATER MONITORING WELL FIELD SAMPLING FORMS

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-1

Project Name:	Cruise America	Date of Sampling:	6/30/2003
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	10.88		
Depth of Well	14.00		
Depth to Water (from top of casing)	4.54		
Water Elevation (feet above msl)	6.34		
Well Volumes Purged	3		
Calculated Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**18.4**		
Actual Volume Purged (gallons)	20.0		
Appearance of Purge Water	Initially grey; Clear at 2 gallons		
Free Product Present?	No	Thickness (ft):	-

GROUNDWATER SAMPLES

Number of Samples/Container Size: 3 40mL VOA

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
9:50:00	4	21.30	6.84	3560	0.98	-100.6	
	8	21.33	6.86	3585	0.53	-104.4	
	12	21.34	6.86	3628	0.40	-106.4	
	16	21.32	6.87	3640	0.31	-108.1	
	20	21.32	6.87	3680	0.23	-109.5	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Strong odor; light sheen but not measurable

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-2

Project Name:	Cruise America	Date of Sampling:	6/30/2003
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	10.77		
Depth of Well	14.00		
Depth to Water (from top of casing)	5.91		
Water Elevation (feet above msl)	4.86		
Well Volumes Purged	3		
Calculated Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**3.9**		
Actual Volume Purged (gallons)	5.0		
Appearance of Purge Water	Clear		
Free Product Present?	Sheen	Thickness (ft):	-

GROUNDWATER SAMPLES

Number of Samples/Container Size: 3 40mL VOA

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	1	22.70	6.91	17993	0.70	-143.5	
	3	21.25	6.97	20411	0.45	-144.3	
	5	21.30	7.11	18779	1.30	-137.5	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Clear with sulfide odor; Well went dry at 3.5 gallons at 11:13 AM; At 11:18 AM light sheen but not measurable

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-3

Project Name:	Cruise America	Date of Sampling:	6/30/2003
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	10.20		
Depth of Well	14.00		
Depth to Water (from top of casing)	3.83		
Water Elevation (feet above msl)	6.37		
Well Volumes Purged	3		
Calculated Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**4.9**		
Actual Volume Purged (gallons)	5.0		
Appearance of Purge Water	Light yellow		
Free Product Present?	No	Thickness (ft):	-

GROUNDWATER SAMPLES

Number of Samples/Container Size: 3 40mL VOA

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	1	21.58	6.81	14680	0.60	-153.7	
	3	21.67	6.77	15391	0.43	-154.9	
	5	20.83	6.79	17999	0.35	-155.3	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Slight hydrocarbon odor

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-4

Project Name:	Cruise America	Date of Sampling:	6/30/2003
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	11.07		
Depth of Well	14.00		
Depth to Water (from top of casing)	4.61		
Water Elevation (feet above msl)	6.46		
Well Volumes Purged	3		
Calculated Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**4.5**		
Actual Volume Purged (gallons)	5.0		
Appearance of Purge Water	Initially dark grey; Clear at 1-2 gallons.		
Free Product Present?	No	Thickness (ft):	-

GROUNDWATER SAMPLES

Number of Samples/Container Size: 3 40 mL VOA

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	1	22.17	7.92	1944	0.74	-165.8	
	3	22.51	7.78	1945	0.37	-187.8	
	5	22.58	7.83	1933	0.22	-212.9	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Slight hydrocarbon odor

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-5

Project Name:	Cruise America	Date of Sampling:	6/30/2003
Job Number:	5526	Name of Sampler:	A Nieto
Project Address:	796 66th Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	11.18		
Depth of Well	14.00		
Depth to Water (from top of casing)	4.75		
Water Elevation (feet above msl)	6.43		
Well Volumes Purged	3		
Calculated Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**4.4**		
Actual Volume Purged (gallons)	5.0		
Appearance of Purge Water	Dark grey and slight odors; Clear at 2 gallons		
Free Product Present?	No	Thickness (ft):	-

GROUNDWATER SAMPLES

Number of Samples/Container Size				3 40mL VOA			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	1	22.34	7.04	4952	0.36	-141.9	
	3	22.33	7.05	4723	0.32	-145.8	
	5	22.35	7.06	4450	0.29	-151.0	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Slight hydrocarbon odor

APPENDIX B

LABORATORY ANALYTICAL DOCUMENTATION

McCampbell Analytical Inc.
110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

All Environmental, Inc. 2500 Camino Diablo, Ste. #200 Walnut Creek, CA 94597	Client Project ID: #5526; Cruise America	Date Sampled: 06/30/03
		Date Received: 06/30/03
	Client Contact: Peter McIntyre	Date Reported: 07/08/03
	Client P.O.:	Date Completed: 07/08/03

WorkOrder: 0306644

July 08, 2003

Dear Peter:

Enclosed are:

1). the results of **5** analyzed samples from your **#5526; Cruise America project,**

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Angela Rydelius, Lab Manager

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All Environmental, Inc.	Client Project ID: #5526; Cruise America	Date Sampled: 06/30/03
2500 Camino Diablo, Ste. #200		Date Received: 06/30/03
Walnut Creek, CA 94597	Client Contact: Peter McIntyre	Date Extracted: 07/01/03-07/04/03
	Client P.O.:	Date Analyzed: 07/01/03-07/04/03

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method: SW5030B Analytical methods: SW8021B/8015Cm Work Order: 0306644

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-1	W	830,a	16,000	ND<5.0	6.8	ND<5.0	ND<5.0	10	114
002A	MW-2	W	ND	7.0	ND	ND	ND	ND	1	89.7
003A	MW-3	W	ND	ND	ND	ND	ND	ND	1	97.8
004A	MW-4	W	ND	1600	ND	ND	ND	ND	1	90.3
005A	MW-5	W	ND<500,j	13,000	ND<5.0	ND<5.0	ND<5.0	ND<5.0	10	101
Reporting Limit for DF =1; ND means not detected at or above the reporting limit		W	50	5.0	0.5	0.5	0.5	0.5	1	µg/L
		S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* water and vapor samples and all TCLP & SPLP extracts are reported in µg/L, soil/sludge/solid samples in µg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

DHS Certification No. 1644

Angela Rydelius, Lab Manager

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Telephone : 925-798-1620 Fax : 925-798-1622
http://www.mccampbell.com E-mail: main@mccampbell.com

All Environmental, Inc.	Client Project ID: #5526; Cruise America	Date Sampled: 06/30/03
2500 Camino Diablo, Ste. #200		Date Received: 06/30/03
Walnut Creek, CA 94597	Client Contact: Peter McIntyre	Date Extracted: 07/04/03
	Client P.O.:	Date Analyzed: 07/04/03

Methyl tert-Butyl Ether*

Extraction method: SW5030B Analytical methods: SW8260B Work Order: 0306644

Lab ID	Client ID	Matrix	Methyl-t-butyl ether (MTBE)	DF	% SS
001B	MW-1	W	17,000	500	100
002B	MW-2	W	9.6	1	121
003B	MW-3	W	1.6	1	118
004B	MW-4	W	1200	100	100
005B	MW-5	W	15,000	500	97.1

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.5	µg/L
	S	NA	NA

* water and vapor samples and all TCLP & SPLP extracts are reported in µg/L, soil/sludge/solid samples in µg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or surrogate coelutes with another peak.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~2 vol. % sediment; j) sample diluted due to high organic content.

DHS Certification No. 1644

Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR SW8021B/8015Cm

Matrix: W WorkOrder: 0306644

EPA Method: SW8021B/8015Cm Extraction: SW5030B BatchID: 7595 Spiked Sample ID: 0306649-002A

	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
TPH(btex) £	ND	60	100	98.5	1.45	106	109	3.44	70	130
MTBE	10.2	10	93	90.2	1.45	110	103	7.08	70	130
Benzene	ND	10	98.6	98.3	0.334	111	104	7.20	70	130
Toluene	ND	10	98.4	99.2	0.795	105	97.8	6.85	70	130
Ethylbenzene	ND	10	102	101	0.781	111	107	4.04	70	130
Xylenes	ND	30	103	103	0	107	100	6.45	70	130
%SS:	103	100	101	101	0	105	101	4.46	70	130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS – MSD) / (MS + MSD) * 2.

* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.
NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

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QC SUMMARY REPORT FOR SW8260B

Matrix: W WorkOrder: 0306644

EPA Method: SW8260B	Extraction: SW5030B			BatchID: 7608		Spiked Sample ID: 0306644-002B				
	Sample	Spiked	MS*	MSD*	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	Low	High
Methyl-t-butyl ether (MTBE)	9.609	10	84.9	78.9	3.40	92.4	91	1.54	70	130
%SS1:	121	100	103	99.8	3.52	99.7	97.9	1.78	70	130

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS – MSD) / (MS + MSD) * 2.

* MS and / or MSD spike recoveries may not be near 100% or the RPDs near 0% if: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) if that specific sample matrix interferes with spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.
NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.

AEC

030644

McCAMPBELL ANALYTICAL INC.

1110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553-5560
Telephone: (925) 798-1620 Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

EDF Required? ☐ Yes ☐ No

Report To: Peter McIntyre Bill To:

Company: AEI Consultants
2500 Camino Diablo, Suite 200
Walnut Creek, CA 94597 E-Mail:

Tele: ( )925/283-6000 Fax: ( ) 925/283-6121

Project #: 5526 Project Name: Circle America

Project Location: 786 66th Ave Oakland

Sampler Signature: Adrian Nieto

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	Soil	Air	Sludge	Other	METHOD PRESERVED Ice	HCl	HNO_3	Other
MW-1		6/30		4	VOAs	X					X			
MW-2						X								
MW-3						X								
MW-4						X								
MW-5						X					✓			

Analysis Request

BTEX & TPH as Gas (602/8020 + 8015)/MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI	Other
X															8260B (MTBE only)
X															X
X															X
X															X
X															X

Comments

Relinquished By:	Date:	Time:	Received By:
Relinquished By: Adrian Nieto	Date: 6/30	Time: 2:50	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° ✓
GOOD CONDITION
HEAD SPACE ABSENT
DECHLORINATED IN LAB

PRESERVATION ✓ APPROPRIATE
CONTAINERS ✓
PERSERVED IN LAB

VOAS	O&G	METALS	OTHER

McCampbell Analytical Inc.
110 Second Avenue South, #D7
Pacheco, CA 94553-5560
(925) 798-1620

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0306644

Client:
All Environmental, Inc.
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597

TEL: (925) 283-6000
FAX: (925) 283-6121
ProjectNo: #5526; Cruise America
PO:

Date Received: **06/30/2003**
Date Printed: **06/30/2003**

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests						
					V8021B/8015C	SW8260B					
0306644-001	MW-1	Water	06/30/2003	☐	A	B					
0306644-002	MW-2	Water	06/30/2003	☐	A	B					
0306644-003	MW-3	Water	06/30/2003	☐	A	B					
0306644-004	MW-4	Water	06/30/2003	☐	A	B					
0306644-005	MW-5	Water	06/30/2003	☐	A	B					

Prepared by: Elisa Venegas

Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.