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June 29, 2006

**GROUNDWATER MONITORING REPORT**  
**2<sup>nd</sup> Quarter, 2006**

245 8th Street  
Oakland, California 94607

AEI Project No. 111783  
ACHCSA Case No. RO0000202 / State ID 263

Prepared For

Mr. Vic Lum  
Vic's Automotive  
245 8th Street  
Oakland, CA 94607

Prepared By

**AEI Consultants**  
2500 Camino Diablo Blvd., Suite 200  
Walnut Creek, California 94597  
(925) 283-6000

**AEI**



June 29, 2006

Mr. Vic Lum  
Vic's Automotive  
245 8th Street  
Oakland, CA 94607

**Subject: Quarterly Groundwater Monitoring Report  
2<sup>nd</sup> Quarter, 2006**  
245 8th Street  
Oakland, California 94607  
AEI Project No. 111783  
ACHCSA Case No. RO0000202 / State ID 263

Dear Mr. Lum:

AEI Consultants (AEI) has prepared this report on behalf of Mr. Vic Lum of Vic's Automotive to document the ongoing groundwater investigation at the above referenced site (Figure 1: Site Location Map). This work was initiated by the property owner in accordance with the requirements of the Alameda County Health Care Services Agency (ACHCSA). The purpose of this investigation is to monitor groundwater quality associated with the release of petroleum hydrocarbons from the former underground storage tank system. This report presents the findings of the 2<sup>nd</sup> quarter, 2006 groundwater monitoring episode conducted on May 4, 2006.

### **Site Description and Background**

The subject property (hereafter referred to as the "site" or "property") is located in a mixed commercial and residential area of Oakland. The site is a lot on the south corner of Alice Street and 8<sup>th</sup> Street, and is currently developed with a gasoline station and auto repair facility. Refer to Figure 2 for a depiction of the site.

Between June 1993 and August 1994, AEI removed a total of seven (7) underground storage tanks (USTs) from the property. The tanks consisted of four (4) 1,000-gallon and two (2) 6,000-gallon gasoline tanks and one (1) 250-gallon waste oil tank. The former locations of the tanks are shown on Figure 2. Impacted soil was removed from beneath the former tank area. Groundwater was encountered beneath the former 6,000-gallon tanks. Light non-aqueous phase liquid (LNAPL) was observed on the water table beneath the southern tank. The excavated soil was transported to an appropriate disposal facility and the excavation was backfilled with clean fill material. A new tank system was installed just west of the dispenser island.

Two groundwater monitoring wells (MW-1 and MW-2) were installed in July 1995. The first two episodes of monitoring revealed total petroleum hydrocarbons as gasoline (TPH-g) and Benzene up to 210,000 µg/L and 720 µg/L, respectively, in MW-2. Free phase gasoline product (LNAPL), was

discovered in MW-1, which ranged from 1.20 to 4.39 feet thick between December 1995 and March 1996.

Three soil borings (SB-1 through SB-3) were advanced in August 1996. Groundwater samples collected from each of the borings contained TPH-g and Benzene ranging from 120,000 to 140,000 µg/L, and from 12,000 to 19,000 µg/L, respectively. Methyl tertiary-butyl ether (MTBE) was also present in all three samples, up to 27,000 µg/L. Although free phase product was not observed in the field, qualitative laboratory observations indicated immiscible sheen. Manual bailing and pumping of NAPL from MW-1, and monitoring of MW-2 occurred intermittently through 1997.

Two additional groundwater monitoring wells (MW-3 and MW-4) were installed in May 2001. Refer to Tables 1 and 2 for data collected from these wells. A free phase product recovery pump was installed in MW-1 in June 2001. Fourteen (14) additional soil borings were performed on and offsite in 2003, from which soil, groundwater, and soil vapor samples were collected to further characterize the extent of the release.

On January 11, 19, and 20, 2005, AEI installed a total of six (6) additional wells, three (3) extraction/monitoring wells on the subject site and three (3) extraction/monitoring wells at 708 Alice Street. The locations of the six (6) additional wells (labeled MW-5 through MW-7 and MW-10 through MW-12) are shown on Figure 2.

On July 11, 2005, a high vacuum dual phase extraction event was performed at the site from July 11 to July 27, 2005 using wells MW-1 through MW-3 and MW-10 through MW-12. Overall, the system uptime was approximately 95%. The results are presented in AEI's *High Vacuum Dual Phase Extraction Event Report* (December 2005).

### **Summary of Monitoring Activities**

AEI measured depth to groundwater in wells MW-1 through MW-7 and MW-10 through MW-12 on May 4, 2006. The well locations are shown in Figure 2. The depth from the top of the well casings was measured with an electric water level indicator prior to sampling. An oil-water interface meter was used to measure thickness of free phase product observed in MW-1, MW-6 and MW-7. The seven (7) wells with no free product (MW-2 through MW-5 and MW-10 through MW-12) were purged of at least three well volumes of water with a submersible purge pump and sampled using disposable Teflon bailers. Temperature, turbidity, pH, specific conductivity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) were measured during the purging of the wells. The turbidity was visually noted. Once temperature, pH, specific conductivity stabilized after three consecutive readings and following the recovery of water levels to at least 90%, a water sample was collected.

Groundwater samples were collected with new disposable bailers and poured into 40-millileter (mL) volatile organic analysis (VOA) vials. The vials were capped so that no head space nor air bubbles were present within the sample containers. The samples were preserved on ice and transported under proper chain of custody protocol to McCampbell Analytical, Inc. of Pacheco, California (Department of Health Services Certification #1644).

The seven (7) groundwater samples were submitted for chemical analysis for TPH-g by EPA method 8015C, Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX) and MTBE by EPA method 8021B.

### **Field Results**

Light non-aqueous phase liquid (LNAPL) was encountered in wells MW-1, MW-6 and MW-7 at thicknesses of 0.01 feet, 0.75 feet and 0.01 feet, respectively. No measurable thickness of free product was encountered in the remaining wells. However, a sheen of free product was noted in MW-2.

Groundwater elevations for this monitoring event ranged from 19.05 (MW-11) to 20.64 (MW-3) feet above mean sea level (amsl). The current groundwater elevations were an average of 3.07 feet higher than the previous monitoring event (February 9, 2005). The groundwater flow direction at the time of measurement is to the south-southwest with a calculated hydraulic gradient of 0.012 ft/ft.

Groundwater elevation data are summarized in Table 1. A summary of the average groundwater elevations and flow directions are presented in Table 2. Water table contours, groundwater flow direction, and hydraulic gradient for this monitoring event are depicted on Figure 4. Refer to Appendix A for the monitoring well field sampling forms.

### **Groundwater Quality**

For this monitoring event, the highest concentrations of petroleum hydrocarbons were detected in MW-10, MW-11, and MW-12. TPH-g, Benzene, Toluene, Ethylbenzene, Xylenes, and MTBE were detected in these wells at concentrations up to 190,000 µg/L, 34,000 µg/L, 41,000 µg/L, 3,500 µg/L, 17,000 µg/L, and 47,000 µg/L, respectively. Lower but elevated concentrations of TPH-g were detected in MW-2 (71,000 µg/L) and MW-5 (110,000 µg/L). Low to non-detectable concentrations of petroleum hydrocarbons were detected in MW-3 and MW-4. A summary of groundwater sample analytical data is presented in Table 3 and in Figure 3. Laboratory analytical reports and chain of custody documents are included in Appendix B.

### **Summary**

This report presents the findings of the 2<sup>nd</sup> Quarter, 2006 groundwater monitoring event performed at the subject site. Apparent free product thickness has decreased in well MW-1 by over 90% since the dual phase extraction event. However, LNAPL thickness has increased slightly in well MW-6. Free product thickness has increased in MW-7 since the dual phase extraction event, but has continued to decrease since the February 9, 2006 monitoring episode. This indicates that dual phase extraction has likely induced migration of petroleum hydrocarbons towards the extraction wells. This may also indicate that a significant phase shift from adsorbed to free and/or dissolved phases has occurred. The results of this monitoring event and previous investigations show that a significant mass of free product and dissolved phase hydrocarbons exist on and offsite. The following tasks are planned for the next quarter:

- Continue quarterly groundwater monitoring, with the next event scheduled for early August 2006.
- Project setup activities and the required permit applications for the high vacuum dual phase extraction (HVDPE) have been completed and submitted to the appropriate agencies. The HVDPE system is currently being manufactured and AEI is awaiting an *Authorization to Construct* from the Bay Area Air Quality Management District (BAAQMD). System construction and start-up is expected to occur around the beginning of August 2006.
- Continued attempt to permit installation of MW-8 and MW-9 in Alice and 7<sup>th</sup> Streets.

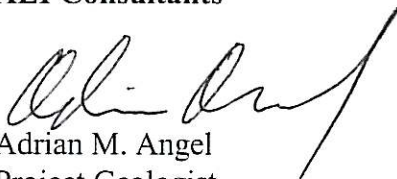
### **Report Limitations and Signatures**

This report presents a summary of work completed by AEI Consultants, including observations and descriptions of site conditions. 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 required information, but it cannot be assumed that they are entirely representative of all areas not sampled. All conclusions and recommendations are based on these analyses, 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 that existed at the time and location of the

These services were performed in accordance with generally accepted practices in the environmental engineering and construction field that existed at the time and location of the work. If you have any questions or need any additional information, please contact either of the undersigned at (925) 283-6000.

Sincerely,  
**AEI Consultants**

  
Adrian M. Angel  
Project Geologist

  
Ricky Bradford  
Senior Staff Engineer

  
Peter J. McIntyre, PG, REA  
Senior Project Manager



**Figures**

- Figure 1 Site Location Map
- Figure 2 Site Plan
- Figure 3 Hydrocarbon Concentrations (5/4/06)
- Figure 4 Groundwater Elevation Contours (5/4/06)

**Tables**

- Table 1 Groundwater Elevation Data
- Table 2 Groundwater Flow Summary
- Table 3 Groundwater Sample Analytical Data

**Appendix A** Monitoring Well Field Sampling Forms

**Appendix B** Laboratory Reports With Chain of Custody Documentation

**Report Distribution**

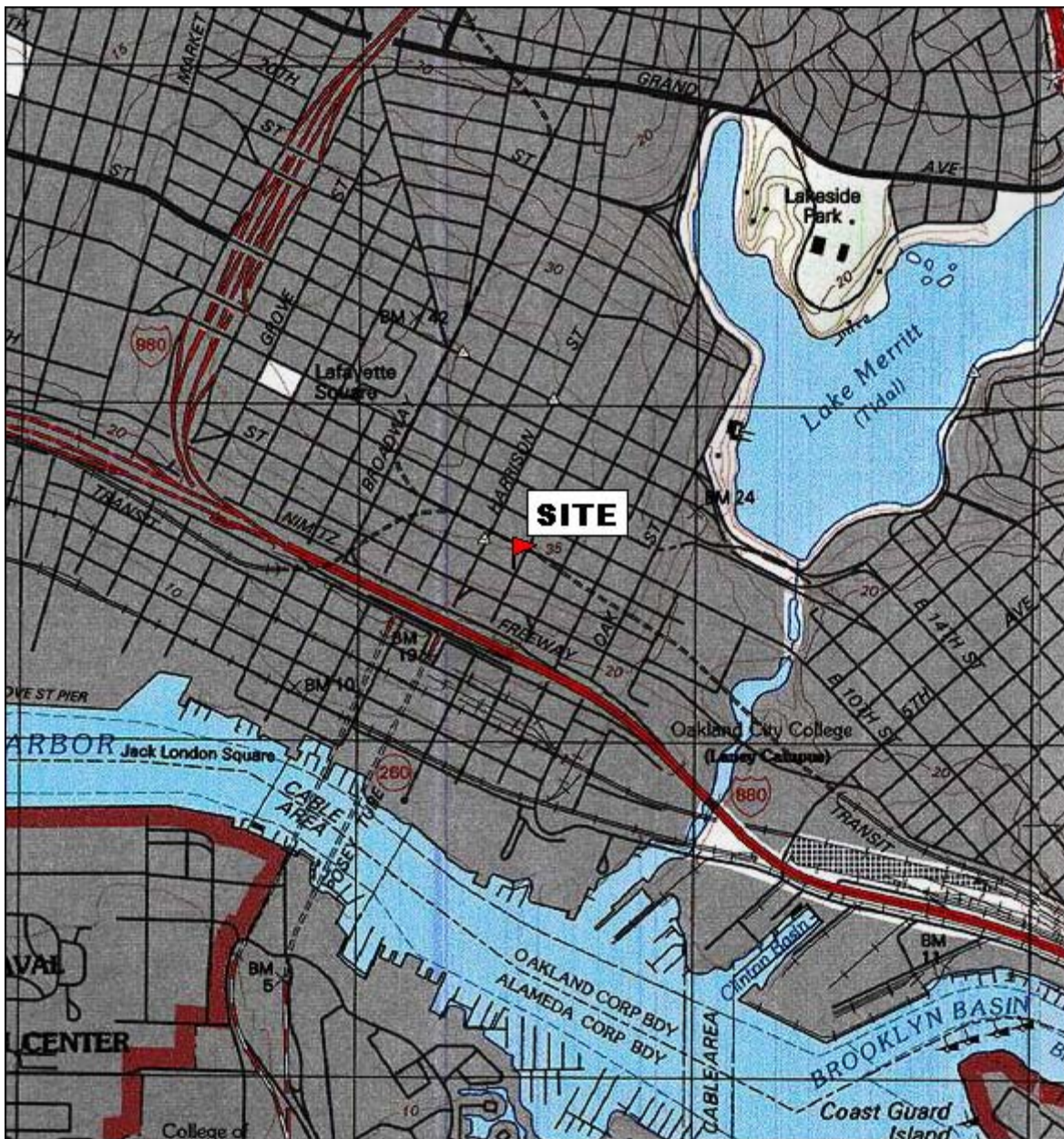
Mr. Victor Lum, 245 8<sup>th</sup> Street, Oakland, CA 94607

Mr. Jerry Wickham, ACHCSA, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94502

# FIGURES







TN  $\star$  MN  
15 $\frac{1}{2}$  $^{\circ}$

0 5 1 MILE  
0 1000 FEET 0 500 1000 METERS

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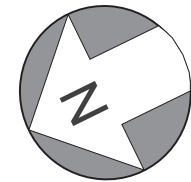
**AEI CONSULTANTS**  
2500 CAMINO DIABLO BLVD, STE 100, WALNUT CREEK

**SITE LOCATION MAP**

245 8<sup>th</sup> STREET  
OAKLAND, CALIFORNIA

**FIGURE 1**  
PROJECT NO. 111783

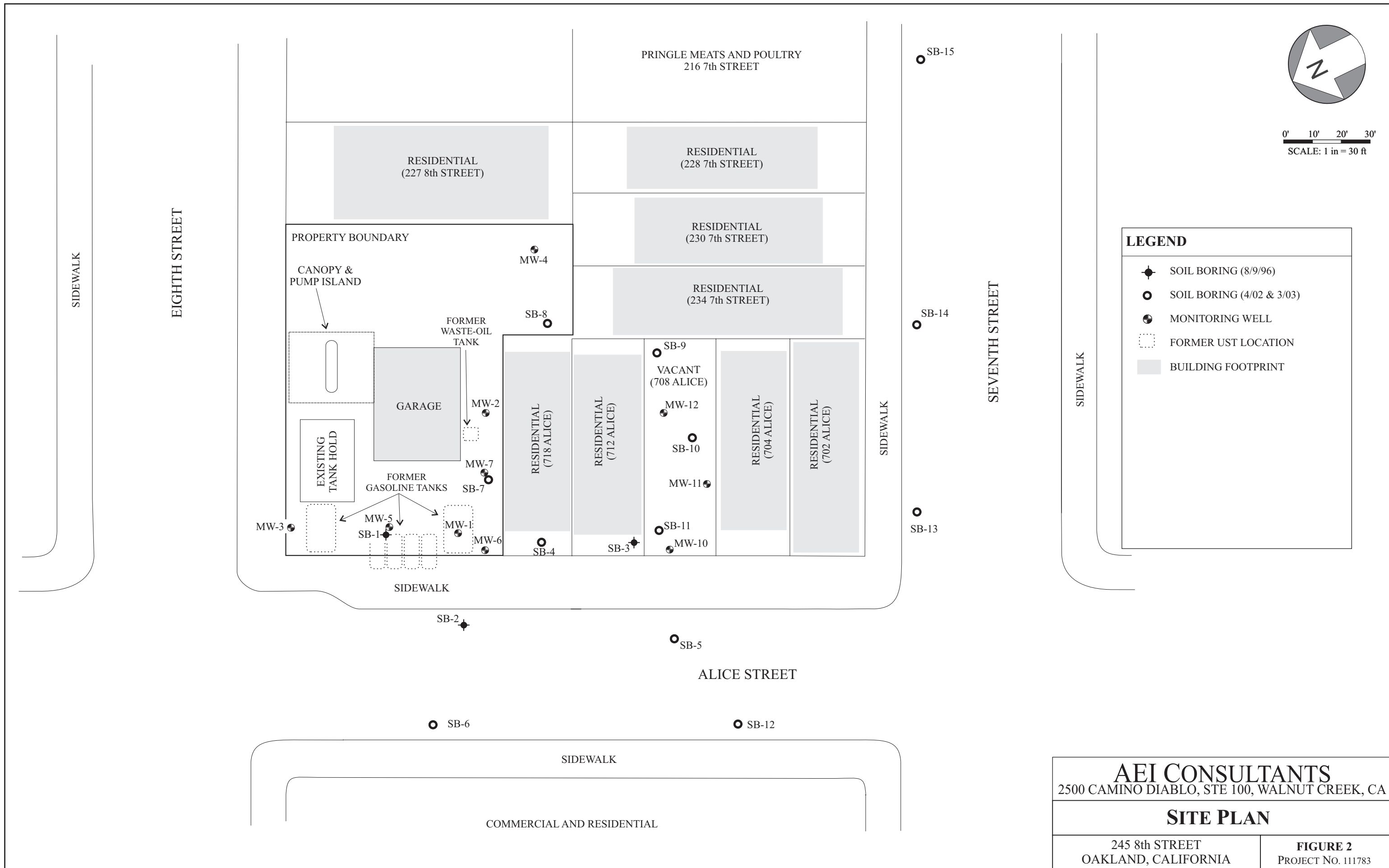




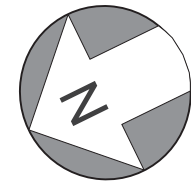
0' 10' 20' 30'  
SCALE: 1 in = 30 ft

**LEGEND**

- SOIL BORING (8/9/96)
- SOIL BORING (4/02 & 3/03)
- MONITORING WELL
- FORMER UST LOCATION
- BUILDING FOOTPRINT



<b>AEI CONSULTANTS</b> 2500 CAMINO DIABLO, STE 100, WALNUT CREEK, CA	
<b>SITE PLAN</b>	
245 8th STREET OAKLAND, CALIFORNIA	<b>FIGURE 2</b> PROJECT NO. 111783



0' 10' 20' 30'  
SCALE: 1 in = 30 ft

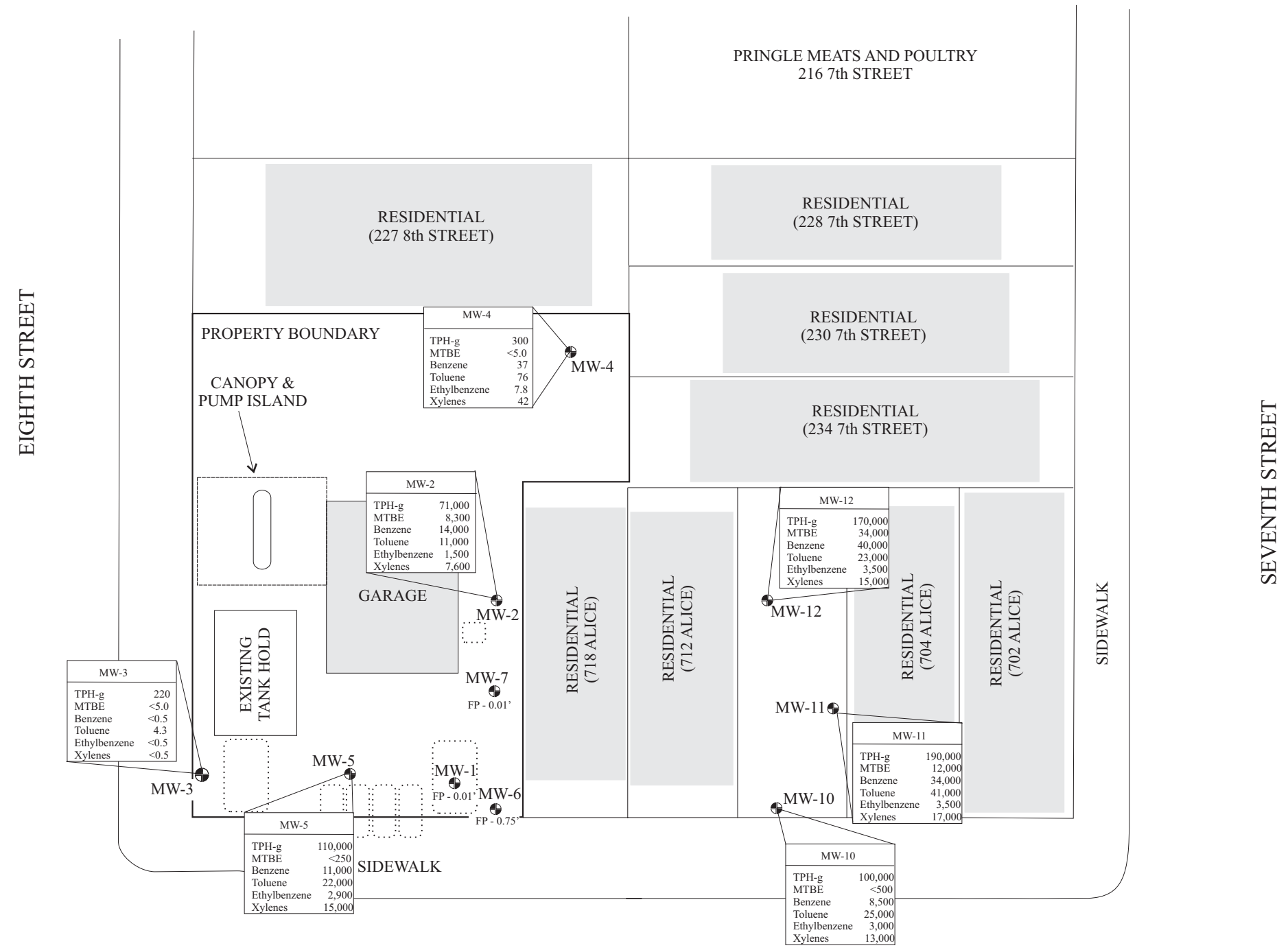
**LEGEND**

- MONITORING WELL
- FORMER UST LOCATION
- BUILDING FOOTPRINT

MW-10	
TPH-g	88,000
MTBE	<1,500
Benzene	6,900
Toluene	20,000
Ethylbenzene	2,300
Xylenes	9,900

Analytical  
results  
(ug/L)

TPH-g = Total Petroleum Hydrocarbons as gasoline  
MTBE = Methyl tertiary-Butyl Ether  
FP - 0.17' = Free Product - thickness (feet)



MW-3	
TPH-g	220
MTBE	<5.0
Benzene	<0.5
Toluene	4.3
Ethylbenzene	<0.5
Xylenes	<0.5

MW-2	
TPH-g	71,000
MTBE	8,300
Benzene	14,000
Toluene	11,000
Ethylbenzene	1,500
Xylenes	7,600

MW-4	
TPH-g	300
MTBE	<5.0
Benzene	37
Toluene	76
Ethylbenzene	7.8
Xylenes	42

MW-12	
TPH-g	170,000
MTBE	34,000
Benzene	40,000
Toluene	23,000
Ethylbenzene	3,500
Xylenes	15,000

MW-11	
TPH-g	190,000
MTBE	12,000
Benzene	34,000
Toluene	41,000
Ethylbenzene	3,500
Xylenes	17,000

MW-10	
TPH-g	100,000
MTBE	<500
Benzene	8,500
Toluene	25,000
Ethylbenzene	3,000
Xylenes	13,000

MW-5	
TPH-g	110,000
MTBE	<250
Benzene	11,000
Toluene	22,000
Ethylbenzene	2,900
Xylenes	15,000

MW-1	
FP - 0.01'	

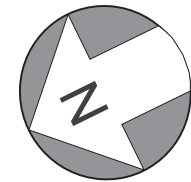
MW-6	
FP - 0.75'	

MW-7	
FP - 0.01'	

**AEI CONSULTANTS**  
2500 CAMINO DIABLO, STE 100, WALNUT CREEK, CA








**HYDROCARBON CONCENTRATIONS (5/4/06)**

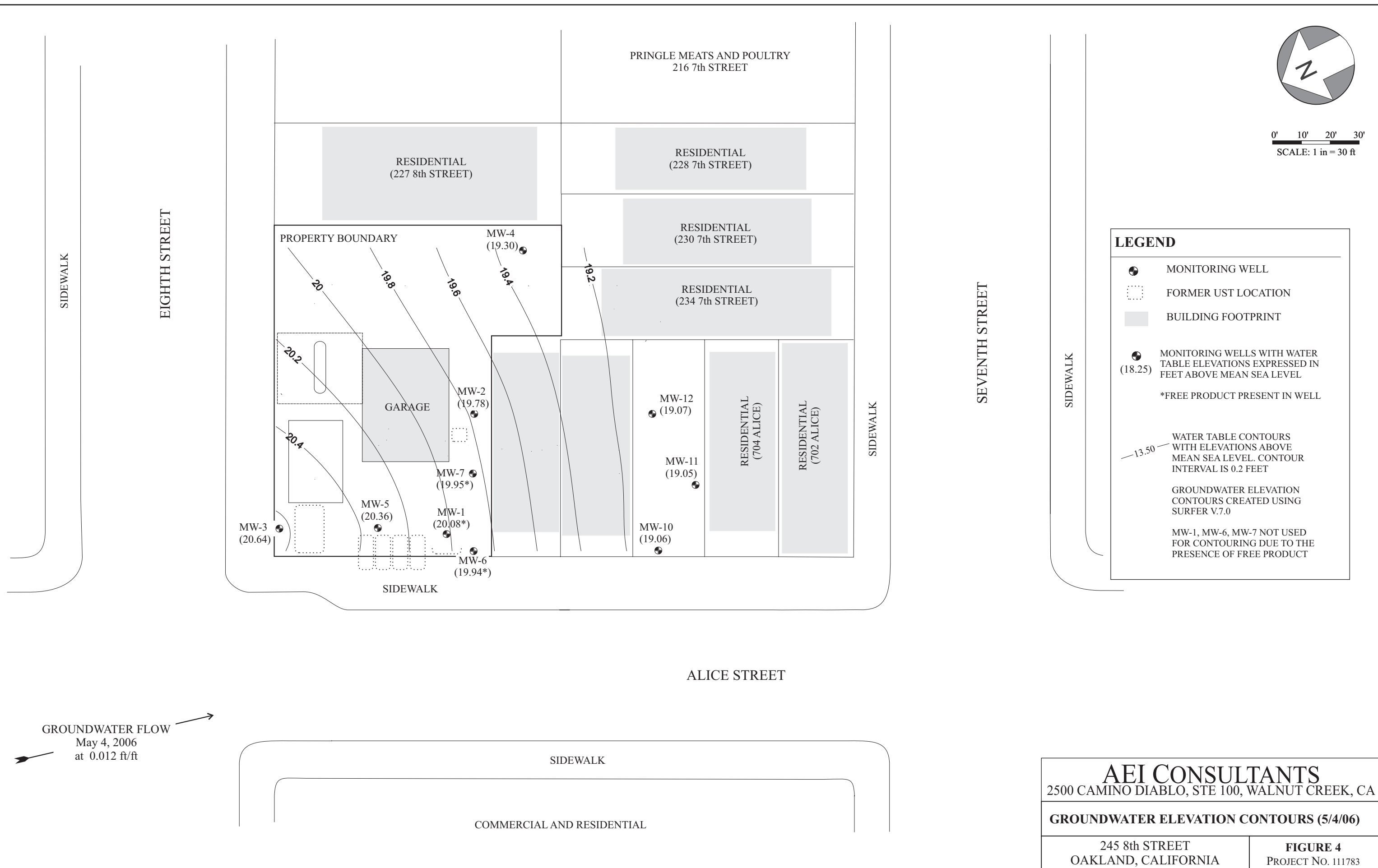
245 8th STREET OAKLAND, CALIFORNIA	<b>FIGURE 3</b> PROJECT NO. 111783
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0' 10' 20' 30'  
SCALE: 1 in = 30 ft

### LEGEND

-  MONITORING WELL
-  FORMER UST LOCATION
-  BUILDING FOOTPRINT
-  MONITORING WELLS WITH WATER TABLE ELEVATIONS EXPRESSED IN FEET ABOVE MEAN SEA LEVEL  
(18.25)
-  \*FREE PRODUCT PRESENT IN WELL
-  WATER TABLE CONTOURS WITH ELEVATIONS ABOVE MEAN SEA LEVEL. CONTOUR INTERVAL IS 0.2 FEET  
-13.50-
-  GROUNDWATER ELEVATION CONTOURS CREATED USING SURFER V.7.0
- MW-1, MW-6, MW-7 NOT USED FOR CONTOURING DUE TO THE PRESENCE OF FREE PRODUCT



GROUNDWATER FLOW  
May 4, 2006  
at 0.012 ft/ft

<b>AEI CONSULTANTS</b> 2500 CAMINO DIABLO, STE 100, WALNUT CREEK, CA	
<b>GROUNDWATER ELEVATION CONTOURS (5/4/06)</b>	
245 8th STREET OAKLAND, CALIFORNIA	<b>FIGURE 4</b> PROJECT NO. 111783

# TABLES



**Table 1: Groundwater Elevation Data**  
**Vic's Automotive, 245 8th Ave, Oakland, CA**

Well ID (screen interval)	Date Collected	TOC Well <sup>1,2</sup> Elevation (ft amsl)	Depth to Water (ft)	Groundwater <sup>3</sup> Elevation (ft amsl)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)
<b>MW-1</b> (8-28)	6/29/2001	27.73	16.52	11.21	14.89	1.63
	10/10/2001	27.73	15.45	12.28	15.37	0.08
	1/9/2002	27.73	12.61	15.12	-	<0.01
	4/24/2002	27.73	13.35	14.38	-	<0.01
	7/24/2002	27.73	14.19	13.54	-	<0.01
	11/5/2002	27.73	14.85	12.88	-	<0.01
	2/4/2003	27.73	14.91	12.82	-	<0.01
	5/2/2003	27.73	14.43	13.30	-	0.08
	8/4/2003	27.73	15.24	12.49	15.01	0.23
	11/3/2003	27.73	16.94	10.79	15.67	1.27
	2/9/2004	27.73	14.61	13.12	14.43	0.18
	5/10/2004	27.73	Inaccessible	-	-	-
	8/9/2004	27.73	15.24	12.49	15.03	0.21
	11/9/2004	27.73	15.95	11.78	15.71	0.24
	2/3/2005	32.55	13.75	18.80	13.58	0.17
	5/9/2005	32.55	13.93	18.62	13.81	0.12
	8/5/2005	32.55	15.40	17.15	15.39	0.01
	11/9/2005	32.55	15.76	16.79	15.75	0.01
2/9/2006	32.55	13.52	19.03	13.50	0.02	
<b>5/4/2006</b>	<b>32.55</b>	<b>12.47</b>	<b>20.08</b>	<b>12.46</b>	<b>0.01</b>	
<b>MW-2</b> (8-28)	6/29/2001	28.16	16.14	12.02	-	-
	10/10/2001	28.16	16.43	11.73	-	-
	1/9/2002	28.16	13.50	14.66	-	-
	4/24/2002	28.16	14.40	13.76	-	-
	7/24/2002	28.16	14.91	13.25	-	-
	11/5/2002	28.16	16.96	11.20	-	-
	2/4/2003	28.16	15.42	12.74	-	-
	5/2/2003	28.16	15.24	12.92	-	-
	8/4/2003	28.16	15.98	12.18	-	-
	11/3/2003	28.16	16.60	11.56	-	Sheen
	2/9/2004	28.16	15.22	12.94	-	Sheen
	5/10/2004	28.16	15.34	12.82	-	Sheen
	8/9/2004	28.16	15.92	12.24	-	Sheen
	11/9/2004	28.16	16.51	11.65	-	Sheen
	2/3/2005	33.24	14.44	18.80	-	Sheen
	5/9/2005	33.24	14.67	18.57	-	Sheen
	8/5/2005	33.24	16.27	16.97	-	Sheen
	11/9/2005	33.24	16.53	16.71	-	Sheen
2/9/2006	33.24	14.36	18.88	-	Sheen	
<b>5/4/2006</b>	<b>33.24</b>	<b>13.46</b>	<b>19.78</b>	-	<b>Sheen</b>	
<b>MW-3</b> (10-25)	6/29/2001	29.21	16.60	12.61	-	-
	10/10/2001	29.21	16.92	12.29	-	-
	1/9/2002	29.21	14.20	15.01	-	-
	4/24/2002	29.21	15.07	14.14	-	-
	7/24/2002	29.21	16.40	12.81	-	-
	11/5/2002	29.21	16.47	12.74	-	-
	2/4/2003	29.21	16.92	12.29	-	-
	5/2/2003	29.21	15.45	13.76	-	-
	8/4/2003	29.21	16.46	12.75	-	-
	11/3/2003	29.21	17.15	12.06	-	-
	2/9/2004	29.21	15.78	13.43	-	-
	5/10/2004	29.21	15.77	13.44	-	-
	8/9/2004	29.21	16.45	12.76	-	-
	11/9/2004	29.21	17.26	11.95	-	-
	2/3/2005	34.25	15.92	18.33	-	-
	5/9/2005	34.25	15.03	19.22	-	-
	8/5/2005	34.25	16.59	17.66	-	-
	11/9/2005	34.25	16.82	17.43	-	-
2/9/2006	34.25	14.65	19.60	-	-	
<b>5/4/2006</b>	<b>34.25</b>	<b>13.61</b>	<b>20.64</b>	-	-	

**Table 1: Groundwater Elevation Data**  
**Vic's Automotive, 245 8th Ave, Oakland, CA**

Well ID (screen interval)	Date Collected	TOC Well <sup>1,2</sup> Elevation (ft amsl)	Depth to Water (ft)	Groundwater <sup>3</sup> Elevation (ft amsl)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)
<b>MW-4</b> (10-25)	6/29/2001	29.38	17.71	11.67	-	-
	10/10/2001	29.38	18.00	11.38	-	-
	1/9/2002	29.38	15.02	14.36	-	-
	4/24/2002	29.38	15.74	13.64	-	-
	7/24/2002	29.38	16.69	12.69	-	-
	11/5/2002	29.38	17.64	11.74	-	-
	2/4/2003	29.38	16.02	13.36	-	-
	5/2/2003	29.38	16.72	12.66	-	-
	8/4/2003	29.38	17.51	11.87	-	-
	11/3/2003	29.38	18.09	11.29	-	-
	2/9/2004	29.38	16.67	12.71	-	-
	5/10/2004	29.38	16.89	12.49	-	-
	8/9/2004	29.38	17.44	11.94	-	-
	11/9/2004	29.38	17.89	11.49	-	-
	2/3/2005	34.42	14.98	19.44	-	-
	5/9/2005	34.42	16.20	18.22	-	-
	8/5/2005	34.42	17.73	16.69	-	-
11/9/2005	34.42	17.91	16.51	-	-	
2/9/2006	34.42	15.62	18.80	-	-	
<b>5/4/2006</b>	<b>34.42</b>	<b>15.12</b>	<b>19.30</b>	-	-	
<b>MW-5</b> (12-22)	2/3/2005	33.33	14.23	19.10	-	-
	5/9/2005	33.33	14.33	19.00	-	-
	8/5/2005	33.33	15.89	17.44	-	-
	11/9/2005	33.33	16.18	17.15	-	-
	2/9/2006	33.33	14.02	19.31	-	-
	<b>5/4/2006</b>	<b>33.33</b>	<b>12.97</b>	<b>20.36</b>	-	-
<b>MW-6</b> (12-22)	2/3/2005	32.82	13.99	18.83	-	Sheen
	5/9/2005	32.82	13.61	19.21	-	Sheen
	8/5/2005	32.82	15.50	17.32	15.13	0.37
	11/9/2005	32.82	15.87	16.95	15.50	0.37
	2/9/2006	32.82	13.93	18.89	13.22	0.71
	<b>5/4/2006</b>	<b>32.82</b>	<b>12.88</b>	<b>19.94</b>	<b>12.13</b>	<b>0.75</b>
<b>MW-7</b> (12-22)	2/3/2005	33.07	14.17	18.90	-	Sheen
	5/9/2005	33.07	14.47	18.60	14.44	0.03
	8/5/2005	33.07	16.07	17.00	16.02	0.05
	11/9/2005	33.07	16.47	16.60	16.35	0.12
	2/9/2006	33.07	14.18	18.89	14.11	0.07
	<b>5/4/2006</b>	<b>33.07</b>	<b>13.12</b>	<b>19.95</b>	<b>13.11</b>	<b>0.01</b>
<b>MW-10</b> (12-22)	2/3/2005	31.17	12.65	18.52	-	-
	5/9/2005	31.17	13.09	18.08	-	-
	8/5/2005	31.17	14.68	16.49	-	-
	11/9/2005	31.17	14.94	16.23	-	-
	2/9/2006	31.17	12.82	18.35	-	-
	<b>5/4/2006</b>	<b>31.17</b>	<b>12.11</b>	<b>19.06</b>	-	-
<b>MW-11</b> (12-22)	2/3/2005	31.78	13.39	18.39	-	Sheen
	5/9/2005	31.78	13.89	17.89	-	Sheen
	8/5/2005	31.78	15.47	16.31	-	Sheen
	11/9/2005	31.78	15.73	16.05	-	Sheen
	2/9/2006	31.78	13.53	18.25	-	Sheen
	<b>5/4/2006</b>	<b>31.78</b>	<b>12.73</b>	<b>19.05</b>	-	<b>Sheen</b>
<b>MW-12</b> (12-22)	2/3/2005	32.05	13.70	18.35	-	Sheen
	5/9/2005	32.05	14.17	17.88	-	Sheen
	8/5/2005	32.05	15.69	16.36	-	Sheen
	11/9/2005	32.05	15.93	16.12	-	Sheen
	2/9/2006	32.05	13.78	18.27	-	Sheen
	<b>5/4/2006</b>	<b>32.05</b>	<b>12.98</b>	<b>19.07</b>	-	<b>Sheen</b>

1) Monitoring well top of casing (TOC) elevations were resurveyed by Morrow Surveying on January 10, 2006 and February 7, 2006

2) Groundwater elevations for the February 3, 2005 and subsequent monitoring episodes use the new well survey data

3) When LNAPL is present at >0.10 ft, the groundwater elevations are assumed to be affected by the LNAPL

All well elevations are measured from the top of the casing (TOC)

- = not applicable

LNAPL = light non-aqueous phase liquid (floating free product)

ft amsl = feet above mean sea level



**Table 2: Groundwater Flow Summary  
Vic's Automotive, 245 8th Ave, Oakland, CA**

<b>Episode #</b>	<b>Date</b>	<b>Average Groundwater Elevation<sup>1</sup> (ft amsl)</b>	<b>Change from Previous Episode (ft)</b>	<b>Flow direction (gradient)</b>
1	6/29/2001	12.10	-	SSE (0.0074)
2	10/10/2001	11.80	-0.30	SSE (0.0071)
3	1/9/2002	14.68	2.88	SE (0.0054)
4	4/24/2002	13.85	-0.83	SSW (0.005)
5	7/24/2002	12.92	-0.93	NE (0.021)
6	11/5/2002	11.89	-1.02	SW (0.019)
7	2/4/2003	12.80	0.90	NNW (0.01)
8	5/2/2003	13.11	0.32	SSE (0.01)
9	8/4/2003	12.27	-0.85	SSE(0.007)
10	11/3/2003	11.64	-0.63	SSE (0.006)
11	2/9/2004	13.03	1.39	SSE (0.006)
12	5/10/2004	12.92	-0.11	SSE (0.008)
13	8/9/2004	12.31	-0.60	SSE (0.006)
14	11/9/2004	11.70	-0.62	SSE (0.004)
15	2/3/2005	18.75	-	W (0.007)
16	5/9/2005	18.53	-0.22	S (0.010)
17	8/5/2005	16.94	-1.59	S (0.010)
18	11/9/2005	16.65	-0.28	S (0.010)
19	2/9/2006	18.83	1.89	SSW (0.010)
<b>20</b>	<b>5/4/2006</b>	<b>19.72</b>	<b>3.07</b>	<b>SSW (0.012)</b>

1) MW-2 to MW-4 only used for episodes 1 through 14; all wells used for episodes 15 and later

- = not applicable

ft amsl = feet above mean sea level

**Table 3: Groundwater Sample Analytical Data  
Vic's Automotive, 245 8th Ave, Oakland, CA**

Well/Sample ID	Date Collected	Apparent LNAPL Thickness (ft)	TPH-g	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
			$\mu\text{g/L}$ <i>EPA Method 8015Cm</i>	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$
MW-1	6/29/2001	1.63	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	10/10/2001	0.08	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	1/9/2002	<0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	4/24/2002	<0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	7/24/2002	~0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	11/5/2002	~0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	2/4/2003	~0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	5/2/2003	0.08	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	8/4/2003	0.23	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	11/3/2003	1.27	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	2/9/2004	0.18	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	5/10/2004	Inaccessible	-	-	-	-	-	-
	8/9/2004	0.21	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	11/9/2004	0.24	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	2/3/2005	0.17	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	5/9/2005	0.12	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	8/5/2005	0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	11/9/2005	0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	2/9/2006	0.02	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	5/4/2006	0.01	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
MW-2	6/29/2001	0.0	69,000	4100/4400*	7,200	6,100	1,500	7,000
	10/10/2001	0.0	87,000	14,000	22,000	12,000	2,700	9,100
	1/9/2002	0.0	130,000	11,000	30,000	19,000	3,800	14,000
	4/24/2002	Sheen	210,000	32,000	38,000	23,000	4,600	19,000
	7/24/2002	Sheen	170,000	36,000	48,000	12,000	3,700	8,600
	11/5/2002	Sheen	190,000	36,000	45,000	25,000	4,600	16,000
	2/4/2003	Sheen	150,000	27,000	51,000	24,000	4,200	14,000
	5/2/2003	Sheen	150,000	35,000	39,000	11,000	3,800	9,900
	8/4/2003	Sheen	120,000	29,000	32,000	5,000	3,200	7,200
	11/3/2003	Sheen	120,000	24,000	33,000	4,300	3,200	5,400
	2/9/2004	Sheen	130,000	19,000	27,000	7,700	3,100	7,600
	5/10/2004	Sheen	67,000	13,000	20,000	3,000	2,300	4,100
	8/9/2004	Sheen	100,000	22,000	27,000	7,100	2,800	6,600
	11/9/2004	Sheen	100,000	23,000	27,000	6,100	3,000	5,600
	2/3/2005	Sheen	84,000	11,000	23,000	5,000	3,000	5,500
	5/9/2005	Sheen	74,000	14,000	21,000	4,200	2,300	3,300
	7/27/2005	Sheen	9,500	910	1,400	1,000	180	960
	8/5/2005	Sheen	74,000	4,000	8,800	11,000	1,300	7,600
	11/9/2005	Sheen	120,000	16,000	21,000	14,000	2,300	13,000
	2/9/2006	Sheen	120,000	10,000	18,000	16,000	2,200	13,000
5/4/2006	Sheen	71,000	8,300	14,000	11,000	1,500	7,600	
MW-3	6/29/2001	0.00	550	<5.0	<0.5	3.1	3.2	1.2
	10/10/2001	0.00	470	<5.0	0.77	5.3	3.3	5.9
	1/9/2002	0.00	1,000	<5.0	0.90	7.6	7.8	25
	4/24/2002	0.00	1,500	<5.0	0.64	7.2	12	14
	7/24/2002	0.00	1,200	<5.0	10	17.0	11	25
	11/5/2002	0.00	1,800	<25	33	43.0	18	31
	2/4/2003	0.00	450	<5.0	<0.5	5.0	<0.5	0.77
	5/2/2003	0.00	340	<5.0	7.3	10.0	2.5	7.3
	8/4/2003	0.00	170	<5.0	5.8	5.9	1.5	4.9
	11/3/2003	0.00	54	<5.0	<0.5	<0.5	<0.5	<0.5
	2/9/2004	0.00	190	<5.0	<0.5	3.6	<0.5	<0.5
	5/10/2004	0.00	280	<5.0	<0.5	3.4	<0.5	<0.5
	8/9/2004	0.00	290	<5.0	<0.5	3.8	<0.5	<0.5
	11/9/2004	0.00	220	<5.0	<0.5	4.0	<0.5	<0.5
	2/3/2005	0.00	160	<5.0	13	30	3.0	21
	5/9/2005	0.00	200	<5.0	<0.5	3.9	<0.5	<0.5
	8/5/2005	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	11/9/2005	0.00	130	<5.0	<0.5	2.3	<0.5	<0.5
	2/9/2006	0.00	270	<5.0	<0.5	5.6	<0.5	<0.5
	5/4/2006	0.00	220	<5.0	<0.5	4.3	<0.5	<0.5

**Table 3: Groundwater Sample Analytical Data  
Vic's Automotive, 245 8th Ave, Oakland, CA**

Well/Sample ID	Date Collected	Apparent LNAPL Thickness (ft)	TPH-g	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes
			$\mu\text{g/L}$ <i>EPA Method 8015Cm</i>	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$
MW-4	6/29/2001	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	10/10/2001	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	1/9/2002	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	4/24/2002	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	7/24/2002	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	11/5/2002	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	2/4/2003	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	5/2/2003	0.00	500	10	68	71	18	65
	8/4/2003	0.00	270	<5.0	30	29	9.2	32
	11/3/2003	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	2/9/2004	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	5/10/2004	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	8/9/2004	0.00	130	<5.0	14	13	5.3	17
	11/9/2004	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	2/3/2005	0.00	370	<5.0	<0.5	4.1	<0.5	0.64
	5/9/2005	0.00	840	<5.0	50	180	21	110
	7/27/2005	0.00	<50	<5.0	<0.5	<0.5	<0.5	<0.5
	8/5/2005	0.00	310	<5.0	7.5	57	10	53
	11/9/2005	0.00	290	<5.0	12	61	8.8	49
	2/9/2006	0.00	250	<5.0	9.9	42	7.5	45
<b>5/4/2006</b>	<b>0.00</b>	<b>300</b>	<b>&lt;5.0</b>	<b>37</b>	<b>76</b>	<b>7.8</b>	<b>42</b>	
MW-5	2/3/2005	0.0	78,000	<1,000	7,600	13,000	2,200	9,600
	5/9/2005	0.0	60,000	<900	6,100	9,900	1,600	6,600
	7/27/2005	nm	120,000	1,100	10,000	19,000	2,100	13,000
	8/5/2005	0.0	59,000	<500	4,100	10,000	1,200	6,600
	11/9/2005	0.0	44,000	<500	3,300	7,400	1,100	4,900
	2/9/2006	0.0	110,000	<500	10,000	22,000	2,400	13,000
	<b>5/4/2006</b>	<b>0.0</b>	<b>110,000</b>	<b>&lt;250</b>	<b>11,000</b>	<b>22,000</b>	<b>2,900</b>	<b>15,000</b>
MW-6	2/3/2005	Sheen	130,000	<1,000	2,400	33,000	2,400	15,000
	5/9/2005	Sheen	170,000	<4,000	11,000	43,000	3,100	16,000
	8/5/2005	0.37	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	11/9/2005	0.37	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	2/9/2006	0.71	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	<b>5/4/2006</b>	<b>0.75</b>	<b>ns/fp</b>	<b>ns/fp</b>	<b>ns/fp</b>	<b>ns/fp</b>	<b>ns/fp</b>	<b>ns/fp</b>
MW-7	2/3/2005	Sheen	220,000	18,000	45,000	44,000	3,500	18,000
	5/9/2005	0.03	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	8/5/2005	0.05	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	11/9/2005	0.12	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	2/9/2006	0.07	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp	ns/fp
	<b>5/4/2006</b>	<b>0.01</b>	<b>ns/fp</b>	<b>ns/fp</b>	<b>ns/fp</b>	<b>ns/fp</b>	<b>ns/fp</b>	<b>ns/fp</b>
MW-10	2/3/2005	0.00	36,000	<500	4,700	7,200	660	3,400
	5/9/2005	0.00	88,000	<1,500	6,900	20,000	2,300	9,900
	8/5/2005	0.00	88,000	<1,100	10,000	21,000	1,900	9,800
	11/9/2005	0.00	63,000	<1,100	5,400	13,000	1,900	7,900
	2/9/2006	0.00	100,000	<500	6,600	19,000	2,900	13,000
	<b>5/4/2006</b>	<b>0.00</b>	<b>100,000</b>	<b>&lt;500</b>	<b>8,500</b>	<b>25,000</b>	<b>3,000</b>	<b>13,000</b>
MW-11	2/3/2005	Sheen	170,000	<3,000	23,000	35,000	3,100	16,000
	5/9/2005	Sheen	210,000	3,500	29,000	40,000	3,400	16,000
	7/27/2005	Sheen	220,000	2,500	26,000	37,000	3,200	18,000
	8/5/2005	Sheen	210,000	<2,500	35,000	42,000	3,300	16,000
	11/9/2005	Sheen	180,000	9,100	32,000	47,000	3,600	18,000
	2/9/2006	Sheen	210,000	10,000	33,000	39,000	3,800	20,000
	<b>5/4/2006</b>	<b>Sheen</b>	<b>190,000</b>	<b>12,000</b>	<b>34,000</b>	<b>41,000</b>	<b>3,500</b>	<b>17,000</b>
MW-12	2/3/2005	Sheen	250,000	100,000	52,000	41,000	3,400	15,000
	5/9/2005	Sheen	210,000	91,000	44,000	28,000	3,300	13,000
	8/5/2005	Sheen	170,000	52,000	38,000	28,000	3,000	12,000
	11/9/2005	Sheen	180,000	52,000	39,000	25,000	2,900	12,000
	2/9/2006	Sheen	170,000	34,000	40,000	23,000	3,500	15,000
	<b>5/4/2006</b>	<b>Sheen</b>	<b>160,000</b>	<b>47,000</b>	<b>33,000</b>	<b>28,000</b>	<b>2,800</b>	<b>10,000</b>

$\mu\text{g/L}$  = micrograms per liter (ppb)

TPH-g = total petroleum hydrocarbons as gasoline

MTBE = methyl tertiary-butyl ether

ns/fp = not sampled / free product

\* samples re-analyzed by EPA Method 8260 (expressed as EPA 8020 / EPA 8260)

Please refer to Appendix B: Lab Analytical and Chain of Custody Documentation for detailed analytical reports including dilution factors

## **APPENDIX A**

### **MONITORING WELL FIELD SAMPLING FORMS**



**AEI CONSULTANTS**

**GROUNDWATER MONITORING WELL FIELD SAMPLING FORM**

**Monitoring Well Number: MW-1**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	111783	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	32.55		
Depth of Well	28.00		
Depth to Water (from top of casing)	12.47		
Depth to Free Product (from top of casing)	12.46		
Water Elevation (feet above msl)	20.08		
Well Volumes Purged	0		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	N/A		
Actual Volume Purged (gallons)	N/A		
Appearance of Purge Water	N/A		
Free Product Present?	Yes	Thickness (ft):	0.01

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				Not sampled due to presence of free product.			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (μS/cm)	DO (mg/L)	ORP (meV)	Comments

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

Well was neither purged nor sampled due to the presence of free product.

**AEI CONSULTANTS**

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-2**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	111783	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	2		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	33.24		
Depth of Well	28.00		
Depth to Water (from top of casing)	13.46		
Water Elevation (feet above msl)	19.78		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	7.0		
Actual Volume Purged (gallons)	6.0		
Appearance of Purge Water	Black, cleared after 1.0 gallons purged.		
Free Product Present?	No	Thickness (ft):	Sheen

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 VOAs			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (μS/cm)	DO (mg/L)	ORP (meV)	Comments
	2	17.81	7.11	1087	10.25	-79.8	
	4	17.87	7.16	899	5.97	-78.0	
	6	17.93	7.13	874	4.54	-77.6	
	8	18.01	7.12	856	3.37	-78.0	

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

Strong petroleum hydrocarbon odors noted.



**AEI CONSULTANTS**  
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-3**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	111783	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	34.25		
Depth of Well	25.00		
Depth to Water (from top of casing)	13.61		
Water Elevation (feet above msl)	20.64		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	<b>22.2</b>		
Actual Volume Purged (gallons)	23		
Appearance of Purge Water	Initially brown, clears quickly		
Free Product Present?	No	Thickness (ft):	-

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 VOAs			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	4	18.42	7.09	335	6.80	66.7	
	8	18.44	7.02	332	5.22	50.2	
	12	18.53	6.97	327	3.69	7.1	
	16	18.57	6.97	329	3.16	-2.0	
	20	18.63	6.95	328	2.66	-7.0	
	23	18.66	6.92	328	2.28	-9.9	

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

No petroleum odors noted.

**AEI CONSULTANTS**  
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-4**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	111783	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	34.42		
Depth of Well	25.00		
Depth to Water (from top of casing)	15.12		
Water Elevation (feet above msl)	19.30		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	<b>19.2</b>		
Actual Volume Purged (gallons)	20.0		
Appearance of Purge Water	Initially brown, clears quickly		
Free Product Present?	No	Thickness (ft):	-

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 VOAs			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (μS/cm)	DO (mg/L)	ORP (meV)	Comments
	4	17.48	7.07	377	9.45	62.4	
	8	17.51	6.88	382	8.75	65.8	
	12	17.52	6.83	402	8.08	62.0	
	16	17.59	6.82	393	7.53	59.0	
	20	17.62	6.78	381	7.06	59.3	

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

Purge water was light-clear with no noted hydrocarbon odor and cleared quickly.

**AEI CONSULTANTS**

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-5**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	111783	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	33.33		
Depth of Well	22.00		
Depth to Water (from top of casing)	12.97		
Water Elevation (feet above msl)	20.36		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	<b>17.6</b>		
Actual Volume Purged (gallons)	18.0		
Appearance of Purge Water	Initially grey, clears after 1 gallon		
Free Product Present?	No	Thickness (ft):	-

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 VOAs			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	3	17.66	7.01	792	3.83	-70.2	
	6	17.70	7.03	800	2.69	-80.8	
	9	17.74	7.05	802	2.14	-86.6	
	12	17.86	7.06	740	1.60	-89.7	
	15	17.91	7.02	704	1.45	-85.7	
	18	17.99	7.00	640	1.33	-81.2	

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

Strong petroleum odors noted.

**AEI CONSULTANTS**  
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-6**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	111783	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	32.82		
Depth of Well	22.00		
Depth to Water (from top of casing)	12.88		
Depth to Free Product (from top of casing)	12.13		
Water Elevation (feet above msl)	19.94		
Well Volumes Purged	N/A		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	N/A		
Actual Volume Purged (gallons)	N/A		
Appearance of Purge Water	N/A		
Free Product Present?	yes	Thickness (ft):	0.75

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 VOAs			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments

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

Well was neither purged nor sampled due to the presence of free product.

**AEI CONSULTANTS**  
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-7**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	9482	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	33.07		
Depth of Well	22.00		
Depth to Water (from top of casing)	13.12		
Depth to Free Product (from top of casing)	13.11		
Water Elevation (feet above msl)	19.95		
Well Volumes Purged	N/A		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	N/A		
Actual Volume Purged (gallons)	N/A		
Appearance of Purge Water	N/A		
Free Product Present?	Yes	Thickness (ft):	0.01

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				Not sampled due to presence of free product.			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (μS/cm)	DO (mg/L)	ORP (meV)	Comments

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

Well was neither purged nor sampled due to the presence of free product.

**AEI CONSULTANTS**  
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-10**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	111783	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	31.17		
Depth of Well	22.00		
Depth to Water (from top of casing)	12.11		
Water Elevation (feet above msl)	19.06		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	<b>17.9</b>		
Actual Volume Purged (gallons)	20.0		
Appearance of Purge Water	Initially milky grey, clears quickly		
Free Product Present?	No	Thickness (ft):	-

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 VOAs			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)	Comments
	3	17.68	7.02	377	7.04	-5.3	
	6	17.70	6.98	377	5.15	-6.5	
	9	17.74	6.95	378	3.93	-8.9	
	12	17.83	6.93	378	2.78	-13.8	
	15	17.89	6.92	3381	2.02	17.9	
	18	17.99	6.87	367	1.57	-19.7	
	20	17.99	6.87	365	1.54	-19.8	

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

Strong petroleum odors noted.



**AEI CONSULTANTS**  
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-11**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	111783	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	31.78		
Depth of Well	22.00		
Depth to Water (from top of casing)	12.73		
Water Elevation (feet above msl)	19.05		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	<b>16.5</b>		
Actual Volume Purged (gallons)	18.0		
Appearance of Purge Water	Initially brown, clears after 2 gallons		
Free Product Present?	No	Thickness (ft):	

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 VOAs			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µS/cm)	DO(mg/L)	ORP (meV)	Comments
	3	17.03	6.87	302	4.33	-30.2	
	6	17.04	6.81	304	3.25	-34.0	
	9	17.02	6.77	339	2.75	-43.9	
	12	17.06	6.81	356	2.07	-48.3	
	15	17.12	6.83	351	1.61	-48.1	
	18	17.15	6.83	345	1.46	-47.1	

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

Strong petroleum odors noted.

**AEI CONSULTANTS**  
GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

**Monitoring Well Number: MW-12**

Project Name:	Vic's Automotive	Date of Sampling:	5/4/2006
Job Number:	111783	Name of Sampler:	Adrian Nieto
Project Address:	245 8th Street, Oakland		

**MONITORING WELL DATA**

Well Casing Diameter (2"/4"/6")	4		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	32.05		
Depth of Well	22.00		
Depth to Water (from top of casing)	12.98		
Water Elevation (feet above msl)	19.07		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	<b>16.0</b>		
Actual Volume Purged (gallons)	18.0		
Appearance of Purge Water	Initially light brown, clears quickly		
Free Product Present?	No	Thickness (ft):	

**GROUNDWATER SAMPLES**

Number of Samples/Container Size				3 VOAs			
Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (μS/cm)	DO (mg/L)	ORP (meV)	Comments
	3	17.03	6.92	352	4.56	-30.8	
	6	17.03	6.85	364	3.66	-30.9	
	9	17.12	6.75	431	2.44	-30.6	
	12	17.17	6.76	475	1.88	-33.2	
	15	17.24	6.81	510	1.40	-37.5	
	18	17.30	6.83	5213	1.28	-39.0	

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

Moderate petroleum odors noted.

## **APPENDIX B**

# **LABORATORY ANALYTICAL AND CHAIN OF CUSTODY DOCUMENTATION**



**McC Campbell Analytical, Inc.**

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560  
Telephone : 925-798-1620 Fax : 925-798-1622  
Website: www.mcccampbell.com E-mail: main@mcccampbell.com

AEI Consultants 2500 Camino Diablo, Ste. #200 Walnut Creek, CA 94597	Client Project ID: #116907; Vic's Automotive	Date Sampled: 05/04/06
		Date Received: 05/04/06
	Client Contact: Ricky Bradford	Date Reported: 05/11/06
	Client P.O.:	Date Completed: 05/11/06

**WorkOrder: 0605097**

May 11, 2006

Dear Ricky:

Enclosed are:

- 1). the results of 7 analyzed samples from your **#116907; Vic's Automotive 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. McC Campbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Best regards,

Angela Rydelius, Lab Manager

00050717EL

### McCAMPBELL ANALYTICAL INC.

110 2<sup>nd</sup> 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

PDF Required? YES

Report To: Ricky Bradford      Bill To:

Company: AEI Consultants

2500 Camino Diablo, Suite 200

Walnut Creek, CA 94597      E-Mail: rbradford@aeiconsultants.com

Tele: (925) 283-6000 ext. 148      Fax: (925) 944-2895

Project #: 116907      Project Name: Vic's Automotive

Project Location: 245 8<sup>th</sup> Street, Oakland

Sampler Signature: *Adrian Niche*

		Analysis Request												Other			Comments																	
SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX					METHOD PRESERVED																							
						Water	Soil	Air	Sludge	Other	Ice	HCl	HNO <sub>3</sub>	Other	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					
<del>MW-1</del>		<del>5/4/06</del>		<del>3</del>	<del>Vials</del>	X					X	X			X																		not collected	
MW-2			8:05 AM			X					X	X			X																			
MW-3			7:00 AM			X					X	X			X																			
MW-4			11:35 AM			X					X	X			X																			
MW-5			7:25 AM			X					X	X			X																			
MW-6						X					X	X			X																		not collected	
<del>MW-7</del>						X					X	X			X																		not collected	
MW-10			9:45 AM			X					X	X			X																			
MW-11			9:50 AM			X					X	X			X																			
MW-12			10:00 AM			X					X	X			X																			

+  
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Relinquished By: <i>Adrian Niche</i>	Date: 5/4/06	Time: 7:20	Received By: <i>Kathleen Owen</i>
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/TPH  GOOD CONDITION  HEAD SPACE ABSENT  DECHLORINATED IN LAB  PRESERVED IN LAB

PRESERVATION APPROPRIATE CONTAINERS  PERSERVED IN LAB

VOAS	O&G	METALS	OTHER

**McC Campbell Analytical, Inc.**



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

**CHAIN-OF-CUSTODY RECORD**

**WorkOrder: 0605097**

**ClientID: AEL**

**EDF: YES**

**Report to:**

Ricky Bradford  
 AEI Consultants  
 2500 Camino Diablo, Ste. #200  
 Walnut Creek, CA 94597

TEL: (925) 283-6000  
 FAX: (925) 283-6121  
 ProjectNo: #116907; Vic's Automotive  
 PO:

**Bill to:**

Denise Mockel  
 AEI Consultants  
 2500 Camino Diablo, Ste. #200  
 Walnut Creek, CA 94597

**Requested TAT: 5 days**

*Date Received: 05/04/2006*

*Date Printed: 05/04/2006*

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)													
					1	2	3	4	5	6	7	8	9	10	11	12		
0605097-001	MW-2	Water	5/4/06 8:05:00 AM	<input type="checkbox"/>	A	A												
0605097-002	MW-3	Water	5/4/06 7:10:00 AM	<input type="checkbox"/>	A													
0605097-003	MW-4	Water	5/4/06 11:35:00 AM	<input type="checkbox"/>	A													
0605097-004	MW-5	Water	5/4/06 7:25:00 AM	<input type="checkbox"/>	A													
0605097-005	MW-10	Water	5/4/06 9:45:00 AM	<input type="checkbox"/>	A													
0605097-006	MW-11	Water	5/4/06 9:50:00 AM	<input type="checkbox"/>	A													
0605097-007	MW-12	Water	5/4/06 10:00:00 AM	<input type="checkbox"/>	A													

**Test Legend:**

<b>1</b>	G-MBTEX_W	<b>2</b>	PREFD REPORT	<b>3</b>		<b>4</b>		<b>5</b>	
<b>6</b>		<b>7</b>		<b>8</b>		<b>9</b>		<b>10</b>	
<b>11</b>		<b>12</b>							

**Prepared by: Kathleen Owen**

**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.





# McC Campbell Analytical, Inc.

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

AEI Consultants  2500 Camino Diablo, Ste. #200  Walnut Creek, CA 94597	Client Project ID: #116907; Vic's Automotive	Date Sampled: 05/04/06
		Date Received: 05/04/06
	Client Contact: Ricky Bradford	Date Extracted: 05/06/06-05/09/06
	Client P.O.:	Date Analyzed: 05/06/06-05/09/06

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

Extraction method: SW5030B

Analytical methods: SW8021B/8015Cm

Work Order: 0605097

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-2	W	71,000,a	8300	14,000	11,000	1500	7600	50	120
002A	MW-3	W	220,m	ND	ND	4.3	ND	ND	1	115
003A	MW-4	W	300,a	ND	37	76	7.8	42	1	106
004A	MW-5	W	110,000,a	ND<250	11,000	22,000	2900	15,000	50	109
005A	MW-10	W	100,000,a	ND<500	8500	25,000	3000	13,000	100	106
006A	MW-11	W	190,000,a	12,000	34,000	41,000	3500	17,000	100	112
007A	MW-12	W	160,000,a	47,000	33,000	28,000	2800	10,000	100	96

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	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	NA	1	mg/Kg

\* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil/sludge/solid samples in mg/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 McC Campbell 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 ~1 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; n) TPH(g) range non-target isolated peaks subtracted out of the TPH(g) concentration at the client's request.



**QC SUMMARY REPORT FOR SW8021B/8015Cm**

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder: 0605097

EPA Method: SW8021B/8015Cm		Extraction: SW5030B			BatchID: 21566			Spiked Sample ID 0605083-018A		
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	LCS / LCSD
TPH(btex) <sup>f</sup>	ND	60	104	103	1.03	103	98.7	4.63	70 - 130	70 - 130
MTBE	ND	10	99.9	89.4	11.1	98.6	107	8.09	70 - 130	70 - 130
Benzene	ND	10	105	91.8	13.0	95.9	102	6.25	70 - 130	70 - 130
Toluene	ND	10	101	88.1	14.1	91.3	96.8	5.80	70 - 130	70 - 130
Ethylbenzene	ND	10	111	104	6.50	101	107	5.59	70 - 130	70 - 130
Xylenes	ND	30	107	96	10.5	95	100	5.13	70 - 130	70 - 130
%SS:	109	10	101	101	0	99	101	2.04	70 - 130	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

BATCH 21566 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0605097-001A	5/04/06 8:05 AM	5/06/06	5/06/06 5:56 AM	0605097-002A	5/04/06 7:10 AM	5/06/06	5/06/06 6:28 AM
0605097-003A	5/04/06 11:35 AM	5/06/06	5/06/06 7:00 AM				

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 / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

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

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not applicable or not enough sample to perform matrix spike and matrix spike duplicate.



**QC SUMMARY REPORT FOR SW8021B/8015Cm**

W.O. Sample Matrix: Water

QC Matrix: Water

WorkOrder: 0605097

EPA Method: SW8021B/8015Cm		Extraction: SW5030B			BatchID: 21579			Spiked Sample ID 0605099-004A		
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	LCS / LCSD
TPH(btex) <sup>f</sup>	ND	60	109	110	1.02	104	101	2.88	70 - 130	70 - 130
MTBE	ND	10	106	106	0	102	101	1.28	70 - 130	70 - 130
Benzene	ND	10	105	106	0.513	106	104	1.42	70 - 130	70 - 130
Toluene	ND	10	99.4	100	0.690	100	97.8	2.25	70 - 130	70 - 130
Ethylbenzene	ND	10	107	108	1.46	108	105	2.40	70 - 130	70 - 130
Xylenes	ND	30	96.7	100	3.39	100	96.3	3.74	70 - 130	70 - 130
%SS:	102	10	101	103	2.01	101	103	2.34	70 - 130	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

BATCH 21579 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0605097-004A	5/04/06 7:25 AM	5/06/06	5/06/06 7:32 AM	0605097-005A	5/04/06 9:45 AM	5/06/06	5/06/06 8:04 AM
0605097-006A	5/04/06 9:50 AM	5/06/06	5/06/06 8:37 AM	0605097-007A	5/04/06 10:00 AM	5/09/06	5/09/06 5:28 AM
0605097-007A	5/04/06 10:00 AM	5/09/06	5/09/06 10:53 PM				

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 / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

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

# cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not applicable or not enough sample to perform matrix spike and matrix spike duplicate.