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February 3, 2006 Mr. Amir Gholami Alameda County Health Care Services Agency 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502-6577

**RECEIVED** By lopprojectop at 11:03 am, Feb 03, 2006

Subject: Work Plan for Soil and Groundwater Investigation

Nat Piazza 20957 Baker Road Castro Valley, California 94546 Leak Case RO0002739 AEI Project # 10509

Dear Mr. Gholami:

Attached is a copy of the work plan for the proposed investigation at the above referenced site. The Piazzas would like to move forward with the investigation as soon as possible.

If you have any questions or need additional information, I can be reached at (925) 944-2899 extension 122.

Sincerely, AEI Consultants

Robert F.F lery, P.G.

Robert F. Flory, P.C Project Manager

cc: Nat & Darlene Piazza file

**RECEIVED** By lopprojectop at 11:03 am, Feb 03, 2006

January 30, 2006

## SOIL & GROUNDWATER INVESTIGATION REPORT

20957 Baker Road Castro Valley, California

Project No. 10509

Prepared For

Nat Piazza 7613 Peppertree Road Dublin, California 94568

Prepared By

AEI Consultants 2500 Camino Diablo, Suite 100 Walnut Creek, CA 94597 (925) 944-2899



January 30, 2006

Darlene and Nat Piazza 7613 Peppertree Road Dublin, California 94568-3343

#### Re: Workplan for Soil and groundwater Investigation 20957 Baker Road Castro Valley, California 94546 Leak Case RO0002739 AEI Project # 10509

Dear Mr. and Mrs. Piazza,

The following workplan has been prepared on behalf of Mr. And Mrs. Nat Piazza, owners of the above referenced property. AEI Consultants (AEI) has been retained by Mr. Nat Piazza to provide environmental engineering and consulting services associated with a previously removed underground storage tank (UST) on the property. This workplan has been prepared in response to a request from the Alameda County Health Care Services (ACHCSA) to prepare work plan for a soil and groundwater investigation to determine the horizontal and vertical extent of impacted groundwater resulting from the hydrocarbon release from the former USTs.

### SITE DESCRIPTION AND BACKGROUND

The subject property (hereafter referred to as the "site" or "property") is located at 20957 Baker Road in Castro Valley, California (Figure 1: Site Location Map). The site is located in a mixed residential and commercial/light-industrial area of Castro Valley. The site is approximately 160 feet by 300 feet in area and is currently undeveloped. The site is partially covered with asphalt surfacing and concrete slabs with the balance of the site graveled.

### Tank Removal

On April 21, 2004, AEI removed two 1,000 gallon underground tanks from the site. The removal was performed under permit from the Alameda County Health Services Agency (ACHCSA). The tank removal was observed by Robert Weston, Inspector for the ACHCSA. Two soil samples were collected from underneath each UST and analyzed for Total Petroleum Hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene, xylenes (BTEX) and Methyl ter- butyl ether (MTBE) by EPA Method 8021B/8015Cm. Fuel oxygenates and 1,2 Dibromoethane (EDB) and 1,2 Dichloroethane (1,2 DCA) were analyzed by EPA Method 8260. Total Petroleum Hydrocarbons as diesel (TPH-d) was analyzed by EPA Method 8015C and total lead by EPA method 7010.

Hydrocarbons were detected in all the soil samples, TPH-g at concentrations ranging from 160 mg/Kg (T1W-EB8') to 1,400 mg/Kg (T2W-EB8') and TPH-d at concentrations ranging from 1,400 mg/Kg (T2E-EB8') to 10,000 mg/Kg (T1E-EB8'). Total xylenes were reported in two samples at 8.4 mg/Kg (T2W-E8') and 0.25 mg/kg (T2E-EB8'). No fuel oxygenates, EDB, or DCA were detected in the samples. Total lead was reported at concentrations ranging from 6.1 mg/Kg to 24 mg/Kg (stockpile sample STKP1-4).

#### **Preliminary Site Assessment**

AEI performed the subsurface investigation at the property on May 18, 2005. Eight (8) soil borings (SB-1 through SB-8) were advanced to depths ranging from 14 ft. to 18 ft. below ground surface (bgs) using a Geoprobe<sup>®</sup> model 5410 direct-push drilling rig. The locations of the soil borings are shown on Figure 2.

No detectable concentrations of TPH-g, TPH-d, TPH-mo, MTBE or BTEX, were reported in any of the soil samples from depths of 7.5 to 11.0 feet bgs above detection limits of 1.0 mg/kg, 1.0 mg/kg, 5.0 mg/kg, 0.05 mg/kg and 0.005 mg/kg respectively.

TPH-g was reported at a concentration of 7,300 micrograms per liter ( $\mu$ g/L) in SB-2 (SB2-W). No TPH-g was reported in groundwater samples from any other borings at or above a detection limit of 50  $\mu$ g/L.

The maximum concentration of TPH-d was reported in the groundwater sample from boring SB-2-W at a concentration of 23,000  $\mu$ g/L. LNAPL was observed in the field and reported by the laboratory in the groundwater sample from SB-2. TPH-d was reported in the other seven borings at concentrations ranging from ND<50  $\mu$ g/L (SB-7) to 670  $\mu$ g/L (SB-5).

TPH-mo was not reported in groundwater samples from borings SB-3, SB-4 and SB-7 at or above a detection limit of 250  $\mu$ g/L. TPH-mo was reported in groundwater samples from borings SB-1, SB-2, SB-5, SB-6 and SB-8 at concentrations ranging from 300  $\mu$ g/L (SB-6) to 1400  $\mu$ g/L (SB-1 and SB-5).

MTBE was not reported by EPA Method 8021B in groundwater samples from any of the eight soil borings at or above a detection limit of  $0.05 \ \mu g/L$ .

The results of the groundwater analyses are summarized in Table 2 (Groundwater Sample Analytical Data) and shown on Figures 3 through 6.

#### **ENVIRONMENTAL SETTING**

The site is located at approximately 180 feet above mean sea level (msl). The site is relatively flat and the local topography slopes very gently to south-southwest toward the nearest stream (Figure 1).

The lithology observed in the borings drilled to date typically consists of 1 to 2 feet of gravelly clay – clayey gravel (Fill). The fill is underlain by silty clay which becomes clayey silt downward to a depth of 6 to 8 feet bgs. The silt and clay are underlain by silty and gravelly sands to the top of the bedrock at depth of 13 to 17 feet bgs (Figure 7). In several borings saprolitic clay is present between the sandy sediments and the siltstone bedrock. Groundwater, where present, was encountered at depths of 9 to 11 feet bgs. The relationships of the sediments which underlie the site are shown on cross sections A-A' and B-B' (Figure 8).

The nearest surface water body to the site is a small unnamed creek, located approximately 500 feet southwest of the site that drains into San Lorenzo Creek.

#### **SCOPE OF WORK**

Based on the results of the soil and groundwater analyses from the UST removal, and the preliminary site investigation, the ACHCSA has requested a scope of work to define the extent of the dissolved phase plume.

AEI proposes to drill three (3) temporary soil borings (labeled SB-9 through SB-11), three (3) 2inch diameter monitoring wells and one (1) 4-inch monitoring/extraction well, as shown on Figure 2. The locations of the borings and wells were chosen to further assess the extent of the impact to soil and groundwater in the area around the former tank hold. All proposed work will be done under the direct supervision of an AEI Professional Geologist.

A summary of the rationale for the proposed boring and monitoring well locations is presented below.

Boring IDs	Rationale
SB-9	20 feet west of SB-5, delineate western extent of groundwater plume.
SB-10	20 feet north of SB-5, delineate northwestern extent of groundwater plume.
SB-11	20 feet northeast of SB-2, delineate northeastern extent of groundwater plume.
MW-1	East end of former tank hold, twin to SB-2 which contained LNAPL, monitoring/extraction
MW-2	Up gradient of tank hold, clean up gradient background monitoring well
MW-3	Down gradient monitoring well
MW-4	Down gradient monitoring well

#### Proposed Boring Location Summary

#### **SOIL BORINGS**

The soil borings will be advanced by Greg Drilling, a California C57 licensed drilling contractor using a Rhino drilling rig. A drilling permit will be obtained from Alameda County Public Works Department (ACPWA). The borings will be advanced into groundwater or to a maximum depth of 20 feet bgs or refusal in each boring, as needed to collect groundwater samples from the water table aquifer. Soil samples will be collected from each boring at approximately 5 foot intervals, with at least one sample from the capillary fringe. Selected sample will be placed in a 1-quart zipper locking plastic bag and used for field screening. The samples will be screened using a Mini RAE Plus Classic (Model PGM-76IS) photo ionization detector (PID). The tip of the PID will be inserted into the sealed 1-quart bag through a small diameter hole poked into the bag. The PID readings will be recorded on the boring logs. Additional samples may be collected based on field observations and organic vapor measurements collected in the field. A minimum of one soil sample will be analyzed from each boring, typically from the capillary fringe.

Those borings to be completed as monitoring wells will be drilled out using nominal 8-inch or 10-inch augers depending on the diameter of well to be installed.

All samples selected for laboratory analysis will be analyzed for TPH-g, TPH-d, and TPH-mo (EPA method 8015M); benzene, toluene, ethyl-benzene, and xylenes (BTEX) and MTBE (EPA method 8021M).

The soil borings will be logged by an AEI geologist using the Unified Soil Classification System (USCS). Copies of the boring logs, including depth of samples collected are included in Appendix B.

Upon completing the three (3) temporary soil borings, <sup>3</sup>/<sub>4</sub>" slotted PVC casing will be installed to allow for groundwater recharge. Groundwater samples will be collected using a drop tube or mini bailer. Following collection of samples, all drilling equipment and temporary casing material will be removed from the boreholes and each boring will be backfilled with neat cement grout as per ACPWA guidelines.

Drill cuttings will be stored in 55-gallon drums, pending the results of sample analyses. On-site treatment or off-site disposal of cuttings is not included in this scope of work. Equipment rinse water and well purge water will be stored in 55-gallon drums.

#### MONITORING WELL COMPLETION

The groundwater monitoring wells will be drilled to a depth of 20 feet bgs or refusal which ever is encountered first. Well MW-1, which is to be installed near boring SB-2 which contained LNAPL, will be drilled using nominal 10-inch augers and completed by installing 4-inch diameter schedule 40 PVC casing. Wells MW-2 through MW-4 will be drilled with nominal 8-

inch augers and competed with 2-inch diameter schedule 40 PVC casing. Both 4 and 2-inch wells will be completed with schedule 40 PVC casing with 0.010 slots. The slotted intervals will extend from total depth to approximately 7 feet bgs. A traffic-rated, flush-mounted well box will be installed at the surface.

The wells will be developed no sooner than 72 hours after seal placement by surging, bailing, and purging to remove accumulated fines from the casing and sand pack.

Each well will be surveyed relative to each other, mean sea level, and a known datum by a California licensed land surveyor. The survey and sample data will be uploaded to GeoTracker.

#### REPORTING

The report will detail the methods and findings of the first phase of temporary borings and installation and sampling of the wells. Following receipt of all analytical and well survey data, a technical report will be prepared. The final report will include figures, data tables, logs of borings and well construction details, and interpretation of the contaminant distributions. Recommendations may be made for further assessment necessary for the preparation of a closure report or in anticipation of the corrective action planning. Quarterly monitoring reports will be submitted within approximately one month of monitoring and sample collection activities.

#### SITE SAFETY

Prior to commencement of field activities, a site safety meeting will be held at a designated command post near the working area. Emergency procedures will be outlined at this meeting, including an explanation of the hazards of the known or suspected chemicals of interest. All site personnel will be in Level D personal protection equipment, which is the anticipated maximum amount of protection needed. A working area will be established with barricades and warning tape to delineate the zone where hard hats and steel-toed shoes must be worn, and where unauthorized personnel will not be allowed. A site safety plan conforming to Part 1910.120 (i) (2) of 29 CFR will be on site at all times during the project.

#### **ESTIMATED SCHEDULE**

Once the scope of work has been agreed upon by the ACEHS, project permitting will begin. Drilling will be scheduled upon approval of permits. Reports will be available within approximately 1 month of receipt of all necessary data.

#### **REFERENCED REPORTS**

- 1. *Geotechnical Exploration and Engineering Study, Proposed Baker Road Apartments,* December 3, 1986, prepared by JMK Environmental Solutions, Inc.
- 2. Underground Storage Tank removal Final Report, May 19, 2004, prepared by AEI Consultants
- 3. Preliminary Site Investigation Report, June 5, 2005, prepared by AEI Consultants

AEI requests your comments and approval to proceed with this project. Please contact me at (925) 944-2899, extension 122, if you have any questions or need any additional information.

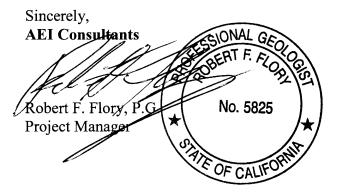
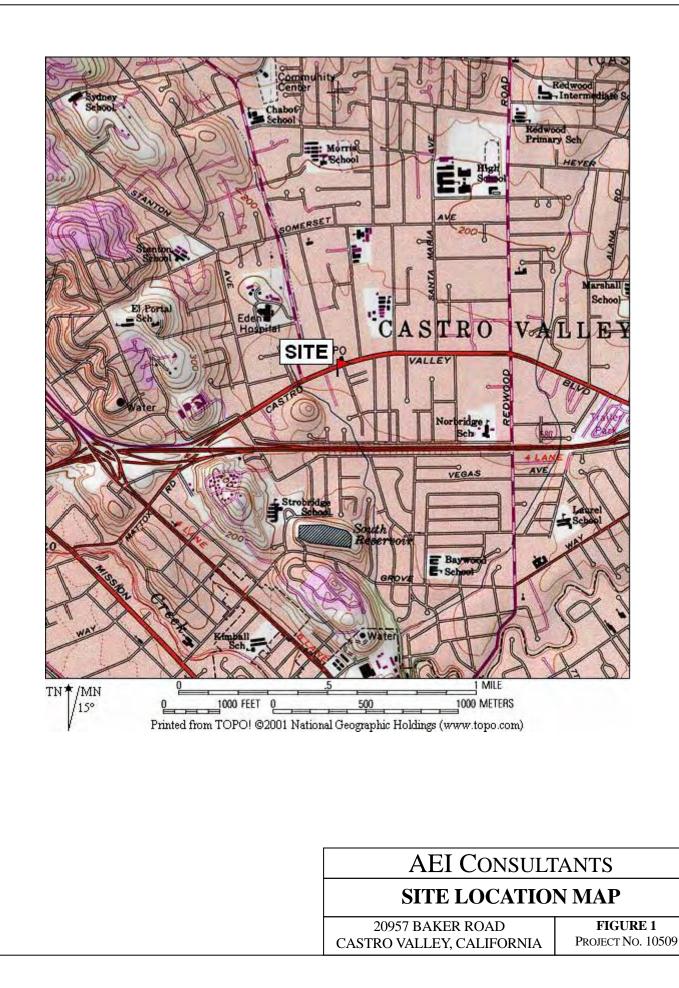
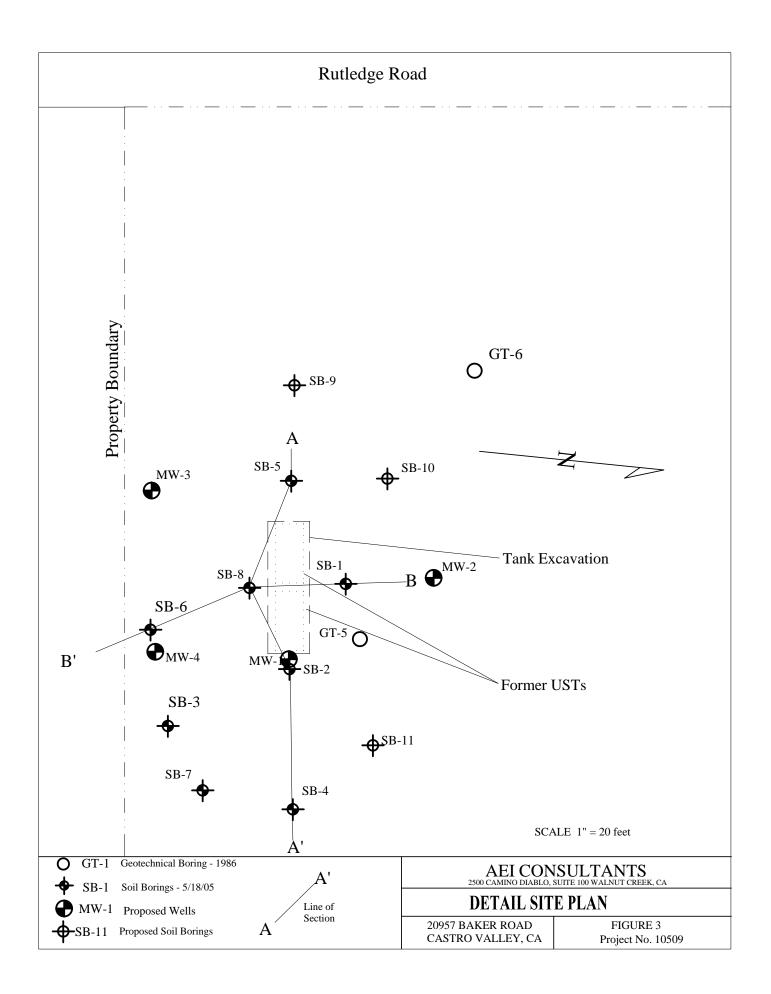
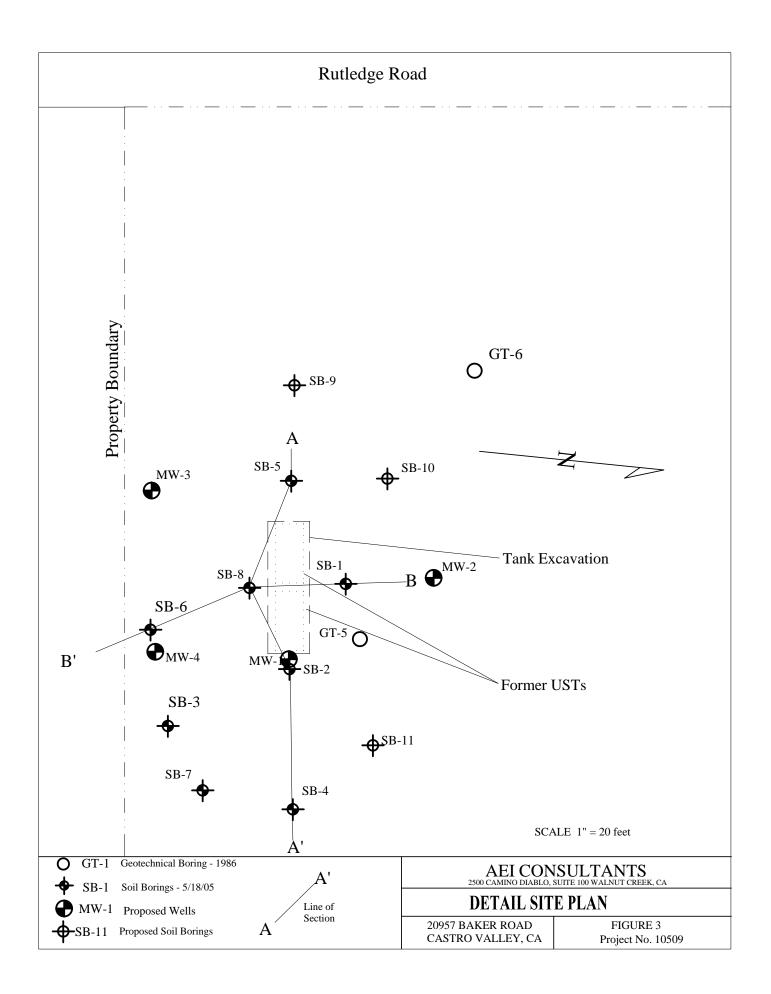


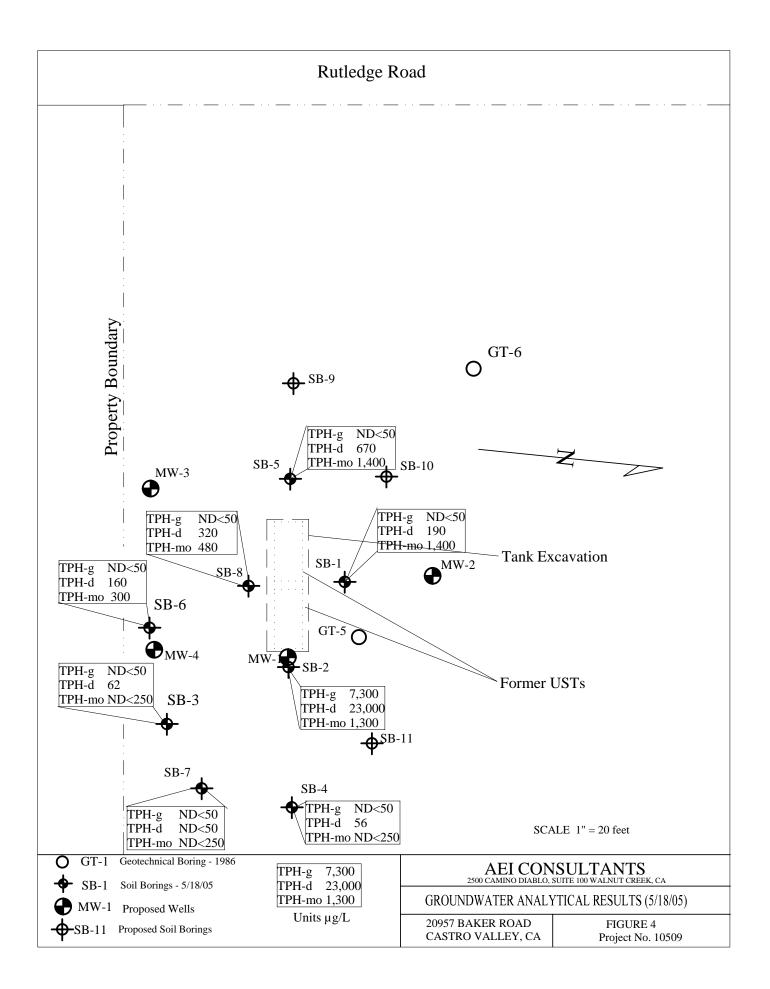
Figure 1 – Site Location Map Figure 2 – Site Map

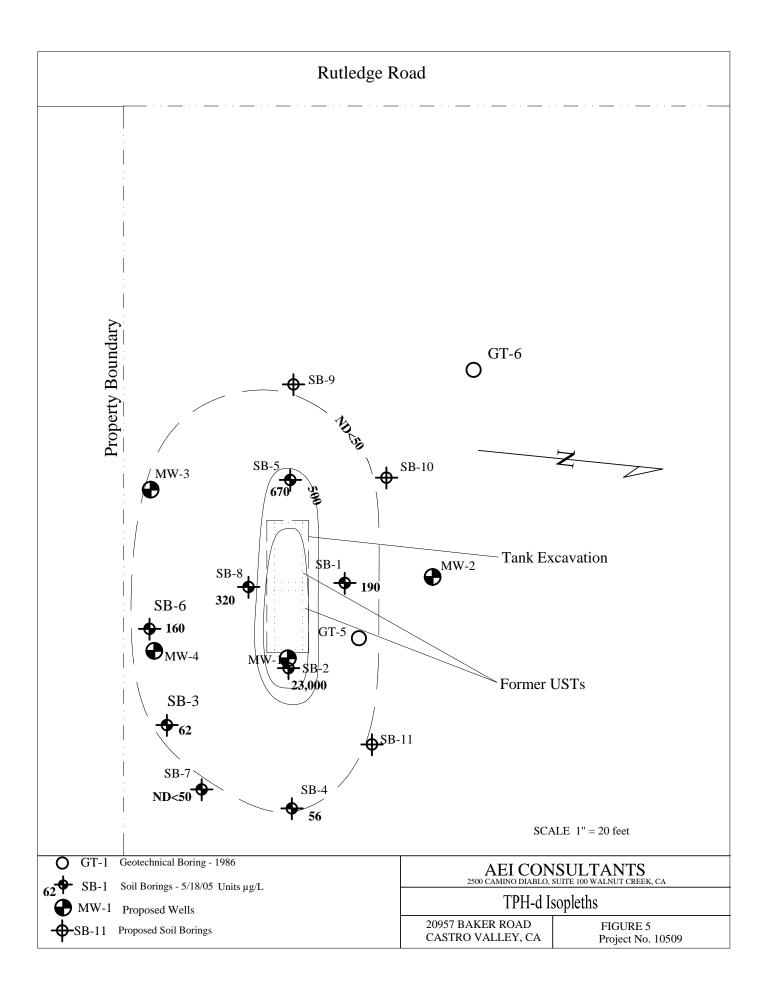
Distribution: File Nat Piazza, 7613 Pepper Tree Road, Dublin, California, 94568-3343 -2 copies Amir Gohlami, Alameda County Environmental Health Care Services, 1131 Harbor Bay parkway, Suite 250, Alameda, California 94502-6577 FIGURES

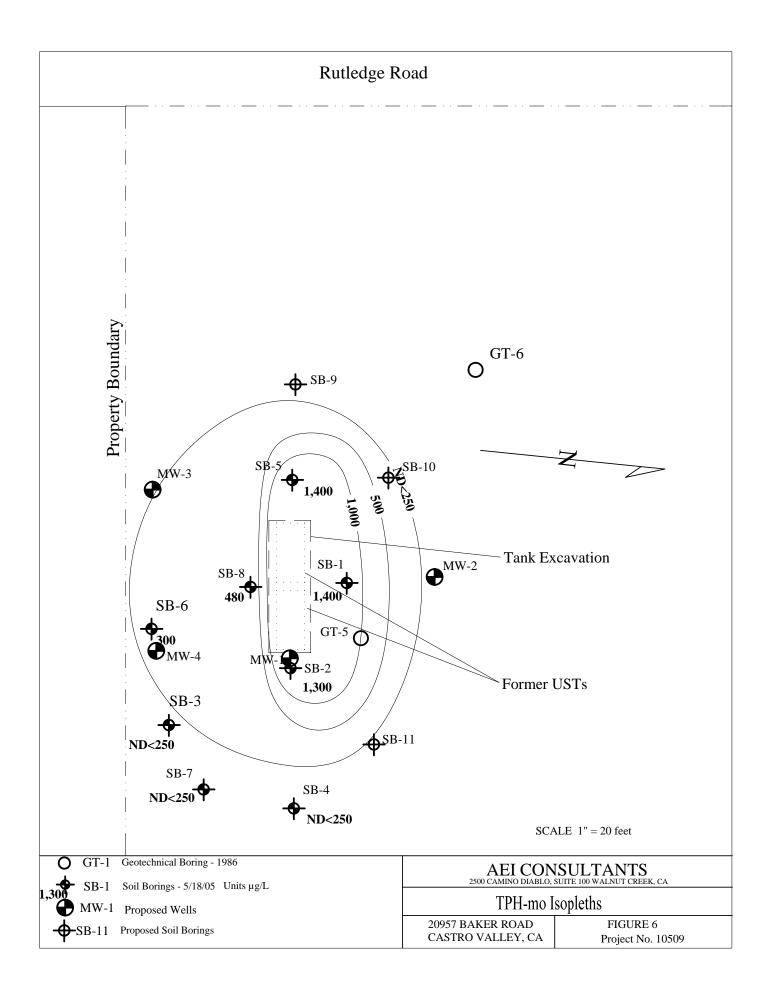


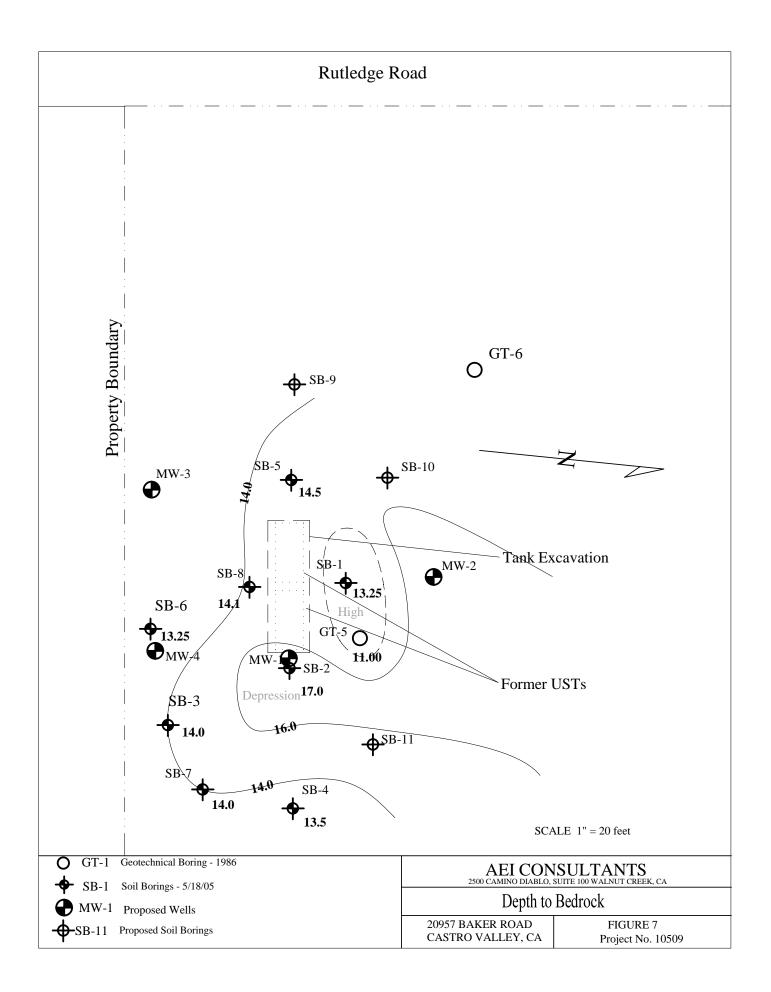


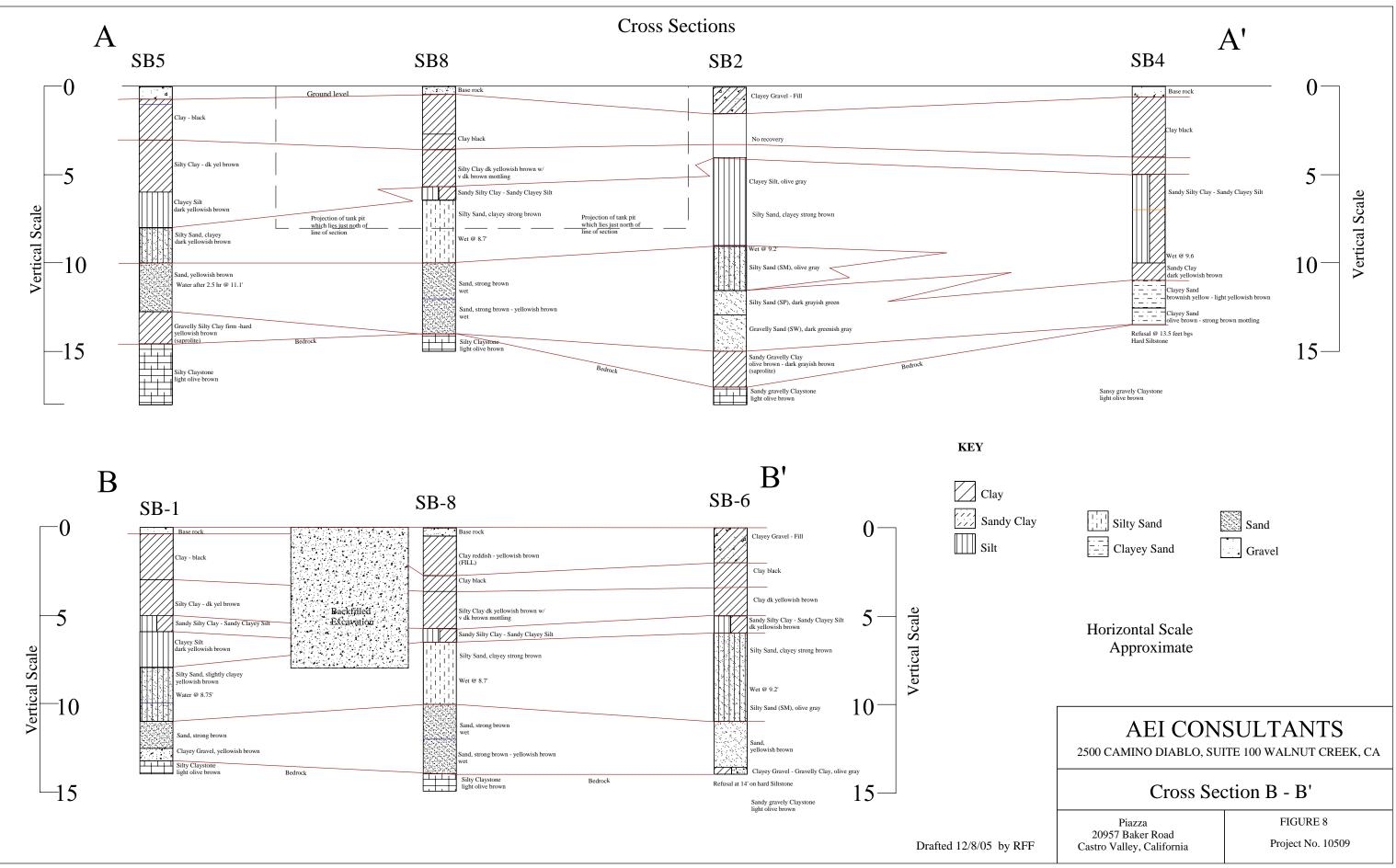












TABLES

Sample	TPH-g	TPH-d	TPH-mo	MTBE	Benzene	Toluene	E'benzene	Xylenes
ID	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	E	PA method 801	15		EF	PA method 802	1B	
SB1-11.5	ND<1.0	ND<1.0	ND<5.0	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005
SB2-10	ND<1.0	ND<1.0	ND<5.0	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005
SB3-7.5	ND<1.0	ND<1.0	ND<5.0	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005
SB4-7.5	ND<1.0	ND<1.0	ND<5.0	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005
SB5-7.5	ND<1.0	ND<1.0	ND<5.0	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005
SB6-7.5	ND<1.0	ND<1.0	ND<5.0	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005
SB7-8	ND<1.0	ND<1.0	ND<5.0	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005
SB8-7.5	ND<1.0	ND<1.0	ND<5.0	ND<0.05	ND<0.005	ND<0.005	ND<0.005	ND<0.005

Table 1, Soil Sample Analytical Data, 20957 Baker Road, Castro Valley, California

Notes

TPH-g = total petroleum hydrocarbons as gasoline

TPH-d = total petroleum hydrocarbons as diesel

TPH-mo = total petroleum hydrocarbons as motor oil

MTBE = methyl tert-butyl ether

mg/kg = micrograms per liter (parts per billion)

Sample	TPH-g	TPH-d	TPH-mo	MTBE	Benzene	Toluene	E'benzene	Xylenes
ID	µg/l	μg/l	µg/l	μg/l	μg/l	µg/l	μg/l	µg/l
	E	EPA method 801.	5		EF	PA method 802	1B	
SB-1 W	ND<50	190 <sup>1,2</sup>	1400	ND<5.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5
SB-2 W	7,300 <sup>3,4</sup>	23,000 1,2,4,5	1300	ND<50	ND<5.0	11	ND<5.0	27
SB3-W	ND<50	62	ND<250	ND<5.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5
SB4-W	ND<50	56 <sup>2</sup>	ND<250	ND<5.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5
SB5-W	ND<50	670 <sup>1,2</sup>	1400	ND<5.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5
SB6-W	ND<50	$160^{1,2}$	300	ND<5.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5
SB7-W	ND<50	ND<50	ND<250	ND<5.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5
SB8-W	ND<50	320 <sup>1,2</sup>	480	ND<5.0	ND<0.5	ND<0.5	ND<0.5	ND<0.5

Table 2, Groundwater Sample Analytical Data, 20957 Baker Road, Castro Valley, California

Notes

1 - oil range compounds are significant

2 = diesel range compounds are significant, no recognizablr pattern

3 = no recognizable pattern

4 = lighter than water immiscible sheen/product is present

5 = gasoline rage compounds are significant

TPH-g = total petroleum hydrocarbons as gasoline

TPH-d = total petroleum hydrocarbons as diesel

TPH-mo = total petroleum hydrocarbons as motor oil

MTBE = methyl tert-butyl ether

 $\mu g/l = micrograms$  per liter (parts per billion)

# APPENDIX A

**Boring Logs** 

# Log of Boring SB-1

Sheet 1 of 1

Date(s) Drilled May 18, 2005	Logged By Robert F. Flory	Checked By Adrian Angel
Drilling Method Geoprobe	Drill Bit Size/Type	Total Depth of Borehole <b>14 feet bgs</b>
Drill Rig Type Geoprobe 5410	Drilling Contractor <b>EnProb</b>	Approximate Surface Elevation
Groundwater Level and Date Measured 8.75 feet ATD	Sampling Method(s) <b>Tube</b>	Permit #
Borehole Backfill Cement Slurry	Location	

Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log		PID Reading, ppm	REMARKS AN OTHER TEST
0	S		⊃ Asphal <sup>:</sup>		MATERIAL DESCRIPTION	66	UTHER TEST
		,	CL		Asphalt 2", base rock 4" Clay, black 10YR 2/1, firm, stiff, moist	-	
-					-	-	
_						1	
		SB1-3.5	CL		Silty Clay, dark yellowish brown 10YR3/4 with very dark brown mottling 10YR 2/2	0.3	
-	$\cap$	001-0.0				0.5	
5			0			4	
			ML-		Sandy silty Clay - Clayey Sand Silt, dark yellowish brown 10YR3/4 with some 10YR 4/6 mottling		
-	1		SM		Silty Sand, yellowish brown 10YR 4/6, very fine grained, slightly clayey, firm -	1	
-					-	-	
	$\boxtimes$	SB1-7.5				0.5	
_					becoming wet @ 9 feet	1	
-					(ATD) ≚		
10							
10							
-			SP		Sand, strong brown 7.5 4/6, soft, loose, wet	-	
_	$\boxtimes$	SB1-11.5				0.9	Boring sealed to surface with near
						1	cement grout.
-		С				1	
-						-	
45					Bottom of Bonng at 14 reet bgs		
15						1	
-				-		-	
_							
-					-	-	
_					<u>-</u> .		
20—						1	
_					and the second second		
							Figure
	- - 10 - 15 - - -	- - - - - - - - - - - - - - -	SB1-7.5 SB1-7.5 SB1-7.5 SB1-7.5 C SB1-11.5 C 15- - - - - - - - - - - - - -	5- SB1-7.5 10- SB1-11.5 SP GC Claystor 15- - - - - - - - - - - - - -	5 SB1-3.5 5 SB1-3.5 7 SB1-7.5 7 SB1-7.5 7 SB1-11.5 7 SB1-11.5 8 SP 7 SB1-11.5 8 SP 7 SB1-11.5 8 SP 7 SP 7 SB1-11.5 8 SP 7 SP 7 SP 7 SP 7 SP 7 SP 7 SP 7 SP 7	SB1-3.5 SB1-3.5 SB1-3.5 SB1-7.5 SB	SB1-3.5 SB1-3.5 SB1-7.5 SB1-7.5 SB1-7.5 SB1-7.5 SB1-7.5 SB1-7.5 SB1-7.5 SB1-11.5 SB1-

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# Log of Boring SB-2

Sheet 1 of 1

Date(s) Drilled May 18, 2005	Logged By Robert F. Flory	Checked By Adrian Angel
Drilling Method Geoprobe	Drill Bit Size/Type <b>2 inch</b>	Total Depth of Borehole <b>18 feet bgs</b>
Drill Rig Type Geoprobe 5410	Drilling Contractor <b>EnProb</b>	Approximate Surface Elevation
Groundwater Level and Date Measured <b>9.2 feet ATD</b>	Sampling Method(s) <b>Tube</b>	Permit #
Borehole Backfill Cement Slurry	Location	

Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log		PID Reading, ppm	REMARKS A
ٽ 0	Sa	Sa			MATERIAL DESCRIPTION	II d d	OTHER TES
-			GC		Clayey Gravel, black - dark yellow brown 10YR 2/1 - 3/4, firm, dry (FILL?)		
	$\times$	SB2-3.5	ML		- Clayey Silt, olive gray 5Y 5/2, moderately firm, moist	0.1	
5					becoming sandy downward		
	$\times$	SB2-7.5			-	0.3	
 - 10			SM		Silty Sand, olive gray 5Y 5/2, clayey, moderately firm, moist wet @ 9.3 (ATD) = 		
	X	SB2-11.5	SP		Silty Sand, dark gray green 10GY 3/1, clayey, moderately firm,	175	
	X	SB2-13	SW		Gravelly Sand, dark greenish gray 10GY 4/1, firm, wet	85	Boring sealed surface with ne cement grout
15			CL		Sandy Gravelly Clay, olive brown - dark grayish brown 2.5Y 4/4 - 4/2, firm, slightly moist (saprolite)		
		С	laystor		Sandy Gravelly Claystone, light olive brown 2.5Y 4/4, firm - hard, indurated		
				-	Bottom of Boring at 18 feet bgs		
20—							
					AFI		Figure

# Log of Boring SB-3

Sheet 1 of 1

Date(s) Drilled May 18, 2005	Logged By Robert F. Flory	Checked By Adrian Angel
Drilling Method Geoprobe	Drill Bit Size/Type <b>2 inch</b>	Total Depth of Borehole <b>16 feet bgs</b>
Drill Rig Type Geoprobe 5410	Drilling Contractor <b>EnProb</b>	Approximate Surface Elevation
Groundwater Level and Date Measured 8.56 feet ATD	Sampling Method(s) <b>Tube</b>	Permit #
Borehole Backfill Cement Slurry	Location	

Depth, feet Samola Type	Sample Type Number	USCS Symbol	Graphic Log		PID Reading, ppm	REMARKS A
	Nur Nar	US(	Gra	MATERIAL DESCRIPTION	DIA	OTHER TES
0		Asphal CL	t //////	Asphalt 2", base rock 4" Clay, black 10YR 2/1, firm, stiff, moist		
	≤ SB3-3.5	CL		Silty Clay, dark yellowish brown 10YR3/4 with some very dark brown 10YR 2/2 mottling, firm, slightly moist	0.5	
- 5		CL- ML		Clayey Silt - Silt, dark yellowish brown 10YR3/4 with some 10YR 4/6 mottling		
	SB3-7.5	SM		Silty Sand, strong brown 7.5 YR 5/6, firm, moist becoming wet @ 10.0 (ATD) ⊑	1.0	
- 10 	✓ SB3-11.5				1.2	
		SP		Clayey Sand, yellowish brown 10YR 4/6, moderately firn - moderately soft, wet	1.2	Borings sealed surface with near
- 15		laystor		Sandy Silty Claystone, light olive brown 2.5Y 4/4, firm - hard, indurated, slightly moist	•	cement grout
				Bottom of Boring at 16 feet bgs		
- 20				·		
<b>」</b> ⊥_	1	1	<u> </u>	AEI	L	Figure

ENVIRONMENTAL & CMIL ENGINEERING

X: PROJECTS (CHARACTERIZATION & REMEDIATION) CHARACTERIZATION (10509 PH II (Piazza) Castro Valley) Work Plan 2 (Borings 1-8.bgs [DP Boring 20.tpl]

# Log of Boring SB-4

Sheet 1 of 1

Date(s) Drilled May 18, 2005	Logged By Robert F. Flory	Checked By Adrian Angel
Drilling Method Geoprobe	Drill Bit Size/Type <b>2 inch</b>	Total Depth of Borehole 13.5 feet bgs
Drill Rig Type Geoprobe 5410	Drilling Contractor <b>EnProb</b>	Approximate Surface Elevation
Groundwater Level and Date Measured 9.6 feet ATD	Sampling Method(s) <b>Tube</b>	Permit #
Borehole Backfill Cement Slurry	Location	

Depth, feet	Sample Type Sample Number	USCS Symbol	Graphic Log		PID Reading, ppm	REMARKS A
0 10	ຑ ຑź	⊃ Asphal	_		급접	OTHER TES
		CL		Asphalt 2", base rock 4" Clay, black 10YR 2/1, firm, stiff, moist		
  - 5	SB4-3.5	; CL CL- ML		Silty Clay, dark yellowish brown 10YR3/4 with very dark brown mottling 10YR 2/2 Sandy Silty Clay - Clayey Sandy Silt, dark yellowish brown 10YR 3/4 - 4/6 mottled,	1.0	
		CL- ML		Silty Clay - Clayey Silt, yellowish brown 10YR 4/6, moderately firm, moist		
- 10	SB4-7.5 SB4-11.3 SB4-12	CL SC		becoming wet @ 9.6 feet       (ATD) \vec{V}         Sandy Clay grading downward to Clayey Sand, dark yellowish brown - 10YR 6/6, firm, moist       Clayey Sand, brownish yellow - light yellowish brown 10YR 6/6 - 6/4, firm - moderately firm, very moist         Clayey Sand, light olive brown 2.5Y 5/6 - strong brown 7.5 YR 5/8 mottling, moderately firm, wet	0.3	Boring sealed to surface with nea cement grout
- 15   - 20						Figure

CONSULTANTS ENVIRONMENTAL& CIVIL ENGINEERING

# Log of Boring SB-5

Sheet 1 of 1

Date(s) Drilled May 18, 2005	Logged By Robert F. Flory	Checked By Adrian Angel
Drilling Method Geoprobe	Drill Bit Size/Type <b>2 inch</b>	Total Depth of Borehole 18 feet bgs
Drill Rig Type Geoprobe 5410	Drilling Contractor EnProb	Approximate Surface Elevation
Groundwater Level Dry feet ATD, 11.1 feet and Date Measured after 2.5 hrs	Sampling Method(s) <b>Tube</b>	Permit #
Borehole Backfill Cement Slurry	Location	

Denth faet	Sample Type	Sample Number	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AN OTHER TEST
0	-		Asphalt		Asphalt 2", base rock 4"		
	_		CL		Clay, black 10YR 2/1, firm, stiff, moist		
-	_		CL				
		SB5-3.5				0.1	
- 5-	_		CL- ML		Clayey Silt, dark yellowish brown 10YR3/4 with some 10YR 4/6 mottling,		
		SB5-7.5	ML		firm,slighly moist	0.1	
-		365-7.5	SM		Sand, yellowish brown 10YR 4/6, very fine grained, clayey, firm - moderately firm, friable, very moist	0.1	
- 10-	-		SP		Sand, yellowish brown 10YR 4/6, very fine grained - coarse grained, firm, wet ?		
-		SB5-11.5			(after 2.5 hrs) ¥	0.3	
	_		CL		<ul> <li>Gravelly Clay - Silty Clay, olive - olive brown 5y 4/4 - 2.5 4/4, firm - hard, slightly moist - (saprolite)</li> </ul>		
15-		SB5-14C	layston		Silty Claystone, light olive brown 2.5Y 4/4, firm - hard, indurated	1.0	Boring sealed to surface with nea
-	-						cement grout
_							
	-				Bottom of Boring at 18 feet bgs		
20-							
	-		-				Figure

CONSULTANTS ENVIRONMENTAL& CIVIL ENGINEERING

# Log of Boring SB-6

Sheet 1 of 1

Date(s) Drilled May 18, 2005	Logged By Robert F. Flory	Checked By Adrian Angel
Drilling Method Geoprobe	Drill Bit Size/Type 2 inch	Total Depth of Borehole <b>14 feet bgs</b>
Drill Rig Type Geoprobe 5410	Drilling Contractor EnProb	Approximate Surface Elevation
Groundwater Level and Date Measured 8.62 feet ATD	Sampling Method(s) <b>Tube</b>	Permit #
Borehole Backfill Cement Slurry	Location	

Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log		PID Reading, ppm	REMARKS A
	San	San Nun	nsc	Gra	MATERIAL DESCRIPTION	DIG	OTHER TES
0			Asphalt		Asphalt 2", clayey gravelly FILL		
			CL		Clay, black 10YR 2/1, soft, moist		
	$\times$	SB6-3.5	CL		Silty Clay, dark yellowish brown 10YR3/4 with very dark brown mottling 10YR 2/2	1.0	
- 5			CL.				
	-		CL- ML SM		Sandy Silty Clay - Clayey Silt, dark yellowish brown 10YR3/4 with some 10YR 4/6 mottling, firm, moist		
					Silty Sand, yellowish brown 10YR 4/6, very fine grained, slightly clayey, firm - moderately firm, friable, very moist - wet		
	$\mid$	SB6-7.5				0.8	
					becoming wet @ 9 feet (ATD) ⊑		
- 10							
	$\boxtimes$	SB6-10.5	SP		Sand, strong brown 7.5 YR 5/8 with yellowish brown 10YR 5/4, moderately soft -	1.1	
					soft, wet		Desire
	$\succ$	SB6-10.5				0.9	Boring sealed to surface with ne cement grout
			GC-CL		Clayey Gravel - Gravelly Clay, olive gray - olive 4/2 - 5/3, firm, moist, (saprolite)		
- 15				-			
				-			
	-			-			
- 20-							
							Figure
					—— (A.C.I.) ———		

ENVIRONMENTAL & CMIL ENGINEERING

X: PROJECTS (CHARACTERIZATION & REMEDIATION (CHARACTERIZATION (10509 PH II (Piazza) Castro Valley) Work Plan 2\Borings 1-8.bgs [DP Boring 20.tp]

# Log of Boring SB-7

Sheet 1 of 1

Date(s) Drilled May 18, 2005	Logged By Robert F. Flory	Checked By Adrian Angel
Drilling Method Geoprobe	Drill Bit Size/Type <b>2 inch</b>	Total Depth of Borehole <b>16 feet bgs</b>
Drill Rig Type Geoprobe 5410	Drilling Contractor EnProb	Approximate Surface Elevation
Groundwater Level and Date Measured 8.56 feet ATD	Sampling Method(s) <b>Tube</b>	Permit #
Borehole Backfill Cement Slurry	Location	

Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log		PID Reading, ppm	
	San	San Nun	nsc	Gra	MATERIAL DESCRIPTION	DID	REMARKS A OTHER TES
0-		Å	Asphali CL		Asphalt 2", base rock 4" Clay, black 10YR 2/1, firm, stiff, moist		
	$\times$	SB7-3.5	CL		Silty Clay, dark yellowish brown 10YR3/4 with some very dark brown 10YR 2/2 mottling, firm, slightly moist	0.1	
	$\times$	SB7-7.5	CL- ML		Clayey Silt - Silt, dark yellowish brown 10YR3/4 with some 10YR 4/6 mottling	0.4	
- 10	$\times$	SB7-11.5	SM		Silty Sand, strong brown 7.5 YR 5/6, firm, moist becoming wet @ 10.0	0.6	
	$\times$	SB7-13.5 C	SP		Clayey Sand, yellowish brown 10YR 4/6, moderately firn - moderately soft, wet	1.1	Boring sealed t surface with ne
15					moist		cement grout
20-					Bottom of Boring at 16 feet bgs		
ı _				I I	AFI		Figure

ENVIRONMENTAL & CMIL ENGINEERING

# Log of Boring SB-8

Sheet 1 of 1

Date(s) Drilled May 18, 2005	Logged By Robert F. Flory	Checked By Adrian Angel
Drilling Method Geoprobe	Drill Bit Size/Type <b>2 inch</b>	Total Depth of Borehole 15 feet bgs
Drill Rig Type Geoprobe 5410	Drilling Contractor EnProb	Approximate Surface Elevation
Groundwater Level and Date Measured 8.7 feet ATD	Sampling Method(s) <b>Tube</b>	Permit #
Borehole Backfill Cement Slurry	Location	

Elevation, feet	Depth, feet	Sample Type	Sample Number	USCS Symbol	Graphic Log		PID Reading, ppm	REMARKS ANI
	0-	0	02	GC CL		Base rock           Sandy Silty Clay, reddish brown 5YR 5/4 - yellowish brown 10YR 5/6, mottled, firm slightly moist	ш.а.	OTTER LESTE
_	_			CL		Clay, black 10YR 2/1, firm, moderately firm, moist		
_	5		SB8-3.5			Silty Clay, dark yellowish brown 10YR3/4 with very dark brown mottling 10YR 2/2	0.2	
_	_			CL- ML SP		Sandy silty Clay - Clayey Sand Silt, dark yellowish brown 10YR3/4 with some 10YR 4/6 mottling Silty Sand, yellowish brown 10YR 4/6, very fine grained, slightly clayey, firm - moderately firm, friable, very moist		
	_	$\times$	SB8-7.5			_ Moisture content increasing downward	1.1	
- 1	10			SP		Sand, strong brown 7.5 4/6, soft - moderately soft, wet		
_	_	$\times$	SB8-11.5 SB8-13	SP		Sand, strong brown 7.5 4/6 - yellowish brown 10YR 5/6 mottled, locally clayey, moderately soft - moderately firm, wet	0.1	Boring sealed wit
- 1	-			Claystor		Sandy Silty Claystone, light olive brown 2.5Y 4/4, firm - hard, indurated		neat cement grou
_	_				-	Bottom of Boring at 15 feet bgs		
-	-						-	
- - 2	- 20							
		I	1	1	I I	AEI		Figure

CONSULTANTS ENVIRONMENTAL& CIVIL ENGINEERING

# **APPENDIX B**

Laboratory Analyses With Chain of Custody Documentation



AEI Consultants	Client Project ID: #10509; Piazza	Date Sampled: 05/18/05
2500 Camino Diablo, Ste. #200		Date Received: 05/19/05
Webset Correla CA 04507	Client Contact: Robert Flory	Date Reported: 05/24/05
Walnut Creek, CA 94597	Client P.O.:	Date Completed: 05/24/05

#### WorkOrder: 0505282

May 24, 2005

#### Dear Robert:

Enclosed are:

- 1). the results of 9 analyzed samples from your #10509; Piazza 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.

You tr

Angela Rydelius, Lab Manager

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		500 Camin Walnut	Consult o Diablo Creek, O	, Suit	e 100 459		025)	044	280	5		v			1	-	AR	00	INI	T	IM	E		RU	JSH		24 H	IR		18 H	R	7	D 2 HR	S DAY
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Tele: (925) 944-2				ax: (										all My(clos	(801	20 E	8.1)		6					625 / 8270 / 8310			Toatal lead							
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<b>Project Location:</b>	Castro, Va	dley	11	1										+ 07	lotor	ease	pon	0	02 /	82	NF			251			010)		15					
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	1/2	SAMP	ING	/	SIS	1	MAT	RIX				HOD RVE	D	Gas (602/8020	c dies	Oil &	Hyd	(basi	y El	ic lis	PCB	/ 87		by E			1/239		EP					
SAMPLE ID (Field Point Name)	LOCATION	Date	Time	# Containers	Type Containers	Water	Soil	Sludge	Other					BTEX & TPH as G	TPH Multi-range diesel/motor oil (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010 (basic list)	BTEX ONLY (By EPA 602 / 8020)	EPA 8010 - basic list (by 8260)	EPA 608 / 8010 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI	TPH multi-range EPA 8015	LEAD - Total	LEAD - STLC			
5B1-3.5		6-18-05	0800																															120
5B1 - 7.5		1	0802	18																						-								145
5B1- 11.5			0805											X	4																			
542 - 7,5			0900					-										-				-												
562-10			0905	-									1	X	X																			1.5
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alv. 0505282

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	ut Creek, (	and the second se			rflor 925)				ultai	nts.co	om		8015)/MTBE	3015	E&	=							/ 831			Toatal lead							
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SAMPLE ID (Field Point Name)	LOCATION	Date	Time	# Containers	<b>Type Containers</b>	Water	Soil	Sludge	Other	Ice	HCI	HNU <sub>3</sub> Other	BTEX & TPH as	TPH Multi-range diesel/motor oil (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010 (basic list)	BTEX ONLY (By EPA 602 / 8020)	EPA 8010 - basic list (by 8260)	EPA 608 / 8010 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI	TPH multi-range EPA 8015	LEAD - Total	LEAD - STLC			
585-7.5		5-18-05	1130	1	2+5		1						X	x																			
585-11.5		9	1130	1	1															_												-	
796-7.5	ALL NO		1220										X	X																			
986-10.5			1230																					-		1							
567 - 8			1315										X	X																			
587 - 11.5	100		1320		1		1						1																				
568-7.5			1410	1			1						X	X																			
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## McCampbell Analytical, Inc.



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

# CHAIN-OF-CUSTODY RECORD

Page 1 of 1

WorkOrder: 0505282 ClientID: AEL

Report to:								Bill	to:						Reques	ted TAT	:	5 da	ays
		TEL: FAX: Project PO:	(925) 283-600 (925) 283-612 tNo: #10509; Piazz	21					2500 0	vironme Camino It Creek	Diablo,	Ste. #2	200		Date R Date Pi	eceived: rinted:		5/19/20 5/03/20	
				Γ					F	Request	ed Test	s (See l	egend b	elow)					
Sample ID	ClientSampID	Matrix	Collection Date	Hold	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0505282-001	SB1-3.5	Soil	05/18/2005			Α													
0505282-003	SB1-11.5	Soil	05/18/2005		А		Α												
0505282-005	SB2-10	Soil	05/18/2005		А		Α												
0505282-007	SB3-7.5	Soil	05/18/2005		А		Α										-		
0505282-010	SB4-7.5	Soil	05/18/2005		А		Α										-		
0505282-013	SB5-7.5	Soil	05/18/2005		А		Α												
0505282-015	SB6-7.5	Soil	05/18/2005		А		Α												
0505282-017	SB7-8	Soil	05/18/2005		А		Α												
0505282-019	SB8-7.5	Soil	05/18/2005		А		Α	-											

#### Test Legend:

1	G-MBTEX_S
6	
11	

PREDF REPORT	

2 7

12

3	TPH(DMO)_S
8	
13	

4	
	0
9	
14	

5	
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15	

#### Prepared by: Melissa Valles

#### **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.

	McCamp	pbell A	Analytica	l, Inc.	v	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 Co	onsultants		Client P	roject ID: #10	509; Piazza	09; Piazza Date Sampled: 05/18/05							
2500 C	amino Diablo, S	Ste. #200	)			Date Received:	05/19/05						
Walnut	Creek, CA 945	:07	Client C	Contact: Robert	Flory	Date Extracted:	05/19/05						
wainut	Creek, CA 945	197	Client P	2.0.:			Date Analyzed:	05/20/05					
Extraction	Gasoli method: SW5030B	ine Rang	ge (C6-C12)	-	carbons as thods: SW80211		with BTEX and		Order: 0	505282			
Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS			
003A	SB1-11.5	S	ND	ND	ND	ND	ND	ND	1	94			
005A	SB2-10	S	ND	ND	ND	ND	ND	ND	1	99			
007A	SB3-7.5	S	ND	ND	ND	ND	ND	ND	1	92			
010A	SB4-7.5	S	ND	ND	ND	ND	ND	ND	1	90			
013A	SB5-7.5	S	ND	ND	ND	ND	ND	ND	1	95			
015A	SB6-7.5	S	ND	ND	ND	ND	ND	ND	1	100			
017A	SB7-8	S	ND	ND	ND	ND	ND	ND	1	105			
019A	SB8-7.5	S	ND	ND	ND	ND	ND	ND	1	99			
ND mean	g Limit for DF =1; is not detected at or	W	NA	NA	NA	NA	NA	NA	1	ug/I			
above t	the reporting limit	S	1.0	0.05	0.005	0.005	0.005	0.005	1	mg/K			

\* water and vapor samples and all TCLP & SPLP extracts are reported in µg/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 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 ~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.

\_\_\_\_Angela Rydelius, Lab Manager

Mc	Campbell Ar	nalytica	al, Inc.	<ul> <li>110 2nd Avenue South, #D7, Pacheco, CA 94553-5560</li> <li>Telephone : 925-798-1620 Fax : 925-798-1622</li> <li>Website: www.mccampbell.com E-mail: main@mccampbell.com</li> </ul>					
AEI Consultant	ts	Client H	Project ID: #1050	9; Piazza	Date Sampled: 05/	18/05			
2500 Camino E	Diablo, Ste. #200			Date Received: 05/	ate Received: 05/19/05				
Walnut Creek,	CA 04507	Client C	Contact: Robert Fl	Date Extracted: 05/	Date Extracted: 05/19/05				
walnut Creek,	CA 94397	Client F	P.O.:	Date Analyzed: 05/2	05/20/05				
Extraction method: SV		and Oil (C	(18+) Range Extrac Analytical metho	•	s as Diesel and Motor Oi		der: 0505282		
Lab ID	Client ID	Matrix	TPH(d)		TPH(mo)	DF	% SS		
0505282-003A	SB1-11.5	S	ND		ND	1	116		
0505282-005A	SB2-10	S	ND		ND	1	110		
0505282-007A	SB3-7.5	S	ND		ND	1	102		
0505282-010A	SB4-7.5	S	ND		ND	1	113		
0505282-013A	SB5-7.5	S	ND		ND		106		
0505282-015A	SB6-7.5	S ND			ND		94		
0505282-017A	SB7-8	S	ND		ND		110		
0505282-019A	SB8-7.5	S	ND		ND		106		
	imit for DF =1;	W	NA		NA	uş	g/L		
	ot detected at or reporting limit	S	1.0		5.0	mg	/Kg		

\* water samples are reported in  $\mu g/L$ , wipe samples in  $\mu g/wipe$ , soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in  $\mu g/L$ .

# cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+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 diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant;; d) gasoline range compounds are significant; e) unknown medium boiling point pattern that does not appear to be derived from diesel (asphalt?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; k) kerosene/kerosene range; l) bunker oil; m) fuel oil; n) stoddard solvent/mineral spirit.



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

W.O. Sample Matrix: Soil

QC Matrix: Soil

WorkOrder: 0505282

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)	
Analyte	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	LCS / LCSD
TPH(btex) <sup>£</sup>	ND	0.60	95.9	93.2	2.82	98.6	92.2	6.76	70 - 130	70 - 130
MTBE	ND	0.10	93.3	87.3	6.66	91.3	94.8	3.74	70 - 130	70 - 130
Benzene	ND	0.10	106	102	3.48	103	110	5.98	70 - 130	70 - 130
Toluene	ND	0.10	83.7	84.4	0.844	85.7	88.9	3.69	70 - 130	70 - 130
Ethylbenzene	ND	0.10	100	98.7	1.74	102	106	3.67	70 - 130	70 - 130
Xylenes	ND	0.30	90.7	87	4.13	91.7	91	0.730	70 - 130	70 - 130
%SS:	109	0.10	108	112	3.64	105	108	2.82	70 - 130	70 - 130

#### BATCH 16289 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0505282-003A	5/18/05 8:05 AM	5/19/05	5/20/05 8:49 AM	0505282-005A	5/18/05 9:05 AM	5/19/05	5/20/05 9:19 AM
0505282-007A	5/18/05 9:50 AM	5/19/05	5/20/05 10:19 AM	0505282-010A	5/18/05 10:50 AM	5/19/05	5/20/05 10:48 AM
0505282-013A	5/18/05 11:30 AM	5/19/05	5/20/05 11:18 AM	0505282-015A	5/18/05 12:20 PM	5/19/05	5/20/05 11:48 AM
0505282-017A	5/18/05 1:15 PM	5/19/05	5/20/05 7:19 AM	0505282-019A	5/18/05 2:10 PM	5/19/05	5/20/05 7:52 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.

 $\pounds$  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.



## QC SUMMARY REPORT FOR SW8015C

W.O. Sample Matrix: Soil

QC Matrix: Soil

WorkOrder: 0505282

EPA Method: SW8015C	E	xtraction:	SW3550C	;	BatchID: 16282			Spiked Sample ID: 0505282-019A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)		
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	LCS / LCSD	
TPH(d)	ND	20	81.1	81.8	0.826	98.8	100	1.18	70 - 130	70 - 130	
%SS:	106	50	89	91	1.19	106	107	1.32	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 16282 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0505282-003A	5/18/05 8:05 AM	5/19/05	5/20/05 2:50 PM	0505282-005A	5/18/05 9:05 AM	5/19/05	5/20/05 2:50 PM
0505282-007A	5/18/05 9:50 AM	5/19/05	5/20/05 8:42 PM	0505282-010A	5/18/05 10:50 AM	5/19/05	5/20/05 7:36 PM
0505282-013A	5/18/05 11:30 AM	5/19/05	5/20/05 5:24 PM	0505282-015A	5/18/05 12:20 PM	5/19/05	5/20/05 6:30 PM
0505282-017A	5/18/05 1:15 PM	5/19/05	5/20/05 4:13 PM	0505282-019A	5/18/05 2:10 PM	5/19/05	5/20/05 4:13 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.

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.



AEI Consultants	Client Project ID: #10509; Piazza	Date Sampled: 05/18/05
2500 Camino Diablo, Ste. #200		Date Received: 05/19/05
Walnut Creek, CA 94597	Client Contact: Robert Flory	Date Reported: 05/26/05
wamut Creek, CA 94397	Client P.O.:	Date Completed: 05/26/05

#### WorkOrder: 0505283

May 26, 2005

#### Dear Robert:

Enclosed are:

- 1). the results of 8 analyzed samples from your #10509; Piazza 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,

O Cuch Caro for

Angela Rydelius, Lab Manager

	McCamj	pbell 4	enue South, #D7, Pacheo ne : 925-798-1620 Fax nccampbell.com E-mail:	: 925-798-1622									
AEI Coi	nsultants		Client Pr	roject ID: #1	0509; Piazza		Date Sampled: 05/18/05						
2500 Ca	amino Diablo, S	Ste. #200	D	Date Received: 05/19/05									
117-1	Create CA 046	:07	Client C	ontact: Robe	rt Flory		Date Extracted:	05/20/05					
wainut	Creek, CA 945	97	Client P	.0.:			Date Analyzed:	05/20/05					
Extraction	Gasoli method: SW5030B	ine Ran	ge (C6-C12) '	-	rocarbons as nethods: SW80211		with BTEX and		Order: 0	505283			
Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS			
001A	SB1-W	w	ND,i	ND	ND	ND	ND	ND	1	96			
002A	SB2-W	w	7300,m,h,i	ND<50	ND<5.0	11	ND<5.0	27 ND	10	100			
003A	SB3-W	w	ND,i	ND	ND	ND	ND		1	92			
004A	SB4-W	w	ND,i	ND	ND	ND	ND	ND	1	97			
005A	SB5-W	w	ND,i	ND	ND	ND	ND	ND	1	96			
006A	SB6-W	w	ND,i	ND	ND	ND	ND	ND	1	100			
007A	SB7-W	w	ND,i	ND	ND	ND	ND	ND	1	95			
008A	SB8-W	w	ND,i	ND	ND	ND	ND	ND	1	96			
Reporting	g Limit for DF =1;	W	50	5.0	0.5	0.5	0.5	0.5					
ND mean	s not detected at or he reporting limit	S	NA	NA	NA	NA		0.3 NA	1	μg/l mg/k			

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

# cluttered chromatogram; sample peak coelutes with surrogate peak.

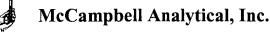
+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (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  $\sim 1$  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.

McC	Campbell Ar	nalytical	, Inc.	Te	nd Avenue South, #D7, Pacheco, lephone : 925-798-1620 Fax : 9 ww.mccampbell.com E-mail: m	925-798-1622	com				
AEI Consultants		Client Pro	oject ID: #1050	9; Piazza	Date Sampled: 0	5/18/05					
2500 Camino Di	iablo, Ste. #200		Date Received: 05/19/05								
Walnut Curvela	74 04507	Client Co	ontact: Robert Fl	ory	Date Extracted: 0	5/19/05					
Walnut Creek, (	JA 94397	Client P.(	O.:		Date Analyzed: 0	5/20/05-05/2	4/05				
extraction method: SW	. ,	and Oil (C1	8+) Range Extrac Analytical metho	-	ons as Diesel and Motor		der: 050528				
Lab ID	Client ID	Matrix	TPH(d)		TPH(mo)	DF	% SS				
0505283-001B	SB1-W	W	190,g,b,i		1400	1	105				
0505283-002B	SB2-W	w	23,000,d,b,g	,h,i	1300	1	102				
0505283-003B	SB3-W	w	62,i		ND	1	102				
0505283-004B	SB4-W	w	56,b,i		ND	1	106				
0505283-005B	SB5-W	W	670,g,b,i	-	1400	1	113				
0505283-006B	SB6-W	W	160,g,b,i		300	1	111				
0505283-007B	SB7-W	W	ND,i		ND	1	105				
0505283-008B	SB8-W	W	320,g,b,i		480	1	115				
	mit for DF =1;	W	50		250	μ	g/L				
	t detected at or eporting limit	S	NA		NA	mį	g/Kg				

\* water samples are reported in  $\mu g/L$ , wipe samples in  $\mu g/wipe$ , soil/solid/sludge samples in mg/kg, product/oil/non-aqueous liquid samples in mg/L, and all DISTLC / STLC / SPLP / TCLP extracts are reported in  $\mu g/L$ .

# cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+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 diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant; d) gasoline range compounds are significant; e) unknown medium boiling point pattern that does not appear to be derived from diesel; f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than  $\sim 1$  vol. % sediment; k) kerosene/kerosene range; l) bunker oil; m) fuel oil; n) stoddard solvent/mineral spirit.



NONE

#### QC SUMMARY REPORT FOR SW8015C

0505283	WorkOrder:				x: Water	QC Matri		W.O. Sample Matrix: Water				
	npie ID: N/A	Spiked Sam	9	hID: 16279	Batc		SW3510C	xtraction:	E	EPA Method: SW8015C		
Criteria (%)	Acceptance	LCS-LCSD	LCSD	LCS	MS-MSD	MSD	MS	Spiked	Sample	Analyte		
LCS / LCSI	MS / MSD	% RPD	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	µg/L	μg/L	Analyte		
70 - 130	N/A	0.467	98.9	99.4	N/A	N/A	N/A	1000	N/A	TPH(d)		
70 - 130	N/A	0.752	107	108	N/A	N/A	N/A	2500	N/A	%SS:		
		0.752	107	108	N/A	N/A	N/A	2500	N/A	TPH(d) %SS: All target compounds in the Meth		

#### BATCH 16279 SUMMARY Sample ID Date Extracted Date Sampled Date Analyzed Sample ID Date Sampled Date Extracted Date Analyzed 0505283-001B 5/18/05 8:30 AM 5/19/05 5/24/05 12:41 AM 0505283-002B 5/18/05 9:30 AM 5/19/05 5/23/05 10:20 PM 0505283-003B 5/18/05 10:20 AM 5/19/05 5/24/05 9:55 AM 0505283-004B 5/18/05 11:00 AM 5/19/05 5/23/05 11:31 PM 5/18/05 3:00 PM 5/19/05 0505283-005B 5/24/05 7:35 AM 0505283-006B 5/18/05 12:50 PM 5/19/05 5/20/05 1:44 PM 0505283-007B 5/18/05 1:45 PM 5/19/05 5/24/05 12:30 PM 0505283-008B 5/18/05 2:30 PM 5/19/05 5/24/05 6:26 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.

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.

DHS Certification No. 1644

QA/QC Officer



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

W.O. Sample Matrix: Water			QC Matri		WorkOrder: 0505283									
EPA Method: SW8021B/80	15Cm I	Extraction:	action: SW5030B BatchID: 16281 Sp					Spiked San	Spiked Sample ID: 0505283-006A					
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance	e Criteria (%)				
Analyte	μg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	LCS / LCSE				
TPH(btex) <sup>£</sup>	ND	60	92.3	93.9	1.70	94.4	93.3	1.21	70 - 130	70 - 130				
MTBE	ND	10	82	82.4	0.505	91	88.7	2.60	70 - 130	70 - 130				
Benzene	ND	10	103	105	1.62	93.2	98.2	5.16	70 - 130	70 - 130				
Toluene	ND	10	104	110	5.50	101	102	1.11	70 - 130	70 - 130				
Ethylbenzene	ND	10	105	102	2.77	99	101	1.67	70 - 130	70 - 130				
Xylenes	ND	30	91.3	90.7	0.733	86.3	90.3	4.53	70 - 130	70 - 130				
%SS:	100	10	109	112	2.42	100	103	2.46	70 - 130	70 - 130				

#### BATCH 16281 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0505283-001A	5/18/05 8:30 AM	5/20/05	5/20/05 1:48 AM	0505283-002A	5/18/05 9:30 AM	5/20/05	5/20/05 10:06 PM
0505283-003A	5/18/05 10:20 AM	5/20/05	5/20/05 3:59 AM	0505283-004A	5/18/05 11:00 AM	5/20/05	5/20/05 7:14 AM
0505283-005A	5/18/05 3:00 PM	5/20/05	5/20/05 9:24 AM	0505283-006A	5/18/05 12:50 PM	5/20/05	5/20/05 7:46 AM
0505283-007A	5/18/05 1:45 PM	5/20/05	5/20/05 8:51 AM	0505283-008A	5/18/05 2:30 PM	5/20/05	5/20/05 9:57 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.

 $\pounds$  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.

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.

 $\mathcal{M}_{QA/QC \text{ Officer}}$ 

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			SAMP	LING -	5	lers	M	ÁTR		Р	RES	ERV	ĒD	Gas (602/8020	se di	li Oil	ı Hy	) (ba	ByE	usic l	DC I	0 / 82		by I	s		:1/23		с Ц					
	SAMPLE ID (Field Point Name)	LOCATION	Date	Time	# Containers	Type Containers	Water Soil	Air	Sludge	Uther	HCI	HNO <sub>3</sub>	Other	BTEX & TPH as (	TPH Multi-range diesel/motor oil (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010 (basic list)	BTEX ONLY (By EPA 602 / 8020)	EPA 8010 - basic list (by 8260)	EPA 608 / 8010 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI	TPH multi-range	LEAD - Total	LEAD - STLC			
12	581-20 582-10 583-10 585-10 585-10 585-10 587-10 588-10		5-18-04	0830	H	3VCA								V	K																			
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## McCampbell Analytical, Inc.



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

# **CHAIN-OF-CUSTODY RECORD**

Page 1 of 1

WorkOrder: 0505283 ClientID: AEL

Report to:							Bill	to:					F	Reques	ed TAT:		5 da	ays
Robert Flory AEI Consulta 2500 Camin		TEL: FAX: Projec PO:	FAX:(925) 283-6121All Environmental, Inc.ProjectNo:#10509; Piazza2500 Camino Diablo, Ste. #200							-	Date R Date P		/19/20 /19/20					
					_			F	Request	ed Tests	(See le	egend b	elow)					
Sample ID	ClientSampID	Matrix	Collection Date Hold	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
										<b>.</b>			~	r — — —		1	······	
0505283-001	SB1-W	Water	5/18/05 8:30:00 AM	Α	А	В												
0505283-002	SB2-W	Water	5/18/05 9:30:00 AM	Α		В												
0505283-003	SB3-W	Water	5/18/05 10:20:00	Α		В												
0505283-004	SB4-W	Water	5/18/05 11:00:00	Α		В												
0505283-005	SB5-W	Water	5/18/05 3:00:00 PM	A		В												
0505283-006	SB6-W	Water	5/18/05 12:50:00	Α		В											L	
0505283-007	SB7-W	Water	5/18/05 1:45:00 PM	Α		В											L	
0505283-008	SB8-W	Water	5/18/05 2:30:00 PM	А	1	В										L	L	

#### Test Legend:

1	G-MBTEX_W	
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PREDF REPORT	

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Prepared by: Melissa Valles

#### **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.