GROUND-WATER MONITORING IN SEPTEMBER 2007 ALAMEDA CONTRA COSTA TRANSIT DISTRICT FACILITY 1177 47TH STREET EMERYVILLE, CALIFORNIA

Prepared for

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GROUND-WATER MONITORING
IN
SEPTEMBER 2007
ALAMEDA CONTRA COSTA
TRANSIT DISTRICT FACILITY
1177 47TH STREET
EMERYVILLE, CALIFORNIA

1.0 INTRODUCTION

The Alameda Contra Costa Transit District (AC Transit) has contracted with Essel Technology Services, Inc. (Essel Tech) to perform ground-water monitoring and sampling at the AC Transit Division 2 facility in Emeryville, California. This report presents the results of monitoring and sampling performed in September 2007.

1.1 Site Location and Description

The Division 2 facility is located at 1177 47th Street in Emeryville, California and occupies nearly the entire city block that is bounded by 47th Street on the north, 45th Street on the south, San Pablo Avenue on the east, and Doyle Street on the west, as shown on Plate 1. The facility is used for storage and maintenance of AC Transit buses. The primary site feature is a maintenance building that is located in the southwestern portion of the site. Other facilities include a parking garage, a transportation building, and a bus washing structure that are located along the northern property line adjacent to 47th Street; and a tire building, an emergency generator building, a pump station, and storm water treatment facilities that are located at the western edge of the site next to Doyle Street. The site also contains underground storage tanks (USTs). The existing USTs, referred to as Tank Farm No. 1, are located near the northeastern corner of the property and just south of fuel dispenser islands. Former USTs, referred to as Tank Farm No. 2, were located near the center of the property and a short distance east of the present maintenance building. These tanks were removed in 1999. A 550-gallon UST that provides fuel for an emergency generator is located next to the southern side of the emergency generator building.

Sixteen wells used for ground-water monitoring are presently installed at the site. Thirteen of the wells (MW-1 through MW-10, MW-12, MW-13, and W-4) are spaced across the northern half of the site and monitor the ground water near and to the west (approximately downgradient) of Tank Farm No 1 and the fuel dispenser islands. Well MW-12 also serves to monitor the ground water at a location northwest of the 550-gallon emergency generator UST. Three of the 16 wells are located in the southeastern quadrant of the property. Well W-3 is at the eastern edge of the property at a location that is upgradient of Tank Farm No. 1, well W-1 is located approximately 220 feet south of Tank Farm No. 1, and MW-11 is near the southwestern corner of Tank Farm No. 2. Three additional wells, that are not part of the ground-water-monitoring program, are located adjacent to Tank Farm No. 1. These wells are referred to as E-1, E-2, and E-5. Plate 2 is a Site Plan that shows the relative locations of the AC Transit facilities, the 16 ground-water-monitoring wells, and the three additional wells.

2.0 FIELD AND LABORATORY WORK

2.1 Field Procedures

Essel Tech personnel visited the site on September 2, 2007 to measure the water level in wells MW-11, MW-12, and MW-13, to measure the thickness of any free-phase petroleum product in the three wells, and to purge the wells for ground-water sampling. The depths to free-phase petroleum product and the static ground-water surface in each well were measured to the nearest 0.1-foot using an electronic oil-water interface probe. Following water-level measurements, wells MW-11 and MW-12 were purged of water using a submersible pump and discharge hose. Approximately three casing volumes of water were pumped from each well. Field measurements of temperature, pH, electrical conductivity, dissolved oxygen, oxygen reduction potential, and ferrous iron were monitored during pumping. Measurements were recorded on field well purging and sampling forms, which are included in Appendix A. Well MW-13 was not purged because the well contained free-phase petroleum product.

To minimize the potential for inadvertently introducing contaminants, wells were purged in order from least contaminated to most contaminated using the analytical results from the previous monitoring event. In addition, the purge pump and attached discharge hose were cleaned before use in each well by washing the equipment in a soap solution followed by rinsing twice with clean tap water. Discharge water from well purging was directed into 55-gallon drums, which were then emptied into the maintenance building steam bay.

Essel Tech personnel collected water samples from wells MW-11 and MW-12 on September 2, 2007. A clean, disposable polyethylene bailer was lowered partly through the air-water interface in each well and retrieved to collect the samples. The retrieved water samples were then slowly transferred from the bailer to clean, 40-milliliter volatile organic analysis (VOA) glass vials containing hydrochloric acid as a preservative and to clean, 1-liter brown glass liter bottles containing sulfuric acid as a preservative. The various containers were filled completely to eliminate air bubbles, sealed with caps, labeled, and placed in ice storage for transport to an analytical laboratory.

2.2 Laboratory Analyses

Essel Tech personnel prepared a Chain-of-Custody form for the ground-water samples collected and this form accompanied the samples to the laboratory. A copy of the Chain-of-Custody form is included in Appendix B. The water samples were delivered to McCampbell Analytical, Inc. (McCampbell) in Pittsburg, California for analysis. McCampbell analyzed the samples for total petroleum hydrocarbons as gasoline (TPHg) and as diesel (TPHd) using Environmental Protection Agency (EPA) modified Method 8015C, and for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tertiary butyl ether (MTBE) using EPA Method 8021B.

3.0 RESULTS OF MONITORING AND SAMPLING

3.1 Ground-Water Monitoring

A total thickness of 1.1 feet of free-phase petroleum product was measured in well MW-13 on September 2, 2007. No free-phase petroleum product was detected in wells MW-11 or MW-12. The measured depth to the static ground-water surface was 4.2 feet below the top of the casing of well MW-11 and 10.7 feet below the top of the casing of well MW-12. Essel Tech used wellhead elevation data and the depth-to-water measurements made on September 2 to calculate the elevation of the ground-water surface, which was 25.73 feet above mean sea level in well MW-11 and 17.98 feet above mean sea level in well MW-12. Water-level measurements show the ground-water surface dropped 1.42 feet in well MW-11 between the May and September monitoring events, but rose 0.18-foot in well MW-12 between the two monitoring events. The ground-water surface was lower in September 2007 than in August 2006 in wells MW-11 and MW-12. Table 1 presents data since November 2005 on product thickness, depth to ground water, and ground-water-surface elevation for the 16 wells.

3.2 Laboratory Analyses

Results of laboratory analyses show 430 parts per billion (ppb) gasoline-range hydrocarbons (i.e., TPHg) were detected in the water sample from well MW-12. This concentration is equivalent to the TPHg concentration detected in this well in November 2005 (440 ppb). The concentration of TPHg in well MW-12 declined from 440 ppb to 310 ppb between November 2005 and May 2006, increased to 740 ppb between May 2006 and November 2006, declined to 200 ppb between November 2006 and February 2007, and increased to 430 ppb between February and September 2007. No TPHg was detected in the water sample from well MW-11 during the latest monitoring event and none has been found in this well during the seven previous monitoring events conducted between November 2005 and May 2007.

The aromatic hydrocarbons BTEX were not detected in the water sample from well MW-11 in September 2007, which continues the trend of non-detectable BTEX in this well during and after the November 2005 monitoring event. Benzene, toluene, and ethylbenzene were not detected and total xylenes were found at a trace concentration of 0.77-ppb in the sample from well MW-12 during the September 2007 monitoring event. Generally low levels of BTEX have only sporadically been detected in well MW-12 since November 2005.

The fuel oxygenate MTBE was not detected in well MW-11 and was found at a concentration of 8.3 ppb in the sample from MW-12 during the latest monitoring event. No MTBE has been detected in water samples collected from well MW-11 since November 2005. In water samples from well MW-12, concentrations of MTBE have varied from 5.7 to 8.3 ppb during this time. Table 2 presents the cumulative results since November 2005 of analyses of water samples for TPHg, BTEX, and MTBE and Appendix B contains a copy of the laboratory report for the September 2, 2007 monitoring event.

Diesel-range hydrocarbons (i.e., TPHd) were detected in both wells MW-11 and MW-12 during the latest monitoring event. A concentration of 67 ppb was detected in the water sample from well MW-11. This concentration is approximately equivalent to levels of TPHd found in this well since August 2006. A concentration of 130 ppb TPHd was detected in September 2007 in the sample from

well MW-12. Since November 2005, TPHd in well MW-12 has been found at concentrations of 87 to 200 ppb. Table 2 presents the cumulative results since November 2005 of analyses of water samples for TPHd and Appendix B contains a copy of the laboratory report.

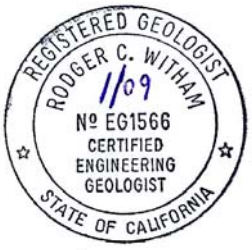
4.0 RECOMMENDATION

Essel Tech recommends that ground-water monitoring and sampling continue on a quarterly basis. The next sampling event should be scheduled for November 2007 and would include measuring depth to water and product thickness in the 16 ground-water-monitoring wells (MW-1 through MW-13, W-1, W-3, and W-4) and purging and sampling the 16 wells for laboratory analysis.

Please call if you have any questions.

Sincerely;
Essel Technology Services, Inc.

Samhita Lahiri
Project Manager



Rodger C. Witham, P.G., C.E.G
Senior Hydrogeologist

Table 1: Well Monitoring Data
Table 2: Results of Laboratory Analyses of Ground-Water Samples

Plate 1: Site Vicinity Map
Plate 2: Site Plan

Appendix A: Field Purging and Sampling Forms
Appendix B: Chain-of-Custody Record and Laboratory Report

TABLE 1
WELL MONITORING DATA
Alameda Contra Costa Transit District Facility
1177 47th Street, Emeryville, California

Well Number	Date	Top of Casing	Product Thickness	Depth to Ground Water	Ground-Water-Surface Elevation	Ground-Water-Surface Elevation Corrected for Product Thickness#
MW-1	11/02/05	32.56	0.00	5.14	27.42	27.42
	05/28/06	32.56	0.00	4.05	28.51	28.51
	11/12/06	32.56	0.00	3.36	29.20	29.20
	05/27/07	32.56	0.00	4.90	27.66	27.66
MW-2	11/02/05	32.12	0.00	4.65	27.47	27.47
	05/28/06	32.12	0.00	3.55	28.57	28.57
	11/16/06	32.12	0.00	3.6	28.52	28.52
	05/27/07	32.12	0.00	3.73	28.39	28.39
MW-3	11/02/05	34.06	0.00	6.21	27.85	27.85
	05/28/06	34.06	0.00	4.95	29.11	29.11
	11/16/06	34.06	0.00	5.5	28.56	28.56
	05/27/07	34.06	0.00	5.28	28.78	28.78
MW-4	11/02/05	34.11	0.00	6.30	27.81	27.81
	05/28/06	34.11	0.00	5.15	28.96	28.96
	11/16/06	34.11	0.00	5.4	28.71	28.71
	05/27/07	34.11	0.00	5.61	28.50	28.50
MW-5	11/02/05	31.70	0.00	4.55	27.15	27.15
	05/28/06	31.70	0.00	3.62	28.08	28.08
	11/12/06	31.70	0.00	2.5	29.20	29.20
	05/27/07	31.70	0.00	3.64	28.06	28.06
MW-6	11/02/05	31.02	0.00	4.21	26.81	26.81
	05/28/06	31.02	0.00	3.00	28.02	28.02
	11/16/06	31.02	0.00	3.3	27.72	27.72
	05/27/07	31.02	0.03	3.20	27.82	27.84
MW-7	11/02/05	29.62	0.00	5.50	24.12	24.12
	05/28/06	29.62	0.00	4.25	25.37	25.37
	11/16/06	29.62	0.00	5.7	23.92	23.92
	05/27/07	29.62	0.00	4.54	25.08	25.08
MW-8	11/02/05	29.43	0.00	5.05	24.38	24.38
	05/28/06	29.43	0.00	4.95	24.48	24.48
	11/12/06	29.43	0.00	4.7	24.73	24.73
	05/27/07	29.43	0.00	4.08	25.35	25.35
MW-9	11/02/05	29.18	0.00	4.26	24.92	24.92
	05/28/06	29.18	0.00	3.70	25.48	25.48
	11/12/06	29.18	0.00	3.5	25.68	25.68
	05/27/07	29.18	0.00	3.43	25.75	25.75
MW-10	11/02/05	29.13	0.00	9.81	19.32	19.32
	05/28/06	29.13	0.00	9.55	19.58	19.58
	11/16/06				Well not accessible	
	02/24/07	29.13	0.00	9.0	20.13	20.13
	05/27/07	29.13	0.00	9.45	19.68	19.68

See notes on page 2 of 2.

TABLE 1
WELL MONITORING DATA
Alameda Contra Costa Transit District Facility
1177 47th Street, Emeryville, California

Well Number	Date	Top of Casing	Product Thickness	Depth to Ground Water	Ground-Water-Surface Elevation	Ground-Water-Surface Elevation Corrected for Product Thickness#
MW-11	11/02/05	29.93	0.00	4.30	25.63	25.63
	02/22/06	29.93	0.00	2.50	27.43	27.43
	05/28/06	29.93	0.00	2.85	27.08	27.08
	08/27/06	29.93	0.00	3.00	26.93	26.93
	11/12/06	29.93	0.00	3.02	26.91	26.91
	02/24/07	29.93	0.00	2.15	27.78	27.78
	05/27/07	29.93	0.00	2.78	27.15	27.15
	09/02/07	29.93	0.00	4.2	25.73	25.73
MW-12	11/02/05	28.68	0.00	10.76	17.92	17.92
	02/22/06	28.68	0.00	10.50	18.18	18.18
	05/28/06	28.68	0.00	10.82	17.86	17.86
	08/27/06	28.68	0.00	10.50	18.18	18.18
	11/16/06	28.68	0.00	10.8	17.88	17.88
	02/24/07	28.68	0.00	10.3	18.38	18.38
	05/27/07	28.68	0.00	10.88	17.80	17.80
	09/02/07	28.68	0.00	10.7	17.98	17.98
MW-13	11/02/05	22.72	0.063	9.10	13.62	13.67
	02/22/06	22.72	0.167	NM	NM	NM
	05/28/06	22.72	NM	NM	NM	NM
	11/16/06	22.72	0.017	NM	NM	NM
	05/27/07	22.72	0.45	9.45	13.27	13.63
	09/02/07	22.72	1.1	10.3	12.42	13.30
W-1	11/02/05	33.43	0.00	6.59	26.84	26.84
	05/28/06	33.43	0.00	5.15	28.28	28.28
	11/16/06	33.43	0.00	5.5	27.93	27.93
	05/27/07	33.43	0.00	5.80	27.63	27.63
W-3	11/02/05	37.46	0.00	8.24	29.22	29.22
	05/28/06	37.46	0.00	6.32	31.14	31.14
	11/16/06	37.46	0.00	6.8	30.66	30.66
	05/27/07	37.46	0.00	6.73	30.73	30.73
W-4	11/02/05	31.72	0.00	4.70	27.02	27.02
	05/28/06	31.72	0.00	4.50	27.22	27.22
	11/16/06	31.72	0.00	3.9	27.82	27.82
	05/27/07	31.72	0.00	3.82	27.90	27.90

Top of casing in feet above mean sea level.
Product thickness in feet.
Depth to ground water in feet below the top of the well casing.
Ground-water surface elevation in feet above mean sea level.
NM = not measured
#Multiply product thickness by specific gravity of 0.8 and add to ground-water surface elevation.

TABLE 2
RESULTS OF LABORATORY ANALYSES OF GROUND-WATER SAMPLES
Alameda Contra Costa Transit District Facility
1177 47th Street, Emeryville, California

Well No.	Date Sampled	TPHg	TPHd	TPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Nitrate	Sulfate	Dissolved Oxygen	Ferrous Iron
MW-1	11/03/05	<50	70	NA	<0.5	<0.5	<0.5	<0.5	4.5	<100	56,000	2,330	0
	5/29/06	<50	89	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	5,400	0
	11/12/06	<50	65	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	6,520	0
	5/27/07	<50	65	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	50	1,280
MW-2	11/03/05	<50	110	NA	<0.5	<0.5	<0.5	<0.5	4.9	430	53,000	2,090	130
	5/29/06	<50	70	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	6,800	60
	11/16/06	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	8,300	10
	5/27/07	<50	75	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	90	1,540
MW-3	11/03/05	<50	180	NA	<0.5	<0.5	<0.5	<0.5	3.2	3,500	67,000	1,850	0
	5/29/06	<50	180	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	4,600	0
	11/16/06	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	360	630
	5/27/07	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	100	1,480
MW-4	11/03/05	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	4.1	3,500	67,000	1,860	60
	5/29/06	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	4,900	0
	11/16/06	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	1,500	1,060
	5/27/07	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	400	1,360
MW-5	11/03/05	<50	1,500	NA	<0.5	<0.5	<0.5	<0.5	5.7	<100	62,000	1,930	150
	5/29/06	<50	200	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	4,900	40
	11/12/06	<50	130	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	4,500	2,170
	5/27/07	140	180	NA	<0.5	<0.5	<0.5	<0.5	<10	NA	NA	220	1,350
MW-6	11/03/05	750	2,000	NA	13	1.9	2.9	4.6	1.4	<100	16,000	1,570	3,300
	5/29/06	2,700	12,000	NA	55	5.7	16	26	<15	NA	NA	4,900	20
	11/16/06	530	2,100	NA	12	0.82	0.58	2.8	<5.0	NA	NA	3,600	2,370
	5/27/07	5,200	2,500	NA	110	5.1	23	17	<60	NA	NA	50	3,300
MW-7	11/03/05	310	140	NA	<0.5	<0.5	<0.5	<0.5	2.3	<100	3,100	3,190	30
	5/29/06	260	120	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	Anomalous	60
	11/12/06	120	96	NA	<0.5	<0.5	<0.5	0.76	<5.0	NA	NA	1,100	23
	5/27/07	700	220	NA	<0.5	<0.5	1.0	2.0	<5.0	NA	NA	170	1,090
MW-8	11/03/05	150	280	NA	<0.5	<0.5	<0.5	<0.5	0.69	<100	24,000	1,630	860
	5/29/06	<50	150	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	8,300	40
	11/12/06	95	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	3,810	860
	5/27/07	140	140	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	390	1,770

See notes on page 3 of 3.

TABLE 2
RESULTS OF LABORATORY ANALYSES OF GROUND-WATER SAMPLES
Alameda Contra Costa Transit District Facility
1177 47th Street, Emeryville, California

Well No.	Date Sampled	TPHg	TPHd	TPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Nitrate	Sulfate	Dissolved Oxygen	Ferrous Iron
MW-9	11/03/05	<50	470	NA	<0.5	<0.5	<0.5	<0.5	4.8	110	28,000	1,720	450
	5/29/06	<50	190	NA	<0.5	<0.5	<0.5	<0.5	5.2	NA	NA	8,600	0
	11/12/06	<50	65	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	2,470	570
	5/27/07	<50	1,000	NA	<0.5	0.92	<0.5	<0.5	<5.0	NA	NA	290	1,140
MW-10	11/03/05	300	600	NA	<0.5	<0.5	<0.5	<0.5	4.1	<100	780	2,350	2,670
	5/29/06	140	540	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	5,600	10
	11/16/06	Well Not Accessible											
	2/24/07	190	970	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	3,460	1,060
	5/27/07	330	850	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	150	2,530
MW-11	11/03/05	<50	290	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<100	21,000	1,360	0
	02/22/06	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<0.5	<100	27,000	100	0
	5/29/06	<50	250	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	6,000	100
	8/27/06	<50	57	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	100	0
	11/12/06	<50	56	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	2,810	0
	2/24/07	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	950	0
	5/27/07	<50	61	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	40	1,170
	9/2/07	<50	67	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	60	630
MW-12	11/03/05	440	120	NA	<0.5	<0.5	<0.5	<0.5	6.6	<100	3,700	1,700	740
	02/22/06	400	140	NA	<0.5	<0.5	<0.5	<0.5	7.8	<100	7,600	90	NM
	5/29/06	310	140	NA	<0.5	<0.5	<0.5	<0.5	5.7	NA	NA	7,200	10
	8/27/06	530	120	NA	<0.5	<0.5	<0.5	<0.5	6.6	NA	NA	90	720
	11/16/06	740	200	NA	<0.5	2.1	<0.5	6.3	<10	NM	NM	3,700	680
	2/24/07	200	87	NA	<0.5	<0.5	<0.5	<0.5	<10	NA	NA	750	310
	5/27/07	340	140	NA	<0.5	<0.5	1.4	1.8	<10	NA	NA	130	1,610
	9/2/07	430	130	NA	<0.5	<0.5	<0.5	0.77	8.3	NA	NA	100	3,300
MW-13	11/03/05	Not sampled - free-phase product in well											
	02/22/06	Not sampled - free-phase product in well											
	5/29/06	Not sampled - free-phase product in well											
	11/16/06	Not sampled - free-phase product in well											
	5/27/07	Not sampled - free-phase product in well											
	9/2/07	Not sampled - free-phase product in well											

See notes on page 3 of 3.

TABLE 2
RESULTS OF LABORATORY ANALYSES OF GROUND-WATER SAMPLES
Alameda Contra Costa Transit District Facility
1177 47th Street, Emeryville, California

Well No.	Date Sampled	TPHg	TPHd	TPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Nitrate	Sulfate	Dissolved Oxygen	Ferrous Iron
W-1	11/03/05	6,200	2,400	NA	7.2	3.6	5.7	20	0.73	140	1,300	1,230	3,300
	5/29/06	4,600	1,700	NA	18	4.4	17	32	<17	NM	NM	4,500	60
	11/16/06	2,600	760	NA	18	3.7	10	19	<10	NA	NA	5,400	2,010
	5/27/07	4,200	1,200	NA	20	34	12	17	<45	NA	NA	60	2,050
W-3	11/03/05	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	1.2	3,700	51,000	2,170	0
	5/29/06	<50	240	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NM	NM	Anomalous	50
	11/16/06	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	3,900	2,140
	5/27/07	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	70	1,130
W-4	11/03/05	<50	66	NA	<0.5	<0.5	<0.5	<0.5	2.0	<100	32,000	1,620	970
	5/29/06	<50	110	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NM	NM	NM	NM
	11/16/06	<50	72	NA	<0.5	<0.5	<0.5	<0.5	<5.0	NA	NA	4,500	1,750
	5/27/07	99	180	NA	0.89	<0.5	<0.5	<0.5	<5.0	NA	NA	70	2,770

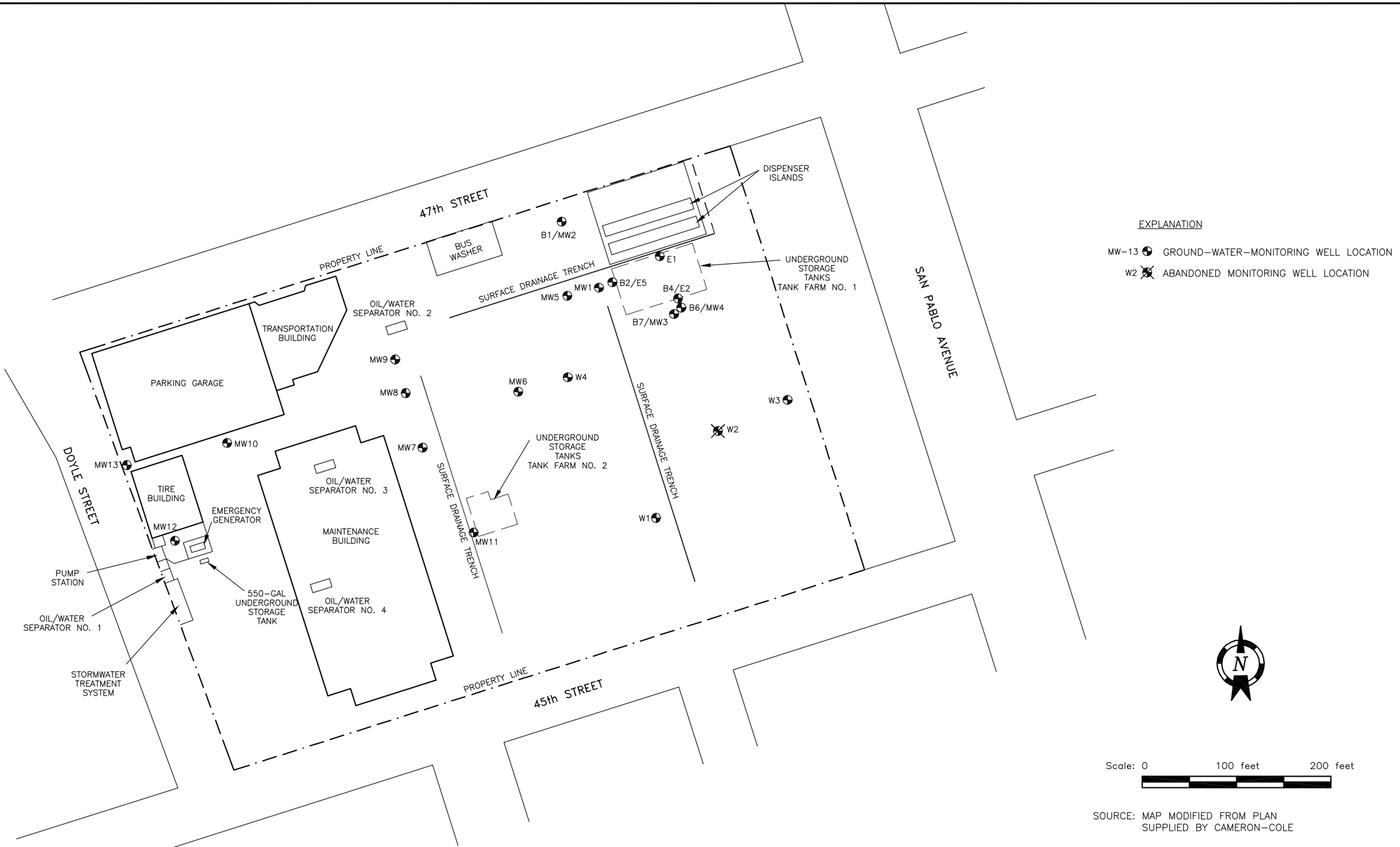
Results are in micrograms per liter = parts per billion; detectable results are shaded.
TPHg = total petroleum hydrocarbons as gasoline
TPHd = total petroleum hydrocarbons as diesel
TPH = total petroleum hydrocarbons as motor oil or unknown hydrocarbon
MTBE = methyl tertiary butyl ether
NA = not analyzed
NM = not measured
< = less than the laboratory method detection limit

Scale: 0 2000 feet 4000 feet

Source: USGS 7 1/2–Minute Quadrangle,
Oakland West, California, Photorevised 1980.

PROJECT NO.	DRAWN BY	REPORT DATE	SITE VICINITY MAP	PLATE
07-36	EC	September 2007	Alameda Contra Costa Transit District Facility 1177 47th Street Emeryville, California	1

ESSEL TECHNOLOGY SERVICES, INC.
9778 Broadmoor Drive
San Ramon, CA 94583



SOURCE: MAP MODIFIED FROM PLAN SUPPLIED BY CAMERON-COLE

PROJECT NO.	DRAWN BY	REPORT DATE
07-36	EC	September 2007

ESSEL TECHNOLOGY SERVICES, INC.
9778 Broadmoor Drive
San Ramon, CA 94583

SITE PLAN
Alameda Contra Costa
Transit District Facility
1177 47th Street
Emeryville, California

PLATE **2**

APPENDIX A

FIELD PURGING AND SAMPLING FORMS

Job Name: Emeryville, Aug-2007 **Well Number:** MW-11

Job Number: 0568-Aug-07 **Date:** 9-2-07

Sampled By: S. Lahiri

Purge Volume	Development/Purge Method(s)
Casing Diameter: 2 inch [ ] 4 inch [ ] Other [ ]	[ ] Swab [ ] Surge [ ] Other _____
Total Depth (TD) of casing in Feet 17.5	[ ] Bail Bailer Type: Disposable
Depth to water (DTW) in Feet 4.2 (4.2)	[ ] Pump
Purge Volume Calculation (17.5) – (4.2) x 3 x 0.17 = 6.7 gallons (TD) – (DTW) x V x F = Purge Volume	Pump type: [✓] Submersible [ ] Centrifuge [ ] Bladder [ ] Other

Explanation

For 2" diameter well: V=3, F= .17gallon/foot

V= well volume

F= gallon of water per foot of casing

Field Parameters								
Time AM PM	Temperature °C	Conductivity µS/cm	DO (mg/L)	pH	ORP	Gallons Pumped	Fe mg/L	Water Level (TD-DTW)
	3.33	541	6.13	7.05	35.3	1		
	24.43	660	2.01	6.60	52.6	2		
	24.83	659	.12	6.08	67.8	3		
	24.86	657	.08	6.04	62.4	4	.163	13.3
	24.90	654	.06	6.04	57.7	5		
	24.93	651	.06	6.05	54.3	6		

Total gallons pumped:

Observations during purging (well condition, turbidity, color, odor etc.)

Turbid water / Cloudy w/ Diesel/Fuel Odor

Discharge water disposal: [ ] Sanitary sewer [ ] Storm drain [ ] Drum [ ] Other Steambay onsite.

Well Sampling Date: Time:

Job Name: Emeryville, Aug 2007 **Well Number:** MW-12

Job Number: 0568 - Aug-07 **Date:** Sept 2, 2007

Sampled By: S. Lahiri

Purge Volume	Development/Purge Method(s)
Casing Diameter: 2 inch [✓] 4 inch [ ] Other [ ]	[ ] Swab [ ] Surge [ ] Other _____
Total Depth (TD) of casing in Feet 29.5	[ ] Bail Bailer Type: Disposable
Depth to water (DTW) in Feet 10.7	[ ] Pump
Purge Volume Calculation (29.5) - (10.7) x 3 x 0.17 = 98 gallons (TD) - (DTW) x V x F = Purge Volume	Pump type: [✓] Submersible [ ] Centrifuge [ ] Bladder [ ] Other

Explanation

For 2" diameter well: V=3, F= .17gallon/foot

V= well volume

F= gallon of water per foot of casing

Field Parameters								
Time AM PM	Temperature °C	Conductivity µS/cm	DO (mg/L)	pH	ORP	Gallons Pumped	Fe mg/L	Water Level (TD-DTW)
	(6) 27.15							
	22.66	699	3.97	6.39	30.0	1		
	20.37	813	1.61	6.18	22.4	2		
	20.31	833	.76	5.97	21.0	3		
	20.15	856	.43	5.43	19.0	4	3.30	18.8
	19.98	877	.20	5.39	21.0	5		
	19.80	873	.12	5.39	18.7	6		
	19.78	871	.12	5.39	17.7	7		
	19.74	865	.10	5.40	13.1	8		
	19.72	863	.10	5.41	11.2	9		
	19.71	862	.10	5.42	10.6	10		

Total gallons pumped:

Observations during purging (well condition, turbidity, color, odor etc.)

Turbid water, diesel odor very light

Discharge water disposal: [ ] Sanitary sewer [ ] Storm drain [ ] Drum [ ] Other Steambay on site

Well Sampling Date: Time:

Job Name: Emeryville-Aug-07 **Well Number:** MW-13

Job Number: 0568-Aug-07 **Date:** 9-2-07

Sampled By: S. Lahiri

Top ~~water~~ level 9'2"
Bup Bup 10.3

Purge Volume	Development/Purge Method(s)
Casing Diameter: 2 inch [ ] 4 inch [ ] Other [ ]	[ ] Swab [ ] Surge [ ] Other _____
Total Depth (TD) of casing in Feet 22.10' First Bup at 9.2'	[ ] Bail Bailer Type: ~~DT~~ N/A.
Depth to water (DTW) in Feet 10.3'	[ ] Pump
Purge Volume Calculation (____)-(____) x ____ x ____ = _____ gallons (TD)-(DTW) x V x F = Purge Volume	Pump type: [✓] Submersible [ ] Centrifuge [ ] Bladder [ ] Other

Explanation

For 2" diameter well: V=3, F= .17gallon/foot

V= well volume
F= gallon of water per foot of casing

Field Parameters								
Time AM PM	Temperature °C	Conductivity µS/cm	DO (mg/L)	pH	ORP	Gallons Pumped	Fe mg/L	Water Level (TD-DTW)
								22.10 - 10.3
								= 11.8'

Total gallons pumped:

Observations during purging (well condition, turbidity, color, odor etc.)

Product thickness: 10.3 - 9.2 = 1.1'
water level: 11.8'

Discharge water disposal: [ ] Sanitary sewer [ ] Storm drain [ ] Drum [ ] Other ~~SF~~

Well Sampling Date: Time:

APPENDIX B

CHAIN-OF-CUSTODY RECORD
AND
LABORATORY REPORT

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Essel Technology Service 9778 Broadmoore Drive San Ramon, CA 94583	Client Project ID: #0569-07-8; Water Monitoring	Date Sampled: 09/02/07
		Date Received: 09/04/07
	Client Contact: Samhita Lahiri	Date Reported: 09/07/07
	Client P.O.:	Date Completed: 09/07/07

WorkOrder: 0709004

September 07, 2007

Dear Samhita:

Enclosed are:

1). the results of **3** analyzed samples from your **#0569-07-8; Water Monitoring 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.

Best regards,

Angela Rydelius, Lab Manager

GSR 070904

McCAMPBELL ANALYTICAL, INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553-5560
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 798-1620 Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

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

GeoTracker EDF ☑ PDF ☑ Excel ☐ Write On (DW) ☐

Report To: Samhita Lahiri	Bill To: ESSEL TECHNOLOGY
Company: ESSEL TECHNOLOGY SERVICES Inc.	
9778 Broadmoor Drive	
San Ramon CA-94583	E-Mail: ESSELTEKSERVICES
Tele: ( )	Fax: ( ) @AOL.COM
Project #: 0569-07-8	Project Name: Groundwater Monitoring
Project Location: Emeryville, CA	
Sampler Signature: S. Lahiri	

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	Other	Comments
MW-12-01	Emeryville	9/2	1:30	1	VOA	X					X	X			X																	
MW-12-02	Emeryville	"	"	1	VOA	X					X	X			X																	
MW-12-03	"	"	"	1	VOA	X					X	X			X																	
MW-12-04	"	"	"	1	Amb	X					X	X				X																
MW-11-05	Emeryville	9/2/07	2:30	1	VOA	X					X	X			X																	
MW-11-06	"	"	"	1	VOA	X					X	X			X																	
MW-11-07	"	"	"	1	VOA	X					X	X			X																	
MW-11-08	"	"	"	1	Amb	X					X	X				X																
MW-09	"	"			VOA	X					X	X			X	Trip Blank																

Relinquished By:	Date:	Time:	Received By:
Samhita Lahiri	9/4/07	12:45pm	Mel Vall
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° 9.2° ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT
DECHLORINATED IN LAB
APPROPRIATE CONTAINERS ✓
PRESERVED IN LAB

COMMENTS:

VOAS O&G METALS OTHER
PRESERVATION pH<2

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0709004 **ClientID: ETSR**

☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty

Report to:
Samhita Lahiri
Essel Technology Service
9778 Broadmoore Drive
San Ramon, CA 94583

Email: esseltekservices@aol.com
TEL: (925) 833-799 FAX: (925) 833-797
ProjectNo: #0569-07-8; Water Monitoring
PO:

Bill t
Sher Guha
Essel Technology Service
9778 Broadmoore Drive
San Ramon, CA 94523

Requested TAT: 5 days

Date Received **09/04/2007**
Date Printed: **09/04/2007**

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0709004-001	MW-12-01-04	Water	9/2/07 1:30:00 PM	☐	A	A	B									
0709004-002	MW-11-05-08	Water	9/2/07 2:30:00 PM	☐	A		B									
0709004-003	Trip Blank	Water	9/2/07	☐	A											

Test Legend:

1	G-MBTEX_W	2	PREDF REPORT	3	TPH(D)_W	4		5	
6		7		8		9		10	
11		12							

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.

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Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **Essel Technology Service**

Date and Time Received: **9/4/07 12:49:52 PM**

Project Name: **#0569-07-8; Water Monitoring**

Checklist completed and reviewed by: Melissa Valles

WorkOrder N°: **0709004** Matrix Water

Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 9.2°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
TTLC Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑

Client contacted: Date contacted: Contacted by:

Comments:

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Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Essel Technology Service	Client Project ID: #0569-07-8; Water Monitoring	Date Sampled: 09/02/07
9778 Broadmoore Drive		Date Received: 09/04/07
San Ramon, CA 94583	Client Contact: Samhita Lahiri	Date Extracted: 09/05/07
	Client P.O.:	Date Analyzed 09/05/07

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

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0709004

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-12-01-04	W	430,m	8.3	ND	ND	ND	0.77	1	108
002A	MW-11-05-08	W	ND	ND	ND	ND	ND	ND	1	98
003A	Trip Blank	W	ND	ND	ND	ND	ND	ND	1	98

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* water and vapor samples and all TCLP & SPLP extracts are reported in 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 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; p) see attached narrative.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

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Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Essel Technology Service	Client Project ID: #0569-07-8; Water Monitoring	Date Sampled: 09/02/07
9778 Broadmoore Drive		Date Received: 09/04/07
San Ramon, CA 94583	Client Contact: Samhita Lahiri	Date Extracted: 09/04/07
	Client P.O.:	Date Analyzed 09/04/07-09/05/07

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel*

Extraction method SW3510C Analytical methods SW8015C Work Order: 0709004

Lab ID	Client ID	Matrix	TPH(d)	DF	% SS
0709004-001B	MW-12-01-04	W	130,d,b	1	109
0709004-002B	MW-11-05-08	W	67,b	1	98

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	µg/L
	S	NA	NA

* water samples are reported in µg/L, wipe samples in µg/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 µg/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 ~1 vol. % sediment; k) kerosene/kerosene range/jet fuel range; l) bunker oil; m) fuel oil; n) stoddard solvent/mineral spirit.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

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Telephone: 877-252-9262 Fax: 925-252-9269

QC SUMMARY REPORT FOR SW8015C

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder 0709004

EPA Method SW8015C **Extraction SW3510C** **BatchID: 30339** **Spiked Sample ID: N/A**

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	RPD	LCS/LCSD	RPD
TPH(d)	N/A	1000	N/A	N/A	N/A	101	94.7	6.19	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	99	100	1.75	N/A	N/A	70 - 130	30

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

NONE

BATCH 30339 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0709004-001B	09/02/07 1:30 PM	09/04/07	09/04/07 8:08 PM	0709004-002B	09/02/07 2:30 PM	09/04/07	09/05/07 4:00 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.

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.

McCampbell Analytical, Inc.
"When Quality Counts"

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Telephone: 877-252-9262 Fax: 925-252-9269

QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder 0709004

EPA Method SW8021B/8015Cm **Extraction SW5030B** **BatchID: 30370** **Spiked Sample ID: 0709026-004A**

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	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	98.1	109	10.5	106	105	0.867	70 - 130	30	70 - 130	30
MTBE	ND	10	105	112	6.55	92.6	97.5	5.09	70 - 130	30	70 - 130	30
Benzene	ND	10	96.4	104	7.55	98.5	96	2.55	70 - 130	30	70 - 130	30
Toluene	ND	10	93.8	101	7.82	98.5	98	0.486	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	96.6	103	5.99	114	101	12.1	70 - 130	30	70 - 130	30
Xylenes	ND	30	95	100	5.13	117	117	0	70 - 130	30	70 - 130	30
%SS:	86	10	101	104	2.93	93	90	2.74	70 - 130	30	70 - 130	30

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

NONE

BATCH 30370 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0709004-001A	09/02/07 1:30 PM	09/05/07	09/05/07 6:37 AM	0709004-002A	09/02/07 2:30 PM	09/05/07	09/05/07 7:10 AM
0709004-003A	09/02/07	09/05/07	09/05/07 8:16 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.