Alameda-Contra Costa Transit District

August 2, 2007

Mr. Stephen Plunkett
Alameda County Health Division
Division of Environmental Protection
Department of Environmental Health
1131 Harbor Bay Parkway, Second Floor
Alameda, CA 94502

Dear Mr. Plunkett:

Subject: Groundwater Monitoring Report – May 2007
AC Transit, 1100 Seminary Ave., Oakland

AC Transit hereby submits the enclosed groundwater monitoring report for the AC Transit facility located at 1100 Seminary Avenue in Oakland. The report was prepared by our consultant, Esseltech, and contains the results of groundwater monitoring performed on May 27, 2007, from six on-site monitoring wells.

Gasoline-range hydrocarbons were detected in wells MW-1, MW-2, and MW-3 at concentrations of 1,400 ppb, 6,900 ppb, and 170 ppb, respectively. Diesel-range hydrocarbons were detected in all six wells at concentrations ranging from 45,000 ppb (MW-2) to 330 ppb (MW-11). BTEX compounds were detected to be highest in samples collected from MW-2 with concentrations at 1,800 ppb for benzene, 28 ppb for toluene, 110 ppb for ethyl benzene, and 270 ppb for total xylenes. The fuel oxygenate MTBE was not detected in any of the wells at detection limits ranging from 5.0 to 130 ppb.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

If you have any questions or comments regarding the enclosed report, please call me at (510) 577-8869.

Sincerely,

Suzanne Chaewsky, P.E.
Environmental Engineer
enclosure

GROUND-WATER MONITORING
IN
MAY 2007
ALAMEDA-CONTRA COSTA
TRANSIT DISTRICT FACILITY
1100 SEMINARY AVENUE
OAKLAND, CALIFORNIA 94621

Prepared for

Alameda-Contra Costa Transit District
10626 International Boulevard
Oakland, California 94603

Prepared by

Essel Technology Services, Inc.
9778 Broadmoor Drive
San Ramon, California 94583
(925) 833-7977

Project No. 0568

June 2007

GROUND-WATER MONITORING
IN
MAY 2007
ALAMEDA-CONTRA COSTA
TRANSIT DISTRICT FACILITY
1100 SEMINARY AVENUE
OAKLAND, CALIFORNIA 94621

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 4 facility in Oakland, California. This report presents the results of monitoring and sampling performed in May 2007.

1.1 Site Location and Description

The Division 4 facility is located at 1100 Seminary Avenue in Oakland, California and is on the southeastern corner of the intersection of San Leandro Street and Seminary Avenue, as shown on Plate 1. The Division 4 facility is used for storage and maintenance of AC Transit buses. The facility contains a primary maintenance building that is located near the southeastern corner of the site. Other facilities include a bus washing structure, a generator building, a service building, and a lift station, which are located along the southwestern side of the property. A parking garage and transportation building are located at the northern end of the property. The site also contains underground storage tanks (USTs). The existing USTs are referred to as Tank Farm No. 1 and are located west of the present maintenance building. A second group of USTs, referred to as Tank Farm No. 2, was formerly located just north of the present maintenance building. These USTs were removed in March 2005. Another, earlier group of USTs was located east of former Tank Farm No. 2 at the eastern edge of the site. These USTs have also been removed.

Six ground-water-monitoring wells (MW-1, MW-2, MW-3, MW-9, MW-10, and MW-11) are presently located at the site. These wells were installed to monitor the ground water in the east-central portion of the site as a result of releases of fuel from the USTs formerly located at the eastern edge of the property. Well MW-1 was installed just east and upgradient of these former USTs and wells MW-2, MW-3, and MW-9 through MW-11 were installed at downgradient locations ranging from approximately 80 to 200 feet northwest to southwest of the former USTs. Plate 2 is a Site Plan that shows the relative locations of the AC Transit surface facilities, present and former USTs, and ground-water-monitoring wells.

2.0 FIELD AND LABORATORY WORK

2.1 Field Procedures

Essel Tech personnel visited the site on May 27, 2007 to measure the water level in wells MW-1 through MW-3 and MW-9 through MW-11, to measure the thickness of free petroleum product in the wells, and to purge the wells for ground-water sampling. The depth to free-phase product and to the static ground-water surface in each well was measured to the nearest 0.01-foot using an electronic oil-water interface probe. Following water-level measurements, the six wells were purged of water using a submersible pump and discharge hose. A minimum of three casing volumes of water was pumped from the six wells during this latest monitoring event. Essel Tech has been pumping 20 casing volumes of water from well MW-2 on a monthly basis. 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-development and sampling forms, which are included in Appendix A. Field forms documenting the monthly purging of well MW-2 are also included in Appendix A.

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 later emptied into the maintenance building steam bay.

Essel Tech personnel collected water samples from the six wells on May 27, 2007. A clean, disposable polyethylene bailer was lowered 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; to clean, 1-liter brown glass liter bottles containing sulfuric acid as a preservative; and to clean, 1-liter plastic bottles. 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 Chain-of-Custody forms for the ground-water samples collected and these forms accompanied the samples to the laboratory. Copies of the Chain-of-Custody forms are 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, for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tertiary butyl ether (MTBE) using EPA Method 8021B, and for nitrate (as nitrogen) and sulfate using EPA Method E300.1.

3.0 RESULTS OF MONITORING AND SAMPLING

3.1 Ground-Water Monitoring

The measured depths to the static ground-water surface in wells MW-1 through MW-3 and MW-9 through MW-11 ranged from 2.20 to 3.75 feet below the tops of the well casings on May 27, 2007. No measurable amount of free-phase petroleum product was found in well MW-2; however, oily globules were observed in the water from the well. Essel Tech used wellhead elevation data and depth-to-water measurements made on May 27 to calculate the elevation of the ground-water surface in the wells. The elevation of the ground-water surface ranged from 1.50 to 2.64 feet above mean sea level in the six wells. Based on these elevations, ground water is estimated to flow toward the west at a gradient of 0.004 (0.4-foot vertical distance per 100 feet horizontal distance). Table 1 presents data on product thickness, depth to ground water, and ground-water elevation for the six wells. Plate 3 is a contour map of the shallow ground-water surface interpreted from water-level data collected on May 27, 2007.

3.2 Laboratory Analyses

Results of laboratory analyses of water samples show, in wells MW-1 through MW-3, concentrations of TPHg, TPHd, and BTEX were notably higher during the May 2007 sampling event than during the previous sampling event in November 2006. In May 2007, well MW-2 contained the highest concentrations of TPHg (6,900 parts per billion [ppb]) and TPHd (45,000 ppb). Concentrations of TPHg and TPHd were 1,400 ppb and 4,700 ppb, respectively in well MW-1 and were 600 ppb and 620 ppb, respectively in well MW-3. No TPHg was detected in water samples from wells MW-9 through MW-11; however, TPHd was detected in samples from all three wells. The levels of TPHd in MW-9 and MW-11 were modestly higher in May 2007 than in November 2006. A concentration of 550 ppb was detected in the water sample from well MW-10 in May 2007, whereas no TPHd was detected in this well during the three previous semiannual monitoring events.

The aromatic hydrocarbons BTEX were found at generally low concentrations (4.7 to 46 ppb) in the samples from wells MW-1 and MW-3 and were found at relatively elevated levels (1,800, 28, 110, and 270 ppb, respectively) in the sample from well MW-2. Except for 1.8 ppb benzene in well MW-11, the aromatic hydrocarbons were not detected in samples from wells MW-9 through MW-11. The fuel oxygenate MTBE was not detected in any of the six wells sampled at detection limits ranging from 5.0 to 130 ppb.

As in previous monitoring events, the laboratory analytical report for the TPHg analysis indicates a significant portion of the gasoline-range hydrocarbons are unmodified or weakly modified (unweathered). The laboratory analytical report for the TPHd analysis indicates gasoline-range hydrocarbons are significant in samples from wells MW-2 and MW-3 and oil-range hydrocarbons are significant in samples from every well except MW-2. Table 2 presents the results of analyses of water samples from the six wells and Appendix B contains copies of the laboratory reports of analyses.

4.0 RECOMMENDATION

Essel Tech recommends that ground-water monitoring and sampling continue on a semiannual basis with the same laboratory protocol as performed during the present sampling event. The next monitoring event should be scheduled for November 2007.

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

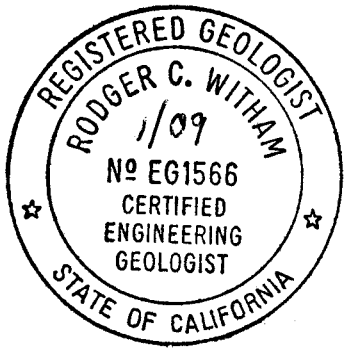


Table 1: Well Monitoring Data
Table 2: Results of Laboratory Analyses of Ground-Water Samples

Plate 1: Site Vicinity Map
Plate 2: Site Plan
Plate 3: Ground-Water-Surface Map

Appendix A: Purging and sampling field forms
Appendix B: Chain-of-Custody Record and Laboratory Report

TABLE 1
Well Monitoring Data
Alameda-Contra Costa Transit District Facility
1100 Seminary Avenue, Oakland, California

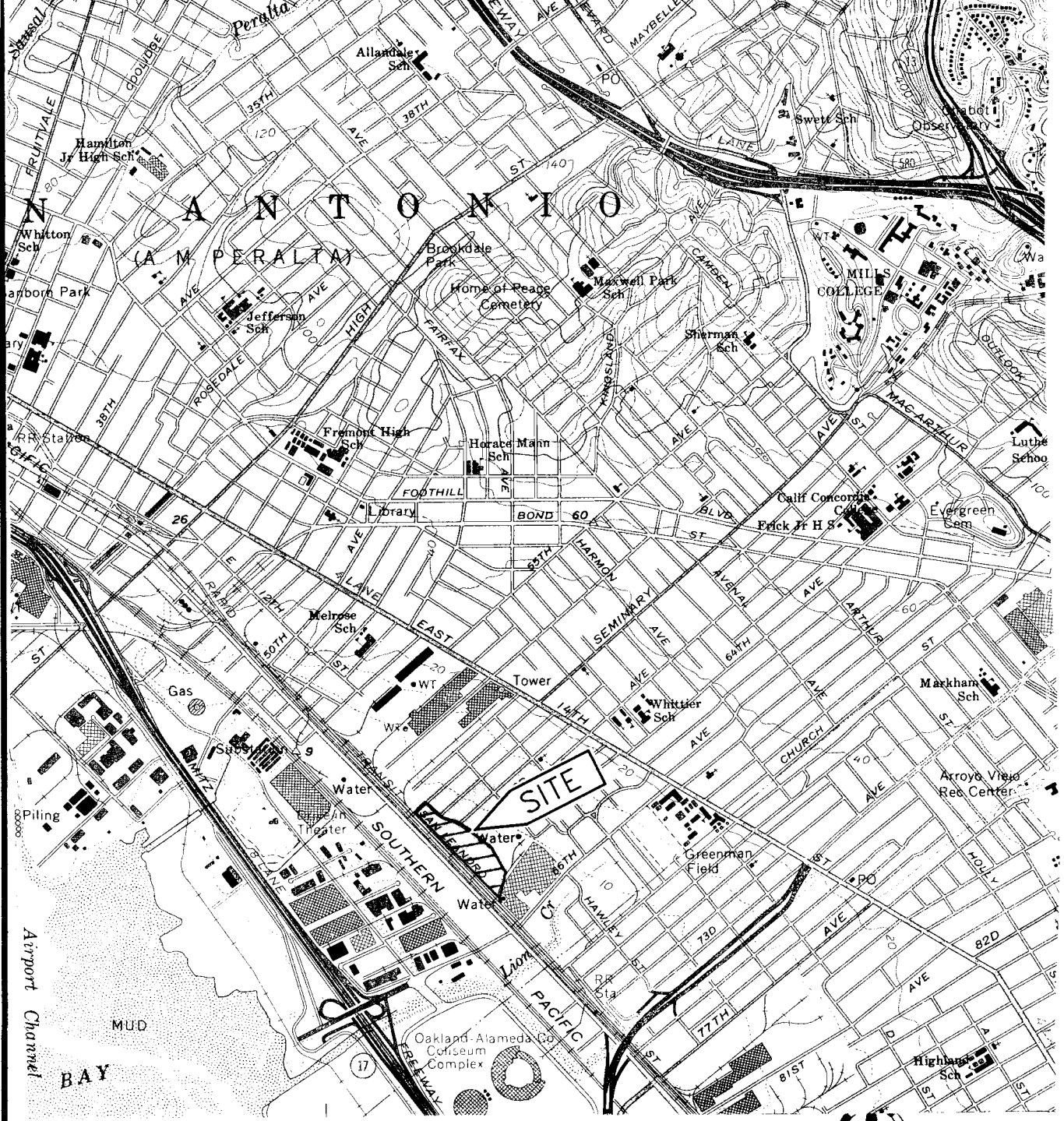
Well Number	Date	Top of Casing	Product Thickness	Depth to Ground Water	Ground-Water Surface Elevation	Ground-Water-Surface Elevation Corrected for Product Thickness#
MW-1	10/09/05	6.25	0.00	4.75	1.50	1.50
	05/28/06		0.00	3.50	2.75	2.75
	11/13/06		0.00	4.00	2.25	2.25
	05/27/07		0.00	3.61	2.64	2.64
MW-2	10/09/05	5.53	0.083	6.91	-1.38	-1.31
	05/28/06		0.1	3.45	2.08	2.16
	11/13/06		0.0	2.60	2.93	2.93
	05/27/07		0.0	3.30	2.23	2.23
MW-3	10/09/05	4.76	0.00	3.36	1.40	1.40
	05/28/06		0.00	2.32	2.44	2.44
	11/13/06		0.00	3.00	1.76	1.76
	05/27/07		0.00	2.45	2.31	2.31
MW-9	10/09/05	5.80	0.00	4.45	1.35	1.35
	05/28/06		0.00	3.33	2.47	2.47
	11/13/06		0.00	4.35	1.45	1.45
	05/27/07		0.00	3.75	2.05	2.05
MW-10	10/09/05	4.65	0.00	3.88	0.77	0.77
	05/28/06		0.00	2.78	1.87	1.87
	11/13/06		0.00	3.70	0.95	0.95
	05/27/07		0.00	3.15	1.50	1.50
MW-11	10/09/05	4.19	0.00	3.04	1.15	1.15
	05/28/06		0.00	1.30	2.89	2.89
	11/13/06		0.00	2.30	1.89	1.89
	05/27/07		0.00	2.20	1.99	1.99

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.
#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
1100 Seminary Avenue, Oakland, California

Well No.	Date Sampled	TPHg	TPHd	TPH	Benzene	Toluene	Ethyl benzene	Total Xylenes	MTBE	Nitrate	Sulfate	Dissolved Oxygen	Ferrous Iron
MW-1	10/09/05	2,800	840	NA	200	5.0	85	26	<5.0	<100	6,600	4,190	3,300
	5/29/06	1,900	580	NA	33	4.3	23	16	<5.0	<100	46,000	3,740	2,200
	11/13/06	<50	230	NA	<0.5	<0.5	<0.5	<0.5	<5.0	180	3,000	3,270	1,200
	5/27/07	1,400	4,700	NA	46	5.5	7.4	8.8	<15	<100	7,900	120	3,270
MW-2	10/09/05	42,000	12,000	NA	19,000	<250	1,300	1,800	<250	<100	170	3,610	2,670
	5/29/06	20,000	170,000	NA	5,900	88	190	660	<170	<100	730	4,230	2,600
	11/13/06	3,000	7,200	NA	560	13	46	140	<80	150	67,000	2,040	2,000
	5/27/07	6,900	45,000	NA	1,800	28	110	270	<130	<100	200	140	3,300
MW-3	10/09/05	8,400	1,400	NA	4,500	<100	330	<100	<100	<100	4,700	3,290	230
	5/29/06	340	330	NA	6.2	1.3	<0.5	1.1	<5.0	<100	9,500	1,970	300
	11/13/06	410	170	NA	2.7	2.1	1.2	1.0	<5.0	<100	18,000	3,310	670
	5/27/07	600	620	NA	15	<0.5	15	4.7	<10	<100	10,000	720	1,570
MW-9	10/09/05	<50	87	NA	2.8	<0.5	<0.5	<0.5	1.2	<100	180,000	2,870	300
	5/29/06	<50	1,100	NA	<0.5	<0.5	<0.5	<0.5	<5.0	120	91,000	1,360	0.0
	11/13/06	<50	56	NA	<0.5	<0.5	<0.5	<0.5	<5.0	170	110,000	70	1,550
	5/27/07	<50	170	NA	<0.5	<0.5	<0.5	<0.5	<5.0	<100	110,000	1,570	1,570
MW-10	10/09/05	<50	<50	NA	0.92	<0.5	<0.5	<0.5	0.66	<100	120,000	3,850	870
	5/29/06	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	<100	110,000	1,590	0.0
	11/13/06	<50	<50	NA	<0.5	<0.5	<0.5	<0.5	<5.0	<100	97,000	490	1,040
	5/27/07	<50	550	NA	<0.5	<0.5	<0.5	<0.5	<5.0	<100	100,000	230	1,160
MW-11	10/09/05	<50	82	NA	3.0	<0.5	<0.5	0.57	0.83	<100	130,000	1,870	640
	5/29/06	<50	150	NA	2.9	<0.5	<0.5	<0.5	<5.0	<100	120,000	3,730	310
	11/13/06	<50	150	NA	<0.5	<0.5	<0.5	<0.5	<5.0	<100	150,000	2,700	NM
	5/27/07	<50	330	NA	1.8	<0.5	<0.5	<0.5	<5.0	<100	130,000	1,420	3,000

Results 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
MCL = maximum contaminant level
NA = not analyzed; NM = not measured
< = less than the laboratory method detection limit



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

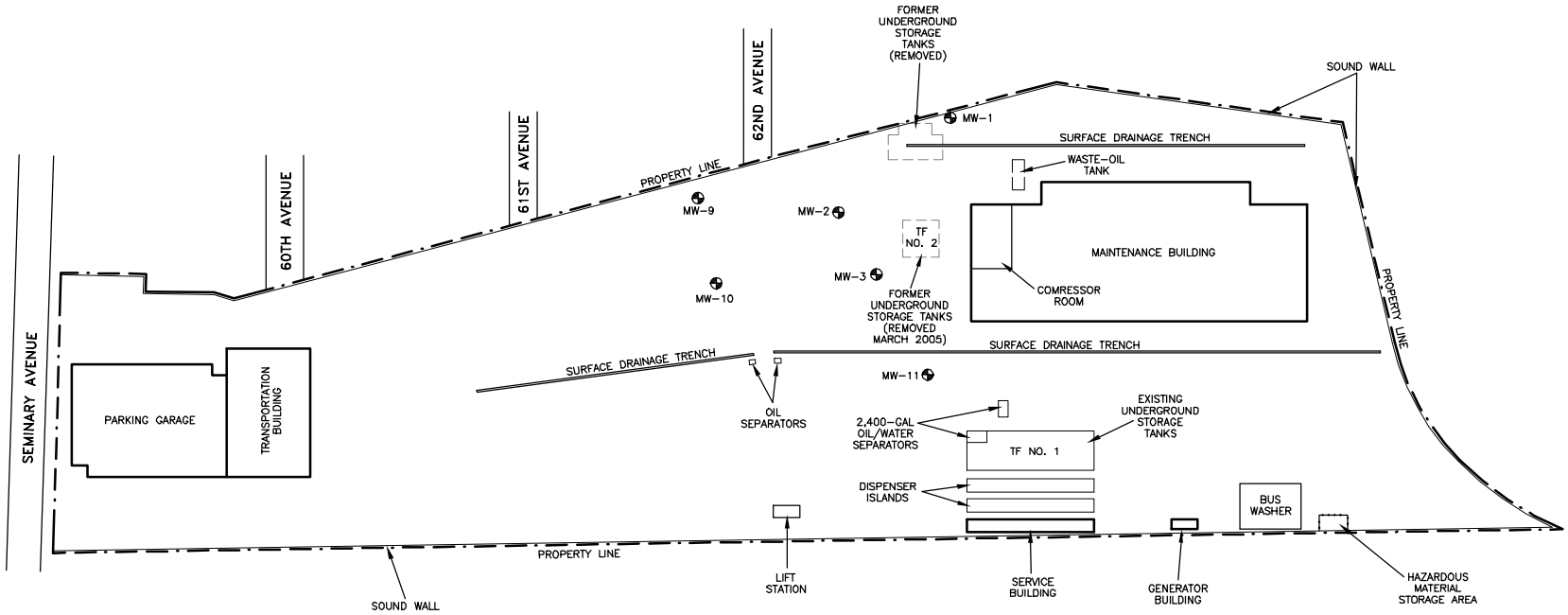
PROJECT NO.	DRAWN BY	REPORT DATE
05–68	EC	June 2007

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

SITE VICINITY MAP

Alameda Contra Costa
Transit District Facility
1100 Seminary Avenue
Oakland, California

PLATE 1



EXPLANATION

MW-11 ⊕ GROUND-WATER-MONITORING WELL LOCATION

TF TANK FARM

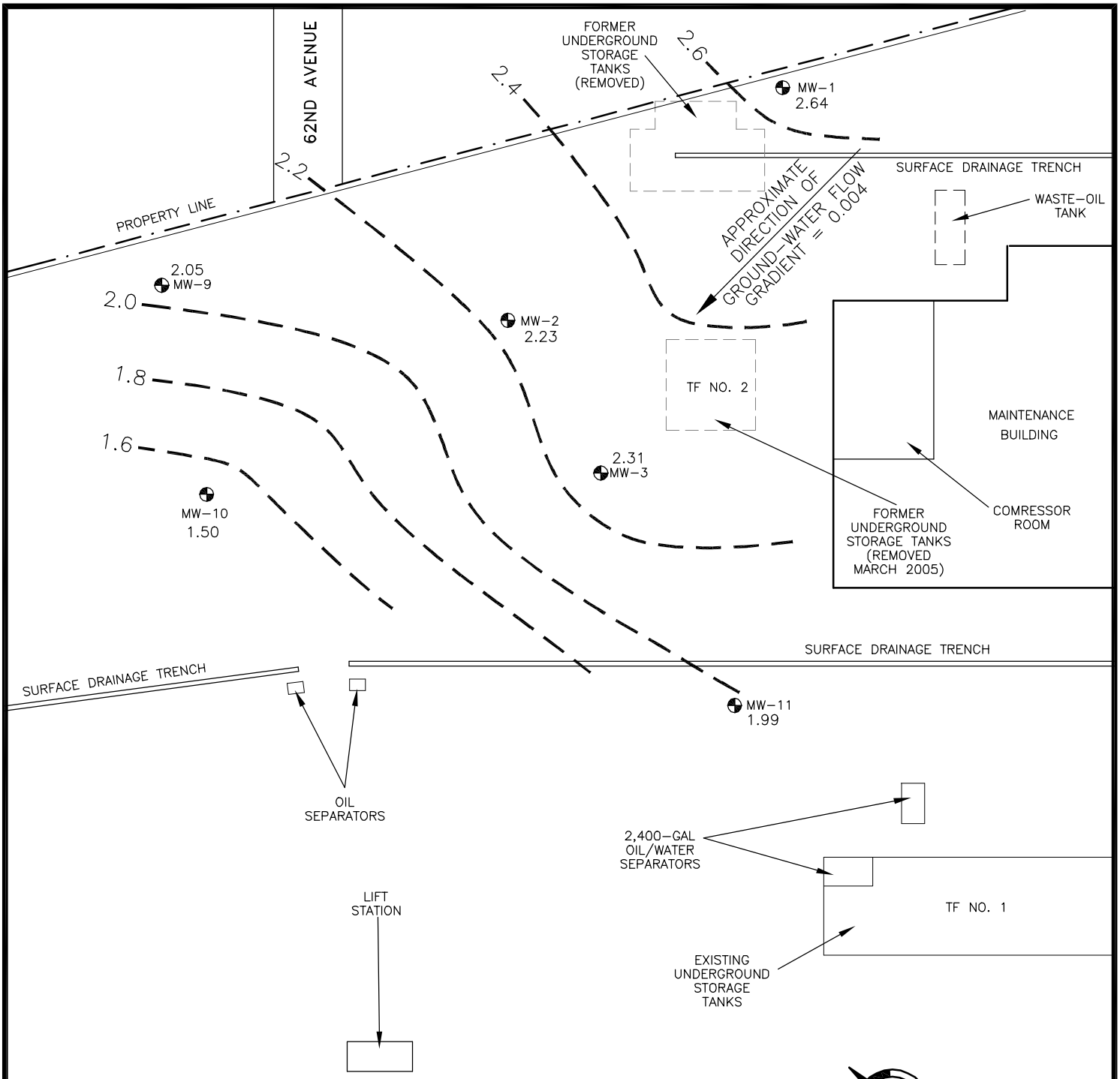
Scale: 0 120 feet 240 feet

SOURCE: MAP MODIFIED FROM PLAN SUPPLIED BY CAMERON-COLE

PROJECT NO.	DRAWN BY	REPORT DATE	SITE PLAN	PLATE
05-68	EC	June 2007	Alameda Contra Costa Transit District Facility 1100 Seminary Avenue Oakland, California	2

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

05-68 606



EXPLANATION

MW-11 ⊕ GROUND-WATER-MONITORING WELL LOCATION

TF TANK FARM

2.6 LINE OF EQUAL ELEVATION OF GROUND-WATER SURFACE IN FEET ABOVE MEAN SEA LEVEL

2.64 ELEVATION OF GROUND-WATER SURFACE IN FEET ABOVE MEAN SEA LEVEL

Scale: 0 60 feet 120 feet

SOURCE: MAP MODIFIED FROM PLAN SUPPLIED BY CAMERON-COLE

PROJECT NO.	DRAWN BY	REPORT DATE
05-68	EC	June 2007

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

GROUND-WATER-SURFACE MAP
May 27, 2007
Alameda Contra Costa Transit District Facility
1100 Seminary Avenue
Oakland, California

PLATE **3**

APPENDIX A

PURGING AND SAMPLING FIELD FORMS

Job Name: AC Transit – Seminary **Well Number:** MW1

Job Number: 0568-May 07 **Date:** 5/27/07

Sampled By: S. Lahiri

Purge Volume	Development/Purge Method(s)
Casing Diameter: 2 inch [x] 4 inch [ ] Other [ ]	[ ] Swab [ ] Surge [ ] Other _____
Total Depth (TD) of casing in Feet 16.45 Depth to water (DTW) in Feet 3.61	[ ] Bail Bailer Type: Disposable [ ] Pump
Purge Volume Calculation (16.45 − 3.61) x 3 x .17 = 6.54 gallons (TD) − (DTW) x V x F = Purge Volume	Pump type: [x] 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)
	19.30	987	2.99	6.95	-45.8	1		
	19.05	1275	1.14	6.85	-70.3	3		
	19.09	1292	0.24	6.87	-76.0	4.5		
	19.16	1291	0.16	6.88	-77.9	6.0	3.27	12.84ft
	19.19	1294	0.12	6.88	-78.6	6.5		

Total gallons pumped:

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

Semi-clear water, No odor of Gas

Discharge water disposal: [ ] Sanitary sewer [ ] Storm drain [ ] Drum [/] Other Steam Bay

Well Sampling Date: 5/27/07 Time: 1930

Job Name: AC Transit – Seminary **Well Number:** MW 2

Job Number: 0568-May 07 **Date:** 5/27/07

Sampled By: S. Lahiri

Purge Volume	Development/Purge Method(s)
Casing Diameter: 2 inch [x] 4 inch [ ] Other [ ]	[ ] Swab [ ] Surge [ ] Other _____
Total Depth (TD) of casing in Feet 23.40 Depth to water (DTW) in Feet 3.30'	[ ] Bail Bailer Type: Disposable [✓] Pump
Purge Volume Calculation (23.4) – (3.3) x 3 x 0.17 = 10.25 gallons (TD) – (DTW) x V x F = Purge Volume	Pump type: [x] 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)
	18.92	295	1.13	6.60	23.9	1		
	19.33	258	0.17	6.63	-27.2	2.5		
	19.00	521	0.11	6.82	-47.1	5.0		
	18.96	676	0.07	6.80	-49.2	7.5	3.3	20.10ft
	19.02	761	0.13	6.82	-52.1	10.0		
	19.07	816	0.14	6.86	-45.3	10.5		

Total gallons pumped:

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

After 5 gallons water clear Dark Color / Smell of Gas Silty water

Discharge water disposal: [ ] Sanitary sewer [ ] Storm drain [ ] Drum [✓] Other Stevens Bay

Well Sampling Date: 5/27/07 Time: 1900

Job Name: AC Transit – Seminary **Well Number:** MW3

Job Number: 0568-May 07 **Date:** 5/27/07

Sampled By: S. Lahiri

Purge Volume	Development/Purge Method(s)
Casing Diameter: 2 inch [x] 4 inch [ ] Other [ ]	[ ] Swab [ ] Surge [ ] Other _____
Total Depth (TD) of casing in Feet 17.31	[ ] Bail Bailer Type: Disposable
Depth to water (DTW) in Feet 2.45	[✓] Pump
Purge Volume Calculation (17.3) – (2.45) x 3 x .17 = 7.57 gallons (TD) – (DTW) x V x F = Purge Volume	Pump type: [x] 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)
	22.13	152	0.67	7.00	-57.5	1		
	20.91	228	0.25	7.19	-77.9	3		
	20.63	283	0.18	7.18	-75.7	5		
	20.33	622	0.61	6.94	-55.6	7	1.5	
	20.26	1420	0.72	6.87	-52.4	8		

Total gallons pumped:

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

Strong Smell of Gas / Water with petroleum product
Black color

Discharge water disposal: [ ] Sanitary sewer [ ] Storm drain [ ] Drum [✓] Other Steam Bay

Well Sampling Date: 5/27/07 Time: 1830

Job Name: AC Transit – Seminary **Well Number:** MW-9

Job Number: 0568-May 07 **Date:** 5/27/07

Sampled By: S. Lahiri

Purge Volume	Development/Purge Method(s)
Casing Diameter: 2 inch [x] 4 inch [ ] Other [ ]	[ ] Swab [ ] Surge [ ] Other _____
Total Depth (TD) of casing in Feet ~~3.75~~ 19.50'	[ ] Bail Bailer Type: Disposable
Depth to water (DTW) in Feet 3.75'	[ ] Pump
Purge Volume Calculation (19.5) – (3.75) x 3 x .17 = 8.03 gallons (TD) – (DTW) x V x F = Purge Volume	Pump type: [x] 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)
	21.99	392	0.28	7.43	-119.	1.0		
	21.52	422	0.15	7.43	-110.2	3.0		
	20.22	967	0.19	7.44	-75.5	5.0		
	19.82	1162	0.83	7.37	-60.7	7.0	1.57	15.75ft
	19.89	1214	1.57	7.32	-54.7	7.5		
	19.92	1212	1.57	7.33	-47.1			

Total gallons pumped:

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

Dirty / Dark water

Discharge water disposal: [ ] Sanitary sewer [ ] Storm drain [ ] Drum [✓] Other Steam Bay

Well Sampling Date: 5/27/07 Time: 1800

Job Name: AC Transit – Seminary **Well Number:** MW 10

Job Number: 0568-May 07 **Date:** 5/27/07

Sampled By: S. Lahiri

Purge Volume	Development/Purge Method(s)
Casing Diameter: 2 inch [x] 4 inch [ ] Other [ ]	[ ] Swab [ ] Surge [ ] Other _____
Total Depth (TD) of casing in Feet 11.30'	[ ] Bail Bailer Type: Disposable
Depth to water (DTW) in Feet 3.15'	[✓] Pump
Purge Volume Calculation (11.3) – (3.15) x 3 x .17 = 4.15 gallons (TD) – (DTW) x V x F = Purge Volume	Pump type: [x] 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)
						~~4.0~~		
	23.09	2298	2.13	6.98	130	~~3~~ 1 Gal		
	21.94	3093	0.51	7.05	123.6	2		
	21.28	3127	0.22	7.10	118.0	3		
	20.96	3129	0.23	7.12	111.7	4		
							1.16	8.15 ft.

Total gallons pumped:

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

Semi-Dark color / No odor

Discharge water disposal: [ ] Sanitary sewer [ ] Storm drain [ ] Drum [✓] Other Steam Bay

Well Sampling Date: 5/27/07 Time: 1815

Job Name: AC Transit – Seminary **Well Number:** MW 11

Job Number: 0568-May 07 **Date:** 5/27/07

Sampled By: S. Lahiri

Purge Volume	Development/Purge Method(s)
Casing Diameter: 2 inch [x] 4 inch [ ] Other [ ]	[ ] Swab [ ] Surge [ ] Other _____
Total Depth (TD) of casing in Feet 13.45 Depth to water (DTW) in Feet 2.2	[ ] Bail Bailer Type: Disposable [ ] Pump
Purge Volume Calculation (13.45) – (2.2) x 3 x .17 = 5.73 gallons (TD) – (DTW) x V x F = Purge Volume	Pump type: [x] 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)
	22.76	1023	2.53	7.09	88.0	1		
	22.94	1014	2.29	7.23	75.5	2		
	21.87	1066	1.50	7.22	63.4	3		
	21.52	1202	6.11	7.41	52.7	4.5	3.00	11.25
	21.36	1315	1.42	7.19	15.5	5.5		

Total gallons pumped:

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

Discharge water disposal: [ ] Sanitary sewer [ ] Storm drain [ ] Drum [/] Other Steam Bay

Well Sampling Date: 5/27/07 Time: 1830

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: #0568-May 07; Seminary	Date Sampled: 05/27/07 Date Received: 05/29/07
	Client Contact: Samhita Lahiri	Date Reported: 06/05/07
	Client P.O.:	Date Completed: 06/05/07

WorkOrder: 0705694

June 05, 2007

Dear Samhita:

Enclosed are:

1). the results of **6** analyzed samples from your **#0568-May 07; Seminary 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

0705694

40
250
500

McCAMPBELL ANALYTICAL, INC.

1534 WILLOW PASS ROAD
PITTSBURG, CA 94565-1701
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

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

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

☐ Check if sample is effluent and "J" flag is required

Report To:	Samhita Guha
Bill To:	ETS
Company:	Essel Technology Services
E-Mail:	EsselTekServices@att.com
Tele:	(510) 200 0270
Fax:	(925) 833 9177
Project #:	0568 - May 07
Project Name:	
Project Location:	Seminary
Sampler Signature:	Samhita

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX: Water	Soil	Air	Sludge	Other	METHOD PRESERVED: ICE	HCL	HNO_3	Other
MW9 - 1	MW9	5-27-07	5:26		500									
MW9 - 2	MW9		5:26		250									
MW9 - 3	MW9				40									
MW9 - 4	MW9													
MW9 - 5	MW9													
MW3 - 1	MW3		5:49		500									
MW3 - 2	MW3				250									
MW3 - 3	MW3				40									
MW3 - 4	MW3													
MW3 - 5	MW3													
MW10 - 1	MW10		6:12		500									
MW10 - 2	MW10				250									
MW10 - 3	MW10				40									
MW10 - 4	MW10				40									

Analysis Request

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**
																Nitrate / Sulfate (300.1)	Filter Samples for Metals analysis: Yes / No

Relinquished By:	**Date:** 5/29	**Time:** 1217	**Received By:**
Relinquished By:	**Date:**	**Time:**	**Received By:**
Relinquished By:	**Date:**	**Time:**	**Received By:**

ICE/t° 4.6 ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT
DECHLORINATED IN LAB
APPROPRIATE CONTAINERS ✓
PRESERVED IN LAB

	VOAS	O&G	METALS	OTHER
PRESERVATION	✓		pH<2	

COMMENTS:

McCAMPBELL ANALYTICAL, INC.

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Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

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

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

☐ Check if sample is effluent and "J" flag is required

Report To: Samhita Lahiri **Bill To:**

Company: Essel Technology Services

E-Mail:

Tele: (510) 206 0270 **Fax:** (925) 833 7977

Project #: **Project Name:** AcTransit

Project Location: Semenary

Sampler Signature:

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX: Water	Soil	Air	Sludge	Other	METHOD PRESERVED: ICE	HCL	HNO_3	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; Arochlors / 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: Nitrate / Sulfate (EPA 300.1)	Comments
MW10 - 5	MW10	5/27/09	6:12		40										✓					✓														
MW11 - 1	MW11		6:30		500											✓																		
MW11 - 2	MW11		↓		250																											✓		
MW11 - 3	↓				40										↓					↓														
MW11 - 4					↓																													
MW11 - 5																																		
MW1 - 1	MW1		6:58		500											✓																		
MW1 - 2	↓		↓		250																											✓		
MW1 - 3					40										↓					↓														
MW1 - 4					↓																													
MW1 - 5																																		
MW2 - 1	MW2		7:15		500											✓																		
MW2 - 2	↓				250																											✓		
MW2 - 3					40										↓					↓														

Relinquished By:	Date:	Time:	Received By:
[signature]	5/29	17:17	[signature]
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t°_____ COMMENTS:
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

	VOAS	O&G	METALS	OTHER
PRESERVATION			pH<2	

McCAMPBELL ANALYTICAL, INC.

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

CHAIN OF CUSTODY RECORD

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

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

☐ Check if sample is effluent and "J" flag is required

Report To: Sambita Lahiri	**Bill To:** ETS
Company: Essel Technology Services	
	E-Mail: Essettechnol
Tele: (510) 206 0270	**Fax:** (925) 833-7977
Project #: 0568 - May 07	**Project Name:**
Project Location: Seminary	
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
MW2-4	MW2	5/27/07	7:15		40									
MW2-5	MW2				40									

Analysis Request

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: Nitrate / Sulfate (300.1 EPA)

Comments: Filter Samples for Metals analysis: Yes / No

Relinquished By:	Date:	Time:	Received By:
[signature]	5/29	1218	[signature]
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° _____ COMMENTS:
GOOD CONDITION _____
HEAD SPACE ABSENT _____
DECHLORINATED IN LAB _____
APPROPRIATE CONTAINERS _____
PRESERVED IN LAB _____

	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: 0705694 **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: #0568-May 07; Seminary
PO:

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

Requested TAT: 5 days

Date Received **05/29/2007**
Date Printed: **05/29/2007**

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0705694-001	MW-9	Water	05/27/07	☐	C	A	A	B								
0705694-002	MW-3	Water	05/27/07	☐	C	A		B								
0705694-003	MW-10	Water	05/27/07	☐	C	A		B								
0705694-004	MW-11	Water	05/27/07	☐	C	A		B								
0705694-005	MW-1	Water	05/27/07	☐	C	A		B								
0705694-006	MW-2	Water	05/27/07	☐	C	A		B								

Test Legend:

1	300_1_W	2	G-MBTEX_W	3	PREDF REPORT	4	TPH(D)_W	5	
6		7		8		9		10	
11		12							

Prepared by: Maria Venegas

Comments:

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

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

Sample Receipt Checklist

Client Name: **Essel Technology Service**

Date and Time Received: **05/29/07 1:49:34 PM**

Project Name: **#0568-May 07; Seminary**

Checklist completed and reviewed by: Maria Venegas

WorkOrder N°: **0705694** 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 shippping 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: 4.6°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: #0568-May 07; Seminary	Date Sampled: 05/27/07
9778 Broadmoore Drive		Date Received 05/29/07
San Ramon, CA 94583	Client Contact: Samhita Lahiri	Date Extracted 05/29/07
	Client P.O.:	Date Analyzed 05/29/07-05/30/07

Inorganic Anions by IC*

Extraction method: E300.1 Analytical methods: E300.1 Work Order: 0705694

Lab ID	Client ID	Matrix	Nitrate as N	DF	Nitrate as $NO3^-$	DF	Sulfate	DF	% SS
001C	MW-9	W	ND	1	ND	1	110	20	99
002C	MW-3	W	ND	1	ND	1	10	1	108
003C	MW-10	W	ND	1	ND	1	100	20	99
004C	MW-11	W	ND	1	ND	1	130	50	100
005C	MW-1	W	ND,h	1	ND	1	7.9	1	90
006C	MW-2	W	ND,h	1	ND	1	0.20	1	100

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.1	0.45	0.1	mg/L
	S	NA	NA	NA	mg/Kg

* water samples are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in mg/wipe, product/oil/non-aqueous liquid samples in mg/L.

* [Nitrate as $NO3^-$] = 4.4286 x [Nitrate as N]

surrogate diluted out of range or surrogate coelutes with another peak; N/A means surrogate not applicable to this analysis.

h) a lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted/reporting limit raised due to high inorganic content/matrix interference; k) sample arrived with head space.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

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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: #0568-May 07; Seminary	Date Sampled: 05/27/07
9778 Broadmoore Drive		Date Received: 05/29/07
San Ramon, CA 94583	Client Contact: Samhita Lahiri	Date Extracted: 05/31/07-06/02/07
	Client P.O.:	Date Analyzed 05/31/07-06/02/07

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

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0705694

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	MW-9	W	ND	ND	ND	ND	ND	ND	1	101
002A	MW-3	W	600,a	ND<10	15	ND	15	4.7	1	111
003A	MW-10	W	ND	ND	ND	ND	ND	ND	1	100
004A	MW-11	W	ND	ND	1.8	ND	ND	ND	1	95
005A	MW-1	W	1400,a,h	ND<15	46	5.5	7.4	8.8	1	94
006A	MW-2	W	6900,a,h	ND<130	1800	28	110	270	10	100

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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"When Quality Counts"

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

Essel Technology Service	Client Project ID: #0568-May 07; Seminary	Date Sampled: 05/27/07
9778 Broadmoore Drive		Date Received: 05/29/07
San Ramon, CA 94583	Client Contact: Samhita Lahiri	Date Extracted: 05/29/07
	Client P.O.:	Date Analyzed 05/31/07-06/02/07

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

Extraction method: SW3510C Analytical methods: SW8015C Work Order: 0705694

Lab ID	Client ID	Matrix	TPH(d)	DF	% SS
0705694-001B	MW-9	W	170,g,a	1	88
0705694-002B	MW-3	W	620,g,d,b	1	116
0705694-003B	MW-10	W	550,g,a/c	1	116
0705694-004B	MW-11	W	330,g,b	1	116
0705694-005B	MW-1	W	4700,a,d,g,h	2	88
0705694-006B	MW-2	W	45,000,a,h	20	111

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

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

QC SUMMARY REPORT FOR E300.1

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder: 0705694

EPA Method E300.1	Extraction E300.1				BatchID: 28312			Spiked Sample ID: N/A				
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Nitrate as N	N/A	1	N/A	N/A	N/A	91.7	95.5	4.06	N/A	N/A	85 - 115	15
Nitrate as $NO3^{-}$	N/A	4.4	N/A	N/A	N/A	91.7	95.5	4.06	N/A	N/A	85 - 115	15
Sulfate	N/A	1	N/A	N/A	N/A	110	108	1.21	N/A	N/A	85 - 115	15
%SS:	N/A	0.10	N/A	N/A	N/A	99	100	0.0905	N/A	N/A	90 - 115	10

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

NONE

BATCH 28312 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0705694-001C	05/27/07	05/29/07	05/29/07 6:15 PM	0705694-001C	05/27/07	05/29/07	05/30/07 7:20 PM
0705694-002C	05/27/07	05/29/07	05/29/07 6:44 PM	0705694-003C	05/27/07	05/29/07	05/29/07 7:13 PM
0705694-003C	05/27/07	05/29/07	05/30/07 8:17 PM	0705694-004C	05/27/07	05/29/07	05/29/07 7:42 PM
0705694-004C	05/27/07	05/29/07	05/30/07 9:15 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 applicable to this method.

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 ELAP Certification N° 1644

QA/QC Officer

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QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder: 0705694

EPA Method SW8021B/8015Cm	Extraction SW5030B				BatchID: 28349				Spiked Sample ID: 0705693-014A			
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	107	99.3	7.08	75.8	91.9	19.3	70 - 130	30	70 - 130	30
MTBE	ND	10	86	87.8	2.07	71.2	74.1	4.00	70 - 130	30	70 - 130	30
Benzene	ND	10	84.9	85.2	0.360	87.8	102	14.6	70 - 130	30	70 - 130	30
Toluene	ND	10	84.2	88.3	4.83	88.1	101	14.1	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	83.5	91.5	9.14	90.2	104	14.0	70 - 130	30	70 - 130	30
Xylenes	ND	30	82	85.7	4.37	103	117	12.1	70 - 130	30	70 - 130	30
%SS:	91	10	97	104	6.33	92	98	6.25	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 28349 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0705694-001A	05/27/07	06/01/07	06/01/07 12:43 AM	0705694-002A	05/27/07	06/02/07	06/02/07 12:46 AM
0705694-003A	05/27/07	05/31/07	05/31/07 7:02 AM	0705694-004A	05/27/07	05/31/07	05/31/07 7:35 AM
0705694-005A	05/27/07	05/31/07	05/31/07 8:07 AM	0705694-006A	05/27/07	05/31/07	05/31/07 3:13 AM

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

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

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

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

cluttered chromatogram; sample peak coelutes with surrogate peak.

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QC SUMMARY REPORT FOR E300.1

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder: 0705694

EPA Method E300.1	Extraction E300.1				BatchID: 28351			Spiked Sample ID: N/A				
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/L	mg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Nitrate as N	N/A	1	N/A	N/A	N/A	89.1	92.1	3.24	N/A	N/A	85 - 115	15
Nitrate as $NO3^{-}$	N/A	4.4	N/A	N/A	N/A	89.1	92.1	3.24	N/A	N/A	85 - 115	15
Sulfate	N/A	1	N/A	N/A	N/A	99	106	7.16	N/A	N/A	85 - 115	15
%SS:	N/A	0.10	N/A	N/A	N/A	100	102	1.24	N/A	N/A	90 - 115	10

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

NONE

BATCH 28351 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0705694-005C	05/27/07	05/29/07	05/30/07 10:49 AM	0705694-005C	05/27/07	05/29/07	05/30/07 9:43 PM
0705694-006C	05/27/07	05/29/07	05/30/07 10:20 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 applicable to this method.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

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QC SUMMARY REPORT FOR SW8015C

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder: 0705694

EPA Method SW8015C	Extraction SW3510C	BatchID: 28350	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	104	105	0.994	N/A	N/A	70 - 130	30
%SS:	N/A	2500	N/A	N/A	N/A	89	90	1.37	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 28350 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0705694-001B	05/27/07	05/29/07	05/31/07 8:21 PM	0705694-002B	05/27/07	05/29/07	05/31/07 6:00 AM
0705694-003B	05/27/07	05/29/07	06/01/07 2:16 AM	0705694-004B	05/27/07	05/29/07	05/31/07 10:33 AM
0705694-005B	05/27/07	05/29/07	06/02/07 8:22 AM	0705694-006B	05/27/07	05/29/07	05/31/07 10:07 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.

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