Alameda-Contra Costa Transit District

R0296

Alameda County
FEB 10 2005
Environmental Health

February 8, 2005

Mr. ~~Barney Chan~~ AG
Alameda County Health Division
Division of Environmental Protection
Department of Environmental Health
1131 Harbor Bay Parkway, Second Floor
Alameda, CA 94502

Dear Mr. Chan:

Subject: Quarterly Groundwater Monitoring Report – November 2004 Sampling
AC Transit, 1100 Seminary Avenue, Oakland, CA

AC Transit hereby submits the enclosed quarterly groundwater monitoring report for the November 2004 sampling event at the 1100 Seminary Avenue, Oakland, facility. The report was prepared by our consultants, Cameron-Cole.

On November 18, 2004, groundwater sampling of six monitoring wells (MW-1 through MW-3 and MW-9 through MW-11) was performed by Cameron-Cole in accordance with directives from your office. Groundwater samples were collected and analyzed for total petroleum hydrocarbons (TPH) as gasoline and diesel using EPA Method 8015, benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl-tert butyl ether (MTBE) using EPA Method 8260B and nitrate and sulfate using Standard Methods 300.0A. Field parameters collected during sampling included pH, temperature, electrical conductivity, dissolved oxygen, ferrous iron and oxidation reduction potential. In addition, monitoring well MW-2 is being purged dry monthly and during each quarterly sampling event.

Sample results continue to show that TPH and related compounds are primarily restricted to monitoring wells MW-1, MW-2 and MW-3, installed near the former underground tank farm. Free phase product has not been measured in well MW-2 since the second quarter of 2002.

If you have any questions regarding this report or other matters pertaining to this site, please call me at (510) 577-8869.

Sincerely,

Suzanne Patton

Suzanne Patton, P.E.
Environmental Engineer
enclosure

MONITORING REPORT
FOR THE AC TRANSIT FACILITY
LOCATED AT 1100 SEMINARY AVENUE,
OAKLAND, CALIFORNIA

December 2004

Ms. Suzanne Patton
AC Transit
10626 E. 14th Street
Oakland, California 94603

Prepared By:
Cameron-Cole
101 W. Atlantic, Building 90
Alameda, California 94501

Project No: 2016

CAMERON-COLE

MONITORING REPORT FOR THE AC TRANSIT FACILITY LOCATED AT 1100 SEMINARY AVENUE, OAKLAND, CALIFORNIA

December 2004

Prepared For:
Ms. Suzanne Patton
AC Transit
10626 E. 14th Street
Oakland, California 94603

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101 W. Atlantic Avenue, Building 90
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CAMERON-COLE

for:

Written By
Mark Duffy
Geologist

Approved By
Brad Wright, RG, CHG
Principle Hydrogeologist

STATE OF CALIFORNIA REGISTERED GEOLOGIST 16276 Exp. 9/06 BRADLEY D. WRIGHT REGISTERED GEOLOGIST

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INTRODUCTION

This report presents the results of the November 2004 sampling event for the AC Transit facility located at 1100 Seminary Avenue, Oakland, California (Site) (Figure 1). Cameron-Cole performed groundwater sampling of monitor wells MW-1 through MW-3 and MW-9 through MW-11, in accordance with directives from the Alameda County Health Care Services Agency (ACHCS).

OBJECTIVES AND SCOPE OF WORK

Work performed during quarterly sampling included measuring depth to water and presence of free phase hydrocarbons in the monitor wells and collecting water samples. Field parameters collected during sampling included pH, temperature, electric conductivity, dissolved oxygen (DO), ferrous iron (Fe^{2+}) and oxygen reduction potential (ORP). Groundwater samples were collected for laboratory analysis using United States Environmental Protection Agency (USEPA) Method 8015 for total petroleum hydrocarbons (TPH) gasoline/diesel, USEPA Method 8021B for benzene, toluene, ethylbenzene, and xylene (BTEX) and methyl-tert butyl ether (MTBE) and methods of chemical analysis for water and waste (MCAWW) 300.0A for nitrate and sulfate.

Chain-of-custody documents and certified analytical reports are presented in Appendix A. Field data sheets are included in Appendix B.

Groundwater Elevations and Flow Direction

Prior to purging and sample collection, all six Site monitor wells were inspected and measured for presence of free phase hydrocarbons and depth to groundwater. Measurements of depths to groundwater are presented on Table 1 and were used to construct the groundwater elevation contours shown in Figure 2. As shown, groundwater flow is to the west at a gradient of 0.0016 feet/foot.

Groundwater Sampling Activities

The monitor wells were purged a minimum of three casing volumes, using a centrifugal pump and samples were collected using disposable polyethylene bailers. During well purging, field parameters for pH, electrical conductivity, DO, ORP, Fe^{2+} and temperature were monitored using calibrated field meters.

In addition, MW-2 is now being purged of ten casing volumes monthly and during all quarterly sampling events to expedite the removal of free phase hydrocarbons from the vicinity of the well. Field data sheets of the over-purge events are included in Appendix B.

Groundwater samples were transferred to appropriate laboratory supplied and preserved containers and placed in an ice-filled cooler for shipment under chain-of-custody to a State of California certified laboratory.

Groundwater Analytical Results

Table 2 presents groundwater historic and fourth quarter 2004 analytical results. Concentrations of benzene above the State of California maximum contaminant level (MCL) of 1.0 part per billion (ppb) were detected in monitor wells MW-1, MW-2, MW-3 and MW-11. Toluene detected above the MCL of 150 ppb in monitor well MW-2. Ethylbenzene was detected above the MCL of 700 ppb in monitor well MW-2. Total xylenes were detected above the MCL of 1,750 ppb in MW-2. TPH-gasoline was detected above the reporting limit in monitor wells MW-1, MW-2, MW-3 and MW-11. TPH-diesel was detected above the reporting limit in wells MW-1, MW-2 and MW-3. A lab control spike and lab control spike duplicate passed the USEPA's criteria for acceptance.

SUMMARY OF RESULTS

- Groundwater flow direction is towards the west at a gradient of 0.0016 feet/foot.
- Chemical concentrations in excess of MCLs were limited to benzene in wells MW-1 MW-2, MW-3 and MW-11 and toluene, ethylbenzene and xylenes in well MW-2.
- Gasoline was found to be present in groundwater samples taken from wells MW-1 (207 ppb), MW-2 (38,200 ppb), MW-3 (728 ppb) and MW-11 (70 ppb).
- Diesel was found to be present in groundwater samples taken from MW-1, MW-2 and MW-3 at concentrations of 200 ppb, 126,000 ppb and 230 ppb, respectively.
- The free phase product level previously measured in well MW-2 has not been detected since the second quarter 2002.

PROJECTED WORK AND RECOMMENDATIONS

Because of the consistency of quarterly groundwater monitoring data collected since February 2000, it was recommended that the groundwater monitoring program be modified to a semi-annual schedule in the second quarter 2004 report. To date ACHCS has not commented on this recommendation. Quarterly monitoring will continue until ACHCS provides authorization to proceed with semi-annual monitoring.

TABLE 1
GROUNDWATER LEVEL MEASUREMENTS
AC Transit Facility
1100 Seminary Avenue, Oakland, California

Well	Date	Top of Casing Elevation (ft-msl)*	Product Thickness (feet)	DTW (feet)	Measured Groundwater Elevation (ft-msl)	Groundwater Elevation Corrected for Product Thickness**
MW-1	7-Jan-99	6.25	None	5.13	1.12	
	7-Feb-00		None	3.75	2.5	
	25-May-00		None	3.69	2.56	
	22-Aug-00		None	4.79	1.46	
	20-Nov-00		None	4.92	1.33	
	1-Mar-01		None	2.75	3.50	
	14-May-01		None	3.67	2.58	
	26-Jul-01		None	4.73	1.52	
	16-Oct-01		None	5.35	0.90	
	21-Feb-02		None	3.30	2.95	
	29-May-02		None	3.70	2.55	
	17-Sep-02		None	4.85	1.40	
	14-Nov-02		None	4.59	1.66	
	5-Feb-03		None	3.37	2.88	
	14-May-03		None	3.17	3.08	
	22-Aug-03		None	4.52	1.73	
	20-Nov-03		None	4.61	1.64	
	9-Feb-04		None	3.05	3.20	
	25-May-04		None	3.22	3.03	
	16-Aug-04		None	4.65	1.60	
	18-Nov-04		**None**	**3.81**	**2.44**	
MW-2	7-Jan-99	5.53	2.27	6.91	-1.38	0.44
	8-Jun-99		2.23	5.83	-0.3	1.48
	9-Jun-99		0	3.9	1.63	1.63
	10-Jun-99		0	3.9	1.63	1.63
	15-Jun-99		0.42	3.92	1.61	1.95
	8-Jul-99		0.2	4.3	1.23	1.39
	7-Feb-00		Sheen	3.8	1.73	
	25-May-00		0.12	3.23	2.3	2.40
	22-Aug-00		0.23	4.45	1.08	1.10
	20-Nov-00		0.23	4.70	0.83	0.85
	1-Mar-01		0.13	2.75	2.78	2.79
	14-May-01		Sheen	3.30	2.23	
	26-Jul-01		None	3.27	2.26	
	16-Oct-01		0.02	5.25	0.28	0.28
	21-Feb-02		0.01	3.32	2.21	2.21
	29-May-02		0.02	2.98	2.55	2.55
	17-Sep-02		None	4.83	0.70	
	14-Nov-02		None	5.43	0.10	
	5-Feb-03		None	3.85	1.68	
	14-May-03		None	2.94	2.59	
	22-Aug-03		None	4.20	1.33	
	20-Nov-03		None	4.68	0.85	
	9-Feb-04		None	2.94	2.59	
	25-May-04		None	2.90	2.63	
	16-Aug-04		None	4.30	1.23	
	18-Nov-04		**None**	**4.67**	**0.86**	

TABLE 1
GROUNDWATER LEVEL MEASUREMENTS
AC Transit Facility
1100 Seminary Avenue, Oakland, California

Well	Date	Top of Casing Elevation (ft-msl)*	Product Thickness (feet)	DTW (feet)	Measured Groundwater Elevation (ft-msl)	Groundwater Elevation Corrected for Product Thickness**
MW-3	7-Jan-99	4.76	None	4.11	0.65	
	7-Feb-00		None	3.1	1.66	
	25-May-00		None	2.41	2.35	
	22-Aug-00		None	3.45	1.31	
	20-Nov-00		None	3.42	1.34	
	1-Mar-01		None	2.00	2.76	
	14-May-01		None	2.64	2.12	
	26-Jul-01		None	3.17	1.59	
	16-Oct-01		None	3.97	0.79	
	21-Feb-02		None	2.20	2.56	
	29-May-02		None	2.52	2.24	
	17-Sep-02		None	3.65	1.11	
	14-Nov-02		None	3.47	1.29	
	5-Feb-03		None	2.19	2.57	
	14-May-03		None	2.12	2.64	
	22-Aug-03		None	3.25	1.51	
	20-Nov-03		None	3.40	1.36	
	9-Feb-04		None	2.06	2.70	
	25-May-04		None	2.10	2.66	
	16-Aug-04		None	3.36	1.40	
	18-Nov-04		**None**	**2.68**	**2.08**	
MW-9	7-Feb-00	5.8	None	4.37	1.43	
	25-May-00		None	4.95	0.85	
	22-Aug-00		None	5.18	0.62	
	20-Nov-00		None	4.70	1.10	
	1-Mar-01		None	3.03	2.77	
	14-May-01		None	4.56	1.24	
	26-Jul-01		None	5.17	0.63	
	16-Oct-01		None	5.19	0.61	
	21-Feb-02		None	4.79	1.01	
	29-May-02		None	4.07	1.73	
	17-Sep-02		None	4.94	0.86	
	14-Nov-02		None	4.87	0.93	
	5-Feb-03		None	3.88	1.92	
	14-May-03		None	3.77	2.03	
	22-Aug-03		None	4.73	1.07	
	20-Nov-03		None	4.46	1.34	
	9-Feb-04		None	3.23	2.57	
	25-May-04		None	3.53	2.27	
	16-Aug-04		None	4.20	1.60	
	18-Nov-04		**None**	**3.91**	**1.89**	

TABLE 1
GROUNDWATER LEVEL MEASUREMENTS
AC Transit Facility
1100 Seminary Avenue, Oakland, California

Well	Date	Top of Casing Elevation (ft-msl)*	Product Thickness (feet)	DTW (feet)	Measured Groundwater Elevation (ft-msl)	Groundwater Elevation Corrected for Product Thickness**
MW-10	7-Feb-00	4.65	None	3.19	1.46	
	25-May-00		None	3.11	1.54	
	22-Aug-00		None	4.35	0.30	
	20-Nov-00		None	4.18	0.47	
	1-Mar-01		None	3.14	1.51	
	14-May-01		None	3.27	1.38	
	26-Jul-01		None	3.95	0.70	
	16-Oct-01		None	4.57	0.08	
	21-Feb-02		None	3.29	1.36	
	29-May-02		None	3.30	1.35	
	17-Sep-02		None	4.11	0.54	
	14-Nov-02		None	3.86	0.79	
	5-Feb-03		None	3.36	1.29	
	14-May-03		None	3.23	1.42	
	22-Aug-03		None	4.52	0.13	
	20-Nov-03		None	3.56	1.09	
	9-Feb-04		None	2.51	2.14	
	25-May-04		None	2.90	1.75	
	16-Aug-04		None	3.90	0.75	
	18-Nov-04		**None**	**2.52**	**2.13**	
MW-11	7-Feb-00	4.19	None	4.97	-0.78	
	25-May-00		None	7.58	-3.39	
	22-Aug-00		None	3.01	1.18	
	20-Nov-00		None	2.88	1.31	
	1-Mar-01		None	1.91	2.28	
	14-May-01		None	4.49	-0.3	
	26-Jul-01		None	2.95	1.24	
	16-Oct-01		None	3.35	0.84	
	21-Feb-02		None	1.85	2.34	
	29-May-02		None	2.36	1.83	
	17-Sep-02		None	3.11	1.08	
	14-Nov-02		None	2.55	1.64	
	5-Feb-03		None	2.75	1.44	
	14-May-03		None	1.98	2.21	
	22-Aug-03		None	2.86	1.33	
	20-Nov-03		None	2.73	1.46	
	9-Feb-04		None	2.60	1.59	
	25-May-04		None	2.06	2.13	
	16-Aug-04		None	2.91	1.28	
	18-Nov-04		**None**	**2.75**	**1.44**	

Notes:

* ft-msl: feet-mean sea level

** used 0.8 specific gravity of product

DTW: Depth to Water

TABLE 2
ANALYTICAL RESULTS OF GROUNDWATER SAMPLES (ppb)
AC Transit Facility
1100 Seminary Avenue, Oakland, California

Well	Date	TPH-G	TPH-D	TPH	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	Nitrate	Sulfate	DO	Fe
	MCL (ppb)				1.0	150	700	1,750	13				
MW-1	7-Jan-99	<100	470	NA	17.0	2	31.0	18	<50	150	3,400	360	53
	7-Feb-00	390	<60	1,300	13.0	<10	<10	<10	<20	<50	1,200	1,220	11,800
	25-May-00	<50	<50	1,000	12.0	<1.0	<1.0	<1.0	<2.0	140	1,500	1,950	1,380
	22-Aug-00	<50	<50	600	6.3	<1.0	2.3	<1.0	<2.0	75	2,100	6,850	2,350
	20-Nov-00	<50	<50	630	2.8	<1.0	1.1	<1.0	<2.0	<50	4,500	11,210	1,170
	1-Mar-01	<50	<50	900	29.0	1.2	16.0	6	<2.0	<50	2,800	6,020	2,920
	14-May-01	<50	<50	540	4.1	<1.0	3.1	<1.0	<2.0	<50	2,500	13,970	1,870
	26-Jul-01	190	<50	500	<1.0	<1.0	<1.0	<1.0	<2.0	75	3,700	8,480	1,950
	16-Oct-01	<50	<50	650	16.0	1.1	4.6	1.6	<2.0	<50	3,600	9,480	2,560
	21-Feb-02	560	<50	550	21	1.0	19	15	<2.0	<50	3,000	5,890	2,200
	29-May-02	130	<50	510	<1.0	<1.0	<1.0	<1.0	<2.0	<50	2,300	6,820	1,300
	17-Sep-02	140	<50	330	<1.0	<1.0	<1.0	<1.0	<2.0	<50	5,200	5,840	>3300
	14-Nov-02	150	570	NA	4.8	0.57	2.7	1.1	<1.0	<200	12,000	4,720	>3300
	5-Feb-03	250	210	NA	16.0	<0.5	0.93	<1.0	<1.0	<200	6,500	5,630	>3300
	14-May-03	220	<50	NA	9.9	<0.5	1.6	<1.0	<1.0	<200	5,200	3,280	2,750
	22-Aug-03	150	770	NA	<0.5	<1.0	<1.0	<1.0	<1.0	<200	6,300	2,980	2,570
	20-Nov-03	300	320	NA	3.0	<0.5	0.56	<1.0	<1.0	<200	7,900	3,030	2,680
	9-Feb-04	210	370	NA	<0.5	0.50	0.52	<1.0	<1.0	<200	7,000	4,190	>3300
	26-May-04	470	<50	NA	5.0	<0.5	7.2	1.9	<1.0	<200	2,400	3,780	>3300
	16-Aug-04	75	<50	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<200	11,000	4,120	2,560
	18-Nov-04	**207**	**200**	**NA**	**6.8**	**0.50**	**2.80**	**1.0**	**<0.5**	**<200**	**14,000**	**50**	**2,840**
MW-2	8-Jun-99	11,000	434,000	117,000	1,000,000	<100,000	260,000	<300,000	<5,000,000	NA	NA	NA	NA
	7-Feb-00	51,000	160,000	<5000	19,000	<500	920	<500	<1000	51	<1000	6,660	7,300
	25-May-00	<1200	<50000	65,000	11,000	<500	670	530	<1000	330	<1000	5,670	0
	22-Aug-00	<2500	<2500	150,000	23,000	<500	1,100	1,100	<1000	370	<1000	4,530	3,680
	20-Nov-00	<1200	<25000	430,000	18,000	<500	840	610	<1000	<250	<500	1,700	3,300
	3-Mar-01	<500	<25000	610,000	14,000	<830	<830	<830	<1700	<250	<5000	7,880	3,300
	14-May-01	<1000	280,000	51,000	19,000	240	1,100	1,200	<330	<50	<1000	3,330	>3300
	26-Jul-01	54,000	590,000	<25000	19,000	<500	1,300	1,500	<1000	<50	<1000	9,960	>3300
	16-Oct-01	43,000	560,000	<25000	18,000	280	1,100	1,300	<100	<50	1,500	17,630	>3300
	21-Feb-02	46,000	180,000	<12000	18,000	<500	950	1,500	<1000	<100	<2000	3,650	>3300
	29-May-02	49,000	130,000	<5000	17,000	350	970	1,700	<500	<50	1,000	2,220	>3300
	17-Sep-02	60,000	<25000	470,000	21,000	<500	1,600	2,700	<1000	<50	<1000	4,270	>3300
	14-Nov-02	36,000	490,000	NA	14,000	280	970	2,200	<400	<200	<500	6,050	>3300
	5-Feb-03	47,000	28,000	NA	15,000	360	1,200	2,100	<100	<200	<500	6,940	>3300
	14-May-03	39,000	200,000	NA	13,000	370	1,000	2,000	<100	<200	<500	2,140	>3300
	22-Aug-03	43,000	480,000	NA	22,000	490	1,500	2,100	<400	<200	<500	1,960	>3300
	20-Nov-03	59,000	320,000	NA	22,000	<100	1,700	3,200	<200	<200	<500	2,100	>3300
	9-Feb-04	19,000	55,000	NA	5,400	160	800	1,800	<100	<200	1,200	4,730	>3300
	26-May-04	60,000	520,000	NA	22,000	410	1,700	2,800	<250	<200	<500	4,520	>3300
	16-Aug-04	63,000	42,000	NA	20,000	520	1,600	2,400	<250	<200	<2500	3,560	>3300
	18-Nov-04	**38,200**	**126,000**	**NA**	**21,900**	**430**	**1,400**	**3,700**	**<2.5**	**<200**	**<500**	**330**	**3,300**

TABLE 2
ANALYTICAL RESULTS OF GROUNDWATER SAMPLES (ppb)
AC Transit Facility
1100 Seminary Avenue, Oakland, California

Well	Date	TPH-G	TPH-D	TPH	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	Nitrate	Sulfate	DO	Fe
	MCL (ppb)				1.0	150	700	1,750	13				
MW-3	7-Jan-99	199	2,680	NA	450	<10	250	190	<500	170	3,300	880	0
	7-Feb-00	2,000	<150	3,100	26	<2	5	2	<4	<50	47,300	6,480	17,800
	25-May-00	<50	<50	1,000	35	<1.0	6	4	<2.0	<50	21,700	4,640	600
	22-Aug-00	<50	<50	2,400	240	<10	<10	<10	<20	<50	19,300	3,970	20
	20-Nov-00	<50	<50	2,400	<25	<25	<25	<25	<50	<50	26,500	4,120	20
	1-Mar-01	<50	<50	1,200	100	<5.0	8.3	<5.0	<10	<50	27,000	1,510	50
	14-May-01	<50	<50	860	8.4	<1.0	1.2	<1.0	<2.0	<50	21,100	9,800	0
	26-Jul-01	1,200	<50	790	140	<5.0	12	<5.0	<10	<50	18,700	8,650	80
	16-Oct-01	1,000	<50	1,600	5.1	<1.0	4.3	<1.0	<2.0	<50	29,800	11,360	640
	21-Feb-02	1,700	<50	990	200	<10	29.0	12	<20	<50	20,500	5,730	0
	29-May-02	630	<50	840	68	<1.0	4.2	3.3	<2.0	<50	14,300	5,870	1,070
	17-Sep-02	<50	<50	1,100	4.1	<1.0	1.8	1.0	<2.0	<50	17,000	6,820	2,820
	14-Nov-02	2,800	460	NA	200	1.1	28	9.0	<2.0	<200	19,000	9,780	1,210
	5-Feb-03	720	270	NA	55	<0.5	20	7.1	<1.0	<200	22,000	8,320	>3300
	14-May-03	540	130	NA	18	<0.5	3.6	1.0	<1.0	<200	19,000	8,460	1,980
	22-Aug-03	400	540	NA	2.7	<1.0	1.6	<1.0	<1.0	<200	18,000	6,620	190
	20-Nov-03	240	520	NA	8.8	<0.5	2.2	<1.0	<1.0	<200	16,000	5,820	100
	9-Feb-04	700	700	NA	5.6	<0.5	3.8	1.3	<1.0	<200	17,000	4,080	0
	26-May-04	700	<100	NA	83.0	<0.5	11.0	1.7	<1.0	<200	18,000	4,210	0
	16-Aug-04	440	<500	NA	6.0	<0.5	1.6	<1.0	<1.0	<200	14,000	3,960	100
	18-Nov-04	**728**	**230**	**NA**	**44.8**	**1.1**	**14.9**	**8.4**	**<0.5**	**<200**	**11,000**	**850**	**300**
MW-9	7-Feb-00	<50	<50	240	<1	<1	<1	<1	<2	230	183,000	6,940	9,000
	25-May-00	<50	<50	130	<1.0	<1.0	<1.0	<1.0	<2.0	250	172,000	6,020	1,200
	22-Aug-00	<50	<50	120	<1.0	<1.0	<1.0	<1.0	<2.0	280	157,000	7,250	0
	20-Nov-00	<50	<50	130	<1.0	<1.0	<1.0	<1.0	<2.0	340	147,000	9,690	0
	1-Mar-01	<50	<50	150	<1.0	<1.0	<1.0	<1.0	<2.0	230	116,000	4,210	0
	14-May-01	<50	<50	110	<1.0	<1.0	<1.0	<1.0	<2.0	100	140,000	8,290	0
	26-Jul-01	<50	<50	71	<1.0	<1.0	<1.0	<1.0	<2.0	130	143,000	7,560	0
	16-Oct-01	<50	<50	120	<1.0	<1.0	<1.0	<1.0	<2.0	89	141,000	967	50
	21-Feb-02	<50	<50	89	<1.0	<1.0	<1.0	<1.0	<2.0	94	137,000	3,500	70
	29-May-02	<50	<50	95	<1.0	<1.0	<1.0	<1.0	<2.0	94	141,000	4,590	90
	17-Sep-02	<50	<50	96	<1.0	<1.0	<1.0	<1.0	<2.0	100	143,000	3,860	2,130
	14-Nov-02	<50	82	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<200	130,000	10,120	670
	5-Feb-03	<50	82	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<200	140,000	8,630	2,870
	14-May-03	<50	140	NA	<0.5	<0.5	<0.5	<1.0	1.3	<200	130,000	8,760	2,570
	22-Aug-03	<50	220	NA	<0.5	<1.0	<1.0	<1.0	<1.0	<200	140,000	6,140	0
	20-Nov-03	<50	80	NA	<0.5	<0.5	<0.5	<1.0	1.8	<200	140,000	6,030	200
	9-Feb-04	<50	65	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<200	98,000	5,800	0
	26-May-04	<50	<250	NA	<0.5	<0.5	<0.5	<1.5	<1.0	<200	88,000	5,200	0
	16-Aug-04	<50	<50	NA	<0.5	<0.5	<0.5	<1.0	1.3	<200	100,000	4,960	0
	18-Nov-04	**<50**	**<50**	**NA**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**2.8**	**<200**	**110,000**	**1,040**	**0**

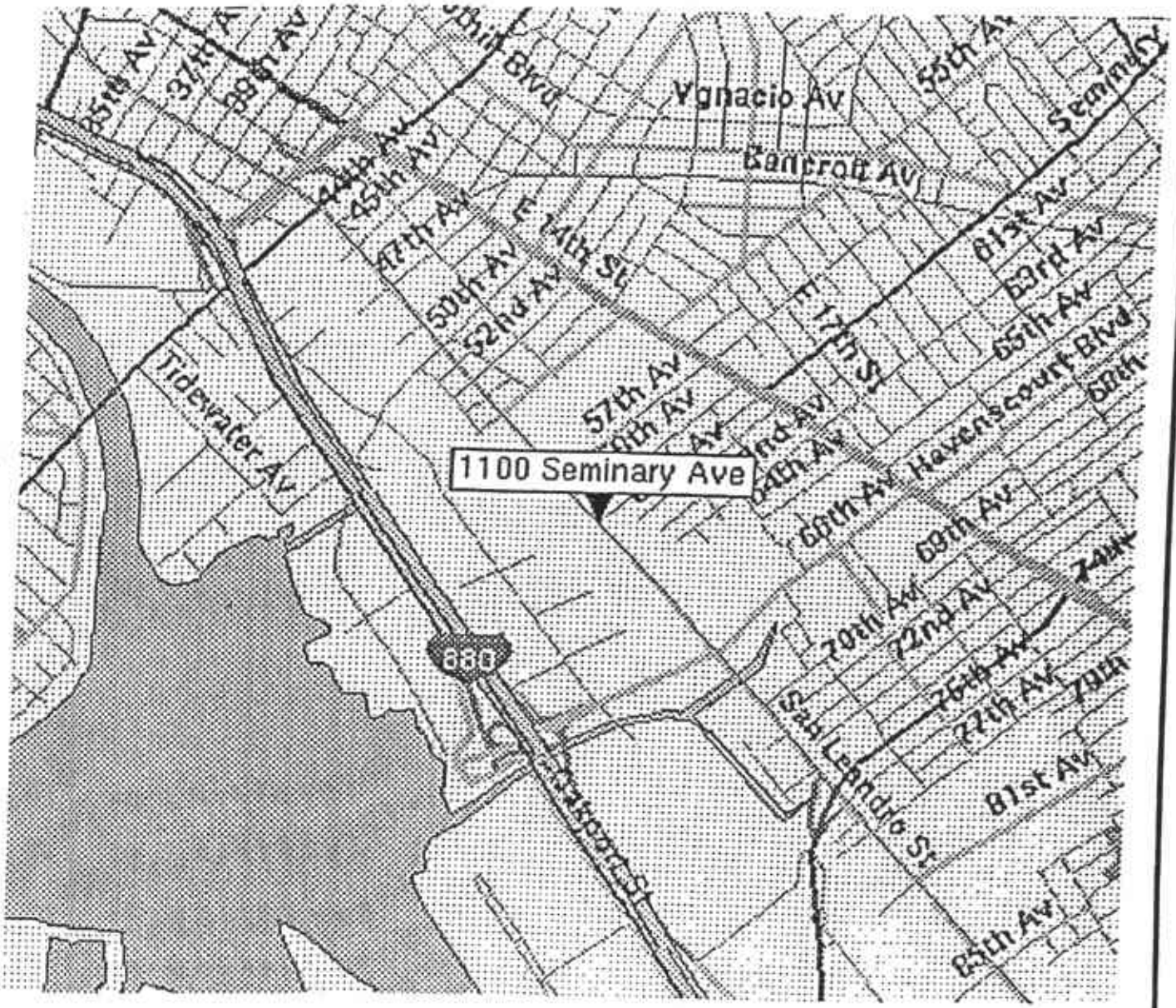
TABLE 2
ANALYTICAL RESULTS OF GROUNDWATER SAMPLES (ppb)
AC Transit Facility
1100 Seminary Avenue, Oakland, California

Well	Date	TPH-G	TPH-D	TPH	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	Nitrate	Sulfate	DO	Fe
	MCL (ppb)				1.0	150	700	1,750	13				
MW-10	7-Feb-00	<50	<50	470	<1	<1	<1	<1	<2	53	114,000	1,200	55,000
	25-May-00	<50	<50	220	<1.0	<1.0	<1.0	<1.0	<2.0	480	136,000	1,940	0
	22-Aug-00	<50	<50	140	<1.0	<1.0	<1.0	<1.0	<2.0	69	126,000	4,350	0
	20-Nov-00	<50	<50	300	<1.0	<1.0	<1.0	<1.0	<2.0	<50	76,200	3,790	0
	1-Mar-01	<50	<50	250	<1.0	<1.0	<1.0	<1.0	<2.0	<250	106,000	7,440	0
	14-May-01	<50	<50	74	<1.0	<1.0	<1.0	<1.0	<2.0	<50	135,000	6,790	0
	26-Jul-01	<50	<50	120	<1.0	<1.0	<1.0	<1.0	<2.0	<50	125,000	9,680	1,970
	16-Oct-01	<50	<50	190	<1.0	<1.0	<1.0	<1.0	<2.0	<50	90,100	28,000	570
	21-Feb-02	<50	<50	190	<1.0	<1.0	<1.0	<1.0	<2.0	<50	77,700	4,280	0
	29-May-02	<50	<50	110	<1.0	<1.0	<1.0	<1.0	<2.0	<50	126,000	7,230	270
	17-Sep-02	<50	<50	170	<1.0	<1.0	<1.0	<1.0	<2.0	<50	107,000	4,230	>3300
	14-Nov-02	<50	270	NA	<0.5	<0.5	<0.5	<1.0	1.5	<200	64,000	1,680	1,400
	5-Feb-03	<50	160	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<200	110,000	5,260	>3300
	14-May-03	<50	<50	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<200	93,000	2,990	1,720
	22-Aug-03	<50	320	NA	<0.5	<1.0	<1.0	<1.0	<1.0	<200	120,000	1,950	0
	20-Nov-03	<50	300	NA	<0.5	<0.5	<0.5	<1.0	1.7	<200	65,000	1,750	0
	9-Feb-04	<50	250	NA	<0.5	<0.5	<0.5	<1.0	1.1	<200	110,000	1,650	0
	26-May-04	<500	<50	NA	<0.5	<0.5	<0.5	<1.5	<1.0	<200	160,000	1,630	0
	16-Aug-04	<50	<50	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<200	120,000	2,840	0
	18-Nov-04	**<50**	**<50**	**NA**	**<0.5**	**<0.5**	**<0.5**	**<1.0**	**0.9**	**<200**	**86,000**	**660**	**0**

TABLE 2
ANALYTICAL RESULTS OF GROUNDWATER SAMPLES (ppb)
AC Transit Facility
1100 Seminary Avenue, Oakland, California

Well	Date	TPH-G	TPH-D	TPH	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	Nitrate	Sulfate	DO	Fe
	MCL (ppb)				1.0	150	700	1,750	13				
MW-11	7-Feb-00	<50	<50	400	<1	<1	<1	<1	25	800	167,000	7,300	16,200
	25-May-00	<50	<50	200	<1.0	<1.0	<1.0	<1.0	16	480	207,000	6,540	0
	22-Aug-00	<50	<50	170	<1.0	<1.0	<1.0	<1.0	9.3	610	168,000	4,640	20
	20-Nov-00	<50	<50	190	<1.0	<1.0	<1.0	<1.0	7.5	550	143,000	2,380	0
	1-Mar-01	<50	<50	250	<1.0	<1.0	<1.0	<1.0	15.0	170	80,300	5,860	0
	14-May-01	<50	<50	160	<1.0	<1.0	<1.0	<1.0	14.0	230	103,000	6,060	2,910
	26-Jul-01	<50	<50	220	5.9	<1.0	<1.0	2.7	20.0	180	71,300	7,360	>3300
	16-Oct-01	<50	<50	170	<1.0	<1.0	<1.0	<1.0	12.0	190	101,000	8,810	>3300
	21-Feb-02	<50	<50	170	<1.0	<1.0	<1.0	<1.0	2.2	110	75,600	4,280	0
	29-May-02	<50	<50	290	<1.0	<1.0	<1.0	<1.0	2.3	140	98,700	8,350	0
	17-Sep-02	<50	<500	1,900	<1.0	<1.0	<1.0	<1.0	3.8	54	141,000	6,260	90
	14-Nov-02	<50	740	NA	0.88	<0.5	<0.5	1.2	5.3	<200	120,000	8,380	0
	5-Feb-03	<50	410	NA	<0.5	<0.5	<0.5	<1.0	3.4	<200	8,800	9,590	0
	14-May-03	<50	<50	NA	<0.5	<0.5	<0.5	<1.0	2.5	<200	91,000	1,560	1,960
	22-Aug-03	<50	540	NA	<0.5	<1.0	<1.0	<1.0	2.2	<200	130,000	2,210	1,720
	20-Nov-03	<50	290	NA	<0.5	<0.5	<0.5	<1.0	1.8	<200	120,000	2,300	1,910
	9-Feb-04	<50	270	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<200	120,000	10,400	0
	26-May-04	<50	<50	NA	<0.5	<0.5	<0.5	<1.5	<1.0	<200	140,000	10,100	0
	16-Aug-04	<50	100	NA	<0.5	<0.5	<0.5	<1.0	<1.0	<200	130,000	8,610	0
	18-Nov-04	**70**	**<50**	**NA**	**3.3**	**<0.5**	**0.80**	1.7	**0.7**	**<200**	**120,000**	**900**	**300**

Notes:
ppb: parts per billion
TPH-G: total petroleum hydrocarbons as gasoline
TPH-D: total petroleum hydrocarbons as diesel
TPH: total petroleum hydrocarbons as motor oil or unknown hydrocarbon
MCL: Maximum Contaminant Level
MTBE: Methyl-tert,butylether
DO: Dissolved Oxygen
Fe: Ferrous Iron
NA: Not Analyzed



CAMERON-COLE

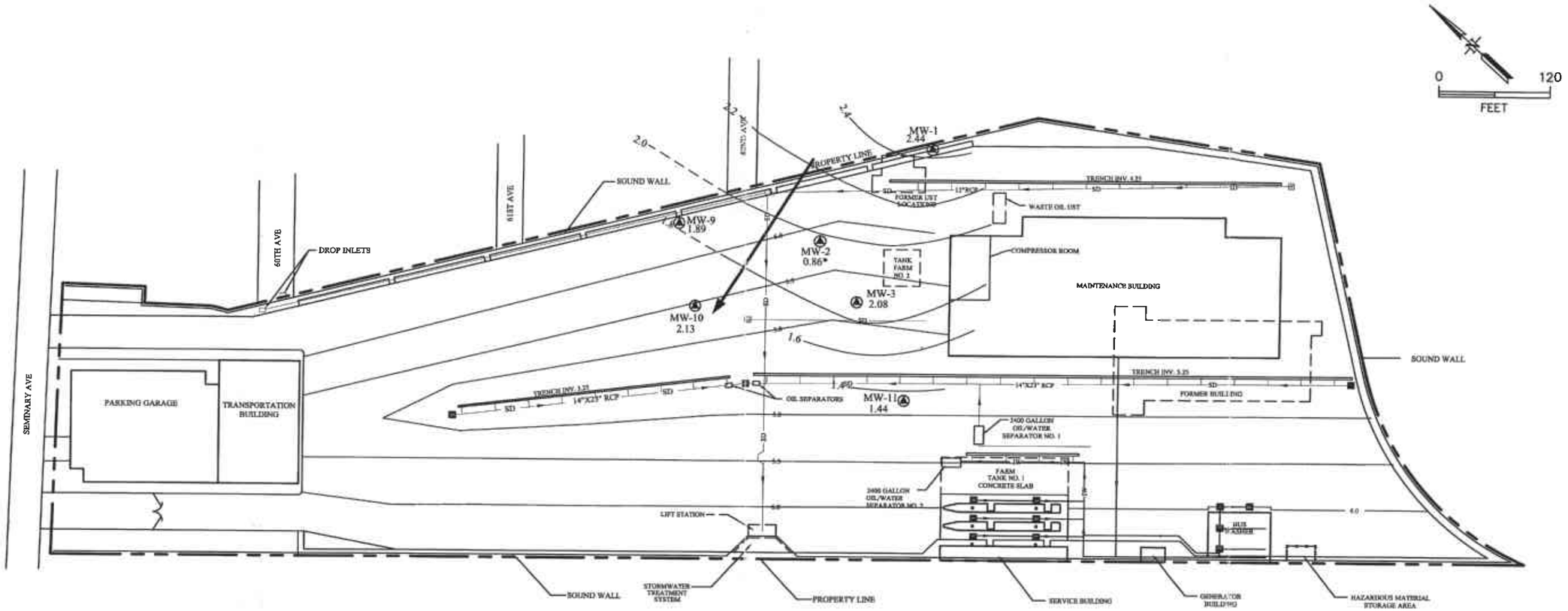
AC TRANSIT - OAKLAND, CALIFORNIA

FIGURE 1
SITE LOCATION MAP
1100 SEMINARY ROAD

SCALE:	DATE:
NO SCALE	3/22/00

North

LOCMAP



LEGEND

1.0 — GROUNDWATER ELEVATION CONTOUR	EXISTING MONITORING WELL
2.08 GROUNDWATER ELEVATION (FT. MSL)	MANHOLE
REPORTED GROUNDWATER FLOW	CATCH BASIN
SD — STORM DRAIN PIPELINE	0.86* MW-2 NOT INCLUDED
6.0 — CONTOUR	
IW — INDUSTRIAL WASTE PIPELINE	
SURFACE DRAINAGE TRENCH	

	BY	DATE
DRAWN	WRB	12/7/04
CHECKED		
APPROVED		
APPROVED		
APPROVED		

CAMERON-COLE

FIGURE 2

AC TRANSIT - OAKLAND, CALIFORNIA

1100 SEMINARY ROAD-POTENTIOMETRIC SURFACE MAP
NOVEMBER 2004

SCALE: 1" = 120'

DWG. NO.: 2011-16

APPENDIX A

CERTIFIED ANALYTICAL REPORTS

CHAIN-OF-CUSTODY DOCUMENTS

North State Labs
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • **(650) 266-4563** • FAX (650) 266-4560

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 04-1821
Client: Cameron-Cole, LLC
Project: AC TRANSIT SEMINARY/1100 SEMINARY RD

Date Reported: 11/30/2004

Gasoline,BTEX and MTBE by Methods 8015M/8021B
Diesel Range Hydrocarbons by Method 8015M

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 04-1821-01 Client ID: MW-1				11/18/2004	W
Benzene	SW8020F	6.8	UG/L		11/19/2004
Ethylbenzene	SW8020F	2.8	UG/L		11/19/2004
Gasoline Range Organics	SW8020F	207	UG/L		11/19/2004
Methyl-tert-butyl ether	SW8020F	*ND<0.5	UG/L		11/19/2004
Toluene	SW8020F	0.5	UG/L		11/19/2004
Xylenes	SW8020F	1	UG/L		11/19/2004
Diesel Fuel #2	CATFH	**0.2	MG/L		11/23/2004
Sample: 04-1821-02 Client ID: MW-9				11/18/2004	W
Benzene	SW8020F	ND<0.5	UG/L		11/19/2004
Ethylbenzene	SW8020F	ND<0.5	UG/L		11/19/2004
Gasoline Range Organics	SW8020F	ND<50	UG/L		11/19/2004
Methyl-tert-butyl ether	SW8020F	*2.8	UG/L		11/19/2004
Toluene	SW8020F	ND<0.5	UG/L		11/19/2004
Xylenes	SW8020F	ND<1.0	UG/L		11/19/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		11/23/2004
Sample: 04-1821-03 Client ID: MW-10				11/18/2004	W
Benzene	SW8020F	ND<0.5	UG/L		11/19/2004
Ethylbenzene	SW8020F	ND<0.5	UG/L		11/19/2004
Gasoline Range Organics	SW8020F	ND<50	UG/L		11/19/2004
Methyl-tert-butyl ether	SW8020F	*0.9	UG/L		11/19/2004
Toluene	SW8020F	ND<0.5	UG/L		11/19/2004

*Conf. by GC/MS method 8260B.**Does not match diesel pattern

North State Labs
CA ELAP # 1753
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C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 04-1821
Client: Cameron-Cole, LLC
Project: AC TRANSIT SEMINARY/1100 SEMINARY RD

Date Reported: 11/30/2004

Gasoline,BTEX and MTBE by Methods 8015M/8021B
Diesel Range Hydrocarbons by Method 8015M

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 04-1821-03 Client ID: MW-10				11/18/2004	W
Xylenes	SW8020F	ND<1.0	UG/L		11/19/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		11/23/2004
Sample: 04-1821-04 Client ID: TRIP BLANK				11/18/2004	W
Benzene	SW8020F	ND<0.5	UG/L		11/24/2004
Ethylbenzene	SW8020F	ND<0.5	UG/L		11/24/2004
Methyl-tert-butyl ether	SW8020F	ND<0.5	UG/L		11/24/2004
Toluene	SW8020F	ND<0.5	UG/L		11/24/2004
Xylenes	SW8020F	ND<1.0	UG/L		11/24/2004

*Conf. by GC/MS method 8260B.**Does not match diesel pattern

North State Labs
CA ELAP # 1753
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C E R T I F I C A T E O F A N A L Y S I S

Quality Control/Quality Assurance

Lab Number: 04-1821
Client: Cameron-Cole, LLC
Project: AC TRANSIT SEMINARY/1100 SEMINARY RD

Date Reported: 11/30/2004

Gasoline,BTEX and MTBE by Methods 8015M/8021B
Diesel Range Hydrocarbons by Method 8015M

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline Range (11/19/04)	SW8020F	50	UG/L	ND	108/111	3
Benzene	SW8020F	0.5	UG/L	ND	110/107	3
Toluene	SW8020F	0.5	UG/L	ND	104/105	1
Ethylbenzene	SW8020F	0.5	UG/L	ND	106/97	9
Xylenes	SW8020F	1.0	UG/L	ND	112/111	1
Methyl-tert-butyl ether	SW8020F	0.5	UG/L	ND	85/86	1
Diesel Fuel #2 (11/23/04)	CATFH	0.05	MG/L	ND	102/101	1
Benzene (11/24/04)	SW8020F	0.5	UG/L	ND	109/115	5
Toluene	SW8020F	0.5	UG/L	ND	99/103	4
Ethylbenzene	SW8020F	0.5	UG/L	ND	103/90	13
Xylenes	SW8020F	1.0	UG/L	ND	107/110	3
Methyl-tert-butyl ether	SW8020F	0.5	UG/L	ND	101/75	30

ELAP Certificate NO:1753
Reviewed and Approved

John A. Murphy, Laboratory Director

North State Labs
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 04-1822
Client: Cameron-Cole, LLC
Project: AC TRANSIT SEMINARY/1100 SEMINARY RD

Date Reported: 11/30/2004

Gasoline,BTEX and MTBE by Methods 8015M/8021B
Diesel Range Hydrocarbons by Method 8015M

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 04-1822-01 Client ID: MW-2				11/18/2004	W
Benzene	SW8020F	21900	UG/L		11/22/2004
Ethylbenzene	SW8020F	1400	UG/L		11/22/2004
Gasoline Range Organics	SW8020F	38200	UG/L		11/22/2004
Methyl-tert-butyl ether	SW8020F	ND<2.5	UG/L		11/22/2004
Toluene	SW8020F	430	UG/L		11/22/2004
Xylenes	SW8020F	3700	UG/L		11/22/2004
Diesel Fuel #2	CATFH	126	MG/L		11/24/2004
Sample: 04-1822-02 Client ID: MW-3				11/18/2004	W
Benzene	SW8020F	44.8	UG/L		11/19/2004
Ethylbenzene	SW8020F	14.9	UG/L		11/19/2004
Gasoline Range Organics	SW8020F	728	UG/L		11/19/2004
Methyl-tert-butyl ether	SW8020F	ND<0.5	UG/L		11/19/2004
Toluene	SW8020F	1.1	UG/L		11/19/2004
Xylenes	SW8020F	8.4	UG/L		11/19/2004
Diesel Fuel #2	CATFH	**0.23	MG/L		11/23/2004
Sample: 04-1822-03 Client ID: MW-11				11/18/2004	W
Benzene	SW8020F	3.3	UG/L		11/19/2004
Ethylbenzene	SW8020F	0.8	UG/L		11/19/2004
Gasoline Range Organics	SW8020F	70	UG/L		11/19/2004
Methyl-tert-butyl ether	SW8020F	*0.7	UG/L		11/19/2004
Toluene	SW8020F	ND<0.5	UG/L		11/19/2004

*Conf. by GC/MS method 8260B.**Does not match diesel pattern

North State Labs
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • **(650) 266-4563** • FAX (650) 266-4560

C E R T I F I C A T E O F A N A L Y S I S

Lab Number: 04-1822
Client: Cameron-Cole, LLC
Project: AC TRANSIT SEMINARY/1100 SEMINARY RD

Date Reported: 11/30/2004

Gasoline,BTEX and MTBE by Methods 8015M/8021B
Diesel Range Hydrocarbons by Method 8015M

Analyte	Method	Result	Unit	Date Sampled	Date Analyzed
Sample: 04-1822-03 Client ID: MW-11				11/18/2004	W
Xylenes	SW8020F	1.7	UG/L		11/19/2004
Diesel Fuel #2	CATFH	ND<0.05	MG/L		11/23/2004

*Conf. by GC/MS method 8260B.**Does not match diesel pattern

North State Labs
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

CERTIFICATE OF ANALYSIS

Quality Control/Quality Assurance

Lab Number: 04-1822
Client: Cameron-Cole, LLC
Project: AC TRANSIT SEMINARY/1100 SEMINARY RD

Date Reported: 11/30/2004

Gasoline,BTEX and MTBE by Methods 8015M/8021B
Diesel Range Hydrocarbons by Method 8015M

Analyte	Method	Reporting Limit	Unit	Blank	Avg MS/MSD Recovery	RPD
Gasoline Range (11/19/04)	SW8020F	50	UG/L	ND	108/111	3
Benzene	SW8020F	0.5	UG/L	ND	110/107	3
Toluene	SW8020F	0.5	UG/L	ND	104/105	1
Ethylbenzene	SW8020F	0.5	UG/L	ND	106/97	9
Xylenes	SW8020F	1.0	UG/L	ND	112/111	1
Methyl-tert-butyl ether	SW8020F	0.5	UG/L	ND	85/86	1
Gasoline Range (11/22/04)	SW8020F	50	UG/L	ND	121/115	5
Benzene	SW8020F	0.5	UG/L	ND	105/111	6
Toluene	SW8020F	0.5	UG/L	ND	108/107	1
Ethylbenzene	SW8020F	0.5	UG/L	ND	103/102	1
Xylenes	SW8020F	1.0	UG/L	ND	121/117	3
Methyl-tert-butyl ether	SW8020F	0.5	UG/L	ND	84/83	1
Diesel Fuel #2 (11/23/04)	CATFH	0.05	MG/L	ND	102/101	1
Diesel Fuel #2 (11/24/04)	CATFH	0.05	MG/L	ND	108/112	4

ELAP Certificate NO:1753
Reviewed and Approved

John A.Murphy,Laboratory Director

Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Angie Adams
North State Environmental Labs
90 South Spruce, Suite W
South San Francisco, CA 94080

Certificate ID: 41350 - 11/23/2004 8:39:30 PM

Order: 41350
Project Name:
Project Number: 04-1822

Date Collected: 11/18/2004
Date Received: 11/19/2004
P.O. Number: 04-1822

Certificate of Analysis - Final Report

On November 19, 2004, samples were received under chain of custody for analysis. Entech analyzes samples "as received" unless otherwise noted. The following results are included:

Matrix	Test	Method	Comments
Liquid	Nitrate as N	EPA 300.0	
	Sulfate by IC	EPA 300.0	

Entech Analytical Labs, Inc. is certified for environmental analyses by the State of California (#2346).
If you have any questions regarding this report, please call us at 408-588-0200 ext. 225.

Sincerely,

Laurie Glantz-Murphy
Laboratory Director

Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

North State Environmental Labs
90 South Spruce, Suite W
South San Francisco, CA 94080
Attn: Angie Adams

Project Number: 04-1822
Project Name:
Date Received: 11/19/2004
P.O. Number: 04-1822
Sampled By: Client

Certificate of Analysis - Data Report

Lab # : 41350-001 **Sample ID:** MW-2 **Matrix:** Liquid **Sample Date:** 11/18/200 11:10 AM

Method: EPA 300.0

Parameter	Result	Flag	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Nitrate as N	ND		1	0.2	mg/L	N/A	N/A	11/19/2004	WIC041119
Sulfate	ND		1	0.5	mg/L	N/A	N/A	11/19/2004	WIC041119

Analyzed by: Equeja

Reviewed by: DQUEJA

Detection Limit = Detection Limit for Reporting. ND = Not Detected at or above the Detection Limit.

Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

North State Environmental Labs
90 South Spruce, Suite W
South San Francisco, CA 94080
Attn: Angie Adams

Project Number: 04-1822
Project Name:
Date Received: 11/19/2004
P.O. Number: 04-1822
Sampled By: Client

Certificate of Analysis - Data Report

Lab # : 41350-002 **Sample ID:** MW-3 **Matrix:** Liquid **Sample Date:** 11/18/200 12:15 PM

Method: EPA 300.0

Parameter	Result	Flag	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Nitrate as N	ND		1	0.2	mg/L	N/A	N/A	11/19/2004	WIC041119
Sulfate	11		1	0.5	mg/L	N/A	N/A	11/19/2004	WIC041119

Analyzed by: Equeja
Reviewed by: DQUEJA

Detection Limit = Detection Limit for Reporting. ND = Not Detected at or above the Detection Limit.

Entech Analytical Labs, Inc.

3334 Victor Court, Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

North State Environmental Labs
90 South Spruce, Suite W
South San Francisco, CA 94080
Attn: Angie Adams

Project Number: 04-1822
Project Name:
Date Received: 11/19/2004
P.O. Number: 04-1822
Sampled By: Client

Certificate of Analysis - Data Report

Lab #: 41350-003 **Sample ID:** MW-11 **Matrix:** Liquid **Sample Date:** 11/18/200 12:40 PM

Method: EPA 300.0

Parameter	Result	Flag	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Nitrate as N	ND		1	0.2	mg/L	N/A	N/A	11/19/2004	WIC041119
Sulfate	120		1	0.5	mg/L	N/A	N/A	11/22/2004	WIC041119B

Analyzed by: Equeja
Reviewed by: DQUEJA

Detection Limit = Detection Limit for Reporting.

ND = Not Detected at or above the Detection Limit.

Entech Analytical Labs, Inc.

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Quality Control - Method Blank / Laboratory Control Spike / Duplicate Results

Reviewed by: DQUEJA - 11/23/04

QC Batch ID: WIC041119 Analysis Date: 11/19/2004

Method EPA 300.0 **Liquid Conc. Units: mg/L**

Parameter	Blank (MDL)	Spike Amt	SpikeResult	QC Type	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
Nitrate as N	<0.01	2.26	2.3	LCS	11/19/2004	99.6			80 - 120
Sulfate	<0.1	15.0	15	LCS	11/19/2004	99.3			80 - 120
Nitrate as N	<0.01	2.26	2.3	LCSD	11/19/2004	100	0.44	25	80 - 120
Sulfate	<0.1	15.0	15	LCSD	11/19/2004	101	1.3	25	80 - 120

Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

Quality Control - Method Blank / Laboratory Control Spike / Duplicate Results

Reviewed by: DQUEJA - 11/23/04

QC Batch ID: WIC041119B Analysis Date: 11/22/2004

Method EPA 300.0 Liquid Conc. Units: mg/L

Parameter	Blank (MDL)	Spike Amt	SpikeResult	QC Type	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
Sulfate	<0.1	15.0	15	LCS	11/22/2004	103			80 - 120
Sulfate	<0.1	15.0	15	LCSD	11/22/2004	101	1.3	25	80 - 120

Entech Analytical Labs, Inc.

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Quality Control - Matrix Spike / Duplicate Results
Liquid

Reviewed by: DQUEJA - 11/23/04

QC Batch ID: WIC041119

Analysis Date: 11/19/2004

Method EPA 300.0 — Conc. Units: mg/L

Parameter	Sample Result	Spike Amount	Spike Result	QC Type	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
MS SampleNumber: 41350-001									
Nitrate as N	0.0460	4.0	3.30	MS	11/19/2004	81.3			80 - 120
Sulfate	ND	20	17.7	MS	11/19/2004	88.5			80 - 120
MSD SampleNumber: 41350-001									
Nitrate as N	0.0460	4.0	3.40	MSD	11/19/2004	83.8	3.0	25	80 - 120
Sulfate	ND	20	17.5	MSD	11/19/2004	87.5	1.1	25	80 - 120

Entech Analytical Labs, Inc.

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Angie Adams
North State Environmental Labs
90 South Spruce, Suite W
South San Francisco, CA 94080

Certificate ID: 41349 - 11/23/2004 8:35:53 PM

Order: 41349
Project Name:
Project Number: 04-1821

Date Collected: 11/18/2004
Date Received: 11/19/2004
P.O. Number: 04-1821

Certificate of Analysis - Final Report

On November 19, 2004, samples were received under chain of custody for analysis. Entech analyzes samples "as received" unless otherwise noted. The following results are included:

Matrix	Test	Method	Comments
Liquid	Nitrate as N	EPA 300.0	
	Sulfate by IC	EPA 300.0	

Entech Analytical Labs, Inc. is certified for environmental analyses by the State of California (#2346).
If you have any questions regarding this report, please call us at 408-588-0200 ext. 225.

Sincerely,

Laurie Glantz-Murphy
Laboratory Director

Entech Analytical Labs, Inc.

3334 Victor Court, Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

North State Environmental Labs
90 South Spruce, Suite W
South San Francisco, CA 94080
Attn: Angie Adams

Project Number: 04-1821
Project Name:
Date Received: 11/19/2004
P.O. Number: 04-1821
Sampled By: Client

Certificate of Analysis - Data Report

Lab #: 41349-001 **Sample ID:** MW-1 **Matrix:** Liquid **Sample Date:** 11/18/200 1:15 PM

Method: EPA 300.0

Parameter	Result	Flag	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Nitrate as N	ND		1	0.2	mg/L	N/A	N/A	11/19/2004	WIC041119
Sulfate	14		1	0.5	mg/L	N/A	N/A	11/19/2004	WIC041119

Analyzed by: Equeja
Reviewed by: DQUEJA

Detection Limit = Detection Limit for Reporting.

ND = Not Detected at or above the Detection Limit.

Entech Analytical Labs, Inc.

3334 Victor Court, Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

North State Environmental Labs
90 South Spruce, Suite W
South San Francisco, CA 94080
Attn: Angie Adams

Project Number: 04-1821
Project Name:
Date Received: 11/19/2004
P.O. Number: 04-1821
Sampled By: Client

Certificate of Analysis - Data Report

Lab #: 41349-002 **Sample ID:** MW-9 **Matrix:** Liquid **Sample Date:** 11/18/200 1:55 PM

Method: EPA 300.0

Parameter	Result	Flag	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Nitrate as N	ND		1	0.2	mg/L	N/A	N/A	11/19/2004	WIC041119
Sulfate	110		1	0.5	mg/L	N/A	N/A	11/22/2004	WIC041119B

Analyzed by: Equeja
Reviewed by: DQUEJA

Detection Limit = Detection Limit for Reporting.

ND = Not Detected at or above the Detection Limit.

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3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

North State Environmental Labs
90 South Spruce, Suite W
South San Francisco, CA 94080
Attn: Angie Adams

Project Number: 04-1821
Project Name:
Date Received: 11/19/2004
P.O. Number: 04-1821
Sampled By: Client

Certificate of Analysis - Data Report

Lab # : 41349-003 **Sample ID:** MW-10 **Matrix:** Liquid **Sample Date:** 11/18/200 2:20 PM

Method: EPA 300.0

Parameter	Result	Flag	DF	Detection Limit	Units	Prep Date	Prep Batch	Analysis Date	QC Batch
Nitrate as N	ND		1	0.2	mg/L	N/A	N/A	11/19/2004	WIC041119
Sulfate	86		1	0.5	mg/L	N/A	N/A	11/22/2004	WIC041119B

Analyzed by: Equeja
Reviewed by: DQUEJA

Detection Limit = Detection Limit for Reporting. ND = Not Detected at or above the Detection Limit.

Entech Analytical Labs, Inc.

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Quality Control - Method Blank / Laboratory Control Spike / Duplicate Results

Reviewed by: DQUEJA - 11/23/04

QC Batch ID: WIC041119 Analysis Date: 11/19/2004

Method EPA 300.0 **Liquid Conc. Units: mg/L**

Parameter	Blank (MDL)	Spike Amt	SpikeResult	QC Type	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
Nitrate as N	<0.01	2.26	2.3	LCS	11/19/2004	99.6			80 - 120
Sulfate	<0.1	15.0	15	LCS	11/19/2004	99.3			80 - 120
Nitrate as N	<0.01	2.26	2.3	LCSD	11/19/2004	100	0.44	25	80 - 120
Sulfate	<0.1	15.0	15	LCSD	11/19/2004	101	1.3	25	80 - 120

Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

Quality Control - Method Blank / Laboratory Control Spike / Duplicate Results

Revicwed by: DQUEJA - 11/23/04

QC Batch ID: WIC041119B Analysis Date: 11/22/2004

Method EPA 300.0 Liquid Conc. Units: mg/L

Parameter	Blank (MDL)	Spike Amt	SpikeResult	QC Type	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
Sulfate	<0.1	15.0	15	LCS	11/22/2004	103			80 - 120
Sulfate	<0.1	15.0	15	LCSD	11/22/2004	101	1.3	25	80 - 120

Entech Analytical Labs, Inc.

3334 Victor Court , Santa Clara, CA 95054 Phone: (408) 588-0200 Fax: (408) 588-0201

Quality Control - Matrix Spike / Duplicate Results
Liquid

Reviewed by: DQUEJA - 11/23/04

QC Batch ID: WIC041119

Analysis Date: 11/19/2004

Method EPA 300.0

Conc. Units: mg/L

Parameter	Sample Result	Spike Amount	Spike Result	QC Type	Analysis Date	% Recovery	RPD	RPD Limits	Recovery Limits
MS SampleNumber: 41350-001									
Nitrate as N	0.0460	4.0	3.30	MS	11/19/2004	81.3			80 - 120
Sulfate	ND	20	17.7	MS	11/19/2004	88.5			80 - 120
MSD SampleNumber: 41350-001									
Nitrate as N	0.0460	4.0	3.40	MSD	11/19/2004	83.8	3.0	25	80 - 120
Sulfate	ND	20	17.5	MSD	11/19/2004	87.5	1.1	25	80 - 120

North State Labs
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

SAMPLE RECEIPT CHECKLIST

Client Name: Cameron-Cole Date 11/18/04

Ref/Subm No: 04-1822

Checked By: EK

Matrix: Soil: ____ Water: X Other: _____ Carrier Name: _____

Shipping Container/Cooler In Good Condition?	Yes: ____	No: ____	NA X
Custody Seals Intact on Container?	Yes: ____	No: ____	NA X
Custody Seals intact on sample bottles/tubes?	Yes: ____	No: ____	NA X
Chain of present?	Yes: X	No: ____	
Chain of Custody Signatures present and correct?	Yes: X	No: ____	
Chain of custody agrees with sample labels?	Yes: X	No: ____	
Samples in proper containers?	Yes: X	No: ____	
Sample containers Intact?	Yes: X	No: ____	
Sufficient sample volume for indicated tests?	Yes: X	No: ____	
All Samples received within holding times?	Yes: X	No: ____	
Container/Temp Blank temperature in compliance?	Yes: ____	No: ____	N/A
Water - VOA vials have zero headspace?	Yes: X	No: ____	
Water- pH acceptable on receipt?	Yes: ____	No: ____	N/A

pH adjusted - Preservative used: HNO3: ____ HCl: X H2SO4: ____ NaOH: ____
Lot: ____ NA _____

Corrective Action Record:

Client Contacted: _____ Date Contacted: ____ Person Contacted: ____

Contacted by: _____ Regarding: _____ NA _____

Comments: _____

Corrective Action: _____

North State Labs
CA ELAP # 1753
90 South Spruce Avenue, Suite V • South San Francisco, CA 94080 • (650) 266-4563 • FAX (650) 266-4560

SAMPLE RECEIPT CHECKLIST

Client Name: Cameron-Cole Date 11/18/04

Ref/Subm No: 04-1821

Checked By: EK

Matrix: Soil: ____ Water: X Other: _____ Carrier Name: _____

Shipping Container/Cooler In Good Condition?	Yes: ____	No: ____	NA X
Custody Seals Intact on Container?	Yes: ____	No: ____	NA X
Custody Seals intact on sample bottles/tubes?	Yes: ____	No: ____	NA X
Chain of present?	Yes: X	No: ____	
Chain of Custody Signatures present and correct?	Yes: X	No: ____	
Chain of custody agrees with sample labels?	Yes: X	No: ____	
Samples in proper containers?	Yes: X	No: ____	
Sample containers Intact?	Yes: X	No: ____	
Sufficient sample volume for indicated tests?	Yes: X	No: ____	
All Samples received within holding times?	Yes: X	No: ____	
Container/Temp Blank temperature in compliance?	Yes: ____	No: ____	N/A
Water - VOA vials have zero headspace?	Yes: X	No: ____	
Water- pH acceptable on receipt?	Yes: ____	No: ____	N/A

pH adjusted - Preservative used: HNO3: ____ HCl: X H2SO4: ____ NaOH: ____
Lot: ____ NA _____

Corrective Action Record:

Client Contacted: _____ Date Contacted: ____ Person Contacted: ____

Contacted by: _____ Regarding: _____ NA _____

Comments: _____

Corrective Action: _____

North State Labs
90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page 1 of 1

Client: North State Labs	Report to: Angie Adams	Phone:	Turnaround Time
Mailing Address: Same As Above →	Billing to: →	Fax:	Std
		email:	Date:
		PO# 04-1821	Sampler:

Project / Site Address / Global ID: 04-1821

Analysis Requested

EDF ☐ PDF ☐

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	Nitrate/ Sulfate Method 300.0						Field Point ID
MW-1	Water	1/250ml Pl	—	11-18-04 / 1315	X			41349-001			
MW-9	↓	↓	—	↓ / 1355	X					002	** Holding
MW-10	↓	↓	—	↓ / 1420	X					003	time expires 11/19/04

Nitrate only Expires today

Relinquished by:	Date:	Time:	Received by:
Angela Adams	11-19-04	12:30	Enteched
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Lab Comments/ Hazards

TERMS: NET 30 OAC

Entech

North State Labs
90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

Chain of Custody / Request for Analysis
Lab Job No.: _____ Page 1 of 1

Client: North State Labs	Report to: Angie Adams	Phone:	Turnaround Time
Mailing Address: Same As Above →	Billing to:	Fax:	Std
		email:	Date:
		PO# 04-1822	Sampler:

Project / Site Address / Global ID: 04-1822

Analysis Requested

Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	Nitrate/Sulfate Method 300.0						Field Point ID
MW-2	Water	1/250 mL P	—	11-18-04 / 1110	✓			41350	-001		
MW-3	↓	↓	—	↓ / 1215	✓				002		* Holding
MW-11	↓	↓	—	↓ / 1240	✓				003		time expires
											11/19/04

Relinquished by: Angela Adams	Date: 11-19-04	Time: 12:30	Received by: Rmachado	Lab Comments/ Hazards
Relinquished by:	Date:	Time:	Received by:	
Relinquished by:	Date:	Time:	Received by:	

TERMS: NET 30 OAC

Entech

North State Labs

90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

04-1821

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page___of___

Client: Cameron-Cole	Report to: EMILY WATERS	Phone: 510 769 3570	Turnaround Time: Standard
Mailing Address: 101 W. Atlantic Ave Bldg #90	Billing to: ↙ Same	Fax: 510 337 3994	
		email:	Date: 11-18-04
		PO# 2016	Sampler: MO/JS

Project / Site Address / Global ID: ACTRANSIT Seminary / 1100 Seminary Rd Oakland CA

Analysis Requested

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	8021 B BTEX/MTBE	TPH-GAS 8015 M	TPH-Diesel 8015 M	Nitrate Perchlorate				Field Point ID
1	MW-1	Water	3/VOA	HCl	11-18-04 / 1315	X							
			↓	↓			X						
			2 Amber	NA				X					
			1 Poly	↓	↓				X				
2	MW-9		3/VOA	HCl	11-18-04 / 1355	X							
			↓	↓			X						
			2 AMBER	NA				X					
			1 Poly	↓	↓				X				
3	MW-10		3 VOA	HCl	11-18-04 / 1420	X							
			↓	↓			X						
			2 AMBER	NA				X					
			1 Poly	↓	↓				X				
4	Trip Blank		3 VOA	HCl	11-18-04 / 1400	X							

EDF ☐
PDF ☒

Relinquished by: [signature]	Date: 11-18-04	Time: 1650	Received by: Angi Adams
Relinquished by: A. Adams	Date: 11-18-04	Time: 5:15	Received by: [signature]
Relinquished by:	Date:	Time:	Received by:

Lab Comments/ Hazards

TERMS: NET 30 OAC

North State Labs
90 South Spruce Avenue, Suite W, South San Francisco, CA 94080
Phone: (650) 266-4563 Fax: (650) 266-4560

04-1822

Chain of Custody / Request for Analysis
Lab Job No.:_____ Page___of___

Client: Cameron-Cole	Report to: EMILY Waters	Phone: 510 769 3570	Turnaround Time: Standard
Mailing Address: 101 W. Atlantic Ave Oild #90	Billing to: ← Same	Fax: 510 337 3994	
		email:	Date: 11-18-04
		PO# 2016	Sampler: MO/SS

Project / Site Address / Global ID: AC Transit Seminary / 1100 Seminary Rd

Analysis Requested

EDF ☐ PDF ☒

	Sample ID	Sample Type	Container No. / Type	Pres.	Sampling Date / Time	8021B (BTEX/MTBE)	TPH-GAS 8015M	TPH-Diesel 8015M	Nitrate Sulfate				Field Point ID
1	MW-2	Water	3/VOA	HCl	11-18-04/1110	X							
			↓	↓			X						
			2/1L AMBER	NA				X					
	↓		1 Poly	↓	↓				X				
2	MW-3		3/VOA	HCl	11-18-04/1215	X							
			↓	↓			X						
			2/Amber	NA				X					
	↓		1 Poly	↓	↓				X				
3	MW-11		3/VOA	HCl	11-18-04/1240	X							
			↓	↓	1240		X						
			2 AMBER	NA				X					
	↓	↓	1 Poly	↓	↓				X				

Relinquished by:	Date: 11-18-04	Time: 1630	Received by:	Lab Comments/ Hazards
Relinquished by: N. Adams	Date: 11-18-04	Time: 515	Received by:	
Relinquished by:	Date:	Time:	Received by:	

TERMS: NET 30 OAC

APPENDIX B

SAMPLING EVENT DATA

HYDRODATA

PROJECT: AC Transit-Seminary EVENT: Quarterly SAMPLER: MD/SS

NO.	WELL OR LOCATION	DATE	TIME	MEASUREMENT	CODE	COMMENTS
1	MW-3	11-18-04	0933	2.68	SWL	
2	MW-11	11-18-04	0937	2.75	"	
3	MW-1	11-18-04	0943	3.81	"	
4	MW-9	11-18-04	0948	3.91	"	
5	MW-10	11-18-04	0955	2.52	"	
6	MW-2	11-18-04	1005	4.67	"	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

CODES:

SWL - Static Water Level

OIL - Oil Level

OWI - Oil/Water Interface

MTD - Measured Total Depth

Well ID: MW-1

Project Name: AC Transit - Seminary
Project Number: 2016
Casing Diameter (in): 2"
Sample Date: 8-18-04
Total Well Depth (ft): 15.30
Sample ID: MW-1
Depth to Water (ft) before purging: 3.81

Development Method:
NA **Bailer:** _____Teflon _____Stainless Steel _____PVC _____ABS Plastic
Pump: _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

Time	pH	Conductivity (umho/cm)	Temperature (Celsius)	Water Level (to 0.01 ft.)	Cum. Vol. (gal)	Pump Rate (GPM)
1258	7.16	799	24.1	5.22	1.0	0.4
1304	7.01	832	24.2	5.78	2.5	↓
1308	7.01	835	24.1	6.01	4.5	↓
				Total Vol.	=6.0 gal	

Water Volume to be Purged (gal):
(Casing Length in Ft – Depth to Water in Ft) (X) (3)
Where X=1 Well Volume in Gal/ft, X=0.165 for 2" wells, X=0.37 for 3" wells, X=0.65 for 4" wells
15.30 - 3.81 = 11.49 x .165 = 1.89 x 3 = 5.68
NOTE: 3 to 5 Well Casing Volumes required prior to sample collection.

At least 3 well casing volumes were removed prior to sampling.

Sample Collection Method:
X **Bailer:** _____Teflon _____Stainless Steel X PVC _____ABS Plastic
_____**Pump:** _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

QA/QC Samples if any (Duplicate, Field Blank, Rinse Blank, Etc.):

Parameter Collected: 8021 B TPH GAS - 8015 M TPH Diesel - 8015 M Nitrate/Sulfate

Sample Appearance
_____OVA Reading (ppm)
_____Suspended Solids (describe):

Decontamination Performed:
Start: 1255
Stop: 1310
Sample: 1315

Fe: 2.84 mg/L
DO: 0.05 mg/L
ORP: -0.80

Comments / Calculations:
- Cent Pump used to purge
- Washed/Rinsed ⟹ Sounder/Meter

Well ID: MW-2

Project Name: AC Transit - Seminary
Project Number: 2016
Casing Diameter (in): 2"
Sample Date: 8-18-04
Total Well Depth (ft): 23.30
Sample ID: MW-2
Depth to Water (ft) before purging: 4.67

Development Method:

NA **Bailer:** _____Teflon _____Stainless Steel _____PVC _____ABS Plastic

Pump: _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

Time	pH (MO)	Conductivity (umho/cm)	Temperature (Celsius)	Water Level (to 0.01 ft.)	Cum. Vol. (gal)	Pump Rate (GPM)
1035	~~7.9~~ 6.73	2860	23.9	7.75	2.0	0.30
1046	6.71	3090	26.9	8.89	5.0	↓
1100	6.69	3080	27.8	8.95	8.0	↓
				Total Vol. = 9.5		

Water Volume to be Purged (gal):
(Casing Length in Ft – Depth to Water in Ft) (X) (3)
Where X =1 Well Volume in Gal/ft, X=0.165 for 2" wells, X=0.37 for 3" wells, X=0.65 for 4" wells
23.30 - 4.67 = 18.63 x .165 = 3.07 x 3 = 9.22
NOTE: 3 to 5 Well Casing Volumes required prior to sample collection.

At least 3 well casing volumes were removed prior to sampling.

Sample Collection Method:

X **Bailer:** _____Teflon _____Stainless Steel X PVC _____ABS Plastic

_____**Pump:** _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

QA/QC Samples if any (Duplicate, Field Blank, Rinse Blank, Etc.):

Parameter Collected: 8021 B TPH GAS - 8015 M TPH Diesel - 8015 M Nitrate/Sulfate

Sample Appearance
_____OVA Reading (ppm)
_____Suspended Solids (describe):

Decontamination Performed: Start: 1030
Stop: 1105
Sample: 1110

Fe: 3.30 mg/L
DO: 0.33 mg/L
ORP: -071 MV

Comments / Calculations:
- Cent Pump used to purge
- Washed/Rinsed ⟹ Sounder/Meter

11-18-04

Well ID: MW-2
Overpurge

Project Name: AC Transit - Seminary
Project Number: 2016
Casing Diameter (in): 2"
Sample Date: 8-18-04
Total Well Depth (ft): 23.30
Sample ID: mw 2
Depth to Water (ft) before purging: ~~5.81~~ (ND) 4.70

Development Method:
NA **Bailer:** _____Teflon _____Stainless Steel _____PVC _____ABS Plastic

Pump: _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

Time	pH	Conductivity (umho/cm)	Temperature (Celsius)	Water Level (to 0.01 ft.)	Cum. Vol. (gal)	Pump Rate (GPM)
			From Purge	10	gal	
			From overpurge	21	gal	
			Total Vol =	31	gal	

Water Volume to be Purged (gal):
(Casing Length in Ft – Depth to Water in Ft) (X) (3)
Where X =1 Well Volume in Gal/ft, X=0.165 for 2" wells, X=0.37 for 3" wells, X=0.65 for 4" wells
23.30 - 4.70 = 18.6 x .165 ≤ 3.0 x 10 = 30.70

NOTE: 3 to 5 Well Casing Volumes required prior to sample collection.

At least 3 well casing volumes were removed prior to sampling.

Sample Collection Method:
X **Bailer:** _____Teflon _____Stainless Steel X PVC _____ABS Plastic

_____**Pump:** _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

QA/QC Samples if any (Duplicate, Field Blank, Rinse Blank, Etc.):

Parameter Collected: 8021 B TPH GAS - 8015 M TPH Diesel - 8015 M Nitrate/Sulfate

Sample Appearance
_____OVA Reading (ppm)
_____Suspended Solids (describe):

Decontamination Performed: Start: 1115
Stop: ↑
Sample: 1355

Fe:
DO:
ORP:

Comments / Calculations:
- Cent Pump used to purge
- Washed/Rinsed ⟹ Sounder/Meter

Well ID: MW-3

Project Name: AC Transit - Seminary
Casing Diameter (in): 2"
Total Well Depth (ft): 17.00
Depth to Water (ft) before purging: 2.68

Project Number: 2016
Sample Date: 8-18-04
Sample ID: MW-3

Development Method:

NA **Bailer:** _____Teflon _____Stainless Steel _____PVC _____ABS Plastic

Pump: _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

Time	pH	Conductivity (umho/cm)	Temperature (Celsius)	Water Level (to 0.01 ft.)	Cum. Vol. (gal)	Pump Rate (GPM)
1153	7.61	337	28.6	5.61	2.5	0.55
1201	7.48	342	29.4	7.52	4.0	↓
1207	7.46	433	26.8	7.91	6.0	↓
				Tot Vol.	= 7.2 gal	

Water Volume to be Purged (gal):
(Casing Length in Ft – Depth to Water in Ft) (X) (3)
Where X =1 Well Volume in Gal/ft, X=0.165 for 2" wells, X=0.37 for 3" wells, X=0.65 for 4" wells
17.00 - 2.68 = 14.32 x .165 = 2.36 x 3 = 7.0

NOTE: 3 to 5 Well Casing Volumes required prior to sample collection.

At least 3 well casing volumes were removed prior to sampling.

Sample Collection Method:

X **Bailer:** _____Teflon _____Stainless Steel X PVC _____ABS Plastic

_____**Pump:** _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

QA/QC Samples if any (Duplicate, Field Blank, Rinse Blank, Etc.):

Parameter Collected: 8021 B TPH GAS - 8015 M TPH Diesel - 8015 M Nitrate/Sulfate

Sample Appearance
_____OVA Reading (ppm)
_____Suspended Solids (describe):

Decontamination Performed: Start: 1140
stop: 1210
sample: 1215

Fe: 0.30 mg/L
DO: 0.85 mg/L
ORP: ~~-082~~ (MO) -082

Comments / Calculations:
- Cent Pump used to purge
- Washed/Rinsed ⟹ Sounder/Meter

Name: _____ Date: _____

Well ID: mw-9

Project Name: AC Transit - Seminary
Casing Diameter (in): 2"
Total Well Depth (ft): 19.70
Depth to Water (ft) before purging: 3.91

Project Number: 2016
Sample Date: 8-18-04
Sample ID: mw-9

Development Method:
NA **Bailer:** _____Teflon _____Stainless Steel _____PVC _____ABS Plastic
Pump: _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

Time	pH	Conductivity (umho/cm)	Temperature (Celsius)	Water Level (to 0.01 ft.)	Cum. Vol. (gal)	Pump Rate (GPM)
1334	7.27	535	25.7	5.62	1.5	0.4
1340	7.42	789	26.5	(R) 6.78	4	↓
1345	7.39	834	26.4	8.11	7	
						↓
				Total Vol	8.0	

Water Volume to be Purged (gal):
(Casing Length in Ft – Depth to Water in Ft) (X) (3)
Where X =1 Well Volume in Gal/ft, X=0.165 for 2" wells, X=0.37 for 3" wells, X=0.65 for 4" wells
15.79 x .165 = 2.60 x 3 = 7.8
NOTE: 3 to 5 Well Casing Volumes required prior to sample collection.

At least 3 well casing volumes were removed prior to sampling.

Sample Collection Method:
X **Bailer:** _____Teflon _____Stainless Steel X PVC _____ABS Plastic
_____**Pump:** _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

QA/QC Samples if any (Duplicate, Field Blank, Rinse Blank, Etc.):

Parameter Collected: 8021 B TPH GAS - 8015 M TPH Diesel - 8015 M Nitrate/Sulfate

Sample Appearance
_____OVA Reading (ppm)
_____Suspended Solids (describe):

Decontamination Performed:
Start: 1330
Stop: 1351
Sample: 1355

Fe: 0.00 mg/L
DO: 1.04
ORP: 064 mV

Comments / Calculations:
- Cent Pump used to purge
- Washed / Rinsed ⇒ Sounder/Meter

Well ID: MW-16

Project Name: AC Transit - Seminary
Project Number: 2016
Casing Diameter (in): 2"
Sample Date: 8-18-04
Total Well Depth (ft): 11.40
Sample ID: MW-16
Depth to Water (ft) before purging: 2.52

Development Method:
NA **Bailer:** _____Teflon _____Stainless Steel _____PVC _____ABS Plastic

Pump: _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

Time	pH	Conductivity (umho/cm)	Temperature (Celsius)	Water Level (to 0.01 ft)	Cum. Vol. (gal)	Pump Rate (GPM)
1405	7.10	3410	25.6	2.94	1	0.3
1407	7.07	3200	24.9	3.10	2	↓
1410	7.13	3030	24.5	3.98	3.5	↓
				Total vol.	4.5	

Water Volume to be Purged (gal):
(Casing Length in Ft – Depth to Water in Ft) (X) (3)
Where X =1 Well Volume in Gal/ft, X=0.165 for 2" wells, X=0.37 for 3" wells, X=0.65 for 4" wells
11.40 - 2.52 = 8.88 x .165 = 1.46 x 3 = 4.4

NOTE: 3 to 5 Well Casing Volumes required prior to sample collection.

At least 3 well casing volumes were removed prior to sampling.

Sample Collection Method:
X **Bailer:** _____Teflon _____Stainless Steel X PVC _____ABS Plastic

_____**Pump:** _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

QA/QC Samples if any (Duplicate, Field Blank, Rinse Blank, Etc.):

Parameter Collected: 8021 B TPH GAS - 8015 M TPH Diesel - 8015 M Nitrate/Sulfate

Sample Appearance
_____OVA Reading (ppm)
_____Suspended Solids (describe):

Decontamination Performed: Start: 1402
Stop: 1417
Sample: 1420

Fe: 0.0 mg/L
DO: 0.66 mg/L
ORP: -0.33

Comments / Calculations:
- Cent Pump used to purge
- Washed/Rinsed ⟹ Sounder/Meter

Trip Blank Collected @ 1400

Well ID: MW-11

Project Name: AC Transit - Seminary
Casing Diameter (in): 2"
Total Well Depth (ft): 13.44
Depth to Water (ft) before purging: 2.68

Project Number: 2016
Sample Date: 8-18-04
Sample ID: mw-11

Development Method:
NA **Bailer:** _____Teflon _____Stainless Steel _____PVC _____ABS Plastic
Pump: _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

Time	pH	Conductivity (umho/cm)	Temperature (Celsius)	Water Level (to 0.01 ft)	Cum. Vol. (gal)	Pump Rate (GPM)
1042	7.21	1056	22.5	7.39	1.5	0.3
1054	7.29	1035	23.0	8.10	2.5	↓
1150	7.30	1034	22.9	7.91	4.0	↓
				Total vole	= 5.5	

Water Volume to be Purged (gal):
(Casing Length in Ft – Depth to Water in Ft) (X) (3)
Where X =1 Well Volume in Gal/ft, X=0.165 for 2" wells, X=0.37 for 3" wells, X=0.65 for 4" wells
13.44 - 2.68 = 10.76 x 0.165 = 1.77 x 3 = 5.3
NOTE: 3 to 5 Well Casing Volumes required prior to sample collection.

At least 3 well casing volumes were removed prior to sampling.

Sample Collection Method:
X **Bailer:** _____Teflon _____Stainless Steel X PVC _____ABS Plastic
_____**Pump:** _____Dedicated Submersible Pump _____Bladder Pump
_____Non-Dedicated Submersible Pump

QA/QC Samples if any (Duplicate, Field Blank, Rinse Blank, Etc.):

Parameter Collected: 8021 B TPH GAS - 8015 M TPH Diesel - 8015 M Nitrate / Sulfate

Sample Appearance
_____OVA Reading (ppm)
_____Suspended Solids (describe):

Decontamination Performed: Start: 1020
Stop: 1235
Sample: 1240

Fe: 0.30 mg/L
DO: 0.90 mg/L
ORP: 47 mv

Comments / Calculations:
- Cent Pump used to purge
- Washed / Rinsed ⟹ Sounder/Meter