

# AC Transit

Alameda-Contra Costa Transit District

10626 East 14th Street, Oakland, California

94603 ☐ (510) 577-8804

FAX ☐ (510) 577-8859

ENVIRONMENTAL  
PROTECTION

00 APR 12 PM 3:10



April 11, 2000

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

# 1233

Dear Mr. Chan:

Subject: Quarterly Monitoring and Well Installation Report  
AC Transit, 1100 Seminary Avenue, Oakland, CA

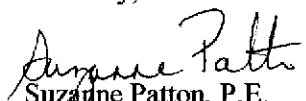
AC Transit hereby submits the enclosed quarterly groundwater monitoring and well installation report for the AC Transit facility located at 1100 Seminary Avenue in Oakland. The report was prepared by our consultant, Safety-Kleen Consulting (formerly called Environmental Decision Group).

Three additional ground water monitoring wells were installed by Safety-Kleen on January 10, 2000, in accordance with the investigation requirements outlined in your August 9, 1999, letter. These wells were included in the quarterly ground water sampling program conducted by Safety-Kleen Consulting in February 2000.

Analytical results of grab water samples collected from the three new wells (MW-9, MW-10, and MW-11) showed nondetectable concentrations of petroleum hydrocarbons, benzene, toluene, ethylbenzene and xylenes (BTEX). Methyl-tert-butylether (MTBE) was not detected in MW-9 and MW-10 but was found in MW-11 at a concentration of 25 ppb. Analyses of samples collected from the three wells (MW-1, MW-2, and MW-3) nearest the former tank farm area showed elevated concentrations of diesel, gasoline and BTEX compounds. The highest results were found to be present in the samples collected from MW-2 with a diesel concentration of 160,000 ppb, gasoline concentration of 51,000 ppb, benzene concentration of 19,000 ppb and ethylbenzene concentration of 920 ppb. The benzene and the ethylbenzene concentrations exceeded their respective Maximum Contaminant Levels (MCLs) of 1 ppb and 700 ppb.

The next quarterly ground water monitoring will be conducted the week of May 22, 2000. Safety-Kleen Consulting will contact you at least 72-hours prior to sampling. If you have any questions regarding this information or other matters pertaining to this site, please call me at (510) 577-8869.

Sincerely,

  
Suzanne Patton, P.E.  
Environmental Manager

SP/sp

enclosure

Barneychan1.doc

MOVING TOWARD THE 21st CENTURY

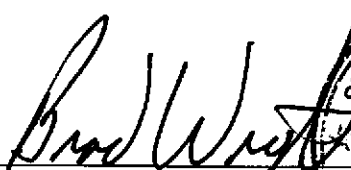
**GROUNDWATER MONITORING  
REPORT FOR THE  
AC TRANSIT FACILITY  
LOCATED AT 1100 SEMINARY AVENUE,  
OAKLAND, CALIFORNIA**

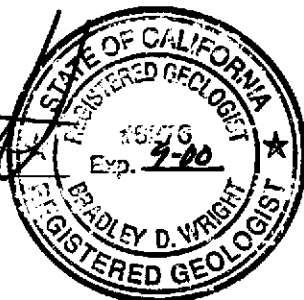
March 28, 2000

**Prepared For:**  
Ms. Suzanne Patton  
AC Transit  
10626 E. 14<sup>th</sup> Street  
Oakland, California 94603

**Prepared By:**  
Safety-Kleen Consulting  
2233 Santa Clara Avenue  
Alameda, California 94501

Project No: 792588

  
Written By  
Brad Wright, RG, CHG



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## INTRODUCTION

This report presents the results of monitor well installation and quarterly groundwater monitoring conducted at the AC Transit Facility located at 1100 Seminary Avenue, Oakland, California (Site) (Figure 1). In accordance with the Alameda County Health Care Services (County) letter dated August 9, 1999, three additional groundwater monitor wells were installed at the Site on January 10, 2000. These wells were located and designed to monitor groundwater quality in shallow saturated soils downgradient of an area of hydrocarbon contamination originating from five underground storage tanks removed from the Site in January 1987. The presence of the hydrocarbon contamination was determined from data collected during numerous investigations performed from 1987 through 1999, the results of which are presented in the document *Subsurface Investigation Report for the AC Transit Facility 1100 Seminary Avenue, Oakland, California* (EDG, 1999).

AC Transit retained Safety-Kleen Consulting to perform the work defined in the County's August 9, 1999 letter. Groundwater sampling of existing monitor wells MW-1 through MW-3 and newly installed monitor wells MW-9 through MW-11 was performed on February 7, 2000.

## OBJECTIVES AND SCOPE OF WORK

As recommended in the document *Subsurface Investigation Report for the AC Transit Facility 1100 Seminary Avenue, Oakland, California* (EDG, 1999), three additional monitor wells were installed at the Site. The wells were installed downgradient of soil boring SB-1, SB-2 and SB-4 drilled during the 1999 investigation. Grab groundwater samples collected from these soil borings showed concentrations of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl-tert butylether (MTBE) below laboratory reporting limits. Monitor well and soil boring locations relative to the Site layout are shown on Figure 2.

Monitor wells MW-9 through MW-11 were installed on January 10, 2000 under permit from the Alameda County Public Works Agency. A copy of the well permit is presented in Appendix A.

The wells were installed using hollow stem auger drilling equipment. During borehole installation a continuous core was collected and logged by the onsite geologist. Monitor well boring logs are presented in Appendix B. Sediments encountered during well installation were consistent with those described during previous investigations. Silty clay (CL/CH) was encountered immediately below the surface pavement to depths of five to nine feet below ground surface (bgs). A one to two foot thick silty sand to clayey sand (SM/SC) layer was encountered immediately below the surface clay. The sand layer was underlain by a silty clay to sandy clay (CL/CH) layer. A second clayey sand (SC) layer was logged at depths of 10 to 12 feet and 13 to 14 feet in monitor wells MW-10 and MW-11, respectively. The lower clay interval encountered in monitor well MW-9 contained thin clayey sand (SC) stringers. As shown on the monitor well logs, these sand layers were not fully saturated, however, free water was observed in the boreholes prior to well construction. The monitor wells were constructed using two-inch diameter PVC well screen and casing. A graded sand filterpack was placed from the bottom of each screen interval to one foot above the screen interval. A bentonite bridge was placed on top of the filterpack and the wells were sealed to the surface with neat cement. Each well was protected with a traffic rated vault box and locking watertight compression cap. The top of casing elevation of the three newly installed wells was surveyed relative to existing well MW-2.

Work performed during quarterly sampling included measuring depth to water and presence of free phase hydrocarbons in the monitor wells and sample collection. Field parameters collected during sampling included pH, temperature, electric conductivity, dissolved oxygen (DO) and oxygen reduction potential (ORP). Groundwater samples were collected for laboratory analysis using United States Environmental Protection Agency (USEPA) Method 8015 for TPH gasoline/diesel, USEPA Method 8260B for BTEX and MTBE, USEPA Method 6010B for iron, 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 C. Field data sheets are included in Appendix D.

### **Groundwater Elevations and Flow Direction**

Prior to purging and sample collection, all 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. The free phase hydrocarbon previously detected in MW-2 was not present during this sampling event, however a hydrocarbon sheen was detected. As shown on Figure 2, groundwater flow is to the west at a gradient of 0.0035 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 and temperature were monitored using calibrated field meters. Purge water was transferred to 55-gallon drums and placed in the Site's drum waste storage area.

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. A trip blank was submitted for analysis by EPA Method 8260.

### **Groundwater Analytical Results**

Table 2 presents groundwater historic and first quarter 2000 analytical results. Concentrations of BTEX above State of California maximum contaminant levels (MCLs) were detected in existing monitor wells MW-1 through MW-3. In addition, concentrations of TPH-gasoline were detected in wells MW-1 through MW-3 and TPH-diesel was detected in well MW-2. Chemical concentrations above laboratory reporting limits detected in newly installed wells MW-9 through

MW-11 were limited to unspecified hydrocarbons, with the exception of 25 parts per billion (ppb) MTBE detected in MW-11. The carbon chain range of the unspecified hydrocarbon suggest that these concentrations represent degraded diesel. No analytes were detected in the trip blanks or method blanks. A lab control spike and lab control spike duplicate passed the USEPA's criteria for acceptance.

Additional geochemical analysis was performed to monitor potential natural attenuation and/or degradation of TPH and related compounds in groundwater. These included analysis for DO, ORP, iron, sulfate and nitrate. An evaluation of concentrations of the geochemical parameters for wells MW-1 through MW-3 and new wells MW-9 through MW-11, suggests that biodegradation processes may be occurring. This is supported by higher sulfate and nitrate concentrations observed along the edge contamination as compared to those detected in the interior of the affected area. However, an affective evaluation of biodegradation processes can only be done after reviewing data collected over an extended period of time.

#### **SUMMARY OF RESULTS**

- Newly installed monitor wells MW-9 through MW-11 were completed to depths of 12 to 20 feet bgs;
- The free phase hydrocarbon layer previously detected in monitor well MW-2 was limited to a sheen during the February 2000 sampling event;
- Groundwater flow direction was interpreted to be toward the west at a gradient of 0.0035 feet/foot;
- Chemical concentrations of in excess of MCLs were limited to BTEX compounds in wells MW-1 through MW-3; and
- Sulfate and nitrate concentrations detected in Site monitor wells suggest that

biodegradation of TPH and related compounds may be occurring.

**PROJECTED WORK AND RECOMMENDATIONS**

- Quarterly groundwater monitoring is scheduled for May 2000.



**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	
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	
MW-3	7-Jan-99	4.76	None	4.11	0.65	
	7-Feb-00		None	3.1	1.66	
MW-9	7-Feb-00	5.8	None	4.37	1.43	
MW-10	7-Feb-00	4.65	None	3.19	1.46	
MW-11	7-Feb-00	4.19	None	4.97	-0.78	

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/Boring	Date	TPH-G	TPH-D	TPH	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE	Nitrate	Sulfate	Dissolved O <sup>2</sup>	Fe
		MCL (ppb)			1	150	700	1,750					
MW-1	7-Jan-99	<100	470	NA	17	2	31	18	<50	150	3,400	360	53
	7-Feb-00	390	<60	1,300	13	<10	<10	<10	<20	<50	1,200	1,220	11,800
MW-2 (Product)	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
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
MW-9	7-Feb-00	<50	<50	240	<1	<1	<1	<1	<2	230	183,000	6,940	9,000
MW-10	7-Feb-00	<50	<50	470	<1	<1	<1	<1	<2	53	114,000	1,200	55,000
MW-11	7-Feb-00	<50	<50	400	<1	<1	<1	<1	25	800	167,000	7,300	16,200

Notes:

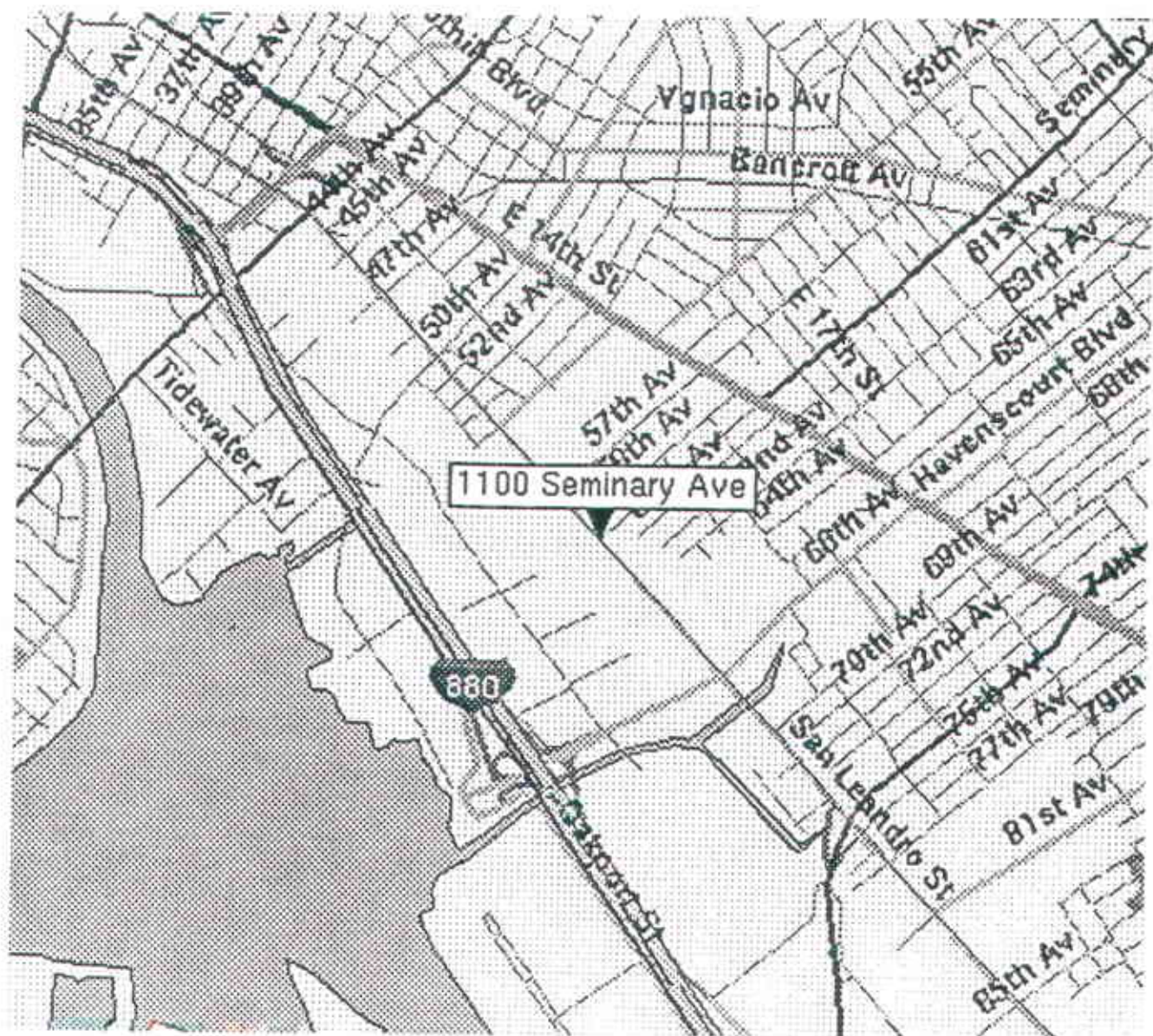
ppb: parts per billion

TPH-G: total petroleum hydrocarbons as gasoline

TPH-D: total petroleum hydrocarbons as diesel

TPH: total petroleum hydrocarbons as motor oil or unknow hydrocarbon

MCL: Maximum Contaminant Level



LOCMAP



AC TRANSIT - OAKLAND, CALIFORNIA

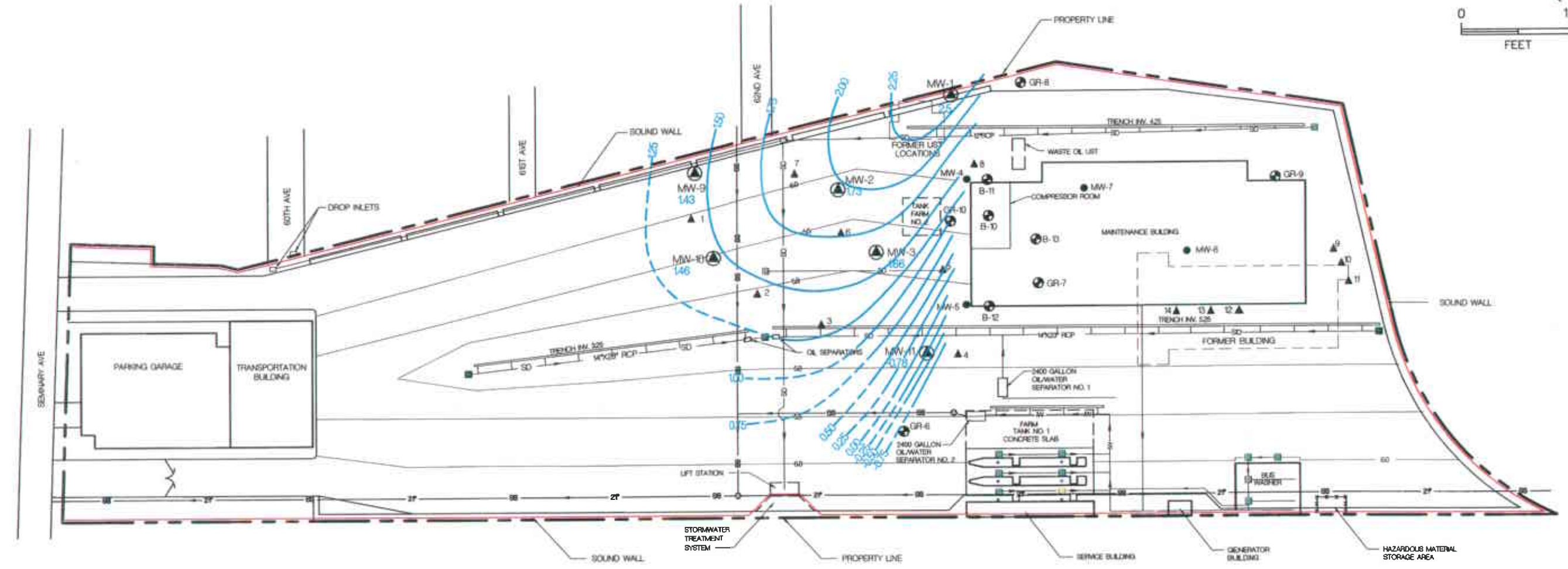
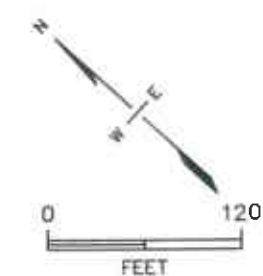
FIGURE 1  
SITE LOCATION MAP  
1100 SEMINARY ROAD

SCALE

NO SCALE

DATE

3/22/00



**LEGEND:**

	GROUNDWATER ELEVATION CONTOUR		EXISTING MONITORING WELL
	GROUNDWATER ELEVATION		ABANDONED MONITORING WELL
	6.0 CONTOUR		PREVIOUSLY INSTALLED SOIL BORING
	SD STORM DRAIN PIPELINE		NEWLY INSTALLED SOIL BORING
	SS SANITARY SEWER PIPELINE		MANHOLE
	IW INDUSTRIAL WASTE PIPELINE		CATCH BASIN
	SURFACE DRAINAGE TRENCH		

BY	DATE
WRB	2/24/00
CHECKED	
APPROVED	
APPROVED	
APPROVED	



<b>AC TRANSIT - OAKLAND, CALIFORNIA</b>	
<b>FIGURE 2</b>	
<b>1100 SEMINARY ROAD - POTENTIOMETRIC SURFACE MAP</b>	
SCALE	1" = 120'
DWG. NO:	792489-06

**APPENDIX A**

**WELL PERMIT**

USA - 3599



ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION

951 TURNER COURT, SUITE 308, HAYWARD, CA 94543-2651  
 PHONE (510) 670-5373 ANDREAS GODFREY FAX (510) 670-5262  
 (510) 670-5268 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT 1100 Seminary Ave  
Oakland Ca 94603

PERMIT NUMBER 99WR718  
 WELL NUMBER \_\_\_\_\_  
 APN \_\_\_\_\_

California Coordinates Source \_\_\_\_\_ ft. Accuracy ± \_\_\_\_\_ ft.  
 CCN \_\_\_\_\_ ft. CCE \_\_\_\_\_ ft.  
 APN 41-4030-1

PERMIT CONDITIONS

Circled Permit Requirements Apply

CLIENT  
 Name AL Transit (Suzanne Patton)  
 Address 10626 E 14th St Phone 527-8864  
 City Oakland Ca. Zip 94603

A. GENERAL

1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

APPLICANT  
 Name Safety-Klean for Gregg Drilling Fax 877-7854  
 Address 2113 Sutter Clark Phone 377-8660  
 City Alameda Zip 94501

B. WATER SUPPLY WELLS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

TYPE OF PROJECT  
 Well Construction \_\_\_\_\_ Geotechnical Investigation \_\_\_\_\_  
 Cathodic Protection  General   
 Water Supply  Contamination   
 Monitoring  Well Destruction

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

PROPOSED WATER SUPPLY WELL USE  
 New Domestic  Replacement Domestic   
 Municipal  Irrigation   
 Industrial  Other \_\_\_\_\_

D. GEOTECHNICAL

Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

DRILLING METHOD:  
 Mud Rotary  Air Rotary  Auger   
 Cable  Other

E. CATHODIC

Fill hole above anode zone with concrete placed by tremie.

DRILLER'S LICENSE NO. C57 485165

F. WELL DESTRUCTION

See attached.

WELL PROJECTS  
 Drill Hole Diameter 6 in. Maximum Depth 20 ft.  
 Casing Diameter 6 in. Number 3  
 Surface Seal Depth 5 ft.

G. SPECIAL CONDITIONS

GEOTECHNICAL PROJECTS  
 Number of Borings \_\_\_\_\_ Maximum Hole Diameter \_\_\_\_\_ in. Depth \_\_\_\_\_ ft.

ESTIMATED STARTING DATE Jan 5, 2000  
 ESTIMATED COMPLETION DATE Jan 6, 2000

APPROVED

Frank L. Pohl DATE 12-30-99

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Brad Wright DATE 12-30-99

**APPENDIX B**  
**MONITOR WELL BORING LOGS**

# SAFETY-KLEEN CONSULTING

# SOIL BORING/WELL LOG

Page 1 of 1

WELL NO. MW-9

CLIENT: AC Transit			JOB NUMBER: 792588		
PROJECT: 1100 Seminary Ave			LOCATION: Oakland, California		
EXCAVATED BY: Gregg Drilling		OPERATOR: Tony		METHOD: Hollow Stem Auger	
DATE START: 1-10-00		DATE COMP: 1-10-00		TIME:	TOTAL DEPTH: 20.0 FT
LOGGED BY: B. Wright			APPROVED BY: B. Wright		DEPTH TO WATER: FT

WELL COMP	DPT	BLOWS	GRAPHIC LOG USCS CODE	DESCRIPTION	OVM (ppm)	SAMPLE NUMBER	SAMPLE ANAL.
<p>Labels in diagram: 6" Borehole, End Cap, 2" 0.02 Slot Well Screen, 8120 Mesh Sand Pack, Blank Casing, Traffic Rated Vault Locking Cap, Bentonite, Portland Cement, Concrete.</p>				10-inch concrete			
			CL	1-9' Silty Clay: (0,30,40,30); black (N2.5/) to light olive brown (2.5Y5/4) @ 5'; stiff; slightly moist	0.0		
	5		SC	9-11.5' Clayey Sand: (0,60,20,20); variegated brown (10YR4/3); fine to coarse sand; dense; slightly plastic; moist @ 10' coarse sand decreased			
	10		CL	11.5-14' Sandy Clay: (0,40,30,30); brown (10YR4/3); stiff; plastic; moist	0.0		
	15		CL	14-20' Silty Clay: (0,20,40,40); brown (10YR4/3); stiff; plastic; slightly moist. Trace clayey sand (Sc) stringers; very moist			
	20			Total Depth 20'	0.0		

JOB NUMBER: 792588



# SAFETY-KLEEN CONSULTING

# SOIL BORING/WELL LOG

Page 1 of 1

WELL NO. MW-10

CLIENT: AC Transit			JOB NUMBER: 792588		
PROJECT: 1100 Seminary Ave			LOCATION: Oakland, California		
EXCAVATED BY: Gregg Drilling		OPERATOR: Tony		METHOD: Hollow Stem Auger	
DATE START: 1-10-00		DATE COMP: 1-10-00		TIME:	TOTAL DEPTH: 13.5 FT
LOGGED BY: B. Wright		APPROVED BY: B. Wright		DEPTH TO WATER: FT	

WELL COMP	DPT	BLOWS	GRAPHIC LOG USCS CODE	DESCRIPTION	OVM (ppm)	SAMPLE NUMBER	SAMPLE ANAL.
				10-inch concrete			
			CL	1-5' Silty Clay: (0,30,40,30); black (N2.5/) to light olive brown (2.5Y5/4); stiff; slightly moist	0.0		
	5		SM	5-7' Silty Sand: (0,70,20,10); dark grayish brown (2.5Y4/2); fine to coarse sand; subrounded; loose; well graded; moist			
			CL	7-8' Sandy Clay: (0,30,30,40); gray (2.5Y5/1); fine to coarse sand; stiff; moist	0.0		
			CL	8-10' Silty Clay: (0,20,40,40); brownish yellow (10YR6/6); fine grained sand; stiff; slightly moist			
	10		SC	10-12' Clayey Sand: (0,60,20,20); yellowish brown (10YR5/4) variegated; fine to coarse sand; dense; moist. Clay content decreased @ 11' (0,70,20,10)			
			CL	12-13.5' Silty Clay: (0,20,40,40); light yellowish brown (10YR6/4); stiff; plastic; moist			
				Total Depth 13.5'	0.0		
	15						
	20						

JOB NUMBER: 792588

CLIENT: AC Transit			JOB NUMBER: 792588		
PROJECT: 1100 Seminary Ave			LOCATION: Oakland, California		
EXCAVATED BY: Gregg Drilling		OPERATOR: Tony		METHOD: Hollow Stem Auger	
DATE START: 1-10-00		DATE COMP: 1-10-00		TIME:	TOTAL DEPTH: 17.0 FT
LOGGED BY: B. Wright			APPROVED BY: B. Wright		DEPTH TO WATER: FT

WELL COMP	DPT	BLOWS	GRAPHIC LOG USCS CODE	DESCRIPTION	OVM (ppm)	SAMPLE NUMBER	SAMPLE ANAL.
				10-inch concrete			
			CH	1-7.5' Silty Clay: (0,20,40,40); black (N2.5Y); stiff; high plastic; moist	0.0		
	5			@ 6' Olive (5Y4/3) @ 7' Sand content increased (0,40,30,30)			
			SC	7.5-8.5' Clayey Sand: (0,60,20,20); light olive brown (2.5Y5/4); fine to coarse sand; dense; medium plastic; moist			
	10		CH	8.5-13' Silty Clay: (0,20,40,40); yellowish brown (10YR5/6); stiff; high plastic; moist	0.0		
				@ 10' Sand content increased; moisture increased @ 12' Slightly moist			
			SC	13-14' Clayey Sand: (0,60,20,20); yellowish brown (10YR5/6); fine to coarse sand; dense; moist			
			CL	14-17' Silty Clay: (0,20,40,40); yellowish brown (10YR5/6); stiff; plastic; moist	0.0		
				Total Depth 17'			
	20						

**APPENDIX C**

**CERTIFIED ANALYTICAL REPORTS**

**CHAIN-OF-CUSTODY DOCUMENTS**



Quanterra  
880 Riverside Parkway  
West Sacramento, California 95605-1500

916 373-5600 Telephone  
916 372-1059 Fax

February 25, 2000

QUANTERRA INCORPORATED PROJECT NUMBER: G0B080174  
PO/CONTRACT:

Brad Wright  
Safety Kleen Consulting  
2233 Santa Clara Ave  
Suite 7  
Alameda, CA 94501

Dear Mr. Wright,

This report contains the analytical results for the samples received under chain of custody by Quanterra Incorporated on 2/8/00. These samples are associated with your AC TRANSIT SEMINARY project.

The case narrative is an integral part of this report.

Preliminary results were sent via facsimile on February 25, 2000.

If you have any questions, please feel free to call me at (916)374-4414.

Sincerely,

A handwritten signature in cursive script that reads "Bonnie J. McNeill".

Bonnie J. McNeill  
Project Manager

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QUANTERRA INCORPORATED PROJECT NUMBER G0B080174

Case Narrative

Quanterra's Quality Assurance Program

Sample Description Information

Chain of Custody Documentation

General Chemistry - Various Methods

Samples: 1, 2, 3, 4, 5, 6

Sample Data Sheets

Method Blank Reports

Laboratory QC Reports

Initial Calibration

Continuing Calibration

Instrument Log Copies

**CASE NARRATIVE**

**QUANTERRA INCORPORATED PROJECT NUMBER G0B080174**

**General Comments**

Samples were received at 9 degrees Centigrade.

There were no anomalies associated with this project.

**Quanterra - Western Region  
Quality Control Definitions**

QC Parameter	Definition
QC Batch	A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots.
Duplicate Control Sample (DCS)	Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD.
Duplicate Sample (DU)	A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch.
Laboratory Control Sample (LCS)	A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked.
Method Blank (MB)	A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps.
Surrogate Spike	Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process.

Source: Quanterra® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

## Sample Summary

### G0B080174

<u>WO#</u>	<u>Sample #</u>	<u>Client Sample ID</u>	<u>Sampling Date</u>	<u>Received Date</u>
D8ALQ	1	MW-1	2/7/00 11:30 AM	2/8/00 09:55 AM
D8AN7	2	MW-9	2/7/00 12:10 PM	2/8/00 09:55 AM
D8AN9	3	MW-10	2/7/00 12:45 PM	2/8/00 09:55 AM
D8ANA	4	MW-11	2/7/00 01:20 PM	2/8/00 09:55 AM
D8ANC	5	MW-3	2/7/00 02:15 PM	2/8/00 09:55 AM
D8ANE	6	MW-2	2/7/00 02:50 PM	2/8/00 09:55 AM

#### Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weigh



# Chain of Custody Record



QUA-4124 0797

Client <b>Safety-Kleen</b>		Project Manager <b>Brad Wright</b>		Date <b>2-7-00</b>	Chain of Custody Number <b>27605</b>
Address <b>2233 Santa Clara Ave</b>		Telephone Number (Area Code) & Number <b>510-337-8660</b>		Lab Number	Page <b>1</b> of <b>1</b>
City <b>Alameda</b>	State <b>Ca</b>	Zip Code <b>94501</b>	Site Contact	Lab Contact	

Project Name <b>AC Transit Seminary</b>		Carrier/Waybill Number <b>UPS 1Z81187E2210038414</b>		Analysis (Attach list if more space is needed)		Special Instructions/ Conditions of Receipt
Contract/Purchase Order/Quote No.						

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix			Containers & Preservatives							Analysis	Special Instructions/ Conditions of Receipt
			Aqueous	Sed.	Soil	Unpres.	HgSO4	HNO3	HCl	NaOH	ZnAc/NaOH			
MW-1	2-7-00	11:30	X											48 Hour Hold
MW-9		12:10	X											
MW-10		12:45	X											
MW-11		13:20	X											
MW-3		14:15	X											
MW-2		14:50	X											

RECEIVED IN GOOD CONDITION UNDER COC  
FEB - 8 2000  
IN: *[Signature]*

Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown	Sample Disposal <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	(A fee may be assessed if samples are retained longer than 3 months)
--	---	--

Turn Around Time Required <input type="checkbox"/> 24 Hours <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/> 7 Days <input type="checkbox"/> 14 Days <input type="checkbox"/> 21 Days <input type="checkbox"/> Other _____	QC Requirements (Specify)
--	---------------------------

1. Relinquished By <i>[Signature]</i>	Date <b>2-7-00</b>	Time <b>15:15</b>	1. Received By <i>[Signature]</i>	Date <b>2-8-00</b>	Time <b>11:30</b>
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

*General Chemistry - Various Methods*



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-1

**General Chemistry**

Lot-Sample #...: G0B080174-001

Work Order #...: D8ALQ

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrate as N	ND	0.050	mg/L	MCAWW 300.0A	02/08/00	0040200
		Dilution Factor: 1				
Sulfate	1.2	1.0	mg/L	MCAWW 300.0A	02/08/00	0040201
		Dilution Factor: 1				



SAFETY KLEEN CONSULTING

Client Sample ID: MW-9

General Chemistry

Lot-Sample #...: G0B080174-002

Work Order #...: D8AN7

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrate as N	0.23	0.050	mg/L	MCAWW 300.0A	02/08/00	0040200
		Dilution Factor: 1				
Sulfate	183 Q	50.0	mg/L	MCAWW 300.0A	02/08/00	0040201
		Dilution Factor: 50				

**NOTE(S) :**

RL Reporting Limit

Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.



**SAFETY KLEEN CONSULTING**

**Client Sample ID: MW-10**

**General Chemistry**

**Lot-Sample #....: GOB080174-003**  
**Date Sampled....: 02/07/00**

**Work Order #....: D8AN9**  
**Date Received...: 02/08/00**

**Matrix.....: WATER**

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrate as N	0.053	0.050	mg/L	MCAWW 300.0A	02/08/00	0040200
		Dilution Factor: 1				
Sulfate	114 Q	5.0	mg/L	MCAWW 300.0A	02/08/00	0040201
		Dilution Factor: 5				

**NOTE(S) :**

RL Reporting Limit

Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-11

**General Chemistry**

Lot-Sample #....: G0B080174-004

Work Order #....: D8ANA

Matrix.....: WATER

Date Sampled....: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrate as N	0.80	0.050	mg/L	MCAWW 300.0A	02/08/00	0040200
		Dilution Factor: 1				
Sulfate	167 Q	50.0	mg/L	MCAWW 300.0A	02/08/00	0040201
		Dilution Factor: 50				

**NOTE(S) :**

RL Reporting Limit

Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.



SAFETY KLEEN CONSULTING

Client Sample ID: MW-3

General Chemistry

Lot-Sample #...: G0B080174-005

Work Order #...: D8ANC

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrate as N	ND	0.050	mg/L	MCAWW 300.0A	02/08/00	0040200
		Dilution Factor: 1				
Sulfate	47.3 Q	10.0	mg/L	MCAWW 300.0A	02/08/00	0040201
		Dilution Factor: 10				

**NOTE(S) :**

RL Reporting Limit

Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.



SAFETY KLEEN CONSULTING

Client Sample ID: MW-2

General Chemistry

Lot-Sample #....: G0B080174-006

Work Order #....: D8ANE

Matrix.....: WATER

Date Sampled....: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrate as N	0.051	0.050	mg/L	MCAWW 300.0A	02/08/00	0040200
		Dilution Factor: 1				
Sulfate	ND	1.0	mg/L	MCAWW 300.0A	02/08/00	0040201
		Dilution Factor: 1				



## QC DATA ASSOCIATION SUMMARY

GOB080174

### Sample Preparation and Analysis Control Numbers

<u>SAMPLE#</u>	<u>MATRIX</u>	<u>ANALYTICAL METHOD</u>	<u>LEACH BATCH #</u>	<u>PREP BATCH #</u>	<u>MS RUN#</u>
001	WATER	MCAWW 300.0A		0040201	0040078
	WATER	MCAWW 300.0A		0040200	0040080
002	WATER	MCAWW 300.0A		0040201	0040078
	WATER	MCAWW 300.0A		0040200	0040080
003	WATER	MCAWW 300.0A		0040201	0040078
	WATER	MCAWW 300.0A		0040200	0040080
004	WATER	MCAWW 300.0A		0040201	0040078
	WATER	MCAWW 300.0A		0040200	0040080
005	WATER	MCAWW 300.0A		0040201	0040078
	WATER	MCAWW 300.0A		0040200	0040080
006	WATER	MCAWW 300.0A		0040201	0040078
	WATER	MCAWW 300.0A		0040200	0040080



METHOD BLANK REPORT

General Chemistry

Client Lot #....: G0B080174

Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
Nitrate as N	ND	Work Order #: D8CNV101 0.050	mg/L	MB Lot-Sample #: MCAWW 300.0A	G0B090000-200 02/08/00	0040200
		Dilution Factor: 1				
Sulfate	ND	Work Order #: D8CNH101 1.0	mg/L	MB Lot-Sample #: MCAWW 300.0A	G0B090000-201 02/08/00	0040201
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.



LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: GOB080174

Matrix.....: WATER

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCNT RECVRY</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrate as N	1.00	0.936	mg/L	94	MCAWW 300.0A	02/08/00	0040200
				Work Order #: D8CNV102 LCS Lot-Sample#: GOB090000-200			
				Dilution Factor: 1			
Sulfate	20.0	19.8	mg/L	99	MCAWW 300.0A	02/08/00	0040201
				Work Order #: D8CNH102 LCS Lot-Sample#: GOB090000-201			
				Dilution Factor: 1			

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.



LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #....: G0B080174

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrate as N	94	Work Order #: D8CNAV102 (90 - 110)	LCS Lot-Sample#: MCAWW 300.0A	G0B090000-200 02/08/00	0040200
		Dilution Factor: 1			
Sulfate	99	Work Order #: D8CNH102 (90 - 110)	LCS Lot-Sample#: MCAWW 300.0A	G0B090000-201 02/08/00	0040201
		Dilution Factor: 1			

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.



MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: GOB080174

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Nitrate as N									
				WO#:	D8ALQ105-MS/D8ALQ106-MSD MS Lot-Sample #: GOB080174-001				
ND	50.0		46.2	mg/L	92		MCAWW 300.0A	02/08/00	0040200
ND	50.0		45.3	mg/L	91	2.0	MCAWW 300.0A	02/08/00	0040200
				Dilution Factor: 1					
Sulfate									
				WO#:	D8ALQ103-MS/D8ALQ104-MSD MS Lot-Sample #: GOB080174-001				
	1.2	750	707	mg/L	94		MCAWW 300.0A	02/08/00	0040201
	1.2	750	711	mg/L	95	0.57	MCAWW 300.0A	02/08/00	0040201
				Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.



MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: G0B080174

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Nitrate as N			WO#:	D8ALQ105-MS/D8ALQ106-MSD	MS Lot-Sample #:	G0B080174-001	
	92	(90 - 110)			MCAWW 300.0A	02/08/00	0040200
	91	(90 - 110)	2.0	(0-10)	MCAWW 300.0A	02/08/00	0040200
			Dilution Factor: 1				
Sulfate			WO#:	D8ALQ103-MS/D8ALQ104-MSD	MS Lot-Sample #:	G0B080174-001	
	94	(90 - 110)			MCAWW 300.0A	02/08/00	0040201
	95	(90 - 110)	0.57	(0-10)	MCAWW 300.0A	02/08/00	0040201
			Dilution Factor: 1				

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.



Quanterra  
880 Riverside Parkway  
West Sacramento, California 95605-1500

916 373-5600 Telephone  
916 372-1059 Fax

March 7, 2000

QUANTERRA INCORPORATED PROJECT NUMBER: G0B090159

Brad Wright  
Safety Kleen Consulting  
2233 Santa Clara Ave  
Suite 7  
Alameda, CA 94501

Dear Mr. Wright,

This report contains the analytical results for the samples received under chain of custody by Quanterra Incorporated on 2/9/00. These samples are associated with your AC Transit Seminary project.

The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916)374-4414.

Sincerely,

A handwritten signature in cursive script that reads "Bonnie McNeill".

Bonnie J. McNeill  
Project Manager

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Case Narrative

Quanterra's Quality Assurance Program

Sample Description Information

Chain of Custody Documentation

WATER, CA LUFT, TVPH (Gas)

Performed at Quanterra - West Sacramento

Samples: 1, 2, 3, 4, 5, 6

Sample Data Sheets

Method Blank Reports

Laboratory QC Reports

WATER, 8260B, BTEX + MTBE

Performed at Quanterra - West Sacramento

Samples: 1, 2, 3, 4, 5, 6, 7

Sample Data Sheets

Method Blank Reports

Laboratory QC Reports

WATER, 8015 MOD, TEPH

Performed at Quanterra - West Sacramento

Samples: 1, 2, 3, 4, 5, 6

Sample Data Sheets

Method Blank Reports

Laboratory QC Reports

WATER, Iron, 6010B

Performed at Quanterra - West Sacramento

Samples: 1, 2, 3, 4, 5, 6

Sample Data Sheets

Method Blank Reports

Laboratory QC Reports



**CASE NARRATIVE**

**QUANTERRA INCORPORATED PROJECT NUMBER G0B090159**

**General Comments**

Samples were received at 6 degrees Centigrade.

**WATER, 8015 MOD, TEPH**

Surrogates in samples MW-1 and MW-3 were higher than the control limits due to contribution from the unknown hydrocarbon present in the samples.

There were no other anomalies associated with this project.

*Quanterra - Western Region*  
**Quality Control Definitions**

QC Parameter	Definition
QC Batch	A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots.
Duplicate Control Sample (DCS)	Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD.
Duplicate Sample (DU)	A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch.
Laboratory Control Sample (LCS)	A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked.
Method Blank (MB)	A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps.
Surrogate Spike	Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process.

Source: Quanterra® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

## Sample Summary G0B090159

<u>WO#</u>	<u>Sample #</u>	<u>Client Sample ID</u>	<u>Sampling Date</u>	<u>Received Date</u>
D8CRW	1	MW-1	2/7/00 11:30 AM	2/8/00 04:00 PM
D8CTA	2	MW-9	2/7/00 12:10 PM	2/8/00 04:00 PM
D8CTE	3	MW-10	2/7/00 12:45 PM	2/8/00 04:00 PM
D8CTH	4	MW-11	2/7/00 01:20 PM	2/8/00 04:00 PM
D8CTQ	5	MW-3	2/7/00 02:15 PM	2/8/00 04:00 PM
D8CTT	6	MW-2	2/7/00 02:50 PM	2/8/00 04:00 PM
D8CV4	7	TRIP BLANK	2/7/00	2/8/00 04:00 PM

**Notes(s):**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weigh

# Chain of Custody Record



QUA-4124 0797

Client <b>Safety-Kleen</b>		Project Manager <b>Brad Wright</b>		Date <b>2-7-00</b>	Chain of Custody Number <b>27604</b>
Address <b>2233 Santa Clara Ave</b>		Telephone Number (Area Code)/Fax Number <b>(510) 337-8660</b>		Lab Number	Page <b>1</b> of <b>1</b>

City <b>Alameda</b>	State <b>Ca</b>	Zip Code <b>94501</b>	Site Contact	Lab Contact	Analysis (Attach list if more space is needed)
------------------------	--------------------	--------------------------	--------------	-------------	--

Project Name <b>AC Transit Seminary</b>	Carrier/Waybill Number <b>Lab Courier</b>	Special Instructions/ Conditions of Receipt
--	--	--

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix			Containers & Preservatives							DRO BOLS	GPO BOLS	BIEX-MTB-B260	Fe Aqueduct	
			Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH						
MW-1	2-7-00	11:30	X			2		1	6					X	X	X	X
MW-9	↓	12:10				2		1	6					X	X	X	X
MW-10		12:45				2		1	6					X	X	X	X
MW-11		13:20				2		1	6					X	X	X	X
MW-3		14:15				2		1	6					X	X	X	X
MW-2		14:50				2		1	6					X	X	X	X
Trip Blank										3							X

RECEIVED IN GOOD CONDITION UNDER COC  
FEB - 8 2000  
INI *[Signature]*

Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown	Sample Disposal <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	(A fee may be assessed if samples are retained longer than 3 months)
--	---	--

Turn Around Time Required <input type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input checked="" type="checkbox"/> 7 Days <input type="checkbox"/> 14 Days <input type="checkbox"/> 21 Days <input type="checkbox"/> Other _____	QC Requirements (Specify)
--	---------------------------

1. Relinquished By <i>[Signature]</i>	Date <b>2-8-00</b>	Time <b>0940</b>	1. Received By <i>[Signature]</i>	Date <b>2-8-00</b>	Time <b>1930</b>
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

WATER, CA LUFT, TVPH (*Gas*)



**SAFETY KLEEN CONSULTING**

**Client Sample ID: MW-1**

**GC Volatiles**

**Lot-Sample #....: G0B090159-001    Work Order #....: D8CRW102    Matrix.....: WATER**  
**Date Sampled....: 02/07/00    Date Received...: 02/08/00**  
**Prep Date.....: 02/15/00    Analysis Date...: 02/15/00**  
**Prep Batch #....: 0056265**  
**Dilution Factor: 1    Method.....: DHS CA LUFT**

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
TPH (as Gasoline)	390	50	ug/L
Unknown Hydrocarbon	ND	50	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	121	(70 - 130)



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-9

**GC Volatiles**

Lot-Sample #....: G0B090159-002    Work Order #....: D8CTA102    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/15/00    Analysis Date...: 02/15/00  
Prep Batch #....: 0056265  
Dilution Factor: 1    Method.....: DHS CA LUFT

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
TPH (as Gasoline)	ND	50	ug/L
Unknown Hydrocarbon	ND	50	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	102	(70 - 130)



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-10

**GC Volatiles**

Lot-Sample #....: G0B090159-003    Work Order #....: D8CTE102    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/15/00    Analysis Date...: 02/15/00  
Prep Batch #....: 0056265  
Dilution Factor: 1    Method.....: DHS CA LUFT

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
TPH (as Gasoline)	ND	50	ug/L
Unknown Hydrocarbon	ND	50	ug/L
<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>	
	<u>RECOVERY</u>	<u>LIMITS</u>	
4-Bromofluorobenzene	100	(70 - 130)	





SAFETY KLEEN CONSULTING

Client Sample ID: MW-11

GC Volatiles

Lot-Sample #....: G0B090159-004    Work Order #....: D8CTH102    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/15/00    Analysis Date...: 02/15/00  
Prep Batch #....: 0056265  
Dilution Factor: 1    Method.....: DHS CA LUFT

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
TPH (as Gasoline)	ND	50	ug/L
Unknown Hydrocarbon	ND	50	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	103	(70 - 130)



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-3

**GC Volatiles**

Lot-Sample #....: G0B090159-005    Work Order #....: D8CTQ102    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/15/00    Analysis Date...: 02/15/00  
Prep Batch #....: 0056265  
Dilution Factor: 1    Method.....: DHS CA LUFT

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>	
		<u>LIMIT</u>	<u>UNITS</u>
TPH (as Gasoline)	2000	50	ug/L
Unknown Hydrocarbon	ND	50	ug/L
	<u>PERCENT</u>	<u>RECOVERY</u>	
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>	
4-Bromofluorobenzene	122	(70 - 130)	



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-2

**GC Volatiles**

Lot-Sample #....: G0B090159-006    Work Order #....: D8CTT102    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/16/00    Analysis Date...: 02/16/00  
Prep Batch #....: 0056266  
Dilution Factor: 25    Method.....: DHS CA LUFT

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
TPH (as Gasoline)	51000	1200	ug/L
Unknown Hydrocarbon	ND	1200	ug/L
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	
4-Bromofluorobenzene	110	(70 - 130)	

## QC DATA ASSOCIATION SUMMARY

GOB090159

Sample Preparation and Analysis Control Numbers

<u>SAMPLE#</u>	<u>MATRIX</u>	<u>ANALYTICAL METHOD</u>	<u>LEACH BATCH #</u>	<u>PREP BATCH #</u>	<u>MS RUN#</u>
001	WATER	DHS CA LUFT		0056265	
002	WATER	DHS CA LUFT		0056265	
003	WATER	DHS CA LUFT		0056265	
004	WATER	DHS CA LUFT		0056265	
005	WATER	DHS CA LUFT		0056265	
006	WATER	DHS CA LUFT		0056266	



METHOD BLANK REPORT

GC Volatiles

Client Lot #....: G0B090159      Work Order #....: D91HW101      Matrix.....: WATER  
MB Lot-Sample #: G0B250000-265  
Prep Date.....: 02/15/00  
Analysis Date...: 02/15/00      Prep Batch #....: 0056265  
Dilution Factor: 1

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
TPH (as Gasoline)	ND	50	ug/L	DHS CA LUFT
Unknown Hydrocarbon	ND	50	ug/L	DHS CA LUFT
	<u>PERCENT</u>	<u>RECOVERY</u>		
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
4-Bromofluorobenzene	103	(70 - 130)		

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.



METHOD BLANK REPORT

GC Volatiles

Client Lot #...: GOB090159      Work Order #...: D91J3101      Matrix.....: WATER  
MB Lot-Sample #: GOB250000-266  
Prep Date.....: 02/16/00  
Analysis Date...: 02/16/00      Prep Batch #...: 0056266  
Dilution Factor: 1

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
TPH (as Gasoline)	ND	50	ug/L	DHS CA LUFT
Unknown Hydrocarbon	ND	50	ug/L	DHS CA LUFT
	<u>PERCENT</u>	<u>RECOVERY</u>		
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
4-Bromofluorobenzene	103	(70 - 130)		

NOTE (S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.



LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #....: G0B090159      Work Order #....: D91HW102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: G0B250000-265      D91HW103-LCSD  
Prep Date.....: 02/15/00      Analysis Date...: 02/15/00  
Prep Batch #....: 0056265  
Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RPD</u>	<u>METHOD</u>
TPH (as Gasoline)	1000	1020	ug/L	102		DHS CA LOFT
	1000	1040	ug/L	104	2.0	DHS CA LOFT
<u>SURROGATE</u>				<u>PERCENT</u> <u>RECOVERY</u>		<u>RECOVERY</u> <u>LIMITS</u>
4-Bromofluorobenzene				108		(70 - 130)
				104		(70 - 130)

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



LABORATORY CONTROL SAMPLE DATA REPORT

GC Volatiles

Client Lot #....: G0B090159      Work Order #....: D91J3102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: G0B250000-266      D91J3103-LCSD  
Prep Date.....: 02/16/00      Analysis Date...: 02/16/00  
Prep Batch #....: 0056266  
Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RPD</u>	<u>METHOD</u>
TPH (as Gasoline)	1000	1040	ug/L	104		DHS CA LUFT
	1000	1060	ug/L	106	2.1	DHS CA LUFT
<u>SURROGATE</u>				<u>PERCENT</u> <u>RECOVERY</u>		<u>RECOVERY</u> <u>LIMITS</u>
4-Bromofluorobenzene				108		(70 - 130)
				105		(70 - 130)

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters





LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #....: G0B090159      Work Order #....: D91HW102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: G0B250000-265      D91HW103-LCSD  
Prep Date.....: 02/15/00      Analysis Date...: 02/15/00  
Prep Batch #....: 0056265  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
TPH (as Gasoline)	102	(70 - 130)			DHS CA LUFT
	104	(70 - 130)	2.0	(0-35)	DHS CA LUFT

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	108	(70 - 130)
	104	(70 - 130)

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Volatiles

Client Lot #...: GOB090159      Work Order #...: D91J3102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: GOB250000-266      D91J3103-LCSD  
Prep Date.....: 02/16/00      Analysis Date...: 02/16/00  
Prep Batch #...: 0056266  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
TPH (as Gasoline)	<b>104</b>	(70 - 130)			DHS CA LUFT
	<b>106</b>	(70 - 130)	2.1	(0-35)	DHS CA LUFT

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	108	(70 - 130)
	105	(70 - 130)

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

WATER, 8260B, BTEX + MTBE



**SAFETY KLEEN CONSULTING**

**Client Sample ID: MW-1**

**GC/MS Volatiles**

**Lot-Sample #....: G0B090159-001    Work Order #....: D8CRW103    Matrix.....: WATER**  
**Date Sampled....: 02/07/00    Date Received...: 02/08/00**  
**Prep Date.....: 02/18/00    Analysis Date...: 02/18/00**  
**Prep Batch #....: 0053321**  
**Dilution Factor: 1    Method.....: SW846 8260B**

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Benzene	13	10	ug/L
Toluene	ND	10	ug/L
Ethylbenzene	ND	10	ug/L
Methyl tert-butyl ether (MTBE)	ND	20	ug/L
Xylenes (total)	ND	10	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	99	(70 - 130)
1,2-Dichloroethane-d4	102	(70 - 130)
Toluene-d8	106	(70 - 130)



**SAFETY KLEEN CONSULTING**

**Client Sample ID: MW-9**

**GC/MS Volatiles**

**Lot-Sample #....: G0B090159-002    Work Order #....: D8CTA103    Matrix.....: WATER**  
**Date Sampled....: 02/07/00    Date Received...: 02/08/00**  
**Prep Date.....: 02/14/00    Analysis Date...: 02/14/00**  
**Prep Batch #....: 0048362**  
**Dilution Factor: 1    Method.....: SW846 8260B**

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methyl tert-butyl ether (MTBE)	ND	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	96	(70 - 130)
1,2-Dichloroethane-d4	100	(70 - 130)
Toluene-d8	101	(70 - 130)



**SAFETY KLEEN CONSULTING**

**Client Sample ID: MW-10**

**GC/MS Volatiles**

**Lot-Sample #....: G0B090159-003    Work Order #....: D8CTE103    Matrix.....: WATER**  
**Date Sampled....: 02/07/00    Date Received...: 02/08/00**  
**Prep Date.....: 02/14/00    Analysis Date...: 02/14/00**  
**Prep Batch #....: 0048362**  
**Dilution Factor: 1    Method.....: SW846 8260B**

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methyl tert-butyl ether (MTBE)	ND	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	98	(70 - 130)
1,2-Dichloroethane-d4	107	(70 - 130)
Toluene-d8	104	(70 - 130)



SAFETY KLEEN CONSULTING

Client Sample ID: MW-11

GC/MS Volatiles

Lot-Sample #....: G0B090159-004    Work Order #....: D8CTH103    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/14/00    Analysis Date...: 02/14/00  
Prep Batch #....: 0048362  
Dilution Factor: 1    Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methyl tert-butyl ether (MTBE)	25	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	96	(70 - 130)
1,2-Dichloroethane-d4	101	(70 - 130)
Toluene-d8	101	(70 - 130)



SAFETY KLEEN CONSULTING

Client Sample ID: MW-3

GC/MS Volatiles

Lot-Sample #....: G0B090159-005    Work Order #....: D8CTQ103    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/15/00    Analysis Date...: 02/15/00  
Prep Batch #....: 0048332  
Dilution Factor: 2    Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
Benzene	26 Q	2.0	ug/L
Toluene	ND	2.0	ug/L
Ethylbenzene	5.2	2.0	ug/L
Methyl tert-butyl ether (MTBE)	ND	4.0	ug/L
Xylenes (total)	2.1	2.0	ug/L

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
4-Bromofluorobenzene	104	(70 - 130)
1,2-Dichloroethane-d4	90	(70 - 130)
Toluene-d8	108	(70 - 130)

**NOTE (S) :**

Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-2

**GC/MS Volatiles**

Lot-Sample #....: G0B090159-006    Work Order #....: D8CTT103    Matrix.....: WATER  
 Date Sampled....: 02/07/00    Date Received...: 02/08/00  
 Prep Date.....: 02/15/00    Analysis Date...: 02/15/00  
 Prep Batch #....: 0048332  
 Dilution Factor: 500    Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Benzene	19000 Q	500	ug/L
Toluene	ND	500	ug/L
Ethylbenzene	920	500	ug/L
Methyl tert-butyl ether (MTBE)	ND	1000	ug/L
Xylenes (total)	ND	500	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	97	(70 - 130)
1,2-Dichloroethane-d4	94	(70 - 130)
Toluene-d8	100	(70 - 130)

**NOTE (S) :**

Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.



SAFETY KLEEN CONSULTING

Client Sample ID: TRIP BLANK

GC/MS Volatiles

Lot-Sample #....: G0B090159-007    Work Order #....: D8CV4101    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/14/00    Analysis Date...: 02/14/00  
Prep Batch #....: 0048362  
Dilution Factor: 1    Method.....: SW846 8260B

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
Benzene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methyl tert-butyl ether (MTBE)	ND	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	97	(70 - 130)
1,2-Dichloroethane-d4	99	(70 - 130)
Toluene-d8	101	(70 - 130)

**QC DATA ASSOCIATION SUMMARY**

G0B090159

Sample Preparation and Analysis Control Numbers

<u>SAMPLE#</u>	<u>MATRIX</u>	<u>ANALYTICAL METHOD</u>	<u>LEACH BATCH #</u>	<u>PREP BATCH #</u>	<u>MS RUN#</u>
001	WATER	SW846 8260B		0053321	
002	WATER	SW846 8260B		0048362	
003	WATER	SW846 8260B		0048362	
004	WATER	SW846 8260B		0048362	
005	WATER	SW846 8260B		0048332	
006	WATER	SW846 8260B		0048332	
007	WATER	SW846 8260B		0048362	



METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: G0B090159  
MB Lot-Sample #: G0B170000-362

Work Order #...: D8PDG101

Matrix.....: WATER

Analysis Date...: 02/14/00  
Dilution Factor: 1

Prep Date.....: 02/14/00

Analysis Time...: 13:05

Prep Batch #...: 0048362

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Benzene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	2.0	ug/L	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	95	(70 - 130)
1,2-Dichloroethane-d4	96	(70 - 130)
Toluene-d8	100	(70 - 130)

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.



METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #....: G0B090159  
MB Lot-Sample #: G0B170000-332

Work Order #....: D8P7P101

Matrix.....: WATER

Analysis Date...: 02/15/00  
Dilution Factor: 1

Prep Date.....: 02/15/00  
Prep Batch #....: 0048332

Analysis Time...: 12:49

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>
Benzene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	2.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B
	<u>PERCENT</u>	<u>RECOVERY</u>		
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
4-Bromofluorobenzene	98	(70 - 130)		
1,2-Dichloroethane-d4	97	(70 - 130)		
Toluene-d8	102	(70 - 130)		

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.



METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: GOB090159      Work Order #...: D8V6P101      Matrix.....: WATER  
MB Lot-Sample #: GOB220000-321      Prep Date.....: 02/18/00      Analysis Time...: 12:54  
Analysis Date...: 02/18/00      Prep Batch #...: 0053321  
Dilution Factor: 1

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
Benzene	ND	10	ug/L	SW846 8260B
Toluene	ND	10	ug/L	SW846 8260B
Ethylbenzene	ND	10	ug/L	SW846 8260B
Methyl tert-butyl ether (MTBE)	ND	20	ug/L	SW846 8260B
Xylenes (total)	ND	10	ug/L	SW846 8260B
		<u>RECOVERY</u>		
<u>SURROGATE</u>	<u>PERCENT</u>	<u>LIMITS</u>		
	<u>RECOVERY</u>			
4-Bromofluorobenzene	102	(70 - 130)		
1,2-Dichloroethane-d4	102	(70 - 130)		
Toluene-d8	108	(70 - 130)		

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.



LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #....: G0B090159      Work Order #....: D8PDG102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: G0B170000-362      D8PDG103-LCSD  
Prep Date.....: 02/14/00      Analysis Date...: 02/14/00  
Prep Batch #....: 0048362      Analysis Time...: 11:36  
Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RPD</u>	<u>METHOD</u>
Benzene	10.0	11.2	ug/L	112		SW846 8260B
	10.0	10.8	ug/L	108	3.7	SW846 8260B
Toluene	10.0	11.3	ug/L	113		SW846 8260B
	10.0	11.0	ug/L	110	2.9	SW846 8260B
Chlorobenzene	10.0	10.9	ug/L	109		SW846 8260B
	10.0	10.9	ug/L	109	0.050	SW846 8260B
1,1-Dichloroethene	10.0	12.3	ug/L	123		SW846 8260B
	10.0	11.7	ug/L	117	4.8	SW846 8260B
Trichloroethene	10.0	10.6	ug/L	106		SW846 8260B
	10.0	10.8	ug/L	108	1.3	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
4-Bromofluorobenzene	106	(70 - 130)
	105	(70 - 130)
1,2-Dichloroethane-d4	110	(70 - 130)
	107	(70 - 130)
Toluene-d8	106	(70 - 130)
	105	(70 - 130)

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

**LABORATORY CONTROL SAMPLE EVALUATION REPORT**
**GC/MS Volatiles**

**Client Lot #....:** G0B090159      **Work Order #....:** D8PDG102-LCS      **Matrix.....:** WATER  
**LCS Lot-Sample#:** G0B170000-362      D8PDG103-LCSD  
**Prep Date.....:** 02/14/00      **Analysis Date...:** 02/14/00  
**Prep Batch #....:** 0048362      **Analysis Time...:** 11:36  
**Dilution Factor:** 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Benzene	112	(70 - 130)			SW846 8260B
	108	(70 - 130)	3.7	(0-35)	SW846 8260B
Toluene	113	(70 - 130)			SW846 8260B
	110	(70 - 130)	2.9	(0-35)	SW846 8260B
Chlorobenzene	109	(70 - 130)			SW846 8260B
	109	(70 - 130)	0.050	(0-35)	SW846 8260B
1,1-Dichloroethene	123	(70 - 130)			SW846 8260B
	117	(70 - 130)	4.8	(0-35)	SW846 8260B
Trichloroethene	106	(70 - 130)			SW846 8260B
	108	(70 - 130)	1.3	(0-35)	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	106	(70 - 130)
	105	(70 - 130)
1,2-Dichloroethane-d4	110	(70 - 130)
	107	(70 - 130)
Toluene-d8	106	(70 - 130)
	105	(70 - 130)

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



**LABORATORY CONTROL SAMPLE DATA REPORT**

**GC/MS Volatiles**

Client Lot #....: G0B090159      Work Order #....: D8P7P102-LCS      Matrix.....: WATER  
 LCS Lot-Sample#: G0B170000-332      D8P7P103-LCSD  
 Prep Date.....: 02/15/00      Analysis Date...: 02/15/00  
 Prep Batch #....: 0048332      Analysis Time...: 10:50  
 Dilution Factor: 1

PARAMETER	SPIKE	MEASURED		PERCENT		METHOD
	AMOUNT	AMOUNT	UNITS	RECOVERY	RPD	
Benzene	10.0	10.9	ug/L	109		SW846 8260B
	10.0	10.8	ug/L	108	0.36	SW846 8260B
Toluene	10.0	11.4	ug/L	114		SW846 8260B
	10.0	11.0	ug/L	110	3.7	SW846 8260B
Chlorobenzene	10.0	11.0	ug/L	110		SW846 8260B
	10.0	10.8	ug/L	108	1.3	SW846 8260B
1,1-Dichloroethene	10.0	11.7	ug/L	117		SW846 8260B
	10.0	11.2	ug/L	112	4.2	SW846 8260B
Trichloroethene	10.0	10.6	ug/L	106		SW846 8260B
	10.0	10.9	ug/L	109	2.9	SW846 8260B

SURROGATE	PERCENT		RECOVERY
	RECOVERY	LIMITS	
4-Bromofluorobenzene	103	(70 - 130)	
	105	(70 - 130)	
1,2-Dichloroethane-d4	101	(70 - 130)	
	106	(70 - 130)	
Toluene-d8	104	(70 - 130)	
	103	(70 - 130)	

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #....: G0B090159      Work Order #....: D8P7P102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: G0B170000-332      D8P7P103-LCSD  
Prep Date.....: 02/15/00      Analysis Date...: 02/15/00  
Prep Batch #....: 0048332      Analysis Time...: 10:50  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Benzene	109	(70 - 130)			SW846 8260B
	108	(70 - 130)	0.36	(0-35)	SW846 8260B
Toluene	114	(70 - 130)			SW846 8260B
	110	(70 - 130)	3.7	(0-35)	SW846 8260B
Chlorobenzene	110	(70 - 130)			SW846 8260B
	108	(70 - 130)	1.3	(0-35)	SW846 8260B
1,1-Dichloroethene	117	(70 - 130)			SW846 8260B
	112	(70 - 130)	4.2	(0-35)	SW846 8260B
Trichloroethene	106	(70 - 130)			SW846 8260B
	109	(70 - 130)	2.9	(0-35)	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	103	(70 - 130)
	105	(70 - 130)
1,2-Dichloroethane-d4	101	(70 - 130)
	106	(70 - 130)
Toluene-d8	104	(70 - 130)
	103	(70 - 130)

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #....: G0B090159      Work Order #....: D8V6P102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: G0B220000-321      D8V6P103-LCSD  
Prep Date.....: 02/18/00      Analysis Date...: 02/18/00  
Prep Batch #....: 0053321      Analysis Time...: 11:24  
Dilution Factor: 1

PARAMETER	SPIKE		MEASURED		PERCENT		METHOD
	AMOUNT	AMOUNT	AMOUNT	UNITS	RECOVERY	RPD	
Benzene	10.0	10.9	10.9	ug/L	109		SW846 8260B
	10.0	11.0	11.0	ug/L	110	1.3	SW846 8260B
Toluene	10.0	11.1	11.1	ug/L	111		SW846 8260B
	10.0	11.2	11.2	ug/L	112	1.2	SW846 8260B
Chlorobenzene	10.0	10.7	10.7	ug/L	107		SW846 8260B
	10.0	11.0	11.0	ug/L	110	2.8	SW846 8260B
1,1-Dichloroethene	10.0	11.2	11.2	ug/L	112		SW846 8260B
	10.0	11.2	11.2	ug/L	112	0.65	SW846 8260B
Trichloroethene	10.0	10.4	10.4	ug/L	104		SW846 8260B
	10.0	10.9	10.9	ug/L	109	4.4	SW846 8260B

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
4-Bromofluorobenzene	103	(70 - 130)
	102	(70 - 130)
1,2-Dichloroethane-d4	108	(70 - 130)
	107	(70 - 130)
Toluene-d8	105	(70 - 130)
	103	(70 - 130)

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #....: G0B090159      Work Order #....: D8V6P102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: G0B220000-321      D8V6P103-LCSD  
Prep Date.....: 02/18/00      Analysis Date...: 02/18/00  
Prep Batch #....: 0053321      Analysis Time...: 11:24  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
Benzene	109	(70 - 130)			SW846 8260B
	110	(70 - 130)	1.3	(0-35)	SW846 8260B
Toluene	111	(70 - 130)			SW846 8260B
	112	(70 - 130)	1.2	(0-35)	SW846 8260B
Chlorobenzene	107	(70 - 130)			SW846 8260B
	110	(70 - 130)	2.8	(0-35)	SW846 8260B
1,1-Dichloroethene	112	(70 - 130)			SW846 8260B
	112	(70 - 130)	0.65	(0-35)	SW846 8260B
Trichloroethene	104	(70 - 130)			SW846 8260B
	109	(70 - 130)	4.4	(0-35)	SW846 8260B

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
4-Bromofluorobenzene	103	(70 - 130)
	102	(70 - 130)
1,2-Dichloroethane-d4	108	(70 - 130)
	107	(70 - 130)
Toluene-d8	105	(70 - 130)
	103	(70 - 130)

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

WATER, 8015 MOD, TEPH



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-1

**GC Semivolatiles**

Lot-Sample #...: GOB090159-001    Work Order #...: D8CRW101    Matrix.....: WATER  
Date Sampled...: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/09/00    Analysis Date...: 02/25/00  
Prep Batch #...: 0040395  
Dilution Factor: 1    Method.....: SW846 8015 MOD

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	ND V	60	ug/L
Unknown Hydrocarbon	1300	60	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
o-Terphenyl	145 *	(66 - 136)

**NOTE(S) :**

- \* Surrogate recovery is outside stated control limits.
  - V Elevated reporting limit. The reporting limit is elevated due to limited sample volume.
- The unknown from n-C09 to n-C28 is quantitated based on a diesel reference from n-C10 to n-C24.



**SAFETY KLEEN CONSULTING**

**Client Sample ID: MW-9**

**GC Semivolatiles**

**Lot-Sample #...: G0B090159-002    Work Order #...: D8CTA101    Matrix.....: WATER**  
**Date Sampled...: 02/07/00    Date Received...: 02/08/00**  
**Prep Date.....: 02/09/00    Analysis Date...: 02/25/00**  
**Prep Batch #...: 0040395**  
**Dilution Factor: 1    Method.....: SW846 8015 MOD**

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	ND	50	ug/L
Unknown Hydrocarbon	240	50	ug/L

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
o-Terphenyl	111	(66 - 136)

**NOTE (S) :**

The unknown from n-C10 to n-C40 is quantitated based on a diesel reference between n-C10 and n-C24.



**SAFETY KLEEN CONSULTING**

**Client Sample ID: MW-10**

**GC Semivolatiles**

Lot-Sample #...: G0B090159-003    Work Order #...: D8CTE101    Matrix.....: WATER  
Date Sampled...: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/09/00    Analysis Date...: 02/25/00  
Prep Batch #...: 0040395  
Dilution Factor: 1    Method.....: SW846 8015 MOD

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	ND	50	ug/L
Unknown Hydrocarbon	470	50	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
o-Terphenyl	111	(66 - 136)

**NOTE (S) :**

The unknown from n-C10 to n-C40 is quantitated based on a diesel reference between n-C10 and n-C24.





SAFETY KLBEN CONSULTING

Client Sample ID: MW-11

GC Semivolatiles

Lot-Sample #....: G0B090159-004    Work Order #....: D8CTH101    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/09/00    Analysis Date...: 02/25/00  
Prep Batch #....: 0040395  
Dilution Factor: 1    Method.....: SW846 8015 MOD

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	ND	50	ug/L
Unknown Hydrocarbon	400	50	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
o-Terphenyl	113	(66 - 136)

**NOTE(S) :**

The unknown from n-C10 to n-C40 is quantitated based on a diesel reference between n-C10 to n-C24.



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-3

**GC Semivolatiles**

Lot-Sample #....: G0B090159-005    Work Order #....: D8CTQ101    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/09/00    Analysis Date...: 02/26/00  
Prep Batch #....: 0040395  
Dilution Factor: 3    Method.....: SW846 8015 MOD

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	ND Q	150	ug/L
Unknown Hydrocarbon	3100	150	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
o-Terphenyl	149 *	(66 - 136)

**NOTE (S) :**

- \* Surrogate recovery is outside stated control limits.
  - Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.
- The unknown from n-C08 to n-C40 is quantitated based on a diesel reference from n-C10 to n-C24.



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-2

**GC Semivolatiles**

Lot-Sample #....: G0B090159-006    Work Order #....: D8CTT101    Matrix.....: WATER  
Date Sampled....: 02/07/00    Date Received...: 02/08/00  
Prep Date.....: 02/09/00    Analysis Date...: 02/27/00  
Prep Batch #....: 0040395  
Dilution Factor: 100    Method.....: SW846 8015 MOD

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>
TPH (as Diesel)	160000 Q	5000	ug/L
Unknown Hydrocarbon	ND	5000	ug/L

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
o-Terphenyl	0.0 SRD	(66 - 136)

**NOTE(S) :**

- SRD The surrogate recovery was not calculated because the extract was diluted beyond the ability to quantitate a recovery.
  - Q Elevated reporting limit. The reporting limit is elevated due to high analyte levels.
- The diesel pattern appears degraded.

## QC DATA ASSOCIATION SUMMARY

GOB090159

Sample Preparation and Analysis Control Numbers

<u>SAMPLE#</u>	<u>MATRIX</u>	<u>ANALYTICAL METHOD</u>	<u>LEACH BATCH #</u>	<u>PREP BATCH #</u>	<u>MS RUN#</u>
001	WATER	SW846 8015 MOD		0040395	
002	WATER	SW846 8015 MOD		0040395	
003	WATER	SW846 8015 MOD		0040395	
004	WATER	SW846 8015 MOD		0040395	
005	WATER	SW846 8015 MOD		0040395	
006	WATER	SW846 8015 MOD		0040395	



METHOD BLANK REPORT

GC Semivolatiles

Client Lot #....: G0B090159      Work Order #....: D8DP1101      Matrix.....: WATER  
MB Lot-Sample #: G0B090000-395  
Prep Date.....: 02/09/00  
Analysis Date...: 02/24/00      Prep Batch #....: 0040395  
Dilution Factor: 1

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>
		<u>LIMIT</u>	<u>UNITS</u>	
TPH (as Diesel)	ND	50	ug/L	SW846 8015 MOD
Unknown Hydrocarbon	ND	50	ug/L	SW846 8015 MOD

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
o-Terphenyl	90	(66 - 136)

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.



LABORATORY CONTROL SAMPLE DATA REPORT

GC Semivolatiles

Client Lot #....: G0B090159      Work Order #....: D8DP1102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: G0B090000-395      D8DP1103-LCSD  
Prep Date.....: 02/09/00      Analysis Date...: 02/24/00  
Prep Batch #....: 0040395  
Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RPD</u>	<u>METHOD</u>
TPH (as Diesel)	300	280	ug/L	93		SW846 8015 MOD
	300	254	ug/L	85	9.8	SW846 8015 MOD
<u>SURROGATE</u>				<u>PERCENT</u> <u>RECOVERY</u>		<u>RECOVERY</u> <u>LIMITS</u>
o-Terphenyl				114		(66 - 136)
				109		(66 - 136)

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters



LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC Semivolatiles

Client Lot #....: GOB090159      Work Order #....: D8DP1102-LCS      Matrix.....: WATER  
LCS Lot-Sample#: GOB090000-395      D8DP1103-LCSD  
Prep Date.....: 02/09/00      Analysis Date...: 02/24/00  
Prep Batch #....: 0040395  
Dilution Factor: 1

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>
TPH (as Diesel)	93	(50 - 129)			SW846 8015 MOD
	85	(50 - 129)	9.8	(0-23)	SW846 8015 MOD

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
o-Terphenyl	114	(66 - 136)
	109	(66 - 136)

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.  
Bold print denotes control parameters

WATER, Iron, 6010B





SAFETY KLEEN CONSULTING

Client Sample ID: MW-1

TOTAL Metals

Lot-Sample #...: G0B090159-001

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
Prep Batch #...: 0042354						
Iron	11.8	0.10	mg/L	SW846 6010B	02/10-02/16/00	D8CRW104



**SAFETY KLEEN CONSULTING**

Client Sample ID: MW-9

**TOTAL Metals**

Lot-Sample #...: GOB090159-002

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION-</u>	<u>WORK</u>
		<u>LIMIT</u>	<u>UNITS</u>		<u>ANALYSIS DATE</u>	<u>ORDER #</u>
Prep Batch #...: 0042354						
Iron	9.0	0.10	mg/L	SW846 6010B	02/10-02/16/00	D8CTA104



SAFETY KLEEN CONSULTING

Client Sample ID: MW-10

TOTAL Metals

Lot-Sample #...: GOB090159-003

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
Prep Batch #...: 0042354 Iron	55.0	0.10	mg/L	SW846 6010B	02/10-02/16/00	D8CTE104



SAFETY KLEEN CONSULTING

Client Sample ID: MW-11

TOTAL Metals

Lot-Sample #...: GOB090159-004

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
Prep Batch #...: 0042354						
Iron	16.2	0.10	mg/L	SW846 6010B	02/10-02/16/00	D8CTH104



SAFETY KLEEN CONSULTING

Client Sample ID: MW-3

TOTAL Metals

Lot-Sample #....: G0B090159-005

Matrix.....: WATER

Date Sampled....: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
Prep Batch #....: 0042354						
Iron	17.8	0.10	mg/L	SW846 6010B	02/10-02/16/00	D8CTQ104



SAFETY KLEEN CONSULTING

Client Sample ID: MW-2

TOTAL Metals

Lot-Sample #...: G0B090159-006

Matrix.....: WATER

Date Sampled...: 02/07/00

Date Received...: 02/08/00

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
Prep Batch #...: 0042354						
Iron	7.3	0.10	mg/L	SW846 6010B	02/10-02/16/00	D8CTT104



# QC DATA ASSOCIATION SUMMARY

GOB090159

Sample Preparation and Analysis Control Numbers

<u>SAMPLE#</u>	<u>MATRIX</u>	<u>ANALYTICAL METHOD</u>	<u>LEACH BATCH #</u>	<u>PREP BATCH #</u>	<u>MS RUN#</u>
001	WATER	SW846 6010B		0042354	0042167
002	WATER	SW846 6010B		0042354	0042167
003	WATER	SW846 6010B		0042354	0042167
004	WATER	SW846 6010B		0042354	0042167
005	WATER	SW846 6010B		0042354	0042167
006	WATER	SW846 6010B		0042354	0042167



METHOD BLANK REPORT

TOTAL Metals

Client Lot #....: G0B090159

Matrix.....: WATER

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
MB Lot-Sample #: G0B110000-354						
Iron	ND	0.10	mg/L	SW846 6010B	02/10-02/16/00	D8GKM10E

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.





LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: G0B090159

Matrix.....: WATER

<u>PARAMETER</u>	<u>SPIKE</u> <u>AMOUNT</u>	<u>MEASURED</u> <u>AMOUNT</u>	<u>UNITS</u>	<u>PERCNT</u> <u>RECVRY</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>WORK</u> <u>ORDER #</u>
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LCS Lot-Sample#: G0B110000-354 Prep Batch #...: 0042354

Iron	1.00	0.988	mg/L	99	SW846 6010B	02/10-02/16/00	D8GKM10F
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NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.



LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: G0B090159

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
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LCS Lot-Sample#: G0B110000-354 Prep Batch #...: 0042354

Iron	99	(90 - 110)	SW846 6010B	02/10-02/16/00	D8GKM10F
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**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.



MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: GOB090159  
Date Sampled...: 01/31/00

Date Received...: 02/02/00

Matrix.....: WATER

PARAMETER	AMOUNT	SAMPLE AMT	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: GOB020256-001 Prep Batch #...: 0042354										
Iron										
ND	1.00		1.01		mg/L	100		SW846 6010B	02/10-02/16/00	D85MD10H
ND	1.00		0.988		mg/L	98	2.5	SW846 6010B	02/10-02/16/00	D85MD10J

NOTE(S) :

Calculations are performed before rounding to avoid round-off errors in calculated results.



MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #....: G0B090159  
Date Sampled...: 01/31/00

Date Received...: 02/02/00

Matrix.....: WATER

<u>PARAMETER</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>	<u>RPD</u>	<u>RPD LIMITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
MS Lot-Sample #: G0B020256-001 Prep Batch #....: 0042354							
Iron	100	(90 - 110)			SW846 6010B	02/10-02/16/00	D85MD10H
	98	(90 - 110)	2.5	(0-20)	SW846 6010B	02/10-02/16/00	D85MD10J

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

**APPENDIX D**  
**SAMPLING EVENT DATA SHEETS**

**LES-SSI MONITOR WELL SAMPLING FORM**

Well ID: MW-1

Project Name: AC Transit Seminary  
 LES-SSI  
 Casing Diameter (in): 2  
 Total Well Depth (ft): 15.50  
 Depth to Water (ft), before purging: 3.75

Project Number:  
 Sample Date: 2-7-00  
 Sample ID:

Development Method:

Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

IDS

Time	pH	Conduct. (umho/cm)	Temp. (Celsius)	Water Level (to 0.01 ft)	Cum. Vol. (gal)	Pump Rate (GPM)
11:03	7.4	1.90	18		1	1.5 GPM
11:05	7.3	1.90	20		2	
11:07	7.3	1.90	20		3	↓

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

At least        well casing volumes were removed prior to sampling.

Sample Collection Method:

Bailer:  Teflon  Stainless Steel  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:

Sample Appearance

OVA Reading (ppm)  
 Suspended Solids (describe): clear

Field Measurements  
 DO = 1.22 mg/l  
 ORP = -97  
 FE = Instrument not working w/ll  
 use lab analysis

Decontamination Performed:

sample collected at 11:30

Comments / Calculations:

$(15.50 - 3.75) \cdot 1.62 = 19.5 \text{ gals}$   
 slight odor  
 silt in discharge

Signature:

Date:

# LES-SSI MONITOR WELL SAMPLING FORM

Well ID: NW-3

Project Name: Ac Transit Seminary LES-SSI Project Number:  
 Casing Diameter (in): 2 Sample Date: 2-7-00  
 Total Well Depth (ft): 16.80 Sample ID:  
 Depth to Water (ft), before purging: 3.10

Development Method:  
 Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

Time	pH	Conduct. (umho/cm)	Temp. (Celsius)	Water Level (to 0.01 ft)	Cum. Vol. (gal)	Pump Rate (GPM)
13:55	7.2	180	18		2.5	1.5
14:00	7.3	185	18		5.0	1.5
14:05	7.3	190	18		7.5	1.5

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

At least \_\_\_ well casing volumes were removed prior to sampling.

Sample Collection Method:  
 Bailer:  Teflon  Stainless Steel  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:  
 Sample Appearance  
 OVA Reading (ppm)  
 Suspended Solids (describe): clear

Field Measurements  
 DO = 6.48 mg/L  
 ORP = -57

Decontamination Performed:  
 Sampled at 14:15

Comments / Calculations:  
 $(16.80 - 3.10) \times 1.6 = 22 \text{ gals}$   
 Hydrocarbon odor

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**LES-SSI MONITOR WELL SAMPLING FORM**

Well ID: MW-2

Project Name: AC Transit Seminary  
~~LES-SSI~~  
 Casing Diameter (in): 2  
 Total Well Depth (ft): 23.50  
 Depth to Water (ft), before purging: 3.80

Project Number:  
 Sample Date: 2-7-00  
 Sample ID:

**Development Method:**

Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

Time	pH	Conduct. (umho/cm)	Temp. (Celsius)	Water Level (to 0.01 ft)	Cum. Vol. (gal)	Pump Rate (GPM)
14:30	7.4	190	18		3	1.5
14:36	7.4	190	18		6	
14:42	7.4	190	18		9	

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

At least        well casing volumes were removed prior to sampling.

**Sample Collection Method:**

Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

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

*Field Measurements*  
 DO = 6.66 mg/L ← hard to believe  
 ORP = -46

**Parameter Collected:**

Sample Appearance  
 OVA Reading (ppm)  
 Suspended Solids (describe): cloudy

**Decontamination Performed:**

**Comments / Calculations:**

$(23.5 - 3.80) \cdot 1.6 = 3 \text{ gals}$

Signature:

Date:



# LES-SSI MONITOR WELL SAMPLING FORM

Well ID: MW-9

Project Name: Ac Transit Sanitary LES-SSI Project Number: \_\_\_\_\_  
 Casing Diameter (in): 2 Sample Date: 2-7-00  
 Total Well Depth (ft): 19.50 Sample ID: \_\_\_\_\_  
 Depth to Water (ft), before purging: 4.37

**Development Method:**

Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

Time	pH	Conduct. (umho/cm)	Temp. (Celsius)	Water Level (to 0.01 ft)	Cum. Vol. (gal)	Pump Rate (GPM)
11:50	7.4	1.85	18		3	1.5
<del>11:50</del>	7.2	1.90	18		6	1.5
12:02	7.2	1.90	18		9	1.5

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

At least \_\_\_\_\_ well casing volumes were removed prior to sampling.

**Sample Collection Method:**

Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

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

*Field Measurements*

Parameter Collected: ORP = -33  
 Sample Appearance: DO = 6.94  
 OVA Reading (ppm)  
 Suspended Solids (describe): Minor particulates

Decontamination Performed: Sampled at 12:10

Comments / Calculations:  
(19.5 - 4.37) x 0.16 = 2.4 gals

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# LES-SSI MONITOR WELL SAMPLING FORM

Well ID: MW-10

Project Name: AC Transit Seminary LES-SSI  
 Casing Diameter (in): 2  
 Total Well Depth (ft): 11.4  
 Depth to Water (ft), before purging: 3.19

Project Number:  
 Sample Date: 2-7-00  
 Sample ID:

Development Method:

Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

Time	pH	Conduct. (umho/cm)	Temp. (Celsius)	Water Level (to 0.01 ft)	Cum. Vol. (gal)	Pump Rate (GPM)
12:28	7.2	180	18		1.5	.5
12:31	7.3	190	18		3	.5
12:35	7.2	190	18		4.5	.5

Water Volume to be Purged (gal) =  
 (Casing Length in Ft - Depth to Water in Ft) x X x 3

Where X = 1 Well Volume in gal/ft, X = 0.165 for 2 in. wells, X = 0.37 for 3 in. wells, X = 0.65 for 4 in. wells  
 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:

Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

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

Field Measurements  
 DO = 120 ug/l  
 ORP = 18 mV

Parameter Collected:

Sample Appearance  
 OVA Reading (ppm)  
 Suspended Solids (describe): clear

Decontamination Performed:

~~SAF~~  
 Sampled at 12:45

Comments / Calculations:

$(11.4 - 3.19) \times 0.16 = 1.3 \text{ gals}$

Signature:

Date:

# LES-SSI MONITOR WELL SAMPLING FORM

Well ID: MW-11

Project Name: AC Transi + Seminary LES-SSI  
 Project Number: \_\_\_\_\_  
 Casing Diameter (in): 2  
 Sample Date: 2-7-00  
 Total Well Depth (ft): \_\_\_\_\_  
 Sample ID: \_\_\_\_\_  
 Depth to Water (ft), before purging: 4.97

**Development Method:**

Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

Time	pH	Conduct. (umho/cm)	Temp. (Celsius)	Water Level (to 0.01 ft)	Cum. Vol. (gal)	Pump Rate (GPM)
13:00					1.5	.5
13:03					3.0	.5
13:06					4.5	.5

Water Volume to be Purged (gal) =

(Casing Length in Ft - Depth to Water in Ft) x X x 3

Where X = 1 Well Volume in gal/ft, X = 0.165 for 2 in. wells, X = 0.37 for 3 in. wells, X = 0.65 for 4 in. wells

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

At least \_\_\_\_\_ well casing volumes were removed prior to sampling.

**Sample Collection Method:**

Bailer:  Teflon  Stainless Steel  PVC  ABS Plastic  
 Pump:  Dedicated Submersible Pump  Bladder Pump  
 Non-Dedicated Submersible Pump

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

Field measurement  
 DO = 7.30 mg/l  
 ORP = -34

**Parameter Collected:**

**Sample Appearance**

OVA Reading (ppm)  
 Suspended Solids (describe): clear

sampled at 13:20

**Decontamination Performed:**

**Comments / Calculations:**

$$(13.5 - 4.97) \cdot 1.6 = 1.36 \text{ gals}$$

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

DEPTH TO WATER

DATE: 2-7-00

PROJECT AC Transit Seminary

EVENT Quarterly

TECHNICIAN BW

NO.	WELL OR LOCATION	DATE	TIME	MEASUREMENT	CODE	COMMENTS
1	MW-1	2-7-00	10:54	3.75	SWL	Vault Difficult to No Lock remove
2	MW-2	↓	10:35	3.80		Sneak present No Lock Flooded Vault Vault cover Broken
3	MW-3		10:37	3.30 <sup>10</sup> <del>3.00</del>		Flooded Vault No Lock
4	MW-9		10:45	4.37		
5	MW-10		10:43	3.19		
6	MW-11		10:40	4.97		
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

CODES: SWL - Static Water Level  
OIL - Oil Level