

DEPARTMENT OF TRANSPORTATION

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00 JAN 18 PM 4:28

PROFESSIONAL
PROTECTION

January 17, 2001

* 2933

Mr. Barney Chan
Alameda County Department of Health Services
1131 Harborway Parkway
Alameda, California 94502

Subject: Ground Water Monitoring Report for the Fourth Quarter of 2000 at the South Oakland Maintenance Station located at 1112 29th Avenue in Oakland, Alameda County, California

Dear Mr. Chan:

Attached is a copy of Professional Services Industries, Inc. "Fourth Quarter 2000 Ground Water Monitoring Report" dated January 9, 2001 for work performed at the above-referenced site. Results of the cumulative sampling and analysis indicate that benzene and Methyl-tert-Butyl-Ether (MtBE) may have migrated down gradient from the former underground storage tank location.

As we discussed, we are preparing a Work Plan for a site investigation to install an additional monitoring well down gradient and off-site to the Caltrans property to define the lateral and vertical extent of the dissolved gasoline constituents in the ground water.

Currently, we are working to obtain a temporary construction easement from the property owners of All Aboard Mini Storage. Also, Mr Steven Ronzone, the contact for the old Del Monte property, has stated that the industrial well identified in our Well Survey Report was located near the current Pep Boys store and was destroyed. Finally, we will continue to sample the wells on a quarterly basis unless otherwise instructed by your office.

If you have any questions or require additional information, please contact Ms. Frances Maroni of my staff at (510) 286-5657.

Sincerely,

HARRY Y. YAHATA
District Director

By:



RAY BOYER
District Branch Chief
Office of Environmental Engineering

Attachment

cc: Regional Water Quality Control Board, SF Bay Region, File

**FOURTH QUARTER 2000
GROUNDWATER MONITORING
REPORT**

**TASK ORDER NUMBER 04-987901-WF
CONTRACT NUMBER 43A0012**

**SOUTH OAKLAND MAINTENANCE STATION
1112 29th AVENUE
OAKLAND, CALIFORNIA**

1-9-01

Prepared for

**CALIFORNIA DEPARTMENT OF TRANSPORTATION
District 4
P.O. Box 23660
Oakland, California**

Prepared by

**Professional Service Industries
1320 West Winton Avenue
Hayward, California 94545
(510) 785-1111**

January 9, 2001
575-0G019

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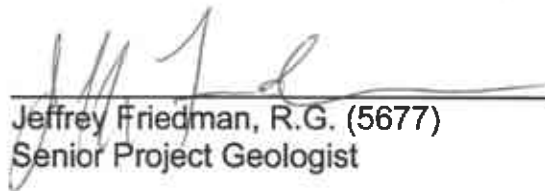
STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATIONS

Information provided in Professional Services Industries, Inc., (PSI) report number 575-0G019 is intended exclusively for the California Department of Transportation (Caltrans) for the evaluation of groundwater contamination as it pertains to the subject site. PSI is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation. The professional services provided have been performed in accordance with practices generally accepted by other geologists, hydrologists, hydrogeologists, engineers, and environmental scientists practicing in this field. No other warranty, either expressed or implied, is made. As with all subsurface investigations, there is no guarantee that the work conducted will identify any or all sources or locations of contamination.

This report is issued with the understanding that Caltrans is responsible for ensuring that the information contained in this report is brought to the attention of the appropriate regulatory agency. This report has been reviewed by a geologist who is registered in the State of California and whose signature and license number appear below.



Frank R. Poss
Senior Hydrogeologist



Jeffrey Friedman, R.G. (5677)
Senior Project Geologist



1.0 INTRODUCTION

This report summarizes the results of the Fourth Quarter 2000 groundwater monitoring activities conducted on November 28, 2000 at the South Oakland Maintenance Yard located in Oakland, California. The subject site location is presented on Figure 1. The purpose of this project is to comply with quarterly sampling requirements for Alameda County Department of Environmental Health. The work was conducted under Contract 43A0012 and Task Order Number 04-987901-WF.

1.1 SITE DESCRIPTION AND HISTORY

The site is currently used as a maintenance station by Caltrans. The maintenance station includes offices, a repair shop, a sign shop, and several material storage bins. The entire property covers approximately two acres. The site is paved with asphalt and is relatively flat. The Alameda/Oakland Estuary is approximately 0.5 miles southwest of the site.

One 4,000-gallon diesel underground storage tank (UST) and one 2,000-gallon gasoline UST were removed from the site on March 11, 1997. The tank pit was over-excavated and soil samples were collected. Sidewall and bottom samples collected from the excavation contained concentrations of Total Petroleum Hydrocarbons as Gasoline (TPH-G, [as high as 380 milligrams per kilogram (mg/kg)]), and Total Petroleum Hydrocarbons as Diesel (TPH-D, [as high as 21 mg/kg]). Concentrations of Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX), ranged from 0.010 to 48 mg/kg. Methyl Tertiary Butyl Ether (MTBE) concentrations ranged from 0.041 to 9.15 mg/kg. Groundwater samples were not collected (Caltrans, 1999).

On April 6 and 7, 1999, Borings B1 through B6 were drilled at the site. The boring locations are presented in Figure 2. All of the borings were converted to 1.3-centimeter (cm) (0.5-inch) inside diameter temporary groundwater monitoring wells. Soil samples were collected from each boring at depths of 1.52, 3, and 4.56 meters (5, 10, and 15 feet) below ground surface (bgs).

Soil samples were analyzed for TPH-G, TPH-D, and Volatile Organic Compounds (VOCs), by EPA Method 8260. TPH-G was detected in one soil sample (B6-10 [13 mg/kg]). None of the soil samples contained detectable concentrations of TPH-D. MTBE was the only VOC detected in the soil samples analyzed. MTBE was detected in the sample B5-1.5 meters (0.16 mg/kg). No other soil sample contained a detectable concentration of MTBE (PSI, 1999).

TPH-G was detected in groundwater samples from temporary Wells B3 (520 µg/l) and B4 (520 µg/l). No other groundwater samples contained detectable concentrations of TPH-G. No TPH-D was detected in any of the groundwater samples. Benzene was detected in the water sample from Well WB3 (6.3 µg/l). MTBE was detected in the

samples from Well WB5 (6,600 µg/l) and WB6 (24 µg/l). Concentrations of other gasoline related compounds were detected in samples from Wells WB1, WB3, WB4, and WB5. Chloroform was detected in water samples from Wells WB4 (2.4 µg/l) and WB6 (2.7 µg/l). Tetrachloroethene (synonym Perchloroethene [PCE]) was detected in the water sample from Well WB6 (12 µg/l) (PSI, 1999).

On August 13, 1999, Borings B7 through B9 were drilled at the site (Figure 2). The borings were drilled on the property boundary. The results of the sampling indicated the following:

- TPH-G concentrations were detected in one soil sample [B9-15 (0.54 mg/kg)] at the site.
- TPH-D was detected in one groundwater sample [WB7 (0.73 mg/l)]
- MTBE was detected in grab groundwater samples WB7 (5,600 µg/l) and WB8 (9.0 µg/l). The downgradient extent of MTBE has not been established.

In June and July 2000, PSI completed a supplemental investigation, which included the installation of four monitoring wells at the site. The conclusions and recommendations of the investigation follows:

- None of the soil samples contained detectable concentrations of TPH-G, while TPH-D was detected in two soil samples at concentrations below regulatory concern.
- None of the soil samples contained detectable concentrations of VOCs with the exception of MTBE. The highest MTBE concentration detected was 0.52 mg/kg in soil sample B3-10. All of the MTBE concentrations detected were below first groundwater.
- None of the groundwater samples contained detectable concentrations of TPH-D, while TPH-G was detected in two groundwater samples at a maximum concentration of 2.7 mg/l.
- Numerous VOCs were detected in the groundwater with only benzene and MTBE being at concentrations greater than the State of California Primary Drinking Water Standard (PDWS) or Secondary Drinking Water Standard (SDWS). Based on the concentrations detected, MTBE appears to be the primary contaminant of concern (COC). The lateral extent of MTBE has not been defined.
- The report recommended continued groundwater monitoring and the installation of additional monitoring wells down gradient of monitoring well MW-3. Additionally, as TPH-D was not detected in the groundwater sample from monitoring well MW-3, the report recommended that the analyses for TPH-D in this well be eliminated.

2.0 GROUNDWATER MONITORING ACTIVITIES

2.1 GROUNDWATER ELEVATION AND HYDRAULIC GRADIENT

On November 28, 2000, static groundwater elevations were measured in wells MW-1 through MW-4 (Figure 2). The groundwater depths were measured using a groundwater interface probe. The average depth the groundwater increased approximately 0.015 meters (0.05 feet) compared to last quarter. A summary of the depth to groundwater data collected during this monitoring event and previous monitoring events is presented in Table 1. Based on the groundwater data, the inferred groundwater flow direction beneath the site is to the west (Figure 2) with a hydraulic gradient of 0.014.

2.2 GROUNDWATER SAMPLING

Groundwater samples were collected from monitoring wells MW-1 through MW-4. Prior to the collection of groundwater samples, the monitoring wells were purged of a minimum of three well volumes of water until pH, conductivity, and temperature stabilized. The wells were allowed to recover to at least 80 percent of their original static groundwater levels prior to sampling.

The following procedures for well monitoring, well purging, and water sampling were implemented while sampling the wells:

1. All equipment was washed prior to entering the well with an Alconox solution, followed by two tap water rinses and a deionized water rinse.
2. Prior to purging the wells, depth-to-water was measured using an Solinst groundwater interface probe to an accuracy of approximately 0.01 foot. The measurements were made to the top of the well casing on the north side.
3. Monitoring wells at the site were prepared for sampling by purging the well of approximately 3 well volumes of water using disposable Teflon bailers.
4. Water samples were collected with a single-use Teflon bailer after the well had been purged and water in the well had equilibrated to approximately 80 percent of the static water level. The water collected was immediately decanted into laboratory-supplied vials and bottles. The containers were overfilled, capped, labeled, and placed in a chilled cooler prior to delivery to the laboratory for analysis.

5. Chain-of-custody procedures, including chain-of-custody forms, were used to document water sample handling and transport from collection to delivery to the laboratory for analyses.
6. Groundwater samples were delivered to the State-certified hazardous waste laboratory within approximately 48-hours of collection.
7. Purged water was contained in a DOT approved 55-gallon drum. The drum was labeled with the contents, date, well number, client name, and project number.

The groundwater monitoring purge logs are presented in Appendix A.

2.3 LABORATORY ANALYSIS AND RESULTS

The groundwater samples were submitted for analyses to Centrum Analytical of Redlands, California, a State of California certified hazardous waste analytical laboratory. The samples were analyzed for the following:

- EPA 8015 modified - TPH-G;
- EPA 8260 - Volatile Organic Compounds (VOCs).

A summary of the laboratory results for groundwater samples is presented in Table 2. A copy of the laboratory reports and chain of custody records are presented in Appendix B. The following are the results of the groundwater sampling:

- TPH-G was detected in the groundwater samples collected from monitoring well MW-1 (1.7 mg/l). TPH-G concentrations have declined since the previous sampling results.

Numerous VOCs were detected in the groundwater samples with the highest concentrations detected in the groundwater sample collected from monitoring well MW-3. The compounds detected are common constituents of gasoline. The compound with the highest concentration was MTBE at 2,500 micrograms per liter (µg/l). MTBE concentrations are generally consistent with concentrations detected in the previous sampling event.

2.4 COMPARISON OF GROUNDWATER RESULTS WITH REGULATORY CRITERIA

The concentrations of contaminants reported by the analytical laboratory were compared to PDWS or SDWS. The following samples were above their respective PDWS or SDWS.

- Benzene concentrations detected in groundwater samples MW-1 (3.6 µg/l) and MW-3 (27 µg/l).
- MTBE concentrations detected in groundwater samples MW-1 (610 µg/l), MW-2 (130 µg/l), and MW-3 (2,500 µg/l).

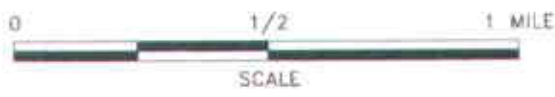
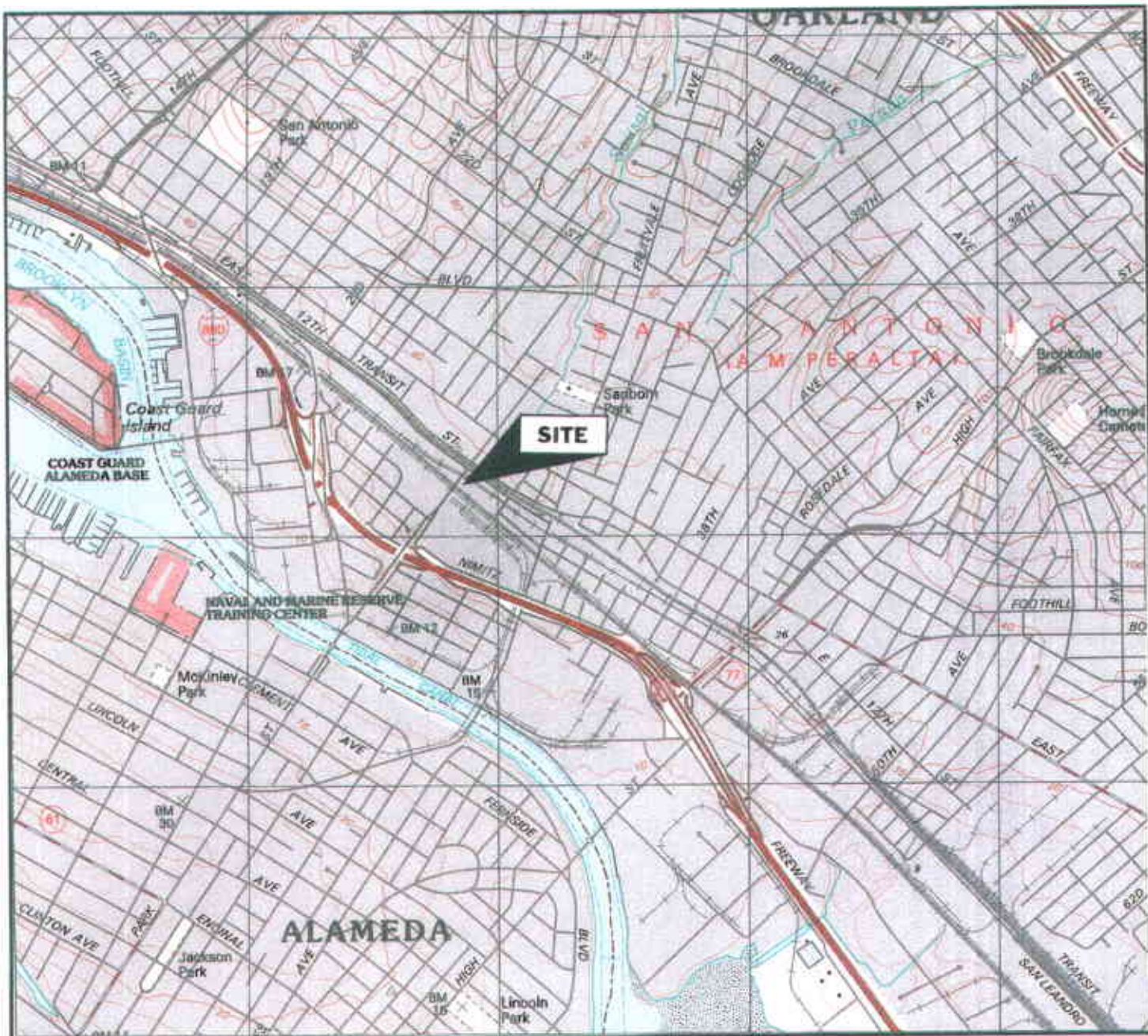
Based on the concentrations detected in the groundwater at the site, the primary COC is MTBE. The concentrations of MTBE in each of the monitoring wells are shown in Figure 3. This figure indicates that the highest concentrations of MTBE were encountered in the groundwater samples collected in the monitoring well (MW-3) directly down gradient of the former USTs and in the well adjacent (MW-1) to the former USTs. Based on the data obtained, the lateral extent of MTBE impacted groundwater has not been defined.

3.0 SUMMARY AND CONCLUSIONS

PSI performed a quarterly monitoring event on November 28, 2000. Groundwater samples were collected from monitoring wells MW-1 through MW-4. Based on measurements collected and analytical data the following conclusions are provided. Groundwater elevation data indicates the groundwater flow direction beneath the site is towards the west, with a hydraulic gradient of 0.014 meter per meter (0.014 foot per foot).

- TPH-G was detected in the groundwater samples collected from monitoring well MW-1 (1.7 mg/l).
- Numerous VOCs were detected in the groundwater samples from the site. However, only benzene and MTBE were detected in concentrations greater than the PDWS. Based on the concentrations detected in the groundwater at the site, the primary appears to be COC is MTBE.

Based on the results of this report, PSI recommends continued groundwater monitoring and the installation of additional monitoring wells down gradient of monitoring well MW-2 and MW-3.

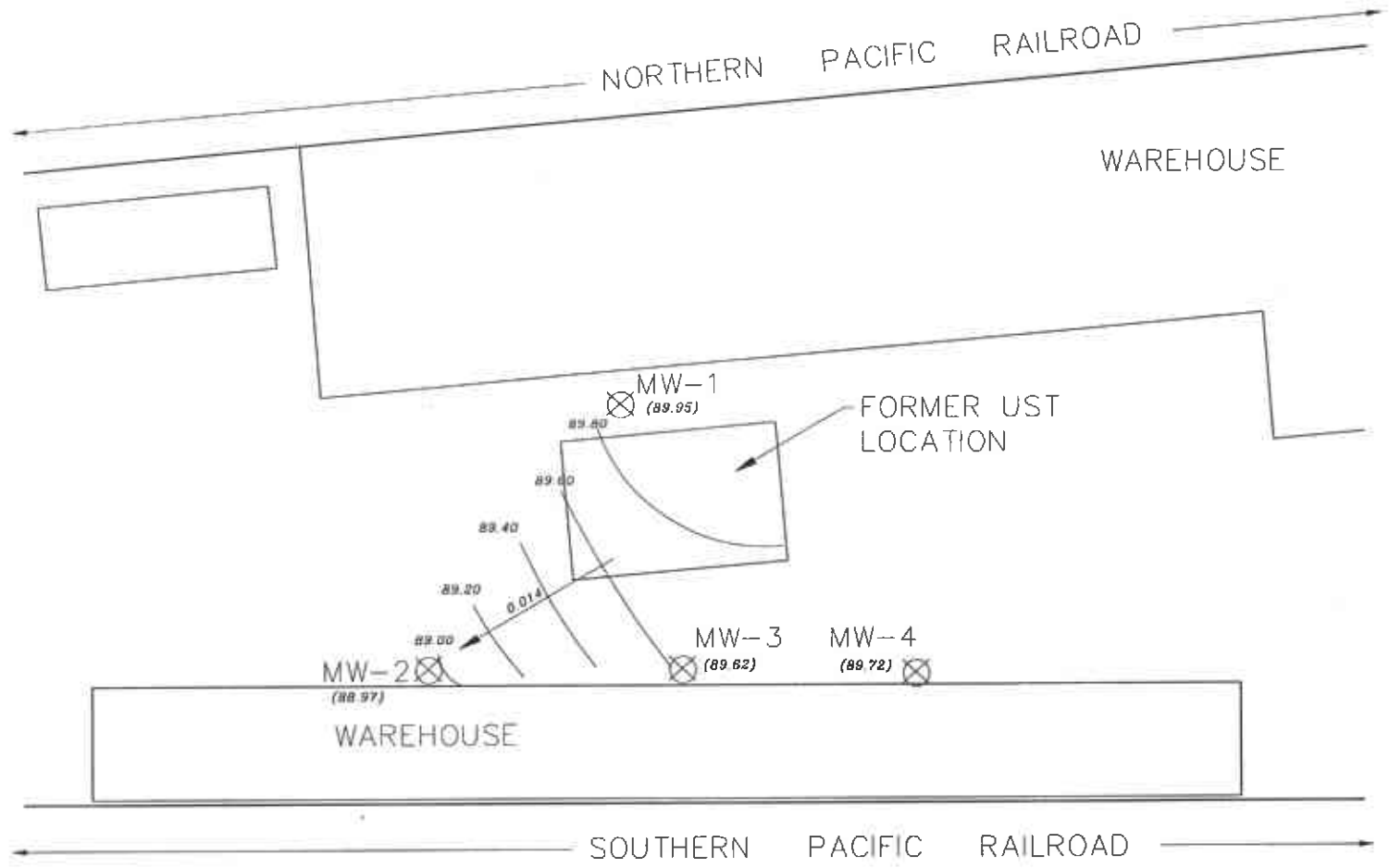


REFERENCE:
U.S.G.S. OAKLAND EAST, CALIFORNIA, 1997



SITE LOCATION
CALTRANS MAINTENANCE STATION
1112 29TH AVENUE
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-9G014


DATE: 3/23/99	CKD'D BY:	FIGURE NO.: 1
FILE NO.: 9G014-1		DRAWN BY: S. BOWERS

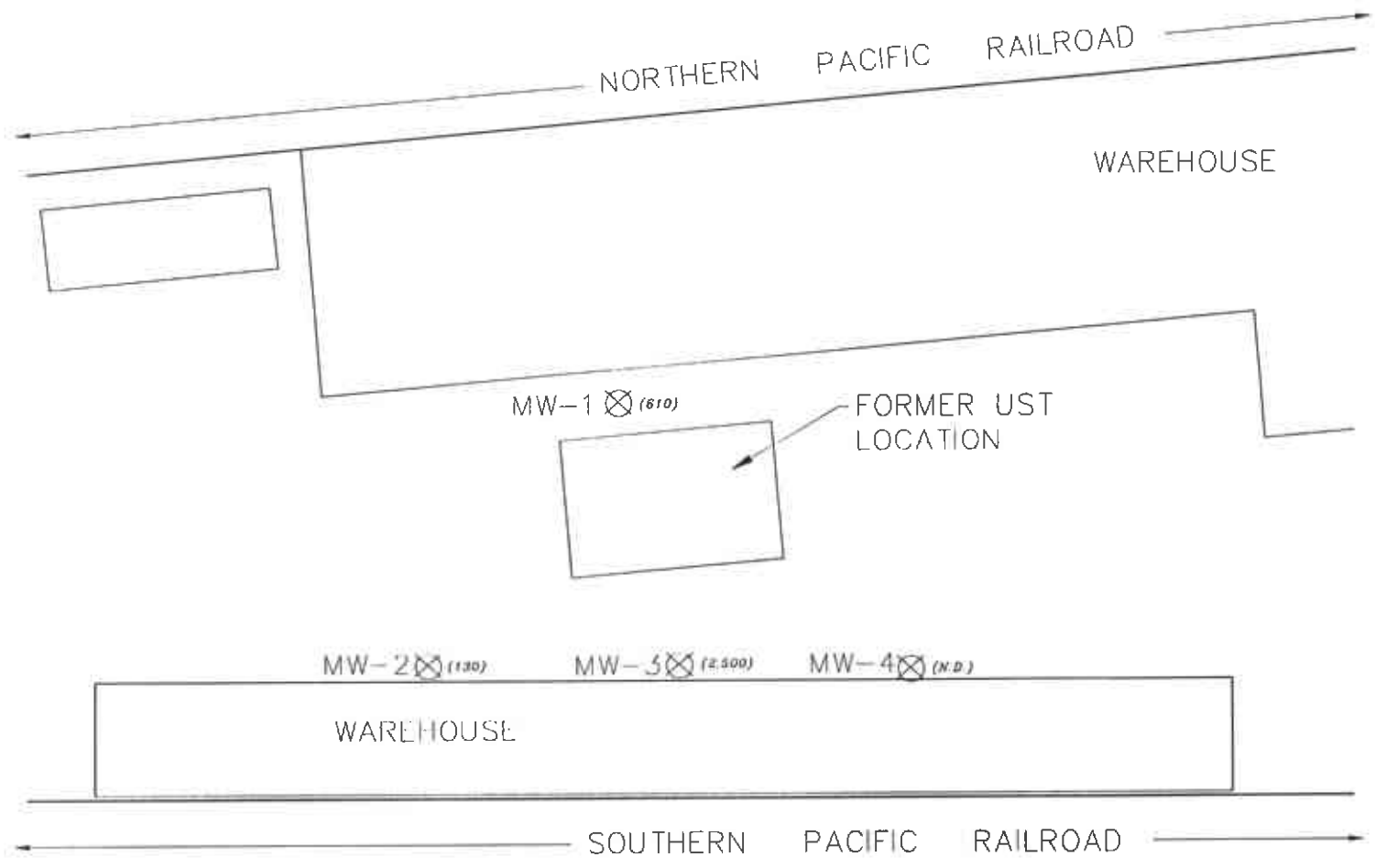
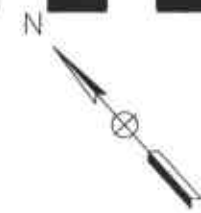


LEGEND

- MW-1 ⊗ (89.95) GROUNDWATER MONITORING WELL (ELEV IN FT. MSL)
- 89.20 GROUNDWATER ISO-ELEVATION CONTOUR (ELEV. IN FT. MSL)



 ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION <small>CONSULTING • ENGINEERING • TESTING</small>		
GROUNDWATER ELEVATION MAP (11/28/00) CALTRANS MAINTENANCE STATION 1112 29TH AVENUE, OAKLAND, CALIFORNIA PROJECT NUMBER: 575-0G019		
DATE: 12/11/00	CKD BY:	FIGURE NO.: 2
FILE NO: 0G019-5		DRAWN BY: B. BURFIELD



LEGEND

- MW-1 (5,000) GROUNDWATER MONITORING WELL
- (5,000) MTBE CONCENTRATIONS IN GROUNDWATER (ug/L)




 ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION <small>CONSULTING • ENGINEERING • TESTING</small>		
MTBE CONCENTRATIONS IN GROUNDWATER (11/28/00) CALTRANS MAINTENANCE STATION 1112 29TH AVENUE, OAKLAND, CALIFORNIA PROJECT NUMBER: 575-0G019		
DATE: 12/15/00	CKD BY:	FIGURE NO.: 3
FILE NO: 0G019-6		DRAWN BY: B. BURFIELD

TABLE 1
GROUNDWATER ELEVATION
SOUTH OAKLAND MAINTENANCE STATION
SOUTH OAKLAND, CALIFORNIA

Sample Location	Date	Temperature (°C)	Conductivity (mS/cm)	pH	TOC Elevation (feet msl)*	Depth To Groundwater	Groundwater Elevation (feet msl)*
MW-1	6/27/00	---	---	---	99.57	9.13	90.44
	9/11/00	20.8	514	6.33	99.57	9.52	90.05
	11/28/00	20.2	491	6.98	99.57	9.62	89.95
MW-2	6/27/00	---	---	---	98.91	9.05	89.86
	9/11/00	19.6	575	6.58	98.91	9.95	88.96
	11/28/00	19.1	571	7.11	98.91	9.94	88.97
MW-3	6/27/00	---	---	---	98.98	8.76	90.22
	9/11/00	20.5	563	6.70	98.98	9.28	89.70
	11/28/00	19.2	571	6.65	98.98	9.36	89.62
MW-4	6/27/00	---	---	---	99.04	8.74	90.30
	9/11/00	20.7	456	6.54	99.04	9.30	89.74
	11/28/00	20	446	6.61	99.04	9.32	89.72

Notes:

All measurements are recorded in feet.

* TOC Measurements are from data supplied by Meridian Surveying

Feet msl = feet above mean sea level

TABLE 2
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
SOUTH OAKLAND MAINTENANCE STATION
SOUTH OAKLAND, CALIFORNIA

Sample I.D.	Date	TPH-G mg/l	TPH-D mg/l	MTBE µg/l	tert- Butanol (TBA) ug/l	tert-Amyl Methyl Ether (TAME) ug/l	Benzene µg/l	Toluene µg/l	Ethyl- benzene µg/l	Total Xylenes µg/l
MW-1	6/27/00	0.85	---	880	<50	<5	20	<1.0	<1.0	19
	9/11/00	0.92	---	860	190	<5	14	<1.0	1.6	3.6
	11/28/00	<0.5	---	610	<250	<25	3.6	<2.5	<2.5	<7.5
MW-2	6/27/00	<0.5	---	86	<50	<5	<1.0	<1.0	<1.0	<3.0
	9/11/00	<0.5	---	110	<50	<5	<1.0	<1.0	<1.0	<3.0
	11/28/00	<0.5	---	130	<50	<5	<1.0	<1.0	<1.0	<3.0
MW-3	6/27/00	2.7	<0.4	5,000	1,500	11	73	1.7	1.2	4.6
	9/11/00	1.9	---	2,700	310	10	19	<1.0	<1.0	<3.0
	11/28/00	1.7	---	2,500	<1,000	<100	27	92	<10	<30
MW-4	6/27/00	<0.5	---	18	<50	<5	<1.0	<1.0	<1.0	<3.0
	9/11/00	<0.5	---	<1.0	<50	<5	<1.0	<1.0	<1.0	<3.0
	11/28/00	<0.5	---	<1.0	<50	<5	<0.5	<0.5	<0.5	<1.5

NOTES:

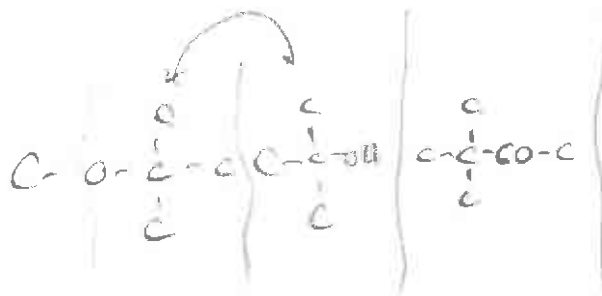
TPH-D = Total Petroleum Hydrocarbons as Diesel by EPA Method 8015M

TPH-G = Total Petroleum Hydrocarbons as Gasoline by EPA Method 8015M.

MTBE = Methyl Tertiary Butyl Ether

mg/l = milligrams per liter

ug/l = micrograms per liter



APPENDIX A
GROUNDWATER PURGE LOGS

WELL PURGING AND SAMPLING DATA

DATE: 11/28/00		PROJECT NAME: CALTRANS S. OAKLAND		WELL NO: MW-1		PROJECT NO: 06019		
WEATHER CONDITIONS: SUNNY, COOL								
WELL DIAMETER (IN.) <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 4 <input type="checkbox"/> 6 <input type="checkbox"/> OTHER _____								
SAMPLE TYPE: <input checked="" type="checkbox"/> GROUNDWATER <input type="checkbox"/> WASTEWATER <input type="checkbox"/> SURFACE WATER <input type="checkbox"/> OTHER								
WELL DEPTH (TOC) 25.18		FT.		DEPTH TO WATER BEFORE PURGING (TOC) 9.62		FT.		
LENGTH OF WATER 15.56		FT.		CALCULATED ONE WELL VOLUME ¹ : 2.64 GAL.				
PURGING DEVICE: <input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> DISPOSABLE <input type="checkbox"/> DECONTAMINATED								
SAMPLING DEVICE: <input type="checkbox"/> DEDICATED <input checked="" type="checkbox"/> DISPOSABLE <input type="checkbox"/> DECONTAMINATED								
EQUIP. DECON. <input type="checkbox"/> TAP WATER WASH <input type="checkbox"/> ISOPROPANOL <input type="checkbox"/> ANALYTE FREE FINAL RINSE								
<input type="checkbox"/> ALCONOX WASH		<input type="checkbox"/> DIST/DEION 1 RINSE		<input type="checkbox"/> OTHER SOLVENT		<input type="checkbox"/> DIST/DEION FINAL RINSE		
<input type="checkbox"/> LIQUINOX WASH		<input type="checkbox"/> DIST/DEION 2 RINSE		<input type="checkbox"/> TAP WATER FINAL RINSE		<input type="checkbox"/> AIR DRY		
CONTAINER PRESERVATION: <input checked="" type="checkbox"/> LAB PRESERVED <input type="checkbox"/> FIELD PRESERVED								
WATER ANALYZER MODEL & SERIAL NO: MYRON L 602155								
ACTUAL TIME (MIN)	CUMUL VOLUME PURGED (GAL)	TEMP <input type="checkbox"/> °F <input type="checkbox"/> °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
0902	INITIAL	20.2	635	7.22				
0910	3.0	20.2	492	7.08				
0920	6.0	20.2	496	7.03				
0925	9.0	20.2	491	6.98				
DEPTH TO WATER AFTER PURGING (TOC) _____ FT.					SAMPLE FILTERED <input type="checkbox"/> YES <input type="checkbox"/> NO SIZE _____			
NOTES:					SAMPLE TIME: 0925		ID# MW-1	
					DUPLICATE <input type="checkbox"/> TIME:		ID#:	
					EQUIP. BLANK: <input type="checkbox"/> TIME:		ID#:	
					PREPARED BY:			

¹A 1 FOOT LENGTH OF WATER = 0.05 GAL IN 1" DIA. PIPE 0.17 GAL IN 2" DIA PIPE 0.65 GAL IN 4" DIA PIPE 1.5 GAL IN 6" DIA PIPE

WELL PURGING AND SAMPLING DATA

WELL NO: MW-3

DATE: 11/28/00 PROJECT NAME: CALTRANS S. OAKLAND PROJECT NO: 06019

WEATHER CONDITIONS: SUNNY, COOL

WELL DIAMETER (IN.) 1 2 4 6 OTHER _____

SAMPLE TYPE: GROUNDWATER WASTEWATER SURFACE WATER OTHER

WELL DEPTH (TOC) 20.20 FT. DEPTH TO WATER BEFORE PURGING (TOC) 9.36 FT.

LENGTH OF WATER 10.84 FT. CALCULATED ONE WELL VOLUME¹: 1.84 GAL.

PURGING DEVICE: DEDICATED DISPOSABLE DECONTAMINATED

SAMPLING DEVICE: DEDICATED DISPOSABLE DECONTAMINATED

EQUIP. DECON. TAP WATER WASH ISOPROPNOL ANALYTE FREE FINAL RINSE
 ALCONOX WASH DIST/DEION 1 RINSE OTHER SOLVENT DIST/DEION FINAL RINSE
 LIQUINOX WASH DIST/DEION 2 RINSE TAP WATER FINAL RINSE AIR DRY

CONTAINER PRESERVATION: LAB PRESERVED FIELD PRESERVED

WATER ANALYZER MODEL & SERIAL NO: MYRON 2602155

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP <input type="checkbox"/> °F <input type="checkbox"/> °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
1020	INITIAL	18.8	527	7.25			CL-STRT	
1023	2.0	19.2	541	6.86			CO	
1028	4.0	19.2	566	6.65			CO	
1034	6.0	19.2	571	6.65			CO	

DEPTH TO WATER AFTER PURGING (TOC) _____ FT. SAMPLE FILTERED YES NO SIZE _____

NOTES: SAMPLE TIME: 1035 ID# MW-3
 DUPLICATE TIME: _____ ID#: _____
 EQUIP. BLANK: TIME: _____ ID#: _____
 PREPARED BY: _____

¹A 1 FOOT LENGTH OF WATER = 0.05 GAL IN 1" DIA. PIPE 0.17 GAL IN 2" DIA PIPE 0.65 GAL IN 4" DIA PIPE 1.5 GAL IN 6" DIA PIPE

APPENDIX B

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS



Centrum Analytical Laboratories, Inc.

CERTIFIED HAZARDOUS WASTE TESTING LABORATORY • CHEMICAL AND BIOLOGICAL ANALYSES

Client: PSI
1320 W. Winton Avenue
Hayward, CA 94545

Date Sampled: 11/28/00
Date Received: 11/29/00
Job Number: 17524

Project: CALTRANS S. OAKLAN


CASE NARRATIVE

The following information applies to samples which were received on 11/29/00 :

The samples were received at the laboratory chilled and sample containers were intact.

Unless otherwise noted below, the Quality Control acceptance criteria were met for all samples for every analysis requested.

Report approved by:


Robert R. Clark, Ph.D.
Laboratory Director

ELAP # 2419

DL : Detection Limit – The lowest level at which the compound can reliably be detected under normal laboratory conditions.
ND : Not Detected – The compound was analyzed for but was not found to be present at or above the detection limit.
NA : Not Analyzed – Per client request, this analyte was not on the list of compounds to be analyzed for.



QC Sample Report - EPA 8015M Gasoline

Matrix: Water

Batch #: 8015GW2778

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Gasoline	10.0	101	70 - 130	Pass

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analyte	Spike Sample Recovery mg/L	Spike Duplicate Recovery mg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
Gasoline	10.12	9.72	4%	25%	Pass

Analytical Notes:

MS: Matrix Spike Sample

MSD: Matrix Spike Duplicate

EPA 8260 - Volatile Organics with Oxygenates

 Client: PSI
 Project: CALTRANS S. OAKLAN
 Job No.: 17524
 Matrix: Water
 Analyst: JL

 Date Sampled: 11/28/00
 Date Received: 11/29/00
 Date Analyzed: 11/29/00
 Batch Number: MS48260W2306

Compounds	Sample ID:	Blank	MW-2	MW-4
	DL	µg/L	µg/L	µg/L
Acetone	50	ND	ND	ND
tert-Amyl Methyl Ether (TAME)	5.0	ND	ND	ND
Benzene	0.5	ND	ND	ND
Bromobenzene	1.0	ND	ND	ND
Bromochloromethane	1.0	ND	ND	ND
Bromodichloromethane	0.5	ND	ND	ND
Bromoform	0.5	ND	ND	ND
Bromomethane	0.5	ND	ND	ND
tert-Butanol (TBA)	50	ND	ND	ND
2-Butanone (MEK)	10	ND	ND	ND
n-Butylbenzene	0.5	ND	ND	ND
sec-Butylbenzene	0.5	ND	ND	ND
tert-Butylbenzene	0.5	ND	ND	ND
Carbon disulfide	10	ND	ND	ND
Carbon tetrachloride	0.5	ND	ND	ND
Chlorobenzene	0.5	ND	ND	ND
Chloroethane	0.5	ND	ND	ND
Chloroform	0.5	ND	ND	7.7
Chloromethane	0.5	ND	ND	ND
2-Chlorotoluene	0.5	ND	ND	ND
4-Chlorotoluene	0.5	ND	ND	ND
Dibromochloromethane	0.5	ND	ND	ND
1,2-Dibromoethane	0.5	ND	ND	ND
1,2-Dibromo-3-chloropropane	10	ND	ND	ND
Dibromomethane	0.5	ND	ND	ND
1,2-Dichlorobenzene	0.5	ND	ND	ND
1,3-Dichlorobenzene	0.5	ND	ND	ND
1,4-Dichlorobenzene	0.5	ND	ND	ND
Dichlorodifluoromethane	0.5	ND	ND	ND
1,1-Dichloroethane	0.5	ND	ND	ND
1,2-Dichloroethane	0.5	ND	ND	ND
1,1-Dichloroethene	0.5	ND	ND	ND
cis-1,2-Dichloroethene	0.5	ND	ND	ND
trans-1,2-Dichloroethene	0.5	ND	ND	ND
1,2-Dichloropropane	0.5	ND	ND	ND
1,3-Dichloropropane	0.5	ND	ND	ND
2,2-Dichloropropane	0.5	ND	ND	ND
1,1-Dichloropropene	0.5	ND	ND	ND

EPA 8260 - Volatile Organics with Oxygenates

Client: PSI
 Project: CALTRANS S. OAKLAN
 Job No.: 17524
 Matrix: Water
 Analyst: JL

Date Sampled: 11/28/00
 Date Received: 11/29/00
 Date Analyzed: 11/29/00
 Batch Number: MS48260W2306

Compounds	Sample ID:	Blank	MW-2	MW-4
	DL	µg/L	µg/L	µg/L
cis-1,3-Dichloropropene	0.5	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND
Diisopropyl Ether (DIPE)	5.0	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND
Ethyl tert-Butyl Ether (EtBE)	5.0	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND
2-Hexanone	10	ND	ND	ND
Isopropylbenzene	0.5	ND	ND	ND
p-Isopropyltoluene	0.5	ND	ND	ND
Methylene chloride	20	ND	ND	ND
4-Methyl-2-pentanone	5.0	ND	ND	ND
Methyl-tert-butyl ether (MtBE)	1.0	ND	130	ND
Napthalene	0.5	ND	ND	ND
n-Propylbenzene	0.5	ND	ND	ND
Styrene	0.5	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND
Toluene	0.5	ND	ND	ND
1,2,3-Trichlorobenzene	0.5	ND	ND	ND
1,2,4-Trichlorobenzene	0.5	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND
Trichlorotrifluoroethane	5.0	ND	ND	ND
1,2,4-Trimethylbenzene	0.5	ND	ND	ND
1,3,5-Trimethylbenzene	0.5	ND	ND	ND
Vinyl chloride	0.5	ND	ND	ND
Xylenes (total)	1.5	ND	ND	ND

Surrogates (% recovery) Limits: 80 - 130

Sample ID:	Blank	MW-2	MW-4
Dibromofluoromethane	106	105	107
Toluene-d8	100	95	97
Bromofluorobenzene	90	89	88

EPA 8260 - Volatile Organics with Oxygenates

Client: PSI
 Project: CALTRANS S. OAKLAN
 Job No.: 17524
 Matrix: Water
 Analyst: JL

Date Sampled: 11/28/00
 Date Received: 11/29/00
 Date Analyzed: 11/29/00
 Batch Number: MS48260W2306

Compounds	Sample ID: MW-1	
	DL	µg/L
Acetone	250	ND
tert-Amyl Methyl Ether (TAME)	25	ND
Benzene	2.5	3.6
Bromobenzene	5.0	ND
Bromochloromethane	5.0	ND
Bromodichloromethane	2.5	ND
Bromoform	2.5	ND
Bromomethane	2.5	ND
tert-Butanol (TBA)	250	ND
2-Butanone (MEK)	50	ND
n-Butylbenzene	2.5	ND
sec-Butylbenzene	2.5	ND
tert-Butylbenzene	2.5	ND
Carbon disulfide	50	ND
Carbon tetrachloride	2.5	ND
Chlorobenzene	2.5	ND
Chloroethane	2.5	ND
Chloroform	2.5	ND
Chloromethane	2.5	ND
2-Chlorotoluene	2.5	ND
4-Chlorotoluene	2.5	ND
Dibromochloromethane	2.5	ND
1,2-Dibromoethane	2.5	ND
1,2-Dibromo-3-chloropropane	50	ND
Dibromomethane	2.5	ND
1,2-Dichlorobenzene	2.5	ND
1,3-Dichlorobenzene	2.5	ND
1,4-Dichlorobenzene	2.5	ND
Dichlorodifluoromethane	2.5	ND
1,1-Dichloroethane	2.5	ND
1,2-Dichloroethane	2.5	ND
1,1-Dichloroethene	2.5	ND
cis-1,2-Dichloroethene	2.5	ND
trans-1,2-Dichloroethene	2.5	ND
1,2-Dichloropropane	2.5	ND
1,3-Dichloropropane	2.5	ND
2,2-Dichloropropane	2.5	ND
1,1-Dichloropropene	2.5	ND

EPA 8260 - Volatile Organics with Oxygenates

Client: PSI
 Project: CALTRANS S. OAKLAN
 Job No.: 17524
 Matrix: Water
 Analyst: JL

Date Sampled: 11/28/00
 Date Received: 11/29/00
 Date Analyzed: 11/29/00
 Batch Number: MS48260W2306

Sample ID: MW-1	
Compounds	DL µg/L
cis-1,3-Dichloropropene	2.5 ND
trans-1,3-Dichloropropene	2.5 ND
Diisopropyl Ether (DIPE)	25 ND
Ethylbenzene	2.5 ND
Ethyl tert-Butyl Ether (EtBE)	25 ND
Hexachlorobutadiene	2.5 ND
2-Hexanone	50 ND
Isopropylbenzene	2.5 ND
p-Isopropyltoluene	2.5 ND
Methylene chloride	100 ND
4-Methyl-2-pentanone	25 ND
Methyl-tert-butyl ether (MTBE)	5.0 610
Napthalene	2.5 ND
n-Propylbenzene	2.5 ND
Styrene	2.5 ND
1,1,1,2-Tetrachloroethane	2.5 ND
1,1,2,2-Tetrachloroethane	5.0 ND
Tetrachloroethene	2.5 ND
Toluene	2.5 ND
1,2,3-Trichlorobenzene	2.5 ND
1,2,4-Trichlorobenzene	2.5 ND
1,1,1-Trichloroethane	2.5 ND
1,1,2-Trichloroethane	2.5 ND
Trichloroethene	2.5 ND
1,2,3-Trichloropropane	2.5 ND
Trichlorofluoromethane	2.5 ND
Trichlorotrifluoroethane	25.0 ND
1,2,4-Trimethylbenzene	2.5 5.4
1,3,5-Trimethylbenzene	2.5 ND
Vinyl chloride	2.5 ND
Xylenes (total)	7.5 ND

Surrogates (% recovery) Limits: 80 - 130

Sample ID: MW-1	
Dibromofluoromethane	107
Toluene-d8	97
Bromofluorobenzene	88



EPA 8260 - Volatile Organics with Oxygenates

Client: PSI
Project: CALTRANS S. OAKLAN
Job No.: 17524
Matrix: Water
Analyst: JL

Date Sampled: 11/28/00
Date Received: 11/29/00
Date Analyzed: 11/29/00
Batch Number: MS48260W2306

Compounds	Sample ID: MW-3	
	DL	µg/L
Acetone	1000	ND
tert-Amyl Methyl Ether (TAME)	100	ND
Benzene	10	27
Bromobenzene	20	ND
Bromochloromethane	20	ND
Bromodichloromethane	10	ND
Bromoform	10	ND
Bromomethane	10	ND
tert-Butanol (TBA)	1000	ND
2-Butanone (MEK)	200	ND
n-Butylbenzene	10	ND
sec-Butylbenzene	10	ND
tert-Butylbenzene	10	ND
Carbon disulfide	200	ND
Carbon tetrachloride	10	ND
Chlorobenzene	10	ND
Chloroethane	10	ND
Chloroform	10	ND
Chloromethane	10	ND
2-Chlorotoluene	10	ND
4-Chlorotoluene	10	ND
Dibromochloromethane	10	ND
1,2-Dibromoethane	10	ND
1,2-Dibromo-3-chloropropane	200	ND
Dibromomethane	10	ND
1,2-Dichlorobenzene	10	ND
1,3-Dichlorobenzene	10	ND
1,4-Dichlorobenzene	10	ND
Dichlorodifluoromethane	10	ND
1,1-Dichloroethane	10	ND
1,2-Dichloroethane	10	ND
1,1-Dichloroethene	10	ND
cis-1,2-Dichloroethene	10	ND
trans-1,2-Dichloroethene	10	ND
1,2-Dichloropropane	10	ND
1,3-Dichloropropane	10	ND
2,2-Dichloropropane	10	ND
1,1-Dichloropropene	10	ND

EPA 8260 - Volatile Organics with Oxygenates

Client: PSI
 Project: CALTRANS S. OAKLAN
 Job No.: 17524
 Matrix: Water
 Analyst: JL

Date Sampled: 11/28/00
 Date Received: 11/29/00
 Date Analyzed: 11/29/00
 Batch Number: MS48260W2306

Sample ID: MW-3	
Compounds	DL µg/L
cis-1,3-Dichloropropene	10 ND
trans-1,3-Dichloropropene	10 ND
Diisopropyl Ether (DIPE)	100 ND
Ethylbenzene	10 ND
Ethyl tert-Butyl Ether (EtBE)	100 ND
Hexachlorobutadiene	10 ND
2-Hexanone	200 ND
Isopropylbenzene	10 ND
p-Isopropyltoluene	10 ND
Methylene chloride	400 ND
4-Methyl-2-pentanone	100 ND
Methyl-tert-butyl ether (MTBE)	20 2,500
Napthalene	10 ND
n-Propylbenzene	10 ND
Styrene	10 ND
1,1,1,2-Tetrachloroethane	10 ND
1,1,2,2-Tetrachloroethane	20 ND
Tetrachloroethene	10 ND
Toluene	10 92
1,2,3-Trichlorobenzene	10 ND
1,2,4-Trichlorobenzene	10 ND
1,1,1-Trichloroethane	10 ND
1,1,2-Trichloroethane	10 ND
Trichloroethene	10 ND
1,2,3-Trichloropropane	10 ND
Trichlorofluoromethane	10 ND
Trichlorotrifluoroethane	100 ND
1,2,4-Trimethylbenzene	10 ND
1,3,5-Trimethylbenzene	10 ND
Vinyl chloride	10 ND
Xylenes (total)	30 ND

Surrogates (% recovery) Limits: 80 - 130

Sample ID: MW-3	
Dibromofluoromethane	104
Toluene-d8	96
Bromofluorobenzene	88

QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: MS48260W2306

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	133	59 - 172	Pass
Benzene	20	125	66 - 142	Pass
Trichloroethene	20	108	71 - 137	Pass
Toluene	20	113	59 - 139	Pass
Chlorobenzene	20	96	60 - 133	Pass

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analyte	Spike Sample Recovery µg/L	Spike Duplicate Recovery µg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
1,1-Dichloroethene	27.98	27.93	0%	22%	Pass
Benzene	25.11	24.27	3%	21%	Pass
Trichloroethene	21.64	21.24	2%	24%	Pass
Toluene	22.82	22.45	2%	21%	Pass
Chlorobenzene	19.31	19.21	1%	21%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate



Centrum Analytical Laboratories, Inc.

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lab@centrum-labs.com

Chain of Custody Record

Centrum Job # **17524**
Page 1 of 1

Project No: 06019		Project Name: CALTRANS S. OAKLAN		Please Circle ALL Analyses Requested		Turn-Around Time <input type="checkbox"/> 24 Hr. RUSH* <input type="checkbox"/> 48 Hr. RUSH* <input checked="" type="checkbox"/> Normal TAT *Requires PRIOR approval, additional charges apply Requested due date: _____	
Project Manager: FRANK POSS		Phone: 510 785-1111 Fax: 510 785-1192		8015M: Diesel, Fuel Screen, Carbon Chain	8015M: Gasoline only		Remarks/Special Instructions
Client Name: (Report and Billing) PSI		Address: (Report and Billing) 1320 W. WINTON AVE HAYWARD, CA 94545		8021B: BTEX/MBE Only by GC/PID	418.1 (TRPH), 413.2 (Oil & Grease)		
Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	
1	MW-1	11/29/00	0925	H ₂ O		4 VOA	
2	MW-2	↓	1010	↓		↓	
3	MW-3	↓	1035	↓		↓	
4	MW-4	↓	1110	↓		↓	
1) Relinquished by: (Sampler's Signature) CHRIS MERRITT		Date: 11/29/00	Time: 1700	3) Relinquished by:		Date:	Time:
2) Received by:		Date:	Time:	4) Received by:		Date:	Time:
The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under the Terms and Conditions set forth on the back hereof.				5) Relinquished by:		Date:	Time:
Laboratory Notes:				6) Received for Laboratory by: Trish Reed		Date: 11/29/00	Time: 9:15 am
						To be completed by Laboratory personnel: Samples chilled? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> From Field Custody seals? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No All sample containers intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Courier <input checked="" type="checkbox"/> UPS/Fed Ex <input type="checkbox"/> Hand carried	
						Sample Disposal <input type="checkbox"/> Client will pick up <input type="checkbox"/> Return to client <input type="checkbox"/> Lab disposal	
						Sample Locator No. VOA	