STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
BOX 23660
OAKLAND, CA 94623-0660
(510) 286-4444
TDD (510) 286-4454

ENVIRONMENTAL PROTECTION

99 FEB 16 PM 4:56

February 10, 1999

Don Hwang
Alameda County
Department of Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Dear Mr. Hwang:

These reports summarize the results of last quarter 1997 and first quarter 1998 groundwater monitoring activities at the Ettie Street maintenance station. I am sending you copies of these reports by PSI Inc.

If you have any questions, please contact me at (510) 286-5256.

Sincerely,

SHEILA YAZDY
Environmental Engineer
Office of Environmental Engineering

c: S. Agarwal, S.Yazdy,

FINAL
FOURTH QUARTER 1997 GROUNDWATER MONITORING REPORT

ETTIE STREET MAINTENANCE STATION

Prepared for

CALIFORNIA DEPARTMENT OF TRANSPORTATION
District 4
111 Grand Avenue
Oakland, California 94623-0660

Prepared by

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

March 20, 1998
575-71022

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STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATION

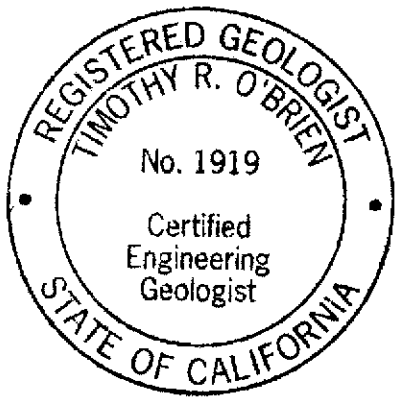
Information provided for Professional Services Industries, Inc., (PSI) report number 575-7I022 is intended exclusively for the California Department of Transportation (Caltrans) for the evaluation of groundwater contamination as it pertains to the subject site. PSI is responsible for the facts and accuracy 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 and 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.

Scott Bowers
Staff Environmental Specialist

Frank R. Poss, R.E.A. #05522
Senior Hydrogeologist

Timothy R. O'Brien RG/CEG/CHG
Senior Geologist



1.0 INTRODUCTION

This report summarizes the results of the Fourth Quarter 1997 groundwater monitoring activities conducted on December 4, 1997 at the Ettie Street Maintenance Station (site; Figure 1). The work presented herein was conducted in accordance with Task Order Number 04-911175-46 and Contract 43Y097. The purpose of this project is to continue quarterly sampling requirements.

2.0 SITE HISTORY

Information provided by Caltrans in the Task Order, dated May 28, 1997, indicates that two underground fuel tanks (UST) at the Ettie Maintenance Station were removed from the site on October 19 and 20, 1995. Laboratory analyses of soil and groundwater samples collected from the UST excavation indicated the presence of diesel and waste oil hydrocarbons.

On February 8, 1996, soil and groundwater samples were collected by Tetra Tech from two borings drilled downgradient from the former USTs and dispensers. The results of the soil analyses indicated that detectable concentrations of total petroleum hydrocarbons as oil (TPH-Oil) were as high as 1,200 milligrams per kilogram (mg/kg), while detectable concentrations of TPH-oil and TPH as diesel (TPH-D) in groundwater samples were as high as 2,300 milligrams per liter (mg/l) and 62.5 mg/l, respectively

An additional investigation of the site area was completed by PSI in February and March 1996 for seismic retrofitting of the freeway columns and bents. PSI drilled over 100 borings in the general area with four of the borings (BM-29 through BM-32) being adjacent to the bents shown in Figure 2. Soil samples were collected at 0.15, 0.3, 0.6, and 1.5 meters (0.5, 1, 2, and 5 feet) bgs. The soil samples from borings BM-29 and BM-30 were analyzed for selected metals; benzene, toluene, ethylbenzene, and total xylenes (BTEX); and total recoverable petroleum hydrocarbons (TRPH). The soil samples from borings BM-31 and BM-32 were analyzed for selected metals, BTEX, total petroleum hydrocarbons as gasoline (TPH-G), TPH-D, and TRPH. The results of the soil analyses indicated that two soil samples from these four borings had soluble lead concentrations greater than the soluble threshold limit concentration (STLC) for lead (5 milligrams per liter (mg/l)). These samples were collected at 0.6 meters (2 feet) in boring BM-30 and at 0.3 meters (1 foot) in boring BM-32. None of the organic compounds were detected with the exception of TRPH. TRPH concentrations ranged from not detected to 400 milligrams per kilogram (mg/kg). The conclusion of the report stated that there was no correlation between lead and TRPH concentrations and their spatial distribution (PSI report for Caltrans Distribution Structure April 4, 1996).

3.0 GROUNDWATER MONITORING ACTIVITIES

3.1 GROUNDWATER ELEVATION AND HYDRAULIC GRADIENT

On December 4, 1997, static groundwater elevations were measured in wells MW-2 through MW-4 (Figure 2). Due to construction activities and/or vandalism, groundwater monitoring well MW-1 has been damaged and was not accessible, while only groundwater elevations were measured in MW-4. The groundwater depths were measured in accordance with the field procedures outlined in Section 3.2, using a groundwater interface probe. A summary of the depth-to-groundwater data collected during this monitoring event and previous monitoring events is presented in Table 1. Consistent with previous measurements, the groundwater flow direction beneath the site is to the west with a hydraulic gradient of 0.012 meter per meter (0.012 foot per foot) (Figure 2). Groundwater elevations have risen an average of 0.05 meters (0.016 feet) since the last monitoring event.

3.2 GROUNDWATER SAMPLING

Groundwater samples were collected from monitoring wells MW-2 and MW-3. Prior to the collection of groundwater samples, the monitoring wells were purged of a minimum of three well volumes of water and 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 are procedures for well monitoring, well purging, and water sampling.

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 a 2-inch or 4-inch diameter polyvinyl chloride (PVC) bailer.

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 or 2 hours after well purging, whichever occurred first. 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.

3.3 LABORATORY ANALYSIS AND RESULTS

Two groundwater samples were submitted for analyses to Pace Analytical of Petaluma, California, a State of California-certified hazardous waste analytical laboratory. As groundwater recharge was extremely slow, groundwater samples MW-2 and MW-3 were analyzed only for the following:

- EPA Method 8015 modified - Total petroleum hydrocarbons as Gasoline (TPH-G);
- EPA Method 8020 - Aromatic volatile compounds: benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl tertiary butyl ether (MTBE);

Groundwater sample MW-3 was analyzed for the following:

- EPA Method 8270 - Semi-Volatile Organic Compounds (SVOC)

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:

- None of the groundwater samples contained detectable BTEX, MTBE, or SVOC concentrations.

4.0 SUMMARY AND CONCLUSIONS

- On December 4, 1997, three wells were measured for depth-to-groundwater and two wells were sampled.

- Based on the groundwater data, the inferred groundwater flow direction beneath the site is to the west with a hydraulic gradient of 0.012 meter per meter (0.012 foot per foot).

- Groundwater elevations have risen an average of 0.05 meters (0.16 feet) from the previous average elevations measured.

- None of the groundwater samples contained detectable amounts of TPH-G, SVOC, BTEX, and MTBE.

NORTH

0 1/2 1 MILE

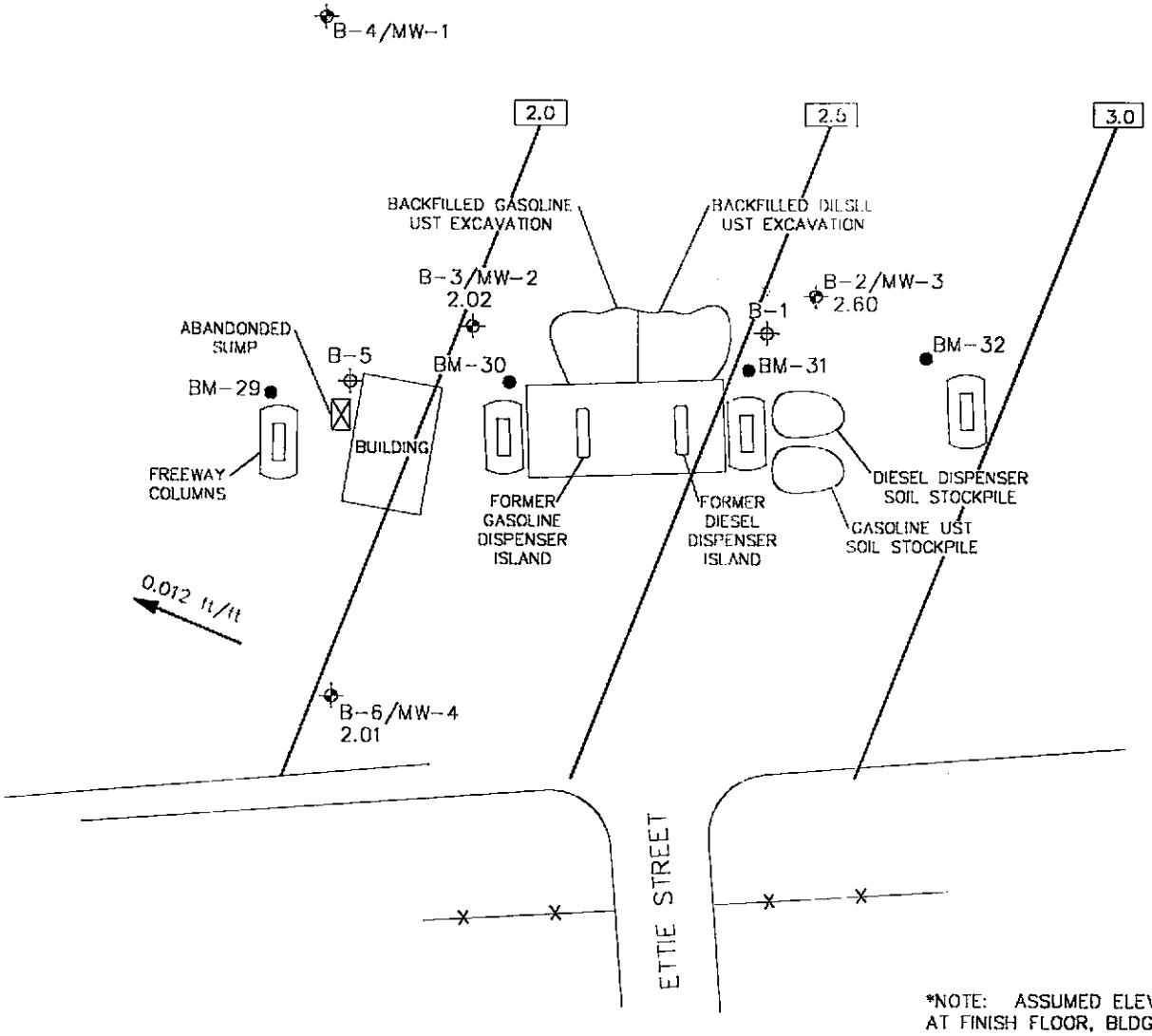
SCALE

REFERENCE:
U.S.G.S. OAKLAND, CALIFORNIA, 1959
PHOTOREVISED 1980

PSI ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION
CONSULTING • ENGINEERING • TESTING

SITE LOCATION
FORMER CALTRANS MAINTENANCE FACILITY
3456 ETTIE STREET
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-71022

DATE: 6/13/97	CKD BY:	FIGURE NO: 1
FILE NO: 71022-1		DRAWN BY: S.BOWERS



LEGEND

- B-1 — BORING LOCATION AND DESIGNATION
- B-2/MW-3 99.45 — GROUNDWATER MONITORING WELL LOCATION WITH GROUNDWATER ELEVATION
- BM-29 — PSI BORING (APRIL 4, 1996)
- 99.50 — GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND GRADIENT

NORTH

0 15 30 60

SCALE IN FEET

PSI ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION
CONSULTING • ENGINEERING • TESTING

GROUNDWATER ELEVATION AND GRADIENT MAP
CALTRANS MAINTENANCE STATION
3456 ETTIE STREET
OAKLAND, CALIFORNIA
? 12/4/97 PROJECT NUMBER: 575-71022

DATE: 10/09/97	CKD BY:	FIGURE NO.: 3
FILE NO: 71022-3		DRAWN BY: L.KOCHIAN

TABLE 1

GROUNDWATER ELEVATIONS

Ettie Street Maintenance Station

Oakland, California

Monitoring Well I.D.	Top of Casing Elevation (feet, MSL)	Date	Depth to Water (feet, TOC)	Groundwater Elevation (feet, MSL)
MW-1	10.26	9/5/97	-82.17	92.43
	Not Accessible	12/4/97	---	---
MW-2	9.45	9/5/97	7.58	1.87
	9.45	12/4/97	7.43	2.02
MW-3	9.78	9/5/97	7.35	2.43
	9.78	12/4/97	7.18	2.60
MW-4	9.14	9/5/97	---	---
	9.14	12/4/97	7.13	2.01

NOTES:

TOC = top of casing. Assumed elevation of 10 feet at finish floor of building number 3.

MSL = mean sea level

TABLE 2
LABORATORY RESULTS FOR WATER SAMPLES

CALTRANS MAINTENANCE STATION
ETTIE STREET, CALIFORNIA

SAMPLE ID	DATE	TPH-G	TPH-D	TOG	BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	MTBE	SVOC	VOCs
MW-1	9/5/97	<500	<500	<500	1.1	0.5	1.2	1.4	<0.6		ND
MW-2	9/5/97	<500	<500	---	<0.3	<0.3	<0.3	<0.6	<0.6		ND
	12/4/97	<50	---	---	<0.5	<0.5	<0.5	<1.0	<5.0	ND	---
MW-3	9/5/97	<500	<500	<500	<0.3	<0.3	<0.3	<0.6	<0.6		ND
	12/4/97	<50	---	---	<0.5	<0.5	<0.5	<1.0	<5.0	ND	---
B-5	8/7/97	<500	---	---	<0.3	<0.3	<0.3	<0.6	---		---

Notes:

All analyses are reported in micrograms per liter (ug/l).
TPH-G = total petroleum hydrocarbons as gasoline.
TPH-D = total petroleum hydrocarbons as diesel.
TOG = total oil and grease
VOCs = volatile organic compounds, reported as total concentration of all constituents.
SVOCs = semi-volatile organic compounds, reported as total concentration of all constituents.
MTBE = Methyl Tertiary Butyl Ether
--- = Not Analyzed
ND = Not Detected at a concentration presented on laboratory reports

APPENDIX A

GROUNDWATER PURGE LOGS

FLUID MEASUREMENT FIELD DATA

SHEET: 1 OF 1

DATE: 12/4/97	PROJECT NAME: CALTRANS: ETTIE ST.	PROJECT NO: 575-7I022
WATER LEVEL MEASUREMENT INSTRUMENT: STEEL TAPE		
PRODUCT DETECTION INSTRUMENT:		

EQUIP. DECON: ■ ALCONOX WASH ☐ DIST/DEION 1 RINSE ☐ ANALYTE FREE FINAL RINSE ☐ TAP WATER FINAL RINSE
☐ TAP WATER WASH ☐ LIQUINOX WASH ■ DIST/DEION 2 RINSE ☐ DIST/DEION FINAL RINSE ☐ AIR DRY

WELL NUMBER	TOP OF CASING ELEVATION	DEPTH TO PRODUCT BELOW TOC	DEPTH TO WATER BELOW TOC	WELL DEPTH BELOW TOC	PRODUCT THICKNESS	GROUND WATER ELEVATION	ACTUAL TIME
MW-1	100.26	---	DRY	---	---	---	
MW-2	99.45	---	7.43	15.58	---	92.02	
MW-3	99.78	---	7.18	15.60	---	92.6	
MW-4	99.14	---	7.13	15.58	---	92.01	

PREPARED BY: Scott Bowers

WELL PURGING AND SAMPLING DATA

DATE: 12/4/97	PROJECT NAME: CALTRANS: ETTIE STREET	WELL NO: MW-1 PROJECT NO: 575-7I022

Well Casing Diameter : 1" Weather Conditions: RAIN

Well Depth (TOC) _____ FT DTW Before Purging (TOC) DRY FT

Min. Purge

Water Column Height (feet): _____ (X) 4" = 0.65 gal/foot = 0.00 (X) 3 well vol. = 0.0

PURGING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

SAMPLING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

EQUIP. DECON. ☐ TAP WATER WASH ☐ ISOPROPANOL ☐ 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:

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP ■ °F ☐ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
	INITIAL							

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

NOTES: Well blockage at six feet below top of casing

Well box is missing

SAMPLE TIME: ID#

DUPLICATE ☐ TIME: ID#:

EQUIP. BLANK: ☐ TIME: ID#:

PREPARED BY: Scott A. Bowers

[1] A 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-2
DATE: 12/4/97	PROJECT NAME: CALTRANS: ETTIE STREET	PROJECT NO: 575-7I022

Well Casing Diameter : 1" Weather Conditions: RAIN

Well Depth (TOC) 15.58 FT DTW Before Purging (TOC) 7.43 FT

Min. Purge

Water Column Height (feet): 8.15 (X) 1" = 0.05 gal/foot = 0.41 (X) 3 well vol. = 1.2

PURGING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

SAMPLING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

EQUIP. DECON. ☐ TAP WATER WASH ☐ ISOPROPANOL ☐ 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: hydac

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP ■ °F ☐ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
	INITIAL							
	0.3	71.2	620	6.58			CL	
	0.5	71.0	630	6.75			TU	Brown, no hydrocarbon odor
								detected

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

NOTES: Well dried @ 0.5 gal.. Purge water decanted into sample containers. Slow recovery, well cap is missing

SAMPLE TIME: ID#

DUPLICATE ☐ TIME: ID#:

EQUIP. BLANK: ☐ TIME: ID#:

PREPARED BY: Scott A. Bowers

[1] A 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: 12/4/97 | PROJECT NAME: CALTRANS: ETTIE STREET | PROJECT NO: 575-71022

Well Casing Diameter : 1" Weather Conditions: RAIN

Well Depth (TOC) 15.6 FT DTW Before Purging (TOC) 7.18 FT

Min. Purge

Water Column Height (feet): 8.42 (X) 1" = 0.05 gal/foot = 0.42 (X) 3 well vol. = 1.3

PURGING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

SAMPLING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

EQUIP. DECON. ☐ TAP WATER WASH ☐ ISOPROPANOL ☐ 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: hydac

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP ■ °F ☐ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
	INITIAL							
	0.3	71.1	840	6.85			CL	
	0.5	71.1	800	6.81			TU	Brown, no hydrocarbon odor
								detected

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

NOTES: Well dried @ 0.5 gal.. Purge water decanted into sample containers. Slow recovery, well box is missing

SAMPLE TIME: ID#

DUPLICATE ☐ TIME: ID#:

EQUIP. BLANK: ☐ TIME: ID#:

PREPARED BY: Scott A. Bowers

[1] A 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-4
DATE: 12/4/97	PROJECT NAME: CALTRANS: ETTIE STREET	PROJECT NO: 575-7I022

Well Casing Diameter : 1" Weather Conditions: RAIN

Well Depth (TOC) 15.58 FT DTW Before Purging (TOC) 7.13 FT

Min. Purge

Water Column Height (feet): 8.45 (X) 1" = 0.05 gal/foot = 0.42 (X) 3 well vol. = 1.3

PURGING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

SAMPLING DEVICE: ☐ DEDICATED ■ DISPOSABLE ☐ DECONTAMINATED

EQUIP. DECON. ☐ TAP WATER WASH ☐ ISOPROPANOL ☐ 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: hydac

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP ■ °F ☐ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
	INITIAL							

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

NOTES: Well destroyed casing is bent and well box is missing.

SAMPLE TIME: ID#

DUPLICATE ☐ TIME: ID#:

EQUIP. BLANK: ☐ TIME: ID#:

PREPARED BY: Scott A. Bowers

[1] A 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

Pace Analytical

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

January 16, 1998

Mr. Frank Poss
PSI, Inc.
1320 W. Winton Ave
Hayward, CA 94545

RE: Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

Dear Mr. Poss:

Enclosed are the results of analyses for sample(s) received by the laboratory on December 4, 1997. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Debbie L. Leibensberger
Project Manager

CA ELAP Certificate Number 2245

Enclosures

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Pace Analytical

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

DATE: 01/16/98
PAGE: 1

PSI, Inc.
1320 W. Winton Ave
Hayward, CA 94545

Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

Attn: Mr. Frank Poss
Phone: (510)785-1111

Solid results are reported on a wet weight basis

Pace Sample No: 701194649 Date Collected: 12/04/97 Matrix: Water
Client Sample ID: MW-2 Date Received: 12/04/97

Parameters	Results	Units	PRL	App. DF	Analyzed	Analyst	CAS#	Footnotes
GC -- Volatiles								
GAS/BTEX, Water		Method: EPA 8015M/8020M			Prep Method: EPA 8015M/8020M			
Gasoline	ND	ug/L	50	1.00	12/10/97	AMH		
Benzene	ND	ug/L	0.5	1.00	12/10/97	AMH	71-43-2	
Toluene	ND	ug/L	0.5	1.00	12/10/97	AMH	108-88-3	
Ethylbenzene	ND	ug/L	0.5	1.00	12/10/97	AMH	100-41-4	
Xylene (Total)	ND	ug/L	1	1.00	12/10/97	AMH	1330-20-7	
Methyl-tert-butyl Ether	ND	ug/L	5	1.00	12/10/97	AMH	1634-04-4	
a,a,a-Trifluorotoluene (S)	95	%		1.00	12/10/97	AMH	2164-17-2	
4-Bromofluorobenzene (S)	96	%		1.00	12/10/97	AMH	460-00-4	

REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, Inc.

Pace Analytical

Pace Analytical Services, Inc.
1455 McDowell Blvd. North, Suite D
Petaluma, CA 94954
Tel: 707-792-1865
Fax: 707-792-0342

DATE: 01/16/98
PAGE: 2

Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

Pace Sample No: 701194656 Date Collected: 12/04/97 Matrix: Water
Client Sample ID: MW-3 Date Received: 12/04/97

Parameters	Results	Units	PRL	App. DF	Analyzed	Analyst	CAS#	Footnotes
GC -- Volatiles								
GAS/BTEX, Water		Method: EPA 8015M/8020M			Prep Method: EPA 8015M/8020M			
Gasoline	ND	ug/L	50	1.00	12/10/97	AMH		
Benzene	ND	ug/L	0.5	1.00	12/10/97	AMH	71-43-2	
Toluene	ND	ug/L	0.5	1.00	12/10/97	AMH	108-88-3	
Ethylbenzene	ND	ug/L	0.5	1.00	12/10/97	AMH	100-41-4	
Xylene (Total)	ND	ug/L	1	1.00	12/10/97	AMH	1330-20-7	
Methyl-tert-butyl Ether	100	ug/L	5	1.00	12/10/97	AMH	1634-04-4	
a,a,a-Trifluorotoluene (S)	105	%		1.00	12/10/97	AMH	2164-17-2	
4-Bromofluorobenzene (S)	106	%		1.00	12/10/97	AMH	460-00-4	
GC/MS -- Semi-VOA								
Semivolatile Organics		Method: EPA 8270			Prep Method: EPA 3520			
Phenol	ND	ug/L	10	1.00	12/20/97	JMH	108-95-2	
bis(2-Chloroethyl)ether	ND	ug/L	10	1.00	12/20/97	JMH	111-44-4	
2-Chlorophenol	ND	ug/L	10	1.00	12/20/97	JMH	95-57-8	
1,3-Dichlorobenzene	ND	ug/L	10	1.00	12/20/97	JMH	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10	1.00	12/20/97	JMH	106-46-7	
Benzyl Alcohol	ND	ug/L	20	1.00	12/20/97	JMH	100-51-6	
1,2-Dichlorobenzene	ND	ug/L	10	1.00	12/20/97	JMH	95-50-1	
2-Methylphenol	ND	ug/L	10	1.00	12/20/97	JMH	95-48-7	
bis(2-Chloroisopropyl)ether	ND	ug/L	10	1.00	12/20/97	JMH	39638-32-9	
4-Methylphenol	ND	ug/L	10	1.00	12/20/97	JMH	106-44-5	
N-Nitroso-di-n-propylamine	ND	ug/L	10	1.00	12/20/97	JMH	621-64-7	
Hexachloroethane	ND	ug/L	10	1.00	12/20/97	JMH	67-72-1	
Nitrobenzene	ND	ug/L	10	1.00	12/20/97	JMH	98-95-3	
Isophorone	ND	ug/L	10	1.00	12/20/97	JMH	78-59-1	
2-Nitrophenol	ND	ug/L	10	1.00	12/20/97	JMH	88-75-5	
2,4-Dimethylphenol	ND	ug/L	10	1.00	12/20/97	JMH	105-67-9	
Benzoic Acid	ND	ug/L	50	1.00	12/20/97	JMH	65-85-0	
bis(2-Chloroethoxy)methane	ND	ug/L	10	1.00	12/20/97	JMH	111-91-1	
2,4-Dichlorophenol	ND	ug/L	10	1.00	12/20/97	JMH	120-83-2	
1,2,4-Trichlorobenzene	ND	ug/L	10	1.00	12/20/97	JMH	120-82-1	
Naphthalene	ND	ug/L	10	1.00	12/20/97	JMH	91-20-3	
4-Chloroaniline	ND	ug/L	20	1.00	12/20/97	JMH	106-47-8	
Hexachlorobutadiene	ND	ug/L	10	1.00	12/20/97	JMH	87-68-3	
4-Chloro-3-methylphenol	ND	ug/L	20	1.00	12/20/97	JMH	59-50-7	

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DATE: 01/16/98
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Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

Pace Sample No: 701194656 Date Collected: 12/04/97 Matrix: Water
Client Sample ID: MW-3 Date Received: 12/04/97

Parameters	Results	Units	PRL	App. DF	Analyzed	Analyst	CAS#	Footnotes
2-Methylnaphthalene	ND	ug/L	10	1.00	12/20/97	JMH	91-57-6	
Hexachlorocyclopentadiene	ND	ug/L	10	1.00	12/20/97	JMH	77-47-4	
2,4,6-Trichlorophenol	ND	ug/L	10	1.00	12/20/97	JMH	88-06-2	
2,4,5-Trichlorophenol	ND	ug/L	50	1.00	12/20/97	JMH	95-95-4	
2-Chloronaphthalene	ND	ug/L	10	1.00	12/20/97	JMH	91-58-7	
2-Nitroaniline	ND	ug/L	50	1.00	12/20/97	JMH	88-74-4	
Dimethylphthalate	ND	ug/L	10	1.00	12/20/97	JMH	131-11-3	
Acenaphthylene	ND	ug/L	10	1.00	12/20/97	JMH	208-96-8	
2,6-Dinitrotoluene	ND	ug/L	10	1.00	12/20/97	JMH	606-20-2	
3-Nitroaniline	ND	ug/L	50	1.00	12/20/97	JMH	99-09-2	
Acenaphthene	ND	ug/L	10	1.00	12/20/97	JMH	83-32-9	
2,4-Dinitrophenol	ND	ug/L	50	1.00	12/20/97	JMH	51-28-5	
4-Nitrophenol	ND	ug/L	50	1.00	12/20/97	JMH	100-02-7	
Dibenzofuran	ND	ug/L	10	1.00	12/20/97	JMH	132-64-9	
2,4-Dinitrotoluene	ND	ug/L	10	1.00	12/20/97	JMH	121-14-2	
Diethylphthalate	ND	ug/L	10	1.00	12/20/97	JMH	84-66-2	
4-Chlorophenyl-phenylether	ND	ug/L	10	1.00	12/20/97	JMH	7005-72-3	
Fluorene	ND	ug/L	10	1.00	12/20/97	JMH	86-73-7	
4-Nitroaniline	ND	ug/L	50	1.00	12/20/97	JMH	100-01-6	
4,6-Dinitro-2-methylphenol	ND	ug/L	50	1.00	12/20/97	JMH	534-52-1	
N-Nitrosodiphenylamine	ND	ug/L	10	1.00	12/20/97	JMH	86-30-6	
4-Bromophenyl-phenylether	ND	ug/L	10	1.00	12/20/97	JMH	101-55-3	
Hexachlorobenzene	ND	ug/L	10	1.00	12/20/97	JMH	118-74-1	
Pentachlorophenol	ND	ug/L	50	1.00	12/20/97	JMH	87-86-5	
Phenanthrene	ND	ug/L	10	1.00	12/20/97	JMH	85-01-8	
Anthracene	ND	ug/L	10	1.00	12/20/97	JMH	120-12-7	
Di-n-butylphthalate	ND	ug/L	10	1.00	12/20/97	JMH	84-74-2	
Fluoranthene	ND	ug/L	10	1.00	12/20/97	JMH	206-44-0	
Pyrene	ND	ug/L	10	1.00	12/20/97	JMH	129-00-0	
Butylbenzylphthalate	ND	ug/L	10	1.00	12/20/97	JMH	85-68-7	
3,3'-Dichlorobenzidine	ND	ug/L	20	1.00	12/20/97	JMH	91-94-1	
Benzo(a)anthracene	ND	ug/L	10	1.00	12/20/97	JMH	56-55-3	
Chrysene	ND	ug/L	10	1.00	12/20/97	JMH	218-01-9	
bis(2-Ethylhexyl)phthalate	ND	ug/L	10	1.00	12/20/97	JMH	117-81-7	
Di-n-octylphthalate	ND	ug/L	10	1.00	12/20/97	JMH	117-84-0	
Benzo(b)fluoranthene	ND	ug/L	10	1.00	12/20/97	JMH	205-99-2	
Benzo(k)fluoranthene	ND	ug/L	10	1.00	12/20/97	JMH	207-08-9	
Benzo(a)pyrene	ND	ug/L	10	1.00	12/20/97	JMH	50-32-8	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10	1.00	12/20/97	JMH	193-39-5	
Dibenz(a,h)anthracene	ND	ug/L	10	1.00	12/20/97	JMH	53-70-3	

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DATE: 01/16/98
PAGE: 4

Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

Pace Sample No: 701194656 Date Collected: 12/04/97 Matrix: Water
Client Sample ID: MW-3 Date Received: 12/04/97

Parameters	Results	Units	PRL	App. DF	Analyzed	Analyst	CAS#	Footnotes
Benzo(g.h.i)perylene	ND	ug/L	10	1.00	12/20/97	JMH	191-24-2	
Nitrobenzene-d5 (S)	68	%		1.00	12/20/97	JMH	4165-60-0	
2-Fluorobiphenyl (S)	78	%		1.00	12/20/97	JMH	321-60-8	
Terphenyl-d14 (S)	25	%		1.00	12/20/97	JMH	1718-51-0	1
Phenol-d6 (S)	62	%		1.00	12/20/97	JMH	13127-88-3	
2-Fluorophenol (S)	56	%		1.00	12/20/97	JMH	367-12-4	
2,4,6-Tribromophenol (S)	104	%		1.00	12/20/97	JMH	118-79-6	
Date Extracted					12/11/97			

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Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

PARAMETER FOOTNOTES

ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
(S)	Surrogate
App. DF	Applied Dilution Factor
[1]	Base/neutral surrogate recovery outside of control limits. The data was accepted based on valid recovery of remaining two base/neutral surrogates.

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QUALITY CONTROL DATA

DATE: 01/16/98
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PSI, Inc.
1320 W. Winton Ave
Hayward, CA 94545

Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

Attn: Mr. Frank Poss
Phone: (510)785-1111

QC Batch ID: 29435
Analysis Method: EPA 8015M/8020M
Associated Pace Samples: 701194649 701194656

QC Batch Method: EPA 8015M/8020M
Analysis Description: GAS/BTEX, Water

METHOD BLANK: 701196842
Associated Pace Samples: 701194649 701194656

Parameter	Units	Method Blank Result	PRL	Footnotes
Gasoline	ug/L	ND	50	
Benzene	ug/L	ND	0.5	
Toluene	ug/L	ND	0.5	
Ethylbenzene	ug/L	ND	0.5	
Xylene (Total)	ug/L	ND	1	
Methyl-tert-butyl Ether	ug/L	ND	5	
a,a,a-Trifluorotoluene (S)	%	95		
4-Bromofluorobenzene (S)	%	94		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 701196859 701196867

Parameter	Units	701194938	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
Gasoline	ug/L	14.24	1000	853.2	83.9	868.1	85.4	2	
4-Bromofluorobenzene (S)					94		94		

LABORATORY CONTROL SAMPLE: 701196875

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
Gasoline	ug/L	1000	971.0	97.1	
4-Bromofluorobenzene (S)				95	

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QUALITY CONTROL DATA

DATE: 01/16/98
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PSI, Inc.
1320 W. Winton Ave
Hayward, CA 94545

Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

Attn: Mr. Frank Poss
Phone: (510)785-1111

QC Batch ID: 29499
Analysis Method: EPA 8270
Associated Pace Samples: 701194656

QC Batch Method: EPA 3520
Analysis Description: Semivolatile Organics

METHOD BLANK: 701199317
Associated Pace Samples:
701194656

Parameter	Units	Method Blank Result	PRL	Footnotes
1,3-Dichlorobenzene	ug/L	ND	10	
1,4-Dichlorobenzene	ug/L	ND	10	
1,2-Dichlorobenzene	ug/L	ND	10	
Benzoic Acid	ug/L	ND	50	
Phenol	ug/L	ND	10	
bis(2-Chloroethyl)ether	ug/L	ND	10	
2-Chlorophenol	ug/L	ND	10	
Benzyl Alcohol	ug/L	ND	20	
2-Methylphenol	ug/L	ND	10	
bis(2-Chloroisopropyl)ether	ug/L	ND	10	
4-Methylphenol	ug/L	ND	10	
N-Nitroso-di-n-propylamine	ug/L	ND	10	
Hexachloroethane	ug/L	ND	10	
Nitrobenzene	ug/L	ND	10	
Isophorone	ug/L	ND	10	
2-Nitrophenol	ug/L	ND	10	
2,4-Dimethylphenol	ug/L	ND	10	
bis(2-Chloroethoxy)methane	ug/L	ND	10	
2,4-Dichlorophenol	ug/L	ND	10	
1,2,4-Trichlorobenzene	ug/L	ND	10	
Naphthalene	ug/L	ND	10	
4-Chloroaniline	ug/L	ND	20	
Hexachlorobutadiene	ug/L	ND	10	
4-Chloro-3-methylphenol	ug/L	ND	20	
2-Methylnaphthalene	ug/L	ND	10	

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QUALITY CONTROL DATA

DATE: 01/16/98
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Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

METHOD BLANK: 701199317
Associated Pace Samples:
701194656

Parameter	Units	Method Blank Result	PRL	Footnotes
Hexachlorocyclopentadiene	ug/L	ND	10	
2,4,6-Trichlorophenol	ug/L	ND	10	
2,4,5-Trichlorophenol	ug/L	ND	50	
2-Chloronaphthalene	ug/L	ND	10	
2-Nitroaniline	ug/L	ND	50	
Dimethylphthalate	ug/L	ND	10	
Acenaphthylene	ug/L	ND	10	
2,6-Dinitrotoluene	ug/L	ND	10	
3-Nitroaniline	ug/L	ND	50	
Acenaphthene	ug/L	ND	10	
2,4-Dinitrophenol	ug/L	ND	50	
4-Nitrophenol	ug/L	ND	50	
Dibenzofuran	ug/L	ND	10	
2,4-Dinitrotoluene	ug/L	ND	10	
Diethylphthalate	ug/L	ND	10	
4-Chlorophenyl-phenylether	ug/L	ND	10	
Fluorene	ug/L	ND	10	
4-Nitroaniline	ug/L	ND	50	
4,6-Dinitro-2-methylphenol	ug/L	ND	50	
N-Nitrosodiphenylamine	ug/L	ND	10	
4-Bromophenyl-phenylether	ug/L	ND	10	
Hexachlorobenzene	ug/L	ND	10	
Pentachlorophenol	ug/L	ND	50	
Phenanthrene	ug/L	ND	10	
Anthracene	ug/L	ND	10	
Di-n-butylphthalate	ug/L	ND	10	
Fluoranthene	ug/L	ND	10	
Pyrene	ug/L	ND	10	
Butylbenzylphthalate	ug/L	ND	10	
3,3'-Dichlorobenzidine	ug/L	ND	20	
Benzo(a)anthracene	ug/L	ND	10	
Chrysene	ug/L	ND	10	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10	
Di-n-octylphthalate	ug/L	ND	10	
Benzo(b)fluoranthene	ug/L	ND	10	
Benzo(k)fluoranthene	ug/L	ND	10	
Benzo(a)pyrene	ug/L	ND	10	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10	

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QUALITY CONTROL DATA

DATE: 01/16/98
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Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

METHOD BLANK: 701199317
Associated Pace Samples:
701194656

Parameter	Units	Method Blank Result	PRL	Footnotes
Dibenz(a,h)anthracene	ug/L	ND	10	
Benzo(g,h,i)perylene	ug/L	ND	10	
2-Fluorophenol (S)	%	46		
Phenol-d6 (S)	%	54		
Nitrobenzene-d5 (S)	%	53		
2-Fluorobiphenyl (S)	%	63		
2,4,6-Tribromophenol (S)	%	88		
Terphenyl-d14 (S)	%	95		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 701199325 701199333

Parameter	Units	701195372	Spike Conc.	Matrix Spike Result	Spike % Rec	Matrix Sp. Dup. Result	Spike Dup % Rec	RPD	Footnotes
1,4-Dichlorobenzene	ug/L	0	100	0	0	0	0	0	
Phenol	ug/L	4448	150	4672	150	4523	50.1	100	
2-Chlorophenol	ug/L	0	150	0	0	0	0	0	
N-Nitroso-di-n-propylamine	ug/L	0	100	0	0	0	0	0	
1,2,4-Trichlorobenzene	ug/L	0	100	0	0	0	0	0	
4-Chloro-3-methylphenol	ug/L	0	150	0	0	0	0	0	
Acenaphthene	ug/L	0	100	0	0	0	0	0	
4-Nitrophenol	ug/L	0	150	0	0	0	0	0	
2,4-Dinitrotoluene	ug/L	0	100	0	0	0	0	0	
Pentachlorophenol	ug/L	0	150	0	0	0	0	0	
Pyrene	ug/L	0	100	0	0	0	0	0	
2-Fluorophenol (S)					0		0		
Phenol-d6 (S)					0		0		
Nitrobenzene-d5 (S)					0		0		
2-Fluorobiphenyl (S)					0		0		
2,4,6-Tribromophenol (S)					0		0		1,1
Terphenyl-d14 (S)					0		0		

LABORATORY CONTROL SAMPLE: 701199341

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
1,4-Dichlorobenzene	ug/L	100	45.06	45.1	

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DATE: 01/16/98
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Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

LABORATORY CONTROL SAMPLE: 701199341

Parameter	Units	Spike Conc.	LCS Result	Spike % Rec	Footnotes
Phenol	ug/L	150	72.25	48.2	
2-Chlorophenol	ug/L	150	68.27	45.5	
N-Nitroso-di-n-propylamine	ug/L	100	39.57	39.6	
1,2,4-Trichlorobenzene	ug/L	100	48.33	48.3	
4-Chloro-3-methylphenol	ug/L	150	82.91	55.3	
Acenaphthene	ug/L	100	69.60	69.6	
4-Nitrophenol	ug/L	150	156.0	104	
2,4-Dinitrotoluene	ug/L	100	91.38	91.4	
Pentachlorophenol	ug/L	150	140.0	93.3	
Pyrene	ug/L	100	63.14	63.1	
2-Fluorophenol (S)				39	
Phenol-d6 (S)				49	
Nitrobenzene-d5 (S)				50	
2-Fluorobiphenyl (S)				62	
2,4,6-Tribromophenol (S)				85	
Terphenyl-d14 (S)				92	

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Pace Project Number: 7010119
Client Project ID: Caltrans: Ettie St.

QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

ND	Not Detected
NC	Not Calculable
PRL	Pace Reporting Limit
RPD	Relative Percent Difference
(S)	Surrogate
[1]	Spike and/or surrogate recoveries could not be calculated due to sample dilution.

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