

DEPARTMENT OF TRANSPORTATION

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January 29, 2001

Mr. Tom Peacock
Alameda County Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Investigation at Vacant Parcel, located at the intersection of 6th and Castro Streets in Oakland, CA

Dear Mr. Peacock:

Enclosed please find a copy of the report entitled, "Fourth Quarter 2000 Six Quarterly Groundwater Monitoring Report, Sixth and Castro Streets, Oakland, California" written by PSI and dated January 10, 2001. If there are any questions, please contact Jill Pollock (510) 286-5638.

Sincerely,

HARRY Y. YAHATA
District Director

By: *Celia McCuaig*

CELIA MCCUAIG
District Branch Chief
Office of Environmental Engineering

Attachments

cc: CM, file, chron

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FOURTH QUARTER 2000
SIXTH QUARTERLY GROUNDWATER
MONITORING REPORT
TASK ORDER NUMBER 04-952137-ES
CONTRACT NUMBER 43A0012
SIXTH AND CASTRO STREETS
OAKLAND, CALIFORNIA

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
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January 10, 2001
575-9G034

TABLE OF CONTENTS

STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATION.....	i
1.0 INTRODUCTION	1
2.0 SITE HISTORY.....	1
3.0 GROUNDWATER MONITORING ACTIVITIES.....	3
3.1 GROUNDWATER ELEVATION AND HYDRAULIC GRADIENT	3
3.2 GROUNDWATER SAMPLING.....	3
3.3 LABORATORY ANALYSIS AND RESULTS	4
4.0 SUMMARY AND CONCLUSIONS	6

FIGURES

- FIGURE 1: SITE LOCATION
- FIGURE 2: GROUNDWATER ELEVATION MAP
- FIGURE 3: GROUNDWATER ELEVATIONS (MW-2)
- FIGURE 4: 1,2 DCA CONCENTRATIONS (MW-2)
- FIGURE 5: BENZENE CONCENTRATIONS MW-2

TABLES

- TABLE 1: SUMMARY OF GROUNDWATER ELEVATION DATA
- TABLE 2: SUMMARY OF GROUNDWATER ANALYTICAL DATA
- TABLE 3: SUMMARY OF VOC COMPOUNDS

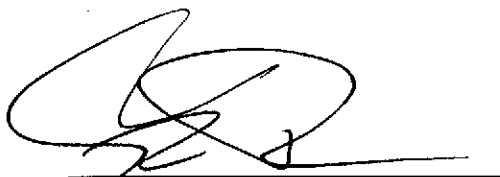
APPENDICES

- APPENDIX A: GROUNDWATER PURGE LOGS
- APPENDIX B: LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS

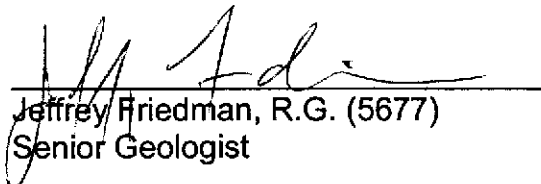
STATEMENT OF LIMITATIONS AND PROFESSIONAL CERTIFICATIONS

Information provided in Professional Services Industries, Inc., (PSI) report number 575-9G034 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.

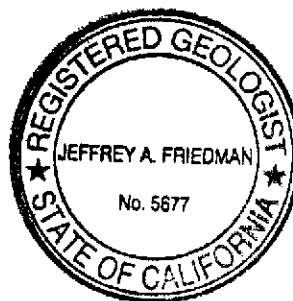
This report is issued with the understanding that Caltrans is responsible for ensuring that the information contained in this report is brought to the attention of the appropriate regulatory agency. This report has been reviewed by a geologist who is registered in the State of California and whose signature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



Frank R. Poss
Senior Hydrogeologist



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



1.0 INTRODUCTION

This report summarizes the results of the Fourth Quarter 2000 groundwater monitoring activities conducted on November 16, 2000 at the intersection of 6th and Castro Streets 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. This is the sixth quarter of groundwater monitoring conducted by PSI that was initiated in June 1999.

2.0 SITE HISTORY

The site is currently a vacant lot that is surrounded by Brush Street to the west, 7th Street to the north, Castro Street to the east, and 6th Street to the south. In 1987, ERM-West Consultants (ERM) conducted an environmental site assessment to identify any environmental concerns resulting from chemical hazardous waste generation at the site. Historical records searches indicated that the site has formerly been occupied by a number of businesses, most notably a gas station, an auto repair garage, Durham Farm Creamery, a machine shop, and a laundry facility. At least four underground storage tanks (USTs) were associated with the former gas station and dairy (IT, 1996). This service station was located at the intersection of 6th Street and Brush Street (Geocon, 1995).

ERM drilled seven soil borings at the site to collect soil samples for analyses. The results from the analyses of the soil samples identified up to 1.3 parts per million (ppm) ethylbenzene, 1.5 ppm toluene, and 7.9 ppm xylenes. The analytical results from groundwater samples collected during drilling had concentrations up to 0.5 ppb ethylbenzene, 0.3 ppb toluene, and 5 ppb total xylenes (ACHCSA, 1998).

In a 1995 investigation conducted by Geocon Environmental Consultants (Geocon), soil and groundwater samples were collected from seven additional locations. The results of the analyses of the soil samples identified up to 410 ppm lead and 8,000 ppm oil and grease. The results from two groundwater samples analyzed did not contain detectable concentrations of Total Petroleum Hydrocarbons as Gasoline (TPH-G); TPH as Diesel (TPH-D); and Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) (IT, 1996).

In a 1996 investigation conducted by International Technology Corporation (IT), soil and groundwater samples were collected from 11 additional borings. The maximum concentration in the soil samples analyzed are presented below:

Total Petroleum Hydrocarbons as Gasoline (TPH-G)	1,100 ppm
Benzene	2.6 ppm
Toluene	34 ppm
Ethylbenzene	25 ppm
Total Xylenes	140 ppm
Total Lead	397 ppm

The maximum concentration in the four groundwater samples collected from the above referenced borings are the following:

Total Petroleum Hydrocarbons as Gasoline (TPH-G)	1,700 ppb
Benzene	51 ppb
Toluene	200 ppb
Ethylbenzene	59 ppb
Total Xylenes	290 ppb
1,2 Dichloroethane	5.4 ppb

In a 1999 investigation completed by PSI, soil and groundwater samples were collected from 11 additional borings and three groundwater monitoring wells were installed. The maximum concentration in the soil samples analyzed are presented below:

TPH-G	600 (milligrams per kilogram (mg/kg))
Benzene	0.2 mg/kg
Toluene	3.7 mg/kg
Ethylbenzene	17 mg/kg
Total Xylenes	67 mg/kg
Total Lead	1,700 mg/kg

The maximum concentration in the 14 groundwater samples analyzed are the following:

TPH-G	58,000 micrograms per liter ($\mu\text{g/L}$)
Benzene	3,900 $\mu\text{g/L}$
Toluene	3,700 $\mu\text{g/L}$
Ethylbenzene	14,000 $\mu\text{g/L}$
Total Xylenes	12,000 $\mu\text{g/L}$
1,2 Dichloroethane	160 $\mu\text{g/L}$

The petroleum hydrocarbon impacted soil and groundwater was primarily found in the southwestern corner of the site.

3.0 GROUNDWATER MONITORING ACTIVITIES

3.1 GROUNDWATER ELEVATION AND HYDRAULIC GRADIENT

On November 16, 2000, static groundwater elevations were measured in wells MW-1, MW-2, and MW-3 (Figure 2). The groundwater depths were measured using a groundwater interface probe. The average groundwater elevation decreased approximately 0.6 meters (2 feet) compared to last quarter. The decrease in groundwater elevation is probably due to seasonal effects, as shallow groundwater fluctuations are commonly associated with seasonal rainfall variations. The depth to groundwater versus time is depicted in Figure 3. The groundwater elevations have been relatively constant over time with a slight increase since the fourth quarter 1999 groundwater elevations.

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 south with a hydraulic gradient of 0.01 (Figure 2). Other than the first quarter of groundwater sampling where the flow direction was to the east, the flow direction at the site has been to the south. The hydraulic gradient site at the site has ranged from 0.006 to 0.01 at the site.

3.2 GROUNDWATER SAMPLING

Groundwater samples were collected from monitoring wells MW-1, MW-2, and MW-3. A duplicate sample of MW-2 was obtained and labeled MW-10. 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 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. 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. 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.
7. Groundwater samples were delivered to the State-certified hazardous waste laboratory within 24-hours of collection.

The groundwater monitoring purge logs are presented in Appendix A.

3.3 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 Method 413.2 – Total Oil & Grease (TOG)
- EPA 8015 modified - TPH-G;
- EPA 8015 modified - Total Petroleum Hydrocarbons as Diesel (TPH-D);
- EPA 8260 - Volatile Organic Compounds (VOCs).
- EPA 6010 – Soluble Lead.

A summary of the laboratory results for groundwater samples is presented in Table 2 and Table 3. 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:

- TOG was detected in Well MW-2 at 5,000 µg/L. This concentration is less than the previous sampling result of 8.8 mg/L in Well MW-2.
- TPH-G was detected in Well MW-2 at 25,000 µg/L. This concentration is less than the previous sampling result of 37 mg/L in Well MW-2.
- TPH-D was not detected in groundwater samples from the site this quarter. This is comparable to the previous sampling results.

- MTBE was not detected in groundwater samples from the site this quarter. This is comparable to the previous sampling results.
- Benzene was detected in Well MW-2 at 550 µg/L. This concentration is less than the previous sampling result of 700 µg/L in Well MW-2.
- Toluene (2,900 µg/L), ethylbenzene (1,500 µg/L) and total xylenes (11,000 µg/L), were detected in well MW-2 at concentrations lower than the previous sampling results.
- BTEX was not detected in the other groundwater samples. This is comparable to the previous sampling results.
- Concentrations of gasoline related compounds isopropylbenzene (46 µg/L), naphthalene (460 µg/L), n-propylbenzene (160 µg/L), 1,2,4 trimethylbenzene (1,200 µg/L), and 1,3,5 trimethylbenzene (390 µg/L) were detected in Well MW-2.
- 1,2 DCA (91 µg/L) was detected in MW-2 and was greater than the previous quarters result (69 µg/L). The common usage for this compound in a service station environment is as a brake and electrical parts cleaner or as an additive to leaded gasoline.
- Soluble lead was not detected in the groundwater samples.

The State of California Primary Drinking Water Standards (PDWS) for benzene is 1 µg/L, toluene is 150 µg/L, ethylbenzene is 700 µg/L, total xylenes is 1,750 µg/L, TCE is 5 µg/L, and 1,2 DCA is 0.5 µg/L. The concentrations of BTEX and 1,2 DCA in the groundwater sample collected from Well MW-2 exceeded their respectable PDWS.

Figures 4 and 5 depicts the concentrations of benzene and 1,2 DCA detected in monitoring well MW-2 with time. It is apparent from this figure that the 1,2 DCA and benzene concentrations have generally declined gradually with time.

4.0 SUMMARY AND CONCLUSIONS

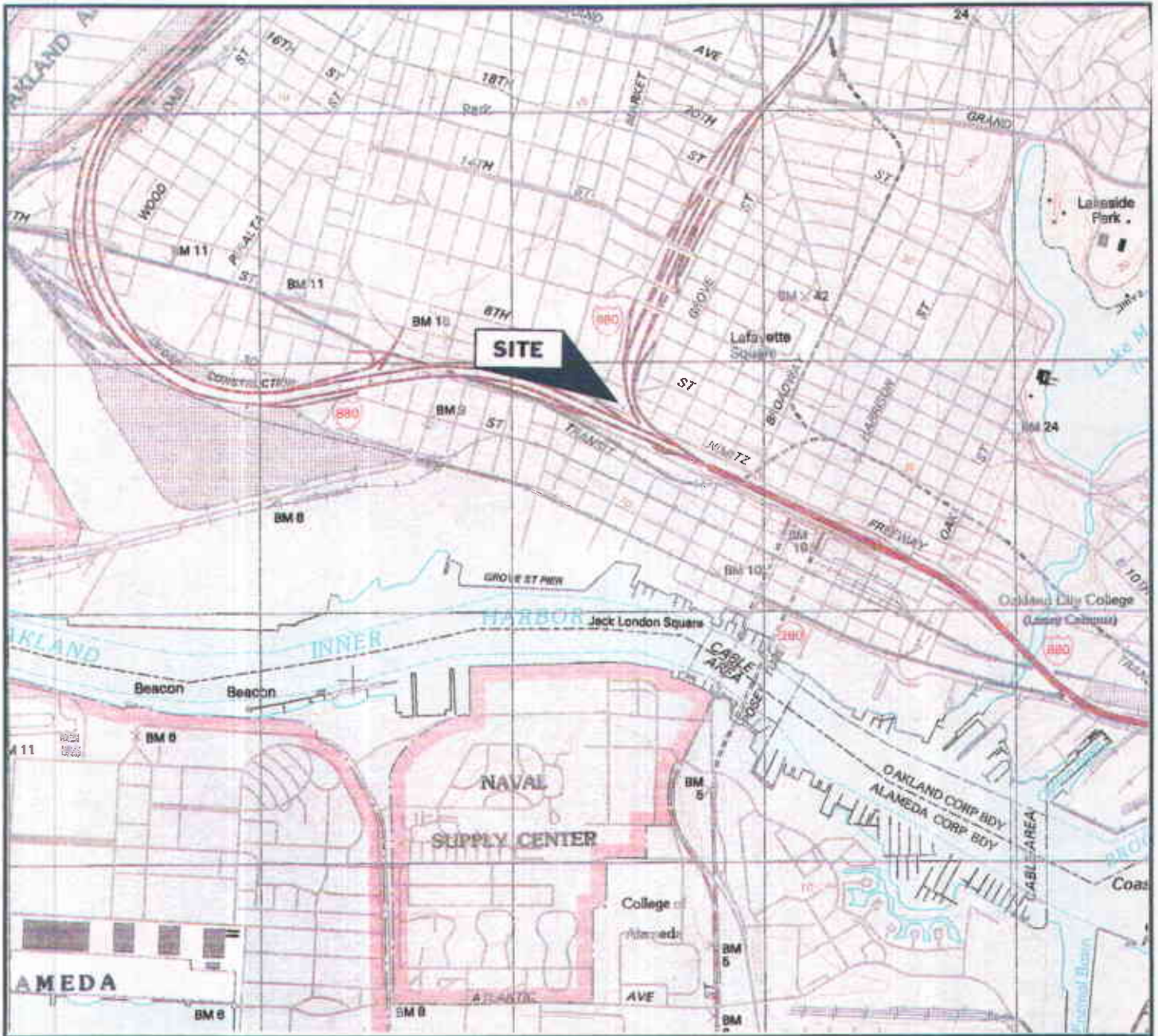
PSI performed a quarterly monitoring event on November 16, 2000. Groundwater samples were collected from the three monitoring wells with a duplicate obtained from MW-2 and labeled MW-10. Based on measurements collected and analytical data the following summary is provided.

- Groundwater elevation data indicates the groundwater flow direction beneath the site is towards the south, with a hydraulic gradient of 0.01 meter per meter (0.01 foot per foot). This is comparable to the previous three sampling events.
- Average groundwater elevations is approximately 0.6 meters (2 feet) lower than the average groundwater elevation measured for the previous sampling event. The groundwater elevations have been relatively constant over time with a slight increase since the fourth quarter 1999 groundwater elevations.
- TPH-D was not detected in groundwater samples this quarter.
- TPH-G was detected in the sample collected from Well MW-2 (25,000 µg/l).
- BTEX was only detected in the sample collected from well MW-2.
- The oxygenates MTBE, TBA, DIPE, ETBE, and TAME were not detected in the EPA Method 8260 analyses this quarter.
- TPH-G and BTEX were only detected in the groundwater sample collected from monitoring well MW-2.
- Concentrations of the gasoline related compounds isopropylbenzene, naphthalene, n-Propylbenzene, 1,2,4 Trimethylbenzene and 1,3,5 Trimethylbenzene were detected only in the sample collected from Well MW-2.
- 1,2 DCA was detected in MW-2 at 91 µg/l. Right units, but still not consistent with the rest of the report!
- The BTEX and 1,2 DCA concentrations in well MW-2 are above their respective State of California Primary Drinking Water Standards.
- Soluble lead was not detected in the groundwater samples.

Based on six quarters of groundwater sampling, the following can be concluded.

- The groundwater flow direction at the site is to the south at a shallow gradient.
- A groundwater plume that exceeds the PDWS for numerous compounds associated with a gas station is present on the southwest corner of the subject property. The contaminated groundwater is likely due to historical use of this portion of the property as a gas station.
- Concentrations of the main COCs have decreased with time with the exception of 1,2 DCA.
- The extent of the groundwater plume has not been identified to the south and likely has migrated off of the site boundaries.

PSI recommends continued groundwater monitoring at the site and an off-site investigation to determine the extent of the groundwater plume to the south. Based on the lack of TPH-D concentrations in any of the groundwater samples during the past five quarters and lead being detected in only one sample during the past six quarters, PSI recommends that the quarterly sampling for these compounds be eliminated. Copies of this report should be provided to the appropriate regulatory agencies.

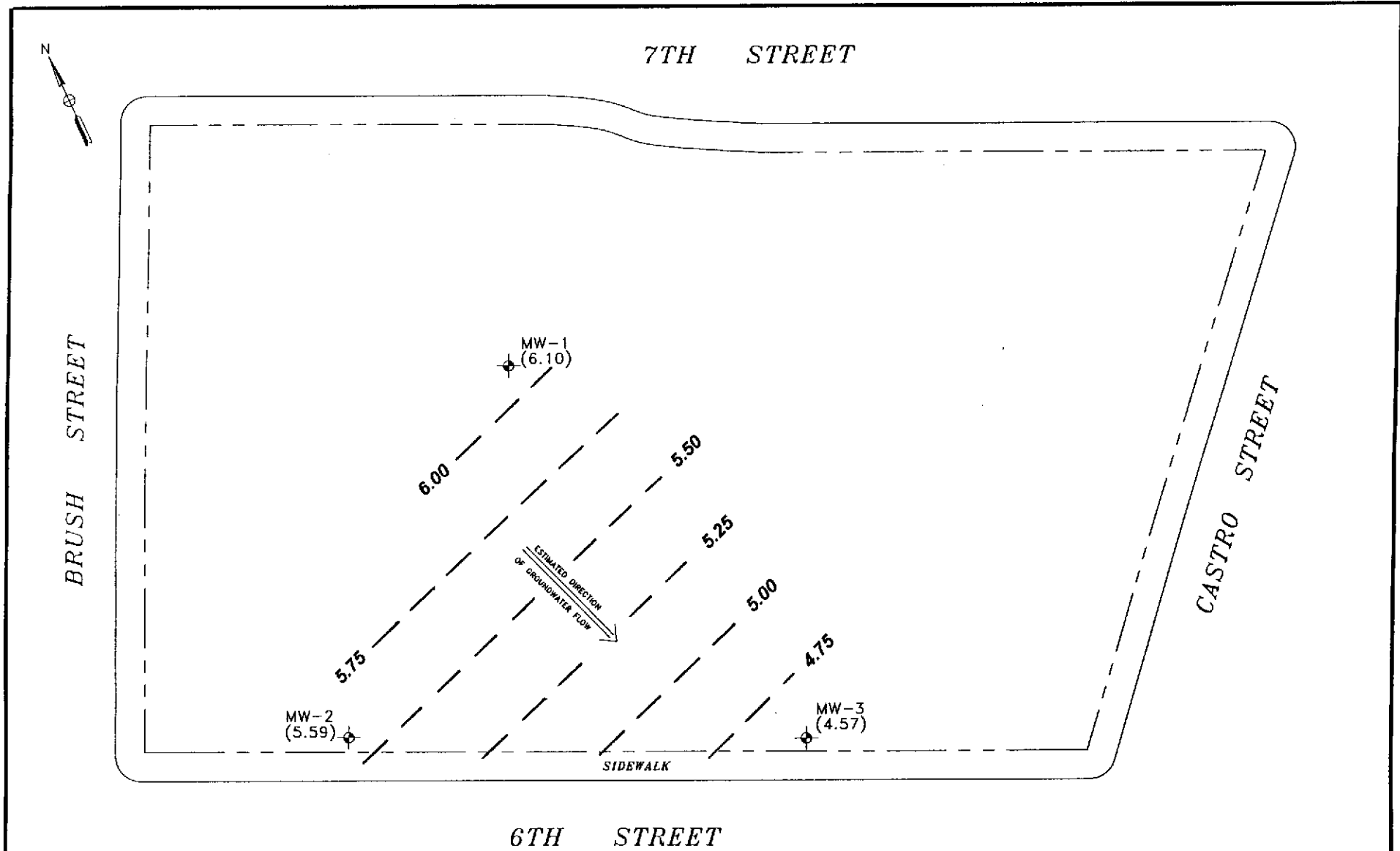


REFERENCE:
U.S.G.S. OAKLAND WEST, CALIFORNIA, 1993

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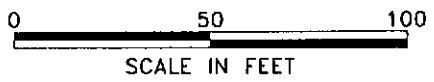
SITE LOCATION
STATE RIGHT-OF-WAY
SIXTH AND CASTRO STREETS
OAKLAND, CALIFORNIA
PROJECT NUMBER: 575-9G034

DATE: 5/05/99	CKD'D BY:	FIGURE NO.: 1
FILE NO.: 96034-1		DRAWN BY: S. BOWERS



LEGEND

- MW-2 (5.59) GROUNDWATER MONITORING WELL LOCATION
- 4.75 GROUNDWATER ELEVATION CONTOUR
- FENCE



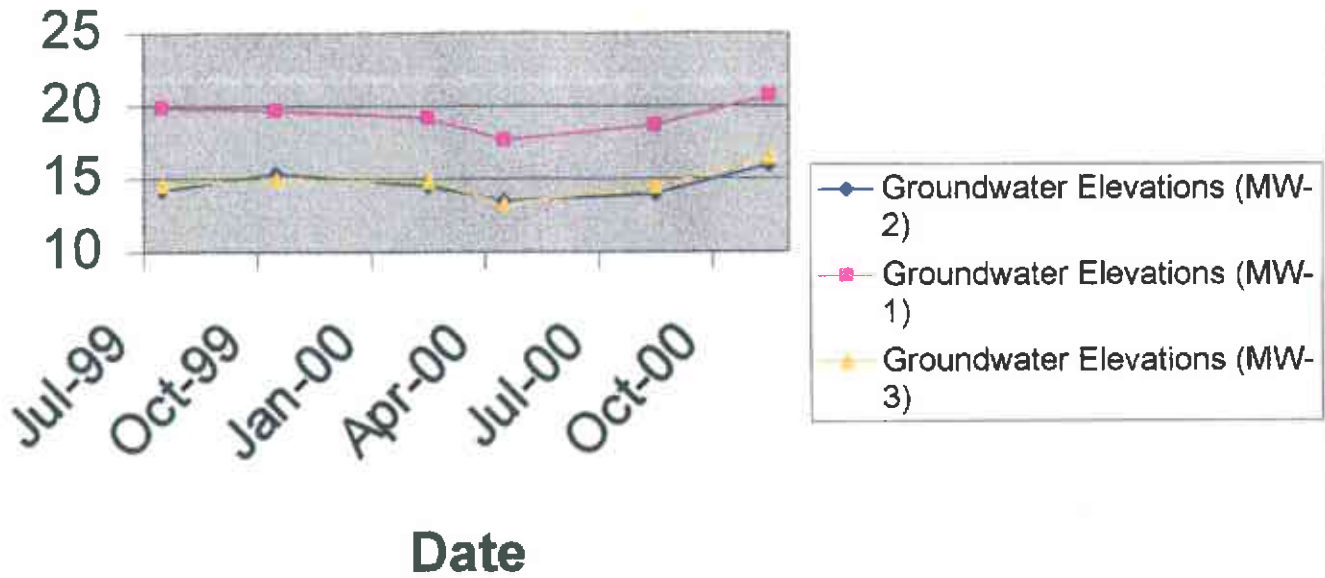
SOURCE: NORCAL, 1999



GROUNDWATER ELEVATION MAP: 11/16/00		
STATE RIGHT-OF-WAY		
SIXTH AND CASTRO STREETS		
OAKLAND, CALIFORNIA		
PROJECT NUMBER: 575-9G034		
DATE: 11/16/00	CKD BY:	FIGURE NO.: 2
FILE NO: 9G034-4		DRAWN BY: B.BURFIELD

Groundwater Elevations

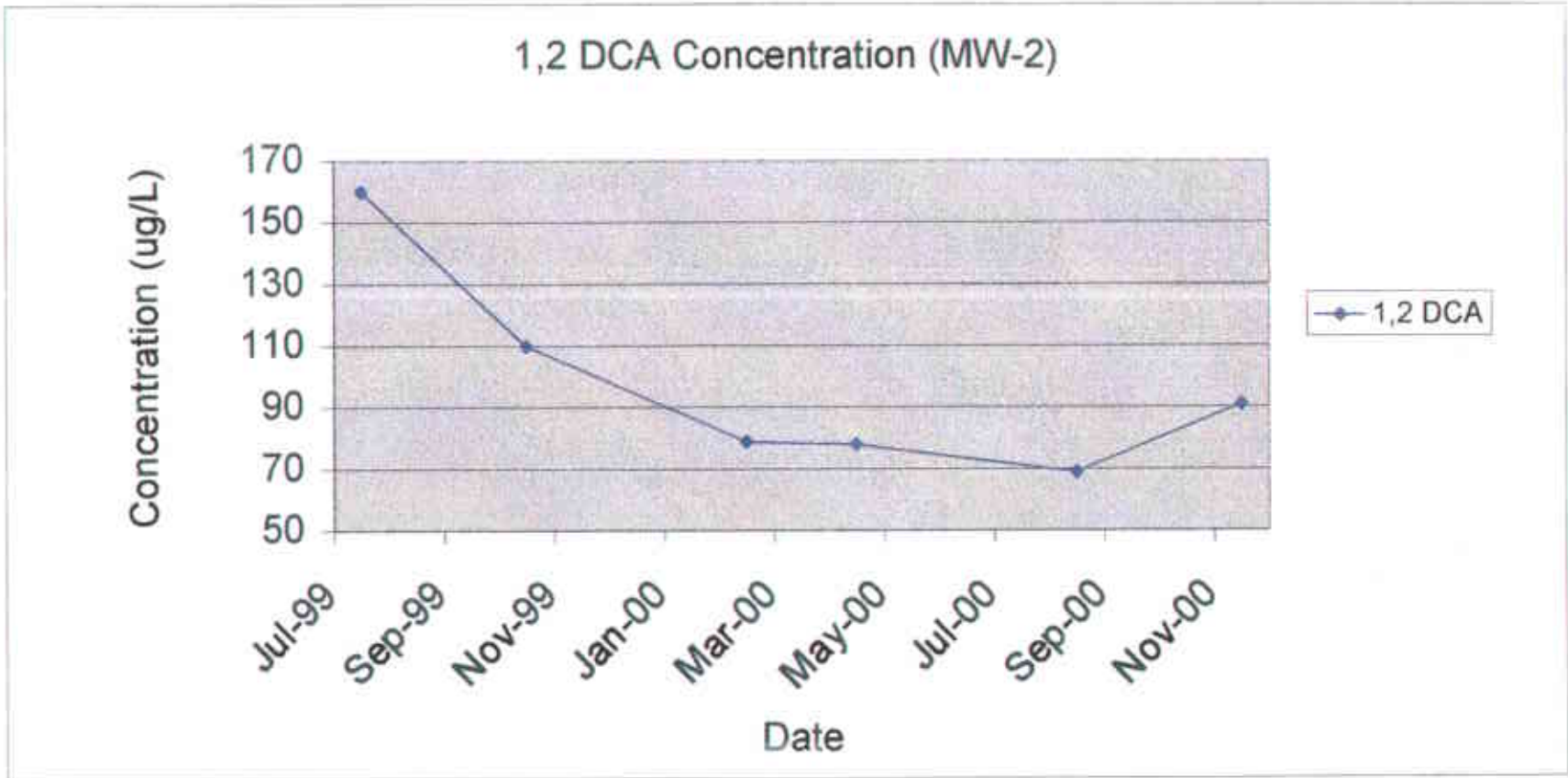
Feet (amsl)



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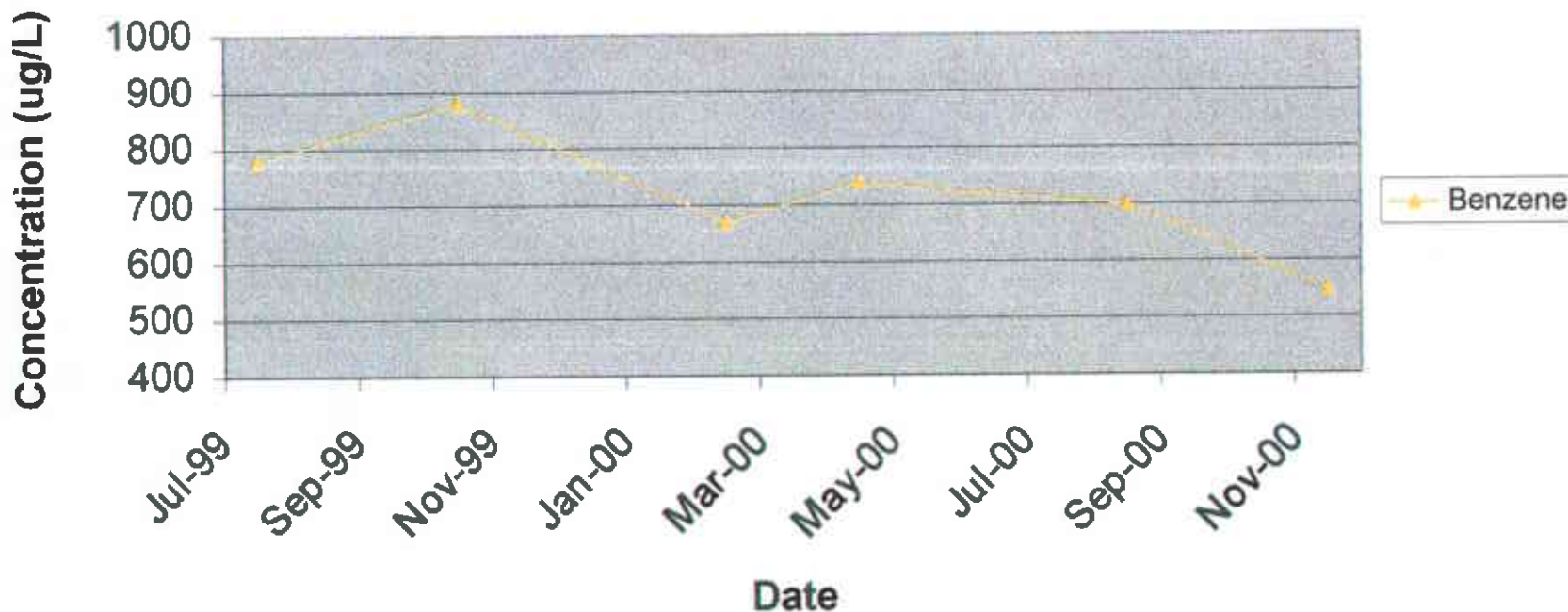
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Project Name: STATE RIGHT-OF-WAY 6TH AND CASTRO STREETS, OAKLAND, CALIFORNIA		Drawn By: D.W.B.	Date: 1/10/01	File No.: 00004-0	Figure No.: 3
Title: GROUNDWATER ELEVATIONS		Approved By: T.P.	Project No.: 575-96034		



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	Project Name: STATE RIGHT-OF-WAY 8TH AND CASTRO STREETS, OAKLAND, CALIFORNIA	Drawn By: S.W.S.	Date: 1/10/01
Title: 1,2 DCA CONCENTRATION (MW-2)	Approved By: P.P.	Project No.: 575-9C034	
			Figure No.: 4

Benzene Concentrations (MW-2)



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Project Name:
STATE RIGHT-OF-WAY
5TH AND CASTRO STREETS, OAKLAND, CALIFORNIA

Drawn By: B.R.B. Date: 1/16/01 File No.: 80024-7 Figure No.: 5

Title:
BENZENE CONCENTRATION (MW-2)

Approved By: F.P. Project No.: 575-9C034

TABLE 1
SUMMARY OF GROUNDWATER ELEVATIONS
CALTRANS MAINTENANCE STATION
6TH AND CASTRO STREETS, OAKLAND, CA

SAMPLE NUMBER	DATE	GROUND SURFACE ELEVATION	WELL CASING ELEVATION	DEPTH TO GROUNDWATER	GROUNDWATER ELEVATION
MW-1	7/2/99	23.74	26.85	19.89	6.96
	10/25/99	23.74	26.85	19.71	7.14
	2/7/00	23.74	26.85	19.22	7.63
	4/27/00	23.74	26.85	17.71	9.14
	8/8/00	23.74	26.85	18.7	8.15
	11/16/00	23.74	26.85	20.75	6.10
MW-2	7/2/99	18.67	21.56	14.21	7.35
	10/25/99	18.67	21.56	15.38	6.18
	2/7/00	18.67	21.56	14.52	7.04
	4/27/00	18.67	21.56	13.51	8.05
	8/8/00	18.67	21.56	14.02	7.54
	11/16/00	18.67	21.56	15.97	5.59
MW-3	7/2/99	19.60	21.04	14.57	6.47
	10/25/99	19.60	21.04	15	6.04
	2/7/00	19.60	21.04	14.85	6.19
	4/27/00	19.60	21.04	13.33	7.71
	8/8/00	19.60	21.04	14.49	6.55
	11/16/00	19.60	21.04	16.47	4.57

NOTES:

All elevation and depth data presented in feet.

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL DATA
CALTRANS MAINTENANCE STATION
6TH CASTRO STREETS, OAKLAND, CA

<i>All concentrations in ug/l (PPB).</i>											
SAMPLE NUMBER	DATE	OIL & GREASE	TPH-G	TPH-D	MTBE	Benzene	E-Benzene	Toluene	Xylenes	VOCs*	LEAD
MW-1	7/2/99	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<100
	10/25/99	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<100
	2/7/00	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<100
	4/27/00	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	0.9	<100
	8/8/00	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<15
	11/16/00	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<15
MW-2	7/2/99	6,300	26,000	<4,000	<1	780	1,300	4,200	5,000	2,830	<100
	10/25/99	4,400	33,000	<400	<50	880	1,800	4,300	4,800	2,490	<100
	2/7/00	8,800	29,000	<400	<50	670	1,500	4,800	8,700	2,240	<100
	4/27/00	10,000	56,000	<400	<50	740	2,500	5,200	11,000	4,150	<100
	8/8/00	8,800	37,000	<400	<50	700	2,400	4,300	11,000	4,150	<15
	11/16/00	5,000	25,000	<400	<50	550	1,500	2,900	7,100	2,247	<15
MW-3	7/2/99	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<100
	10/25/99	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<100
	2/7/00	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<100
	4/27/00	<2,000	<500	<400	<1	<0.5	1.9	0.9	3.6	ND*	0.37
	8/8/00	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<15
	11/16/00	<2,000	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<15

NOTES

Sample concentrations reported in ug/l (micrograms per liter).

TPH-G denotes Total Petroleum Hydrocarbons as Gasoline, TPH-D denotes Total Petroleum Hydrocarbons as Diesel.

MTBE denotes Methyl Tert Butyl Ether, E-Benzene denotes Ethylbenzene

VOC denotes Volatile Organic Compounds not including BTEX and MTBE

ND denotes Not Detected, detection limit presented in parentheses.

ND* denotes all analytes included in EPA Method 8260 analyte list not presented on this table, Not Detected.

TABLE 3
SUMMARY OF VOC COMPOUNDS
CALTRANS MAINTENANCE STATION
6TH CASTRO STREETS, OAKLAND, CA

All concentrations in ug/l (PPB).

SAMPLE NUMBER	DATE	n-Butylbenzene	1,2 DCA	1,2-DCP	IPB	IPT	Naphthalene	n-Propylbenzene	TCE	1,2,4 TMB	1,3,5 TMB
		MW-1	7/2/99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/25/99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/7/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	4/27/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5
	8/8/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	11/16/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-2	7/2/99	<25	160	<25	60	<25	590	200	<25	1,400	420
	10/25/99	<25	110	<25	54	<25	600	170	<25	1,200	360
	2/7/00	<5	79	<5	44	<5	620	160	<5	1,100	320
	4/27/00	<25	78	15	77	28	1,100	270	9.1	2,000	570
	8/8/00	170	69	<25	74	<25	860	270	<25	1,900	550
	11/16/00	<25	91	<25	46	<25	460	160	<25	1,200	290
MW-3	7/2/99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/25/99	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2/7/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	4/27/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	8/8/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	11/16/00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

NOTES

Sample concentrations reported in ug/l (microgram per liter).

1,2 DCA denotes 1,2 Dichloroethane; 1,2-DCP denotes 1,2-Dichloropropane; IPB denotes Isopropylbenzene; IPT denotes p-Isopropyltoluene

TCE denotes Trichloroethene; 1,2,4 TMB denotes 1,2,4 Trimethylbenzene; 1,3,5 TMB denotes 1,3,5 Trimethylbenzene,

<0.5 = Not detected at detection limit shown

FLUID MEASUREMENT FIELD DATA

SHEET: 1 OF 1

DATE: 11/16/00	PROJECT NAME: CALTRANS 6 th + CASTRO	PROJECT NO: 46034
WATER LEVEL MEASUREMENT INSTRUMENT: SOLINST		SERIAL NO:
PRODUCT DETECTION INSTRUMENT:		SERIAL NO:

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

WELL NUMBER	GROUND SURFACE ELEVATION	TOP OF CASING ELEVATION	DEPTH TO PRODUCT BELOW TOC	DEPTH TO WATER BELOW TOC	WELL DEPTH BELOW TOC	PRODUCT THICKNESS	WATER TABLE ELEVATION	ACTUAL TIME
MW-1				20.75	23.24			0850
MW-2				15.97	22.42			0859
MW-3				16.47	~22.0			0854

REMEMBER TO CORRECT PRODUCT THICKNESS FOR DENSITY BEFORE CALCULATING WATER TABLE ELEVATION PREPARED BY:

WELL PURGING AND SAMPLING DATA

3124
73
79
7
743
49
3

WELL NO: MW-1

DATE: 11/16/00 PROJECT NAME: CALTRANS 6th + CASTRO PROJECT NO: 96034

WEATHER CONDITIONS: SUNNY, WARM

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

SAMPLE TYPE: GROUNDWATER WASTEWATER SURFACE WATER OTHER

WELL DEPTH (TOC) 23.24 FT. DEPTH TO WATER BEFORE PURGING (TOC) 20.75 FT.

LENGTH OF WATER 2.49 FT. CALCULATED ONE WELL VOLUME¹: .42 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 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)
0915	INITIAL	20.7	928	7.61			CO	
0918	.5	20.0	874	7.29			↓	
0920	1.0	19.8	908	7.25			↓	
0922	1.5	19.7	930	7.32			↓	

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

NOTES: SAMPLE TIME: 0925 ID# MW-1
 DUPLICATE TIME: ID#: _____
 EQUIP. BLANK: TIME: ID#: _____
 PREPARED BY: _____

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

3
645
17
15
5
0965

WELL NO: *MW-2*

DATE: *11/16/00* PROJECT NAME: *CALTRANS 6th + CASTRO* PROJECT NO: *96034*

WEATHER CONDITIONS:

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

SAMPLE TYPE: GROUNDWATER WASTEWATER SURFACE WATER OTHER

WELL DEPTH (TOC) *22.42* FT. DEPTH TO WATER BEFORE PURGING (TOC) *15.97* FT.

LENGTH OF WATER *6.45* FT. CALCULATED ONE WELL VOLUME¹: *1.09* GAL.

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: *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)
<i>1010</i>	<i>INITIAL</i>	<i>19.8</i>	<i>782</i>	<i>6.79</i>				
<i>1015</i>	<i>1.5</i>	<i>20.3</i>	<i>818</i>	<i>6.65</i>				
<i>1018</i>	<i>3.0</i>	<i>20.5</i>	<i>869</i>	<i>6.62</i>				
<i>1026</i>	<i>5.0</i>	<i>19.8</i>	<i>947</i>	<i>6.76</i>				
<i>1027</i>	<i>5.3</i>	<i>20.1</i>	<i>970</i>	<i>6.61</i>				

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

NOTES: SAMPLE TIME: *1030* ID# *MW-2*
 DUPLICATE TIME: *1050* ID#: *MW-10*
 EQUIP. BLANK: TIME: _____ ID#: _____
 PREPARED BY: *CHRIS MERRITT*

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: *11/16/00* PROJECT NAME: *CALTRANS 6th + CASTRO* PROJECT NO: *96034*

WEATHER CONDITIONS: *SUNNY, COOL*

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

SAMPLE TYPE: GROUNDWATER WASTEWATER SURFACE WATER OTHER

WELL DEPTH (TOC) *22* FT. DEPTH TO WATER BEFORE PURGING (TOC) *16.47* FT.

LENGTH OF WATER *5.53* FT. CALCULATED ONE WELL VOLUME¹: *.94* 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 L 602155*

ACTUAL TIME (MIN)	CUMUL. VOLUME PURGED (GAL)	TEMP		SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
		<input type="checkbox"/> °F	<input type="checkbox"/> °C						
<i>0948</i>	<i>INITIAL</i>	<i>19.2</i>		<i>562</i>	<i>7.58</i>			<i>CL</i>	
<i>0950</i>	<i>1.0</i>	<i>20.2</i>		<i>572</i>	<i>6.67</i>			<i>CO</i>	
<i>0953</i>	<i>2.0</i>	<i>20.2</i>		<i>576</i>	<i>6.57</i>				
<i>0955</i>	<i>3.0</i>	<i>20.2</i>		<i>587</i>	<i>6.53</i>				

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

NOTES: SAMPLE TIME: *1000* ID# *MW-3*
 DUPLICATE TIME: _____ ID#: _____
 EQUIP. BLANK: TIME: _____ ID#: _____
 PREPARED BY: _____

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



Centrum Analytical Laboratories, Inc.

CERTIFIED HAZARDOUS WASTE TESTING LABORATORY • CHEMICAL AND BIOLOGICAL ANALYSES

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

Date Sampled: 11/16/00
Date Received: 11/17/00
Job Number: 17461

Project: Caltrans 6th & Castro


CASE NARRATIVE

The following information applies to samples which were received on 11/17/00 :

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.

Lead by ICP

Client: PSI
 Project: Caltrans 6th & Castro
 Job No.: 17461
 Matrix: Water
 Analyst: RLB

Date Sampled: 11/16/00
 Date Received: 11/17/00
 Date Digested: 11/17/00
 Date Analyzed: 11/21/00
 Batch Number: 6010W1794
 Method Number: 6010B

Sample ID	Reporting Limit mg/L	Lead mg/L
Method Blank	0.020	ND
MW-1	0.020	ND
MW-2	0.020	ND
MW-3	0.020	ND
MW-10	0.020	ND

QC Sample Report - Metals

Matrix: Water
Batch #: 6010W1794

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Compound	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Lead	1.0	104	75 - 125	Pass

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: MW-1

Compound	Spike Sample Recovery mg/L	Spike Duplicate Recovery mg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
Lead	1.025	1.091	6%	20%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

QC Report - EPA 413.2 Oil & Grease

Matrix: Water
Batch #: 4132W1248

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration mg/Kg	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Reference Oil	10	90	70 - 130	Pass

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: Laboratory Control Sample

Analyte	Spike Sample Recovery mg/Kg	Spike Duplicate Recovery mg/Kg	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
Reference Oil	9.00	9.20	2%	25%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Modified 8015 - Total Extractable Petroleum Hydrocarbons as Diesel

Client:	PSI	Date Sampled:	11/16/00
Project:	Caltrans 6th & Castro	Date Received:	11/17/00
Job No.:	17461	Date Extracted:	11/22/00
Matrix:	Water	Date Analyzed:	11/25-26/00
Analyst:	JB	Batch Number:	8015DW2074

Sample ID	Detection Limit mg/L	Diesel mg/L	Surrogate (OTP) Limit: 50 - 150%
Method Blank	0.40	ND	72 %
MW-1	0.40	ND	73 %
MW-2	0.40	ND	80 %
MW-3	0.40	ND	80 %
MW-10	0.40	ND	58 %

QC Sample Report - EPA 8015M Diesel

Matrix: Water
Batch #: 8015DW2074

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Diesel	0.8	91	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
Diesel	0.73	0.73	0%	25%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Modified 8015 - Total Volatile Hydrocarbons as Gasoline

Client: PSI
 Project: Caltrans 6th & Castro
 Job No.: 17461
 Matrix: Water
 Analyst: CP

Date Sampled: 11/16/00
 Date Received: 11/17/00
 Date Analyzed: 11/29-30/00
 Batch Number: 8015GW2777

Sample ID	Detection Limit mg/L	Petroleum Hydrocarbons as Gasoline mg/L
Method Blank	0.5	ND
MW-1	0.5	ND
MW-2	5.0	25
MW-3	0.5	ND
MW-10	5.0	32

QC Sample Report - EPA 8015M Gasoline

Matrix: Water
Batch #: 8015GW2777

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Gasoline	10.0	102	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	10.19	9.79	4%	25%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate



EPA 8260 - Volatile Organics

Client: PSI
Project: Caltrans 6th & Castro
Job No.: 17461
Matrix: Water
Analyst: JMR/JL

Date Sampled: 11/16/00
Date Received: 11/17/00
Date Analyzed: 11/24-29/00
Batch Number: MS28260W079
MS28260W082

Compounds	Sample ID:	Blank	MW-1	MW-3
	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)	10	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	ND
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

Client:	PSI	Date Sampled:	11/16/00
Project:	Caltrans 6th & Castro	Date Received:	11/17/00
Job No.:	17461	Date Analyzed:	11/24-29/00
Matrix:	Water	Batch Number:	MS28260W079
Analyst:	JMR/JL		MS28260W082

Compounds	Sample ID:	Blank	MW-1	MW-3
	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	50	ND	ND	ND
4-Methyl-2-pentanone	5.0	ND	ND	ND
Methyl-tert-butyl ether (MtBE)	1.0	ND	ND	ND
Napthalene	2.0	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	2.0	ND	ND	ND
1,2,4-Trichlorobenzene	2.0	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, m-,p-	1.0	ND	ND	ND
Xylene, o-	0.5	ND	ND	ND

Surrogates (% recovery) Limits: 80 - 130

Sample ID:	Blank	MW-1	MW-3
Dibromofluoromethane	102	104	104
Toluene-d8	101	97	103
Bromofluorobenzene	101	98	97

EPA 8260 - Volatile Organics

Client: PSI
 Project: Caltrans 6th & Castro
 Job No.: 17461
 Matrix: Water
 Analyst: JMR/JL

Date Sampled: 11/16/00
 Date Received: 11/17/00
 Date Analyzed: 11/24-29/00
 Batch Number: MS28260W079
 MS28260W082

Compounds	Sample ID:	MW-2	MW-10
	DL	µg/L	µg/L
Acetone	2500	ND	ND
tert-Amyl Methyl Ether (TAME)	250	ND	ND
Benzene	25	550	560
Bromobenzene	50	ND	ND
Bromochloromethane	50	ND	ND
Bromodichloromethane	25	ND	ND
Bromoform	25	ND	ND
Bromomethane	25	ND	ND
tert-Butanol (TBA)	500	ND	ND
2-Butanone (MEK)	500	ND	ND
n-Butylbenzene	25	ND	ND
sec-Butylbenzene	25	ND	ND
tert-Butylbenzene	25	ND	ND
Carbon disulfide	500	ND	ND
Carbon tetrachloride	25	ND	ND
Chlorobenzene	25	ND	ND
Chloroethane	25	ND	ND
Chloroform	25	ND	ND
Chloromethane	25	ND	ND
2-Chlorotoluene	25	ND	ND
4-Chlorotoluene	25	ND	ND
Dibromochloromethane	25	ND	ND
1,2-Dibromoethane	25	ND	ND
1,2-Dibromo-3-chloropropane	500	ND	ND
Dibromomethane	25	ND	ND
1,2-Dichlorobenzene	25	ND	ND
1,3-Dichlorobenzene	25	ND	ND
1,4-Dichlorobenzene	25	ND	ND
Dichlorodifluoromethane	25	ND	ND
1,1-Dichloroethane	25	ND	ND
1,2-Dichloroethane	25	91	76
1,1-Dichloroethene	25	ND	ND
cis-1,2-Dichloroethene	25	ND	ND
trans-1,2-Dichloroethene	25	ND	ND
1,2-Dichloropropane	25	ND	ND
1,3-Dichloropropane	25	ND	ND
2,2-Dichloropropane	25	ND	ND
1,1-Dichloropropene	25	ND	ND

EPA 8260 - Volatile Organics

Client: PSI
 Project: Caltrans 6th & Castro
 Job No.: 17461
 Matrix: Water
 Analyst: JMR/JL

Date Sampled: 11/16/00
 Date Received: 11/17/00
 Date Analyzed: 11/24-29/00
 Batch Number: MS28260W079
 MS28260W082

Compounds	Sample ID:	MW-2	MW-10
	DL	µg/L	µg/L
cis-1,3-Dichloropropene	25	ND	ND
trans-1,3-Dichloropropene	25	ND	ND
Diisopropyl Ether (DIPE)	250	ND	ND
Ethylbenzene	25	1,200	1,500
Ethyl tert-Butyl Ether (EtBE)	250	ND	ND
Hexachlorobutadiene	25	ND	ND
2-Hexanone	500	ND	ND
Isopropylbenzene	25	39	46
p-Isopropyltoluene	25	ND	ND
Methylene chloride	2500	ND	ND
4-Methyl-2-pentanone	250	ND	ND
Methyl-tert-butyl ether (MtBE)	50	ND	ND
Napthalene	100	340	460
n-Propylbenzene	25	120	160
Styrene	25	ND	ND
1,1,1,2-Tetrachloroethane	25	ND	ND
1,1,2,2-Tetrachloroethane	50	ND	ND
Tetrachloroethene	25	ND	ND
Toluene	25	2,500	2,900
1,2,3-Trichlorobenzene	100	ND	ND
1,2,4-Trichlorobenzene	100	ND	ND
1,1,1-Trichloroethane	25	ND	ND
1,1,2-Trichloroethane	25	ND	ND
Trichloroethene	25	ND	ND
1,2,3-Trichloropropane	25	ND	ND
Trichlorofluoromethane	25	ND	ND
Trichlorotrifluoroethane	250	ND	ND
1,2,4-Trimethylbenzene	25	860	1,200
1,3,5-Trimethylbenzene	25	230	290
Vinyl chloride	25	ND	ND
Xylenes, m-,p-	50	4,200	5,300
Xylene, o-	25	1,400	1,800

Surrogates (% recovery) Limits: 80 - 130

Sample ID:	MW-2	MW-10
Dibromofluoromethane	109	110
Toluene-d8	104	107
Bromofluorobenzene	105	107

QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: MS28260W079

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	119	59 - 172	Pass
Benzene	20	122	66 - 142	Pass
Trichloroethene	20	114	71 - 137	Pass
Toluene	20	116	59 - 139	Pass
Chlorobenzene	20	110	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	23.85	22.49	6%	22%	Pass
Benzene	24.34	22.99	6%	21%	Pass
Trichloroethene	22.85	22.60	1%	24%	Pass
Toluene	23.31	22.27	5%	21%	Pass
Chlorobenzene	22.06	21.15	4%	21%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: MS28260W082

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	103	59 - 172	Pass
Benzene	20	110	66 - 142	Pass
Trichloroethene	20	110	71 - 137	Pass
Toluene	20	107	59 - 139	Pass
Chlorobenzene	20	100	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	20.60	21.77	6%	22%	Pass
Benzene	22.07	22.67	3%	21%	Pass
Trichloroethene	21.94	22.44	2%	24%	Pass
Toluene	21.36	22.82	7%	21%	Pass
Chlorobenzene	19.93	20.16	1%	21%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate



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Chain of Custody Record

Centrum Job # 174401

Page 1 of 1

Project No:		Project Name:		Please Circle ALL Analyses Requested												Turn-Around Time	
96034		CALTRANS 6th + CASTRO		8015M: (See) Fuel Screen, Carbon Chain	8015M: Gasoline only	8021B: BTEX/MIBE Only by GC/PID	418.1 (TRPH) (413.2) (Oil & Grease)	GCMS: (3260B) 8021B, 624, 524.2	GCMS: Fuel Oxygenates	GCMS: MIBE Conf. Only	GCMS: 8270C, 625	8081A/8082: Pesticides, PCBs, Pest/PCB	Metals: Title 22 (CAM), RCRA, PP	pH, TDS, TSS, Conductivity	<input type="checkbox"/> 24 Hr. RUSH*	<input type="checkbox"/> 48 Hr. RUSH*	<input checked="" type="checkbox"/> Normal TAT
Project Manager:		Phone:		Address:		*Requires PRIOR approval, additional charges apply											
CHRIS MERRITT		510-785-1111 510-785-1192		1320 W. WINTON AVE HAYWARD, CA 94545		Requested due date: _____											
Client Name:		Address:		Remarks/Special Instructions													
(Report and Billing) PSI		(Report and Billing)															
Centrum ID (Lab use only)	Sample ID (As it should appear on report)	Date sampled	Time sampled	Sample matrix	Site location	Containers: # and type	8015M: (See) Fuel Screen, Carbon Chain	8015M: Gasoline only	8021B: BTEX/MIBE Only by GC/PID	418.1 (TRPH) (413.2) (Oil & Grease)	GCMS: (3260B) 8021B, 624, 524.2	GCMS: Fuel Oxygenates	GCMS: MIBE Conf. Only	GCMS: 8270C, 625	8081A/8082: Pesticides, PCBs, Pest/PCB	Metals: Title 22 (CAM), RCRA, PP	pH, TDS, TSS, Conductivity
1	MW-1	11/16/00	0925	H ₂ O		4 VOA 2 AMB IN 1 plastic	X	X	X	X					X		
2	MW-2		1030				X	X	X	X					X		
3	MW-3		1000				X	X	X	X					X		
4	MW-10		1050				X	X	X	X					X		
1) Relinquished by: (Sampler's Signature)		Date:	Time:	3) Relinquished by:		Date:	Time:	To be completed by Laboratory personnel:								Sample Disposal	
CHRIS MERRITT		11/16/00	1800					Samples chilled? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> From Field								<input type="checkbox"/> Client will pick up	
2) Received by:		Date:	Time:	4) Received by:		Date:	Time:	Custody seals? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No								<input type="checkbox"/> Return to client	
								All sample containers intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								<input checked="" type="checkbox"/> Lab disposal	
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:	All sample containers intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No									
				FEDEX				All sample containers intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No									
				6) Received for Laboratory by:		Date:	Time:	All sample containers intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No									
				D. D. [Signature]		11/17	9:00A	All sample containers intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No									
Laboratory Notes: FILTER METALS FIRST O+G 413.2																Sample Locator No.	
																F-4/VOA	