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

DEPARTMENT OF TRANSPORTATION
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August 7, 2001

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

Subject: Quarterly Groundwater Report for Vacant Parcel, located at the intersection of 6th and Castro Streets in Oakland, CA

Dear Mr. Hwang:

Enclosed please find a copy of the First Quarter 2001 Groundwater Monitoring Report for the subject site. PSI has been removed as Caltrans' consultant for this project. ERM-West has assumed responsibility of the investigation. Please review the attached draft work plan for further groundwater investigation to determine the extent of the contaminant plume to south. If you have 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

FIRST QUARTER 2001

SEVENTH QUARTERLY GROUNDWATER MONITORING REPORT

(REVISED)

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
(510) 785-1111

July 26, 2001
575-9G034

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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

Chris Merritt, R.G. (7156)
Senior Geologist

1.0 INTRODUCTION

This report summarizes the results of the First Quarter 2001 groundwater monitoring activities conducted on March 5, 2001 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 seventh 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 (µg/L)
Benzene	3,900 µg/L
Toluene	3,700 µg/L
Ethylbenzene	14,000 µg/L
Total Xylenes	12,000 µg/L
1,2 Dichloroethane	160 µg/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 March 5, 2001, 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 depth to groundwater decreased approximately 0.8 meters (2.6 feet) compared to last quarter. The decrease in groundwater elevation is likely 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.

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 approximately 0.01 (Figure 2). Other than the first quarter of groundwater sampling where the flow direction was estimated to be more easterly, the flow direction at the site has consistently estimated to have been toward the south. The hydraulic gradient site at the site has fluctuated with a range of 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-3 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 reusable equipment was washed prior to entering the well with an Alconox solution, followed by two deionized water rinses.

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 8015 modified – Total Petroleum Hydrocarbons as Motor Oil (TPH-MO)
- 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:

- TPH-MO was not detected in groundwater samples from the site this quarter.

- TPH-G was detected in Well MW-2 at 65,000 µg/L. This concentration is greater than the previous sampling result of 25,000 µg/L in Well MW-2.

- TPH-D was detected in Well MW-2 at 6,500 µg/L. This concentration is greater than the previous sampling result of not detected in Well MW-2.

- 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 730 µg/L. This concentration is greater than the previous sampling result of 550 µg/L in Well MW-2.

- Toluene (3,100 µg/L), ethylbenzene (4,100 ug/L) and total xylenes (18,400 ug/L) were detected in well MW-2 at concentrations greater than the previous sampling results.

- BTEX was not detected in the other groundwater samples. This is comparable to the previous sampling results.

- The following constituents associated with a release of gasoline were detected: n-butylbenzene (200 µg/L), isopropylbenzene (100 µg/L), naphthalene (1,200 µg/L), n-propylbenzene (3760 µg/L), 1,2,4 trimethylbenzene (2,300 µg/L), and 1,3,5 trimethylbenzene (700 µg/L) were detected in Well MW-2.

- 1,2 DCA was not detected in groundwater samples from the site this quarter. This concentration is less than the previous quarters result (91 µg/L) found in MW-2. 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 ug/L, and 1,2 DCA is 0.5 µg/L. The concentrations of BTEX 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. Benzene has exhibited a slight declining trend in concentration over time. With the exception of the second quarterly monitoring event performed by PSI this correlates directly with rising and falling groundwater levels. 1,2, DCA has exhibited a general declining trend over time. This trend has correlated inversely with rising and falling groundwater levels.

BTEX compounds are Light Non Aqueous Phase Liquids (LNAPL's) which are characterized by their tendency to float upon water while 1,2, DCA is a Dense Non Aqueous Phase Liquid (DNAPL) whose characteristic is a tendency to sink within water.

The fluctuation in the BTEX compounds concentrations over time is probably due to the washing action of rising groundwater on soils which are more heavily impacted with the compounds at shallower depths.

The fluctuation in the 1,2, DCA levels could be due to a variety of factors. The material could be undergoing greater dilution with rising water levels or the material may be migrating more rapidly in the subsurface.

4.0 SUMMARY AND CONCLUSIONS

PSI performed a quarterly monitoring event on March 5, 2001. Groundwater samples were collected from the three monitoring wells with a duplicate obtained from MW-3 and labeled MW-10. Based on measurements collected and analytical data the following summary is provided.

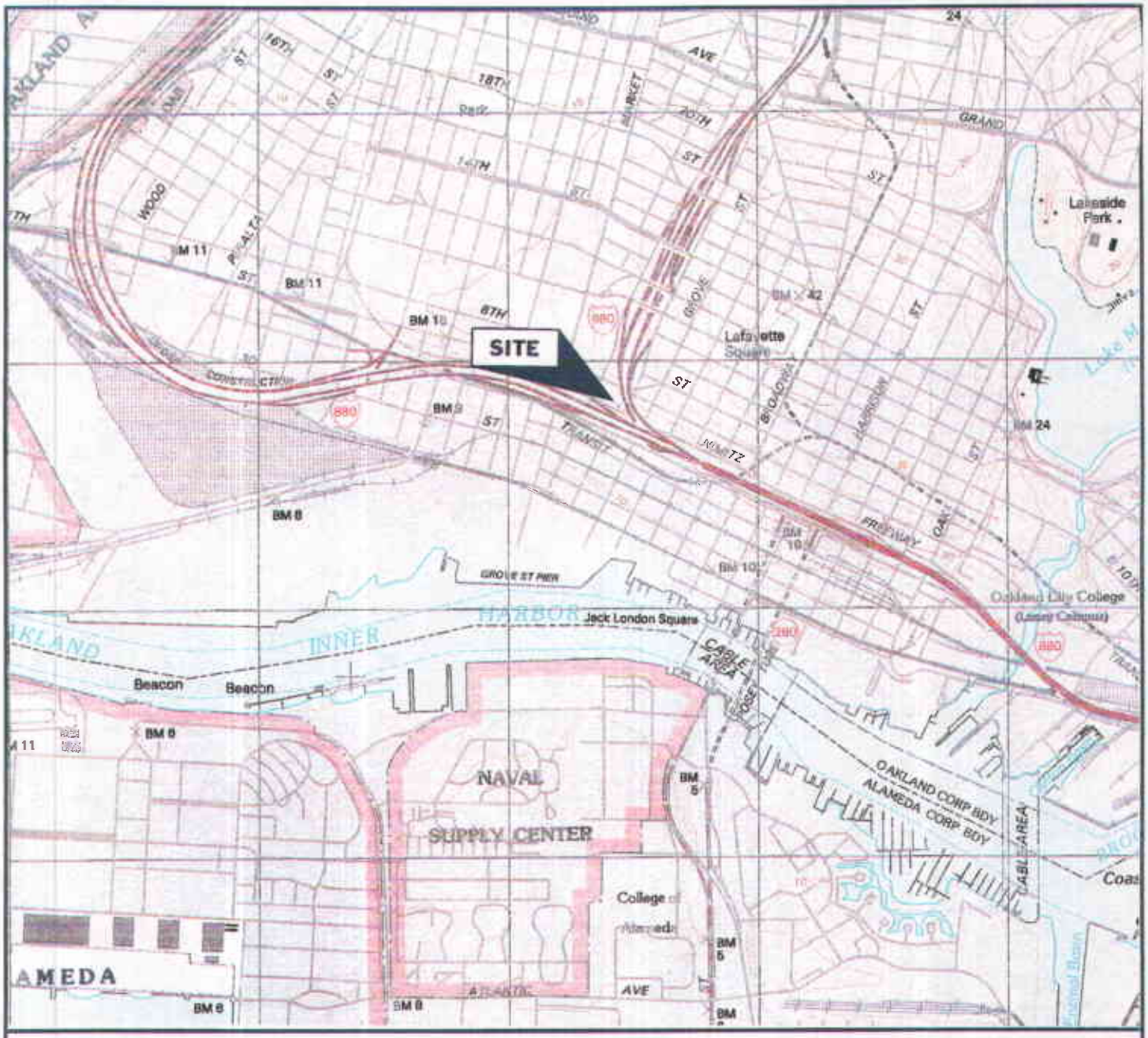
- Groundwater elevation data indicates the groundwater flow direction beneath the site is towards the south, with a hydraulic gradient of 0.01 meter per meter (0.01 foot per foot). This is comparable to the previous sampling events.
- TPH-G was detected in the sample collected from Well MW-2 (65,000 µg/l).
- TPH-D was detected in the sample collected from Well MW-2 (6,500 µg/l).
- TPH-MO was not detected in groundwater samples this quarter.
- 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.
- Concentrations of the gasoline related compounds n-butylbenzene, 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 not detected in groundwater samples this quarter.
- The BTEX 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 seven quarters of groundwater sampling, the following can be concluded.

- 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.

- The extent of the groundwater plume has not been identified to the south and likely has migrated off of the site boundaries.

To fully characterize the contaminant plume in the area of MW-2, PSI recommends the installation of at least three more monitoring wells in the areas to the south, west and north of MW-2. A Slug or Pump Test should be conducted in order to determine the velocity of the groundwater in the area of MW-2. A Horizontal and Vertical conduit search should be instituted to determine the number and nature of subsurface utility trenches in nearby streets whose fill sands could provide preferential pathways for contaminant migration. Groundwater monitoring should continue at the site. Copies of this report should be provided to the appropriate regulatory agencies.

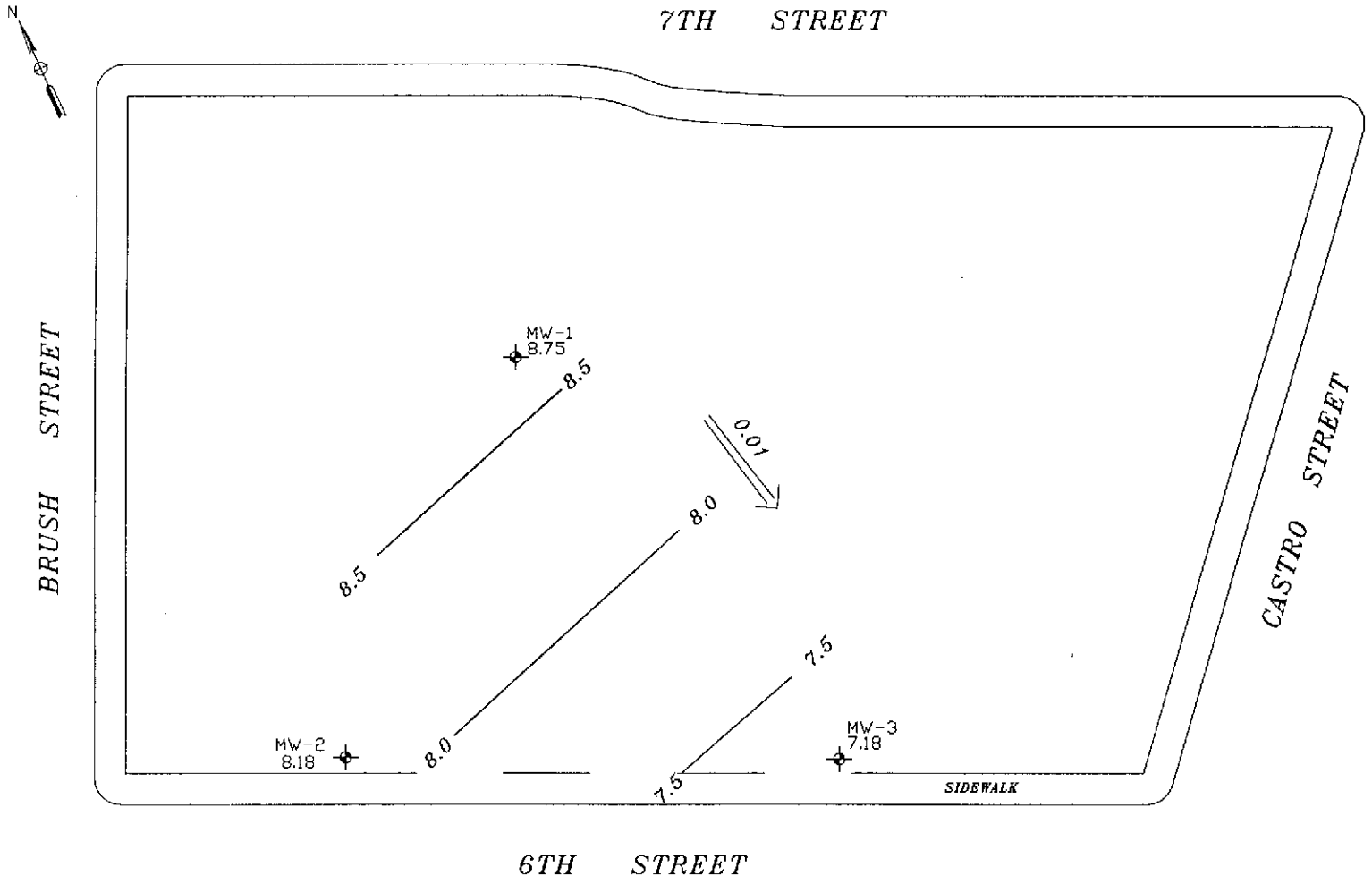


REFERENCE:
U.S.G.S. OAKLAND WEST, CALIFORNIA, 1993

psi ENVIRONMENTAL GEOTECHNICAL CONSTRUCTION
CONSULTING • ENGINEERING • TESTING

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.: 9G034-1		DRAWN BY: S. BOWERS



LEGEND

GROUNDWATER MONITORING WELL LOCATION

7.2 —— 7.2 GROUNDWATER ELEVATION CONTOUR

0.01 GROUNDWATER FLOW DIRECTION AND GRADIENT

SOURCE: NORCAL, 1999

0 50

SCALE IN FEET

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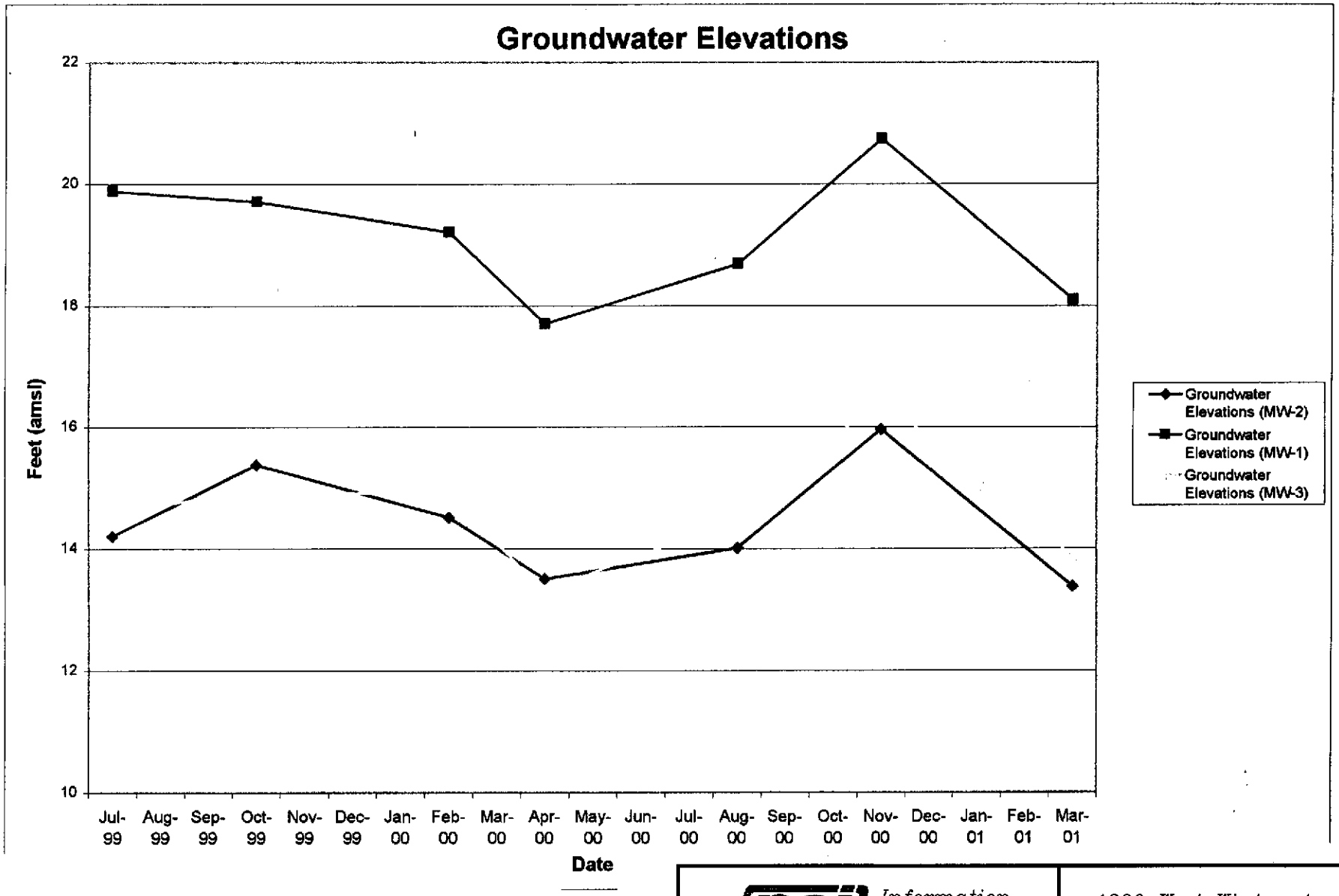
Project Name:	Drawn By:	Date:	File No.:	Figure No.:
STATE RIGHT-OF-WAY 6TH AND CASTRO STREETS, OAKLAND, CALIFORNIA	C.G.M	9/27/01	9C034-5a	2
Title: GROUNDWATER ELEVATION MAP	**Approved By:** P.P.	**Project No.:** 575-9C034		



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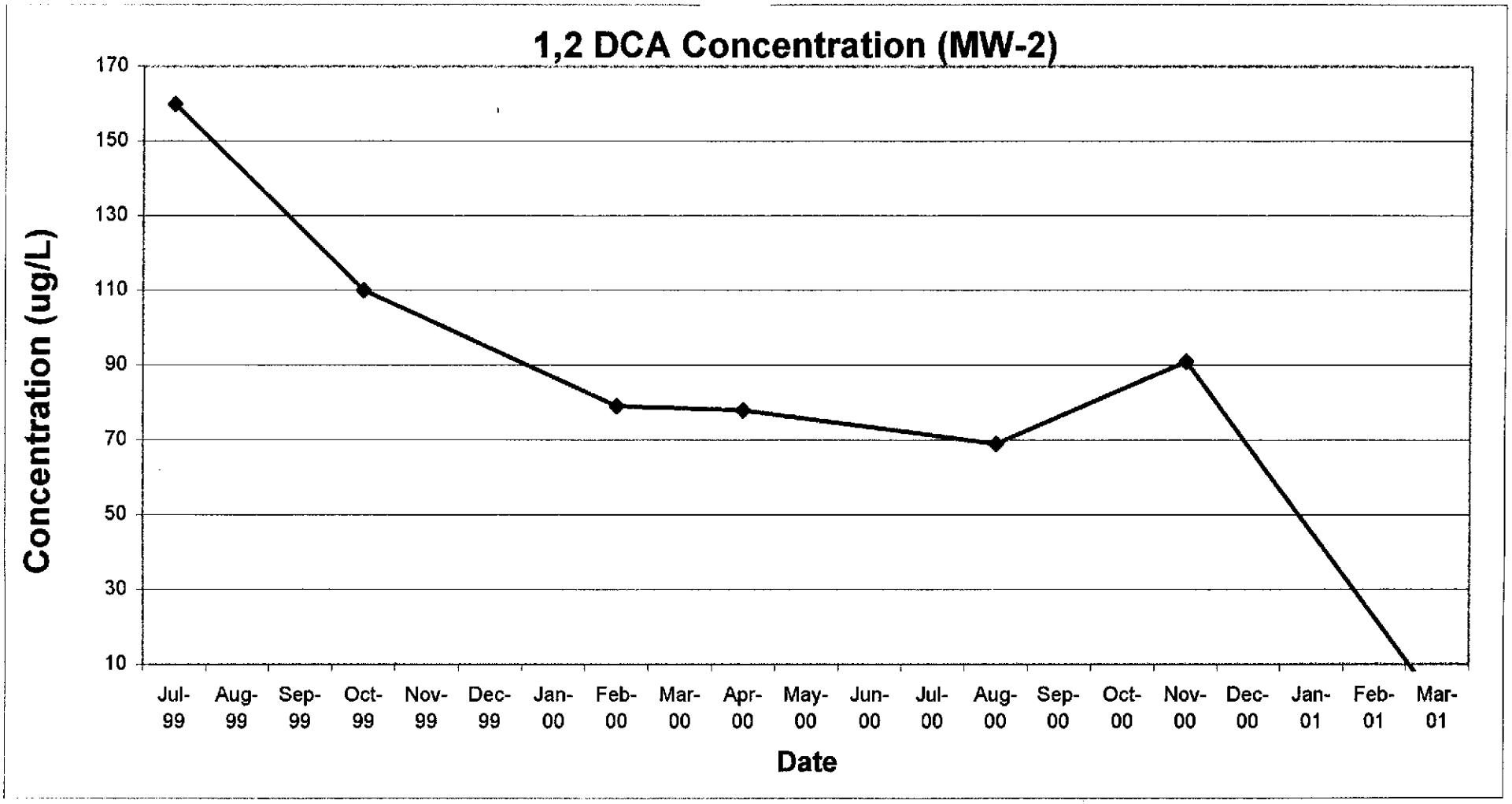
Project Name:	Drawn By:	Date:	File No.:	Figure No.:
STATE RIGHT-OF-WAY 6TH AND CASTRO STREETS, OAKLAND, CALIFORNIA	B.W.B.	1/10/01	9C034-5	3
Title: GROUNDWATER ELEVATIONS	**Approved By:** F.P.	**Project No.:** 575-9C034		



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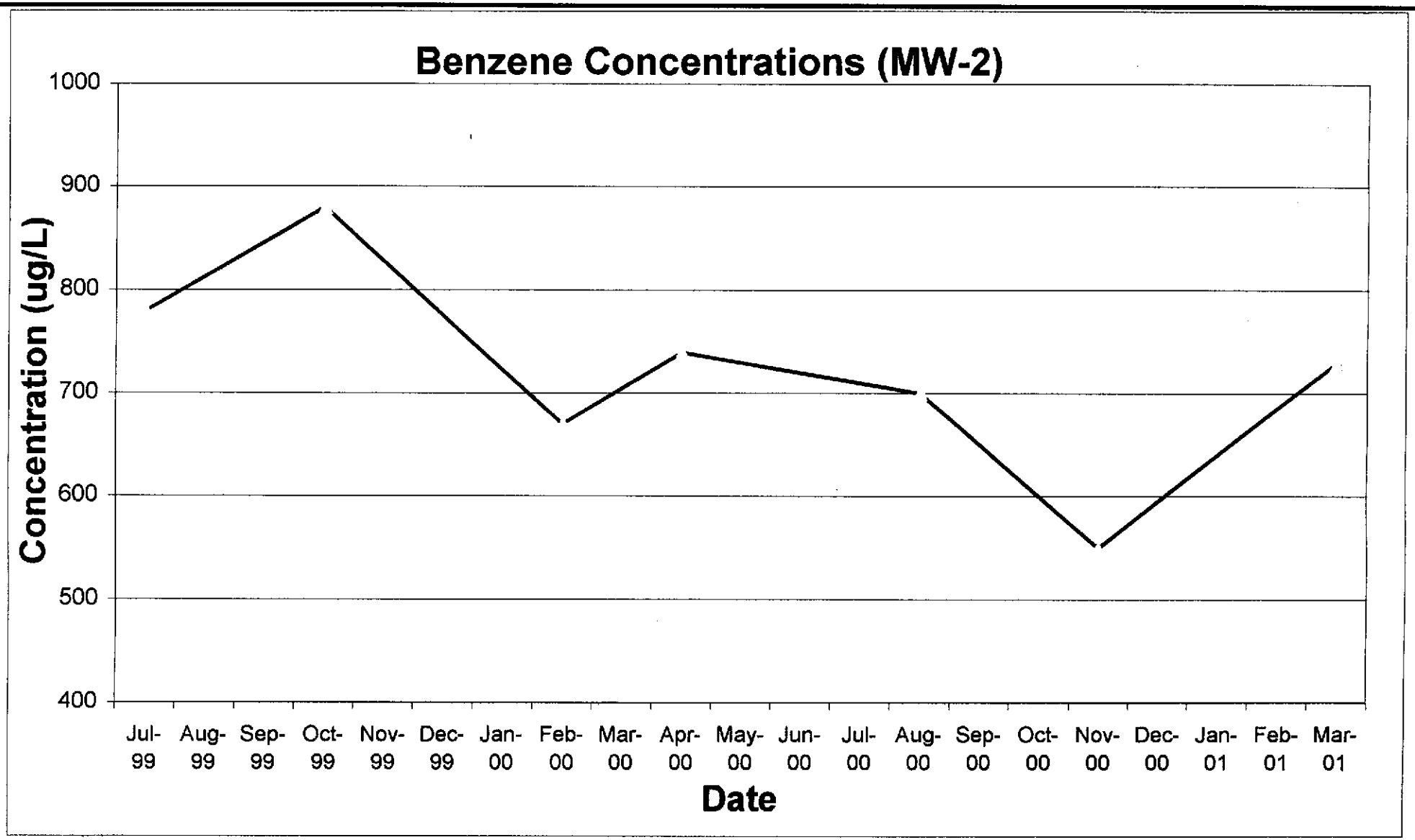
Project Name: STATE RIGHT-OF-WAY 6TH AND CASTRO STREETS, OAKLAND, CALIFORNIA	Drawn By: B.W.B.	Date: 1/10/01	File No.: 9C034-6	Figure No.: 4
Title: 1,2 DCA CONCENTRATION (MW-2)	Approved By: F.P.	Project No.: 575-9C034		



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Project Name:	Drawn By:	Date:	File No.:	Figure No.:
STATE RIGHT-OF-WAY 6TH AND CASTRO STREETS, OAKLAND, CALIFORNIA	B.W.B.	1/10/01	9G034-7	5
Title: BENZENE CONCENTRATION (MW-2)	**Approved By:** F.P.	**Project No.:** 575-9G034		

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
	3/5/01	23.74	26.85	18.1	8.75
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
	3/5/01	18.67	21.56	13.38	8.18
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
	3/5/01	19.60	21.04	13.86	7.18

NOTES:
All elevation and depth data presented in feet.

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

All concentrations in ug/l (PPB).												
SAMPLE NUMBER	**DATE**	**OIL & GREASE**	**TPH-MO**	**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
	3/5/01	---	<400	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<20
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
	3/5/01	---	<400	**65,000**	**6,500**	<13	**730**	**3,100**	**4,100**	**18,400**	**4,720**	<20
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*	**370**
	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
	3/5/01	---	<400	<500	<400	<1	<0.5	<0.5	<0.5	<0.5	ND*	<20

NOTES
Sample concentrations reported in ug/l (micrograms per liter).
TPH-MO denotes Total Petroleum Hydrocarbons as Motor Oil, TPH-G denotes TPH as Gasoline, TPH-D denotes TPH 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 anaytes 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	<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
	3/5/01	<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**
	3/5/01	**200**	<13	<13	**100**	**34**	**1,200**	**370**	<13	**2,300**	**700**
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
	3/5/01	<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

WELL PURGING AND SAMPLING DATA

WELL NO: MW-1

DATE: 3/5/01 | PROJECT NAME: CALTRANS 6th & CASTRO | PROJECT NO: 96034

WEATHER CONDITIONS: PT CLDY 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) 18.10 FT.

LENGTH OF WATER 5.14 FT. | CALCULATED ONE WELL VOLUME[1]: .87 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 ☐ °F ☐ °C	SPECIFIC CONDUCT. µS	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
0940	INITIAL	14.0	609	4.00			CL- SLIGHT TURB BOT	
0942	.9	17.6	605	7.95				
0944	1.8	17.5	807	7.98				
0946	2.70	17.6	804	7.97				

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

NOTES:

SAMPLE TIME: 0956 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

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WELL PURGING AND SAMPLING DATA

WELL NO: MW-2

DATE: 3/5/01 | PROJECT NAME: CALTRANS 6TH + CASTRO | PROJECT NO: 46034

WEATHER CONDITIONS: PTLY SUNNY, WARM

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) 13.38 FT.

LENGTH OF WATER 9.04 FT. | CALCULATED ONE WELL VOLUME[1]: 1.53 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 ☐ °F ☐ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
1041	INITIAL	18	710	8.14				
1044	1.5	17.8	723	7.88				
1048	3.0	18.1	709	7.81				
1051	4.5	18.1	721	7.84				

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

NOTES:

SAMPLE TIME: 1055 ID# MW-2

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

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WELL PURGING AND SAMPLING DATA

WELL NO: MW-3

DATE: 3/5/01 | PROJECT NAME: CALTRANS 6TH & CASTRO | PROJECT NO: 4C034

WEATHER CONDITIONS: PTLY SUNNY, WARM

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

SAMPLE TYPE: ■ GROUNDWATER ☐ WASTEWATER ☐ SURFACE WATER ☐ OTHER

WELL DEPTH (TOC)	22.00 FT.	DEPTH TO WATER BEFORE PURGING (TOC)	13.86 FT.
LENGTH OF WATER	8.14 FT.	CALCULATED ONE WELL VOLUME[1]:	1.38 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/DEICN 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 ☐ °F ☐ °C	SPECIFIC CONDUCT.	pH	DISS. OXYGEN	TURBIDITY (NTUs)	WATER APPEAR CL=CLEAR CO=CLOUDY TU=TURBID	REMARKS (EVIDENT ODOR, COLOR, PID)
1013	INITIAL	18.1	600	8.15				
1016	1.5	17.7	564	7.77				
1018	3.0	17.8	571	7.80				
1020	4.5	17.8	585	7.78				

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

NOTES:

SAMPLE TIME: 1020 ID# MW-3

DUPLICATE ■ TIME: 1130 ID#: MW-10

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

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Centrum Analytical Laboratories, Inc.
CERTIFIED HAZARDOUS WASTE TESTING MOBILE & IN HOUSE LABORATORIES

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

Date Sampled: 03/05/01
Date Received: 03/06/01
Job Number: 18053

Project: Caltrans 6th & Castro

CASE NARRATIVE

The following information applies to samples which were received on 03/06/01 :

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.

This report is a re-issue. The data herein is a revised reporting of the results for these analyses and supersedes any other version issued previously. The date of re-issue is 03/30/01.

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.

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Lead by ICP

Client:	PSI	Date Sampled:	03/05/01
Project:	Caltrans 6th & Castro	Date Received:	03/06/01
Job No.:	18053	Date Digested:	03/07/01
Matrix:	Water	Date Analyzed:	03/13/01
Analyst:	RVJ	Batch Number:	6010W1904
		Method Number:	6010B

	Reporting Limit	Lead
Sample ID	mg/L	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

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QC Sample Report - Metals

Matrix: Water
Batch #: 6010W1904

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Compound	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Lead	1.0	96.72	75 - 125	Pass

Analytical Notes:

Batch Precision Results

MS/MSD Sample ID: MW-10

Compound	Spike Sample Recovery mg/L	Spike Duplicate Recovery mg/L	Relative Percent Difference (RPD)	Upper Control Limit RPD	Pass/Fail
Lead	0.9457	0.9589	1%	20%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Centrum Analytical Laboratories, Inc.

Modified 8015 - Fuel Screen

Client:	PSI	Date Sampled:	03/05/01
Project:	Caltrans 6th & Castro	Date Received:	03/06/01
Job No.:	18053	Date Extracted:	03/08/01
Matrix:	Water	Date Analyzed:	03/12/01
Analyst:	JB	Batch Number:	8015DW2169

Fuel Identified:	Diesel	Motor Oil	Detection Limits
Units:	mg/L	mg/L	mg/L
Blank	ND	ND	0.40
MW-1	ND	ND	0.40
MW-2	6.5	ND	0.40
MW-3	ND	ND	0.40
MW-10	ND	ND	0.40

Centrum Analytical Laboratories, Inc.

QC Sample Report - EPA 8015M Diesel

Matrix: Water
Batch #: 8015DW2169

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Diesel	0.8	97	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	0.78	0.82	5%	25%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Centrum Analytical Laboratories, Inc.

Modified 8015 - Total Volatile Hydrocarbons as Gasoline

Client: PSI
Project: Caltrans 6th & Castro
Job No.: 18053
Matrix: Water
Analyst: MBH

Date Sampled: 03/05/01
Date Received: 03/06/01
Date Analyzed: 03/11/01
Batch Number: M48015GW383

Sample ID	Detection Limit	Petroleum Hydrocarbons as Gasoline
	mg/L	mg/L
Method Blank	0.5	ND
MW-1	0.5	ND
MW-2	0.5	65
MW-3	0.5	ND
MW-10	0.5	ND

Centrum Analytical Laboratories, Inc.

QC Sample Report - EPA 8015M Gasoline by GCMS

Matrix: Water
Batch #: M48015GW383

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration mg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
Gasoline	2.0	87	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	1.74	1.81	4%	25%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

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EPA 8260 - Volatile Organics

Client: PSI
Project: Caltrans 6th & Castro
Job No.: 18053
Matrix: Water
Analyst: JL

Date Sampled: 03/05/01
Date Received: 03/06/01
Date Analyzed: 03/09-13/01
Batch Number: MS48260W2441
MS48260W2444
MS48260W2445

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

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EPA 8260 - Volatile Organics

Client:	PSI	Date Sampled:	03/05/01
Project:	Caltrans 6th & Castro	Date Received:	03/06/01
Job No.:	18053	Date Analyzed:	03/09-13/01
Matrix:	Water	Batch Number:	MS48260W2441
Analyst:	JL		MS48260W2444
			MS48260W2445

	Sample ID:	Blank	MW-1	MW-3	MW-10
Compounds	DL	µg/L	µg/L	µg/L	µg/L
cis-1,3-Dichloropropene	0.5	ND	ND	ND	ND
trans-1,3-Dichloropropene	0.5	ND	ND	ND	ND
Diisopropyl Ether (DIPE)	5.0	ND	ND	ND	ND
Ethylbenzene	0.5	ND	ND	ND	ND
Ethyl tert-Butyl Ether (EtBE)	5.0	ND	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND	ND
2-Hexanone	10	ND	ND	ND	ND
Isopropylbenzene	0.5	ND	ND	ND	ND
p-Isopropyltoluene	0.5	ND	ND	ND	ND
Methylene chloride	50	ND	ND	ND	ND
4-Methyl-2-pentanone	5.0	ND	ND	ND	ND
Methyl-tert-butyl ether (MtBE)	1.0	ND	ND	ND	ND
Napthalene	2.0	ND	ND	ND	ND
n-Propylbenzene	0.5	ND	ND	ND	ND
Styrene	0.5	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	0.5	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	1.0	ND	ND	ND	ND
Tetrachloroethene	0.5	ND	ND	ND	ND
Toluene	0.5	ND	ND	ND	ND
1,2,3-Trichlorobenzene	2.0	ND	ND	ND	ND
1,2,4-Trichlorobenzene	2.0	ND	ND	ND	ND
1,1,1-Trichloroethane	0.5	ND	ND	ND	ND
1,1,2-Trichloroethane	0.5	ND	ND	ND	ND
Trichloroethene	0.5	ND	ND	ND	ND
1,2,3-Trichloropropane	0.5	ND	ND	ND	ND
Trichlorofluoromethane	0.5	ND	ND	ND	ND
Trichlorotrifluoroethane	5.0	ND	ND	ND	ND
1,2,4-Trimethylbenzene	2.0	ND	ND	ND	ND
1,3,5-Trimethylbenzene	2.0	ND	ND	ND	ND
Vinyl chloride	0.5	ND	ND	ND	ND
Xylenes, m-,p-	1.0	ND	ND	ND	ND
Xylene, o-	0.5	ND	ND	ND	ND

Surrogates (% recovery) Limits: 80 - 130

Sample ID:	Blank	MW-1	MW-3	MW-10
Dibromofluoromethane	104	111	114	113
Toluene-d8	101	101	100	95
Bromofluorobenzene	96	104	104	104

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EPA 8260 - Volatile Organics

Client: PSI
Project: Caltrans 6th & Castro
Job No.: 18053
Matrix: Water
Analyst: JL

Date Sampled: 03/05/01
Date Received: 03/06/01
Date Analyzed: 03/09-13/01
Batch Number: MS48260W2441
MS48260W2444
MS48260W2445

	Sample ID:	MW-2
Compounds	**DL**	**µg/L**
Acetone	1250	ND
tert-Amyl Methyl Ether (TAME)	125	ND
Benzene	13	**730**
Bromobenzene	25	ND
Bromochloromethane	25	ND
Bromodichloromethane	13	ND
Bromoform	13	ND
Bromomethane	13	ND
tert-Butanol (TBA)	250	ND
2-Butanone (MEK)	250	ND
n-Butylbenzene	13	**200**
sec-Butylbenzene	13	ND
tert-Butylbenzene	13	ND
Carbon disulfide	250	ND
Carbon tetrachloride	13	ND
Chlorobenzene	13	ND
Chloroethane	13	ND
Chloroform	13	ND
Chloromethane	13	ND
2-Chlorotoluene	13	ND
4-Chlorotoluene	13	ND
Dibromochloromethane	13	ND
1,2-Dibromoethane	13	ND
1,2-Dibromo-3-chloropropane	250	ND
Dibromomethane	13	ND
1,2-Dichlorobenzene	13	ND
1,3-Dichlorobenzene	13	ND
1,4-Dichlorobenzene	13	ND
Dichlorodifluoromethane	13	ND
1,1-Dichloroethane	13	ND
1,2-Dichloroethane	13	ND
1,1-Dichloroethene	13	ND
cis-1,2-Dichloroethene	13	ND
trans-1,2-Dichloroethene	13	ND
1,2-Dichloropropane	13	ND
1,3-Dichloropropane	13	ND
2,2-Dichloropropane	13	ND
1,1-Dichloropropene	13	ND

Centrum Analytical Laboratories, Inc.

EPA 8260 - Volatile Organics

Client: PSI
Project: Caltrans 6th & Castro
Job No.: 18053
Matrix: Water
Analyst: JL

Date Sampled: 03/05/01
Date Received: 03/06/01
Date Analyzed: 03/09-13/01
Batch Number: MS48260W2441
MS48260W2444
MS48260W2445

Sample ID:		MW-2
Compounds	DL	µg/L
cis-1,3-Dichloropropene	13	ND
trans-1,3-Dichloropropene	13	ND
Diisopropyl Ether (DIPE)	125	ND
Ethylbenzene	13	3,100
Ethyl tert-Butyl Ether (EtBE)	125	ND
Hexachlorobutadiene	13	ND
2-Hexanone	250	ND
Isopropylbenzene	13	100
p-Isopropyltoluene	13	34
Methylene chloride	1250	ND
4-Methyl-2-pentanone	125	ND
Methyl-tert-butyl ether (MtBE)	13	ND
Napthalene	50	1,200
n-Propylbenzene	13	370
Styrene	13	ND
1,1,1,2-Tetrachloroethane	13	ND
1,1,2,2-Tetrachloroethane	25	ND
Tetrachloroethene	13	ND
Toluene	13	4,100
1,2,3-Trichlorobenzene	50	ND
1,2,4-Trichlorobenzene	50	ND
1,1,1-Trichloroethane	13	ND
1,1,2-Trichloroethane	13	ND
Trichloroethene	13	ND
1,2,3-Trichloropropane	13	ND
Trichlorofluoromethane	13	ND
Trichlorotrifluoroethane	125	ND
1,2,4-Trimethylbenzene	50	2,300
1,3,5-Trimethylbenzene	50	700
Vinyl chloride	13	ND
Xylenes, m-,p-	25	15,000
Xylene,o-	13	3,400

Surrogates (% recovery) Limits: 80 - 130

Sample ID:	MW-2
Dibromofluoromethane	104
Toluene-d8	104
Bromofluorobenzene	94

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QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: MS48260W2441

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	110	59 - 172	Pass
Benzene	20	121	66 - 142	Pass
Trichloroethene	20	109	71 - 137	Pass
Toluene	20	115	59 - 139	Pass
Chlorobenzene	20	106	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	21.97	21.67	1%	22%	Pass
Benzene	24.21	24.23	0%	21%	Pass
Trichloroethene	21.81	21.91	0%	24%	Pass
Toluene	23.17	22.54	3%	21%	Pass
Chlorobenzene	21.24	20.88	2%	21%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Centrum Analytical Laboratories, Inc.

QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: MS48260W2444

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	110	59 - 172	Pass
Benzene	20	111	66 - 142	Pass
Trichloroethene	20	109	71 - 137	Pass
Toluene	20	111	59 - 139	Pass
Chlorobenzene	20	112	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	22.06	22.42	2%	22%	Pass
Benzene	22.27	22.96	3%	21%	Pass
Trichloroethene	21.92	22.15	1%	24%	Pass
Toluene	22.25	23.21	4%	21%	Pass
Chlorobenzene	22.41	22.00	2%	21%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Centrum
Analytical
Laboratories, Inc.

QC Sample Report - EPA Method 8260

Matrix: Water
Batch #: MS48260W2445

Batch Accuracy Results

Sample ID: Laboratory Control Sample

Analyte	Spike Concentration µg/L	% Recovery LCS	Acceptance Limits % Recovery	Pass/Fail
1,1-Dichloroethene	20	122	59 - 172	Pass
Benzene	20	122	66 - 142	Pass
Trichloroethene	20	134	71 - 137	Pass
Toluene	20	124	59 - 139	Pass
Chlorobenzene	20	124	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	24.38	23.15	5%	22%	Pass
Benzene	24.50	22.78	7%	21%	Pass
Trichloroethene	26.70	23.97	11%	24%	Pass
Toluene	25.02	23.17	8%	21%	Pass
Chlorobenzene	24.73	22.70	9%	21%	Pass

Analytical Notes:

MS: Matrix Spike Sample
MSD: Matrix Spike Duplicate

Chain of Custody Record

Centrum Job # 18053

Centrum Analytical Laboratories, Inc.

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Page 1 of 1

Project No:	Project Name:
960314	CALTRANS 6th + CASTRO

Project Manager:	Phone:	Fax:
FRANK POSS	510 785-1111	510-785-1192

Client Name: (Report and Billing)	Address: (Report and Billing)
PSI	1320 W. WINTON AVE HAYWARD, CA 94545

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	3/5/01	0950	H_2O		3 VOA 2-250 IN
2	MW-2	↓	1055	↓		↓
3	MW-3		1020			
4	MW-10		1130			

Please Circle Analyses Requested

8015M: Diesel, Fuel Screen, Carbon Chain	8015M: Gas only	8021B: BTEX/MtBE Only	418.1 (TRPH), 413.2, 1664	TPH as - EPA 8015m	GC or GCMS Volatiles by 5035*	GCMS: 8250, 8021B, 624, 524.2	GCMS: MtBE Conf. Only, BTEX/Oxygenates Only	GCMS: 8270C, 625	8080: Pesticides, PCBs, Pest/PCB	Pb	Metals: Title 22 (CAM), RCRA, PP	pH, TDS, TSS, Conductivity	Flashpoint, Hex Cr
X	X			X		X				X			
X	X			X		X				X			
X	X			X		X				X			
X	X			X		X				X			

Turn-Around Time

- ☐ 24 Hr. RUSH*
- ☐ 48 Hr. RUSH*
- ☒ Normal TAT

*Requires PRIOR approval, additional charges apply

Requested due date: _____

Remarks/Special Instructions

1) Relinquished by: (Sample's Signature)	Date:	Time:	3) Relinquished by:	Date:	Time:
CHRIS MERRITT	3/6/01	1630			
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: FEDEX	Date:	Time:
			6) Received for Laboratory by:	Date: 3/6	Time: 930A

To be completed by Laboratory personnel:

Samples chilled? ☒ Yes ☐ No ☐ From Field

Custody seals? ☐ Yes ☒ No

All sample containers intact? ☒ Yes ☐ No

☐ Courier ☐ UPS ☐ Fed Ex ☐ Hand carried

Sample Disposal

- ☐ Client will pick up
- ☐ Return to client
- ☒ Lab disposal

Laboratory Notes: FILTER Pb SAMPLES

Sample Locator No.: VOA/Δ

White Copy - Original (Accompanies Samples) Yellow Copy - Centrum Files Pink Copy - Centrum duplicate Gold Copy - Client Copy