REPORT
GROUNDWATER MONITORING
SEPTEMBER 24, 1993
FORMER CHEVRON SERVICE STATION
1911 TELEGRAPH AVENUE
FOR CARTER HAWLEY HALE

Job No. 12606-068-128
October 20, 1993

DAMES & MOORE

b:CBS5.008

DAMES & MOORE
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October 20, 1993
Job No. 12606-068-128

Carter Hawley Hale
Construction Department
3880 North Mission Road
Los Angeles, CA 90031

Attention: Mr. Howard Wallach, Vice President
Construction Management

Dear Howard:

Report
Groundwater Monitoring
September 24, 1993
Former Chevron Service Station
1911 Telegraph Avenue
For Carter Hawley Hale

1.0 INTRODUCTION

This report, prepared by Dames & Moore, presents the results of September 24, 1993 groundwater sampling of three monitoring wells at the former Chevron Service Station site at 1911 Telegraph Avenue in Oakland, California (Plate 1). Groundwater monitoring was performed at the request of Carter Hawley Hale in response to the Regional Water Quality Control Board, San Francisco Bay Region's (RWQCB's) request for further assessment of groundwater conditions at the site. The field investigation was conducted in accordance with Dames & Moore's proposal to Carter Hawley Hale dated March 30, 1993 and amended May 13, 1993.

2.0 BACKGROUND

In 1988, four underground storage tanks (USTs) were removed from the site under Dames & Moore's direction. Of the four tanks, three were fuel tanks and one was a waste oil tank. During the course of the tank removal operation, contaminated soil was also removed and disposed. The excavation was then backfilled with clean soil. The Alameda County Department of Environmental Health (ACDEH), which is the lead regulatory agency for

leaking UST cases in Oakland, oversaw the removal of the tanks and contaminated soil and the placement of the backfill. The ACDEH then requested that one monitoring well be installed to assess potential impacts of the leaking UST's on the quality of groundwater beneath the site. The well was installed and the results of analyses performed on groundwater samples from this well did not detect significant contamination. Subsequently the ACDEH recommended to the RWQCB that the site be closed.

In a letter to Carter Hawley Hale dated October 13, 1992, the RWQCB requested further investigation of the groundwater conditions at the site. In response to this letter, Dames & Moore installed monitoring wells MW-2, MW-3, and MW-4 on June 14, 1993. Based on the results of Dames & Moore's subsurface investigation, it appears that soil and groundwater at the site have been impacted by gasoline hydrocarbons. The highest concentrations in both soil and groundwater were observed in well MW-2 which, based on June 1993 groundwater levels, appeared to be cross-gradient of the former gasoline UST locations and upgradient of the former waste oil UST location. However, groundwater flow data in the site vicinity suggested that flow directions may vary significantly with time. Based on September 24, 1993 data, MW-2 appears to be located downgradient of the former UST locations. The chlorinated solvents 1,1-dichloroethylene (1,1-DCE), tetrachloroethylene (or perchloroethylene, PCE), and trichloroethylene (TCE) were detected in the groundwater sample from well MW-2, which appears to be cross- to up-gradient with respect to the former waste oil tank location. PCE was also detected in well MW-3, which was located cross-gradient of the gasoline USTs and upgradient of the waste oil UST in June 1993.

3.0 GROUNDWATER MONITORING ACTIVITIES

As part of the recent groundwater monitoring activities, Dames & Moore measured water levels and collected groundwater samples on September 24, 1993. Groundwater elevations calculated from the water level readings are included in Table 1. These elevations were used to estimate the groundwater elevation contours and approximate groundwater flow direction beneath the site, as presented on Plate 2. A review of the Plate 2 shows that groundwater appears to flow in a northeasterly direction with an approximate gradient of 0.004. This

differs somewhat from June 1993 data, which indicated that the flow direction was to the east-southeast with a gradient of 0.002.

Groundwater samples were collected from monitoring wells MW-2, MW-3, and MW-4 in accordance with sampling procedure described in Appendix A. Field measurements of groundwater temperature, pH, specific conductivity, and turbidity are presented in Table 2. All samples were chemically analyzed by D&M Laboratories in Petaluma, California, which is a California certified laboratory. The analyses included Total Petroleum Hydrocarbons as gasoline (TPH-gasoline) by EPA Method 8015 (Modified) and volatile organic compounds (VOCs) be EPA Method 624.

Table 3 summarizes the analytical results for the groundwater samples. The laboratory results are included in Appendix B. In general, the results of the September 1993 chemical analyses were similar to those performed in June 1993. Exceptions to this conclusion included:

- Xylenes, 1,1-DCE, and PCE were reported for well MW-2 during the June 1993 sampling event but were not detected in September 1993, possibly due to raised detection limits;
- Benzene was detected at a trace level in well MW-3 in the September 1993 sampling round, but was not previously detected; and
- TPH-gasoline was reported for well MW-4 in September 1993 but not in June 1993.

Concentrations of benzene, PCE, and TCE in well MW-2 exceeded California Maximum Contaminant Levels (MCLs) for drinking water. The only other constituents present above the MCLs were PCE in well MW-3 and benzene in well MW-4.

-oOo-

We appreciate the opportunity to perform environmental services for Carter Hawley Hale. Please call us if you have any questions or require further assistance.

Very truly yours,

DAMES & MOORE

for E. Essi Esmaili, Ph.D., R.G.
Associate

Charles B. Snell, C.E.G.
Project Geologist

TABLE 1
WELL CONSTRUCTION AND WATER LEVELS
GROUNDWATER MONITORING - THIRD QUARTER 1993
FORMER CHEVRON SERVICE STATION
1911 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

Well Number	Screen Interval (feet bgs)	Top of Casing Elevation (feet msl)	Date	Depth to Water (feet bgs)	Water Elevation (feet msl)
MW-2	14-24	24.01	6/21/93	16.55	7.46
			6/29/93	16.50	7.51
			9/24/93	17.05	6.96
MW-3	15-30	25.75	6/21/93	18.10	7.65
			6/29/93	18.10	7.65
			9/24/93	18.45	7.30
MW-4	14-24	22.09	6/21/93	14.75	7.34
			6/29/93	14.75	7.34
			9/24/93	15.21	6.88

bgs = below ground surface
msl = mean sea level

TABLE 2
SUMMARY OF FIELD MEASUREMENTS
GROUNDWATER MONITORING - THIRD QUARTER 1993
FORMER CHEVRON SERVICE STATION
1911 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

Well Number	Temperature (°C)	pH	Specific Conductivity (μmhos/cm)	Turbidity (N.T.U.)
MW-2	22.7	7.0	1500	>200
MW-3	25.0	6.9	700	>200
MW-4	25.4	6.7	2300	110

Notes: Measurements indicate stabilized groundwater conditions after purging and prior to sample collection.

Field work conducted 9/24/93.

TABLE 3
SUMMARY OF GROUNDWATER CHEMICAL ANALYSIS
GROUNDWATER MONITORING - THIRD QUARTER 1993
FORMER CHEVRON SERVICE STATION
1911 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

Well Number	Sample Date	TPH-Gas	B	T	E	X	1,1-DCE	PCE	TCE
MW-2	6/21/93	11	3.60 (2.90)	0.015 (0.013)	0.11 (0.11)	0.011 (0.0072)	0.0012	0.008	0.089
	9/24/93	7.6[2]	4.00	0.019	0.15	ND[26]	ND[26]	ND[25]	0.078
MW-3	6/21/93	ND	ND (ND)	ND (ND)	ND (ND)	ND (ND)	ND	0.0084	ND
	9/24/93	ND	0.00084	ND	ND	ND	ND	0.0074	ND
MW-4	6/21/93	ND	0.0015 (0.0015)	ND (ND)	ND (ND)	ND (ND)	ND	ND	ND
	9/24/93	0.35	0.011	ND	ND	ND	ND	ND	ND
Detection Limits		0.05	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0005
MCL		--	0.001	--	0.680	1.75	0.006	0.005	0.005

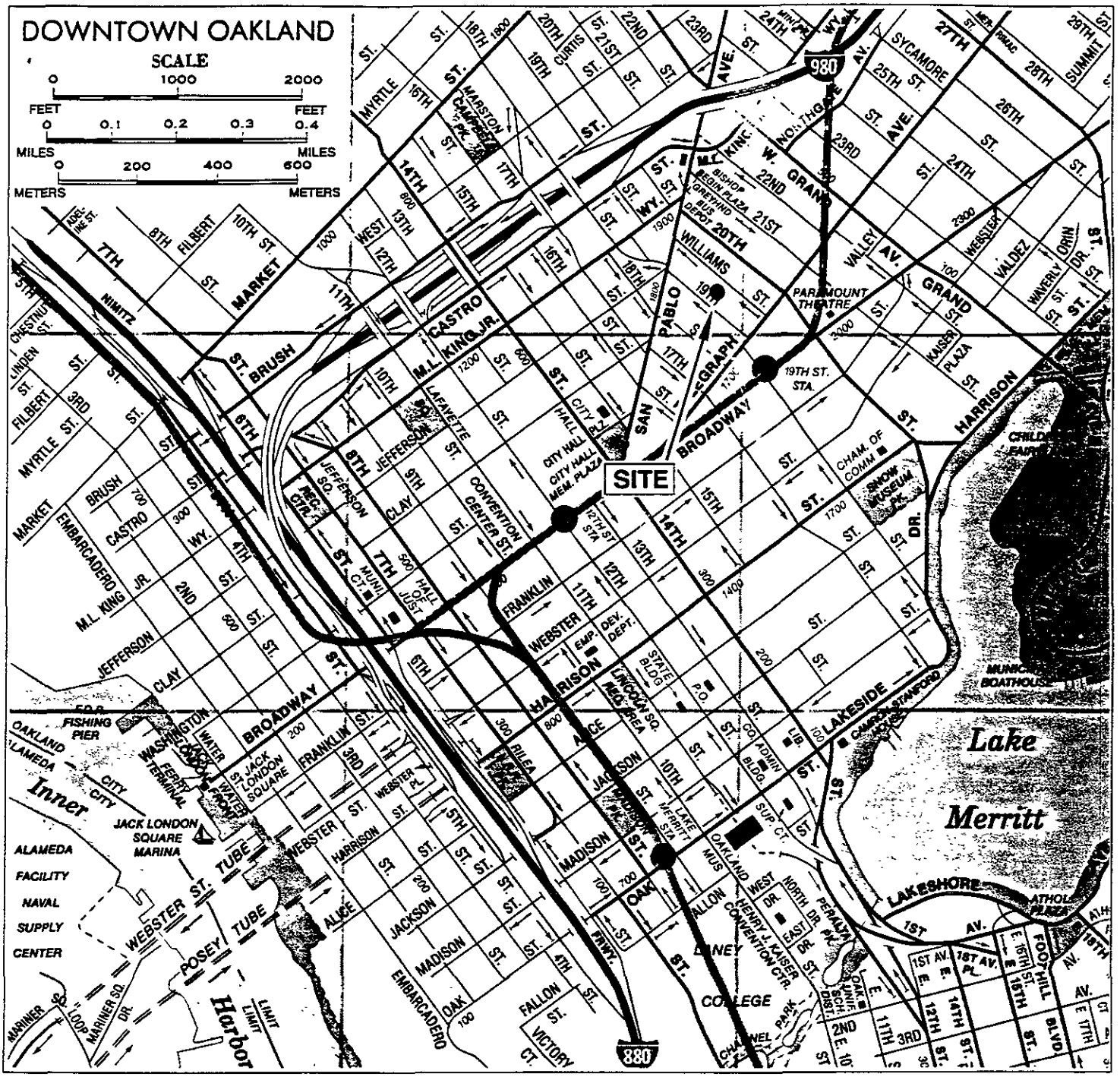
Key:

All values are in milligrams per liter. mg/l

TPH-Gas = Total petroleum hydrocarbons as gasoline by EPA Method 8015M
BTEX = Benzene, toluene, ethylbenzene and xylenes by EPA Method 624 and EPA Method 8020 (in parentheses)
1,1-DCE = 1,1-Dichloroethylene
PCE = Tetrachloroethylene
TCE = Trichloroethylene
MCL = California Maximum Contaminant Level, Primary Drinking Water Standards
ND[x] = Not detected. Detection limit raised by a factor of x.
-- = MCL not established

Notes: 1) 1,1-DCE, PCE, and TCE were the only non-BTEX constituents detected in the volatile organic compound analyses (EPA Method 624)

2) D&M Laboratories reported that the TPH-gasoline value for well MW-2 is primarily due to the presence of a large benzene peak, and that no gasoline pattern was observed.



SOURCE: Oakland, Berkeley California, California State Automobile Association, 1980.

SITE LOCATION MAP

Carter Hawley Hale
Former Chevron Service Station
1911 Telegraph Ave., Oakland CA

October 1993
12606-068-128

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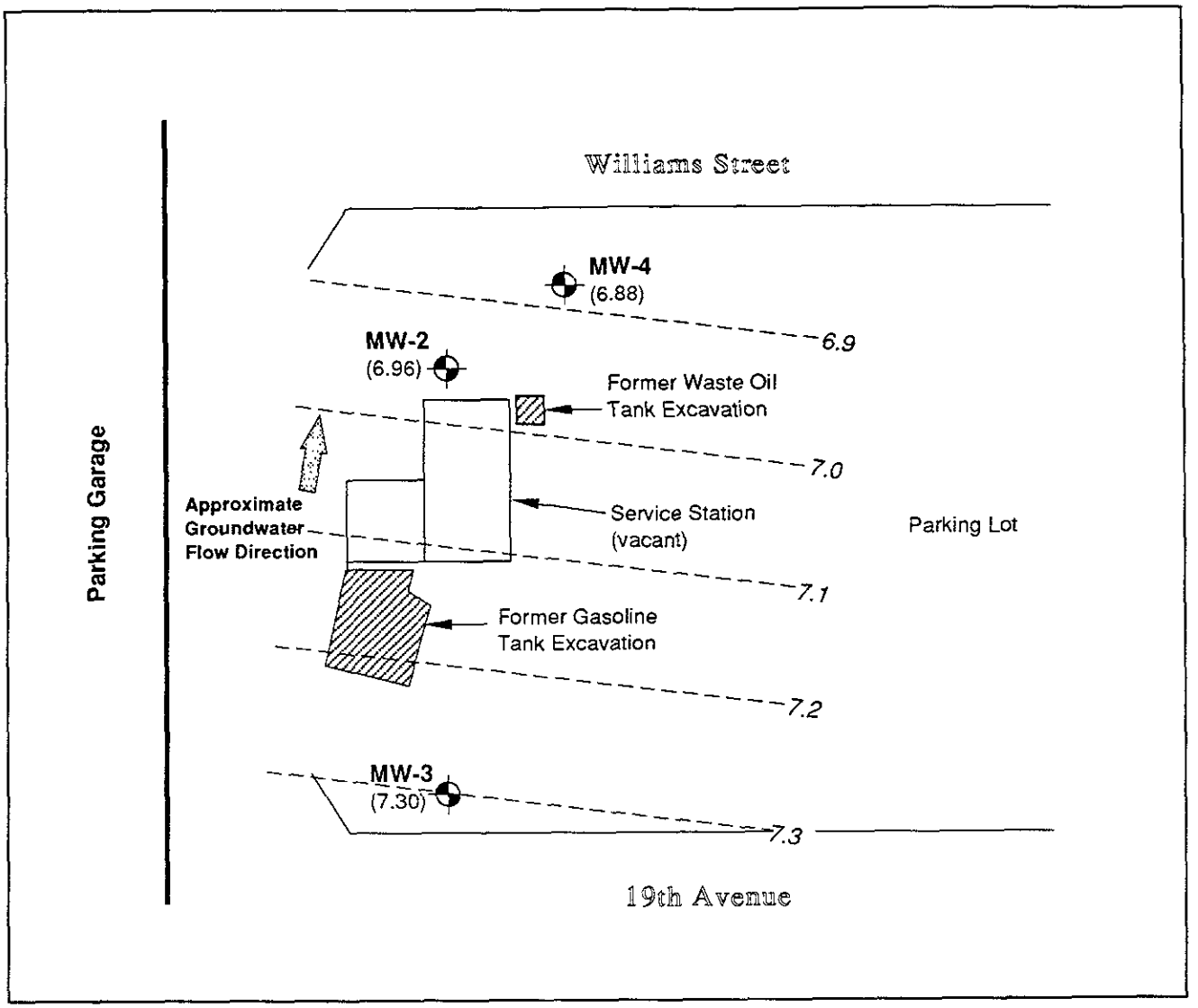
PLATE 1



Elevations refer to mean sea level.

KEY

Monitoring Well Location

(7.30) Groundwater Elevation (feet)

7.0 – – – Groundwater Surface Elevation Contour

N

0 100 feet

GROUNDWATER CONTOURS
SEPTEMBER 24, 1993

Carter Hawley Hale
October 1993 Former Chevron Service Station
12606-068-128 1911 Telegraph Ave., Oakland, CA

DAMES & MOORE PLATE 2

APPENDIX A

GROUNDWATER SAMPLING PROCEDURE

APPENDIX A

Groundwater Sampling Procedure

Groundwater monitoring activities consist of collection of water level and hydrocarbon thickness measurements, if present, using an electronic water-level indicator, and collection and analysis of groundwater samples from each of three wells located at the site. The samples are analyzed by Dames & Moore Laboratories of Petaluma, California, which is a California certified laboratory. Analyses include total petroleum hydrocarbons (TPH) as gasoline by EPA Method 8015-modified and volatile organic compounds by EPA Method 624.

In order to obtain samples representative of groundwater in the formation, each monitoring well is purged prior to sample collection until (1) at least three casing volumes of water have been removed and (2) the field-measured parameters including pH, specific conductivity and temperature have substantially stabilized. As used here, the term "casing volume" means the volume of water being stored inside the well casing at the time the well is visited for purging and sampling. One casing volume (CV) is calculated using:

$CV = (\pi r^2 d)(7.48\ gal/ft^3)$, where:

π = 3.14;

r = the radius measured from the center of the well to the inside surface of the well casing (feet); and

d = the difference in depth between the water level in the well and the bottom of the well casing (feet).

The monitoring wells were purged prior to sample collection using a portable gasoline-powered (banjo) pump. Purge water was stored in properly labelled 55-gallon drums until analytical laboratory results are received and proper disposal can be arranged.

Water samples are collected from monitoring wells using disposable Teflon bailers. A total of four water samples are collected; one from each of the three existing wells, and one trip blank for quality assurance. Water samples for TPH-gasoline and VOC analyses were collected in 40-ml glass vials equipped with Teflon-lined septa using appropriate techniques to minimize aeration of the sample and eliminate head space. Samples were preserved with hydrochloric acid. Sampling equipment was decontaminated prior to each use. Samples are placed immediately on ice and kept in a cooler until delivered, accompanied the travel blank, to the laboratory for analysis. Chain-of-custody procedures were maintained for all samples collected.

APPENDIX B

LABORATORY RESULTS
CHAIN OF CUSTODY

D&M LABORATORIES
ENVIRONMENTAL AND INDUSTRIAL HYGIENE SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245
FAX (707) 763-4065

October 5, 1993

Chuck Snell
Dames & Moore-San Francisco
221 Main Street
Suite 600
San Francisco, CA 94105

Customer Project: 04979-990 Carter Hawley Hale
Laboratory Job: L9309231

On September 25, 1993 we received 4 sample(s) for analysis. Samples were analyzed by the following method(s):

Volatile Organic Compounds (EPA 624)

Gasoline (8015 Modified)

Robin Cochran
Project Manager

Robert Peak
Laboratory Director
Robert Peak

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 04979-990 Carter Hawley Hale
Sample Id: MW-2
Lab Id: L9309231-1

Collected: 24-SEP-93
Received: 25-SEP-93
Reported: 05-OCT-93

Parameter	Value	Limit	Units	Extracted	Analyzed
624W					
Benzene	4000	250	ug/L	28-SEP-93	28-SEP-93
Bromodichloromethane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Bromoform	ND <	25.	ug/L	28-SEP-93	28-SEP-93
Bromomethane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Carbon Tetrachloride	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Chlorobenzene	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Chloroethane	ND <	25.	ug/L	28-SEP-93	28-SEP-93
Chloroform	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Chloromethane	ND <	25.	ug/L	28-SEP-93	28-SEP-93
Dibromochloromethane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
1,2-Dichlorobenzene	ND <	13.	ug/L	28-SEP-93	28-SEP-93
1,3-Dichlorobenzene	ND <	13.	ug/L	28-SEP-93	28-SEP-93
1,4-Dichlorobenzene	ND <	13.	ug/L	28-SEP-93	28-SEP-93
1,1-Dichloroethane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
1,2-Dichloroethane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
1,1-Dichloroethene	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Trans-1,2-Dichloroethene	ND <	13.	ug/L	28-SEP-93	28-SEP-93
1,2-Dichloropropane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Cis-1,3-Dichloropropene	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Trans-1,3-Dichloropropene	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Ethyl Benzene	150	13.	ug/L	28-SEP-93	28-SEP-93
Methylene Chloride	ND <	25.	ug/L	28-SEP-93	28-SEP-93
1,1,2,2-Tetrachloroethane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Tetrachloroethene	ND <	25.	ug/L	28-SEP-93	28-SEP-93
Toluene	19.	13.	ug/L	28-SEP-93	28-SEP-93
1,1,1-Trichloroethane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
1,1,2-Trichloroethane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Trichloroethene	78.	13.	ug/L	28-SEP-93	28-SEP-93
Trichlorofluoromethane	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Vinyl Chloride	ND <	13.	ug/L	28-SEP-93	28-SEP-93
Xylenes	ND <	13.	ug/L	28-SEP-93	28-SEP-93
-	-				
Comments:	See footnote #16.				
-	-				
8015GW					
Gasoline	7.6	0.050	mg/L	01-OCT-93	01-OCT-93
-	The gasoline value is primarily due to the presence of				
Comments:	a large benzene peak, no gasoline pattern is observed.				

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 04979-990 Carter Hawley Hale
Sample Id: MW-3
Lab Id: L9309231-2

Collected: 24-SEP-93
Received: 25-SEP-93
Reported: 05-OCT-93

Parameter	Value	Limit	Units	Extracted	Analyzed
624W					
Benzene	0.84	0.50	ug/L	27-SEP-93	27-SEP-93
Bromodichloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Bromoform	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Bromomethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Carbon Tetrachloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloroethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Chloroform	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloromethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Dibromochloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloropropane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Ethyl Benzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Methylene Chloride	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Tetrachloroethene	7.4	1.0	ug/L	27-SEP-93	27-SEP-93
Toluene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichlorofluoromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Vinyl Chloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Xylenes	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
-	-				
Comments:	None				
-	-				
8015GW					
Gasoline	ND <	0.050	mg/L	28-SEP-93	28-SEP-93
-	-				
Comments:	None				

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 04979-990 Carter Hawley Hale
Sample Id: MW-4
Lab Id: L9309231-3

Collected: 24-SEP-93
Received: 25-SEP-93
Reported: 05-OCT-93

Parameter	Value	Limit	Units	Extracted	Analyzed
624W					
Benzene	11.	0.50	ug/L	27-SEP-93	27-SEP-93
Bromodichloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Bromoform	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Bromomethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Carbon Tetrachloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloroethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Chloroform	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloromethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Dibromochloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloropropane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Ethyl Benzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Methylene Chloride	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Tetrachloroethene	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Toluene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichlorofluoromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Vinyl Chloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Xylenes	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Comments:	None				
8015GW					
Gasoline	0.35	0.050	mg/L	28-SEP-93	28-SEP-93
Comments:	None				

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 04979-990 Carter Hawley Hale
Sample Id: TRIP BLANK
Lab Id: L9309231-4

Collected: 24-SEP-93
Received: 25-SEP-93
Reported: 05-OCT-93

Parameter	Value	Limit	Units	Extracted	Analyzed
624W					
Benzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Bromodichloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Bromoform	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Bromomethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Carbon Tetrachloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloroethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Chloroform	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloromethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Dibromochloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloropropane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Ethyl Benzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Methylene Chloride	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Tetrachloroethene	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Toluene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichlorofluoromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Vinyl Chloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Xylenes	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
-	-				
Comments:	None				
-	-				
8015GW					
Gasoline	ND <	0.050	mg/L	28-SEP-93	28-SEP-93
-	-				
Comments:	None				

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG2672-8

Collected: 27-SEP-93
Received: 20-SEP-93
Reported: 01-OCT-93

Parameter	Value	Limit	Units	Extracted	Analyzed
8015GW					
Gasoline	ND <	0.050	mg/L	28-SEP-93	28-SEP-93
-	-				
Comments:	None				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG2672-9

Reported: 06-OCT-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
8015GW							
Gasoline	1.02	mg/L	1	mg/L	102 %	28-SEP-93	28-SEP-93
-	-						
Comments:	None						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG2672-14

Collected: 01-OCT-93
Received: 05-OCT-93
Reported: 05-OCT-93

Parameter	Value	Limit	Units	Extracted	Analyzed
GAS/BTEX-W					
Benzene	ND <	0.50	ug/L	01-OCT-93	01-OCT-93
Ethyl Benzene	ND <	0.50	ug/L	01-OCT-93	01-OCT-93
Toluene	ND <	0.50	ug/L	01-OCT-93	01-OCT-93
Xylene	ND <	0.50	ug/L	01-OCT-93	01-OCT-93
Gasoline	ND <	0.050	mg/L	01-OCT-93	01-OCT-93
-	-				
Comments:	None				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG2672-15

Reported: 05-OCT-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-W							
Benzene	17.5	ug/L	20	ug/L	88	01-OCT-93	01-OCT-93
Ethyl Benzene	17.3	ug/L	20	ug/L	87	01-OCT-93	01-OCT-93
Toluene	17.3	ug/L	20	ug/L	87	01-OCT-93	01-OCT-93
Xylene	51.0	ug/L	60	ug/L	85	01-OCT-93	01-OCT-93
Gasoline	0.900	mg/L	1	mg/L	90	01-OCT-93	01-OCT-93
-	-						
Comments:	None						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG2672-10

Collected: 14-SEP-93
Received: 20-SEP-93
Reported: 01-OCT-93

Parameter	Value	Limit	Units	Extracted	Analyzed
8015GW					
Gasoline	ND <	0.050	mg/L	22-SEP-93	22-SEP-93
Comments:	MX=L9309160-1				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG2672-11

Reported: 28-SEP-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-W							
Gasoline	0.930	mg/L	1	mg/L	93	22-SEP-93	22-SEP-93

Comments: None

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG2672-12

Reported: 28-SEP-93

Parameter	Value	Units	%Rec	RPD	Extracted	Analyzed
GAS/BTEX-W						
Gasoline	1.02	mg/L	102	9.7	22-SEP-93	22-SEP-93

Comments: None

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG2743-4

Collected:
Received: 28-SEP-93
Reported: 28-SEP-93

624W

Parameter	Value	Limit	Units	Extracted	Analyzed
Benzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Bromodichloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Bromoform	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Bromomethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Carbon Tetrachloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloroethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Chloroform	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloromethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Dibromochloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloropropane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Ethyl Benzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Methylene Chloride	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Tetrachloroethene	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Toluene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichlorofluoromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Vinyl Chloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Xylenes	ND <	0.50	ug/L	27-SEP-93	27-SEP-93

Comments: None

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG2743-5

Reported: 28-SEP-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
624WQC							
Benzene	9.70	ug/L	10	ug/L	97.0%	27-SEP-93	27-SEP-93
Chlorobenzene	9.88	ug/L	10	ug/L	98.8%	27-SEP-93	27-SEP-93
1,1-Dichloroethene	9.11	ug/L	10	ug/L	91.1%	27-SEP-93	27-SEP-93
Toluene	9.66	ug/L	10	ug/L	96.6%	27-SEP-93	27-SEP-93
Trichloroethene	9.66	ug/L	10	ug/L	96.6%	27-SEP-93	27-SEP-93
Comments:	None						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG2743-6

Collected:
Received: 28-SEP-93
Reported: 28-SEP-93

624W

Parameter	Value	Limit	Units	Extracted	Analyzed
Benzene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Bromodichloromethane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Bromoform	ND <	1.0	ug/L	28-SEP-93	28-SEP-93
Bromomethane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Carbon Tetrachloride	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Chlorobenzene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Chloroethane	ND <	1.0	ug/L	28-SEP-93	28-SEP-93
Chloroform	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Chloromethane	ND <	1.0	ug/L	28-SEP-93	28-SEP-93
Dibromochloromethane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
1,1-Dichloroethane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
1,2-Dichloroethane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
1,1-Dichloroethene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
1,2-Dichloropropane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Ethyl Benzene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Methylene Chloride	ND <	1.0	ug/L	28-SEP-93	28-SEP-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Tetrachloroethene	ND <	1.0	ug/L	28-SEP-93	28-SEP-93
Toluene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Trichloroethene	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Trichlorofluoromethane	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Vinyl Chloride	ND <	0.50	ug/L	28-SEP-93	28-SEP-93
Xylenes	ND <	0.50	ug/L	28-SEP-93	28-SEP-93

Comments: None

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG2743-7

Reported: 28-SEP-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
624WQC							
Benzene	9.41	ug/L	10	ug/L	94.1%	28-SEP-93	28-SEP-93
Chlorobenzene	9.48	ug/L	10	ug/L	94.8%	28-SEP-93	28-SEP-93
1,1-Dichloroethene	8.24	ug/L	10	ug/L	82.4%	28-SEP-93	28-SEP-93
Toluene	9.17	ug/L	10	ug/L	91.7%	28-SEP-93	28-SEP-93
Trichloroethene	9.23	ug/L	10	ug/L	92.3%	28-SEP-93	28-SEP-93
-	-						
Comments:	None						
-	-						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG2743-1

Collected:
Received: 28-SEP-93
Reported: 28-SEP-93

624W

Parameter	Value	Limit	Units	Extracted	Analyzed
Benzene	0.84	0.50	ug/L	27-SEP-93	27-SEP-93
Bromodichloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Bromoform	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Bromomethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Carbon Tetrachloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloroethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Chloroform	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Chloromethane	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
Dibromochloromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,2-Dichloropropane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Ethyl Benzene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Methylene Chloride	ND <	1.0	ug/L	27-SEP-93	27-SEP-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Tetrachloroethene	7.4	1.0	ug/L	27-SEP-93	27-SEP-93
Toluene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichloroethene	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Trichlorofluoromethane	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Vinyl Chloride	ND <	0.50	ug/L	27-SEP-93	27-SEP-93
Xylenes	ND <	0.50	ug/L	27-SEP-93	27-SEP-93

Comments: MX = L9309231-2.

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG2743-2

Reported: 29-SEP-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
624WQC							
Benzene	10.2	ug/L	10	ug/L	93.6%	28-SEP-93	28-SEP-93
Chlorobenzene	9.72	ug/L	10	ug/L	97.2%	28-SEP-93	28-SEP-93
1,1-Dichloroethene	9.56	ug/L	10	ug/L	95.6%	28-SEP-93	28-SEP-93
Toluene	10.4	ug/L	10	ug/L	104%	28-SEP-93	28-SEP-93
Trichloroethene	9.39	ug/L	10	ug/L	93.9%	28-SEP-93	28-SEP-93
-	-						
Comments:	None						
-	-						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG2743-3

Reported: 29-SEP-93

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
624WQC						
Benzene	10.7	ug/L	98.6%	4.8	28-SEP-93	28-SEP-93
Chlorobenzene	10.0	ug/L	100%	2.8	28-SEP-93	28-SEP-93
1,1-Dichloroethene	8.52	ug/L	85.2%	12.	28-SEP-93	28-SEP-93
Toluene	10.4	ug/L	104%	0.0	28-SEP-93	28-SEP-93
Trichloroethene	9.61	ug/L	96.1%	2.3	28-SEP-93	28-SEP-93
Comments:	None					

QUALITY CONTROL REPORT

In order to provide you with the means of assessing the quality of the data in our report, **D&M Laboratories** reports the results of Quality Control samples analyzed with your samples.

The Quality Control samples provide the following QC information:

The Method Blank (**MB**) monitors the level of contamination introduced by reagents or glassware. A minimum of one MB is run per batch of 20 samples or less.

The Method Blank Spike (**MBS**) measures the accuracy of analytical techniques and is not subject to matrix effects. A minimum of one MBS is run per batch of 20 samples or less.

The Matrix Spike (**MS**) measures the accuracy of the method for a matrix type. Due to the high variability within matrix types and the necessity of batching samples from varied sources, matrix spike information from one sample is not necessarily relevant to other samples on the batch. A minimum of two matrix spikes, MS and MSD, are run per batch of 20 samples or less. The sample selected for the matrix spike is designated **MX**, and may or may not have been submitted by the recipient of this report.

The Matrix Spike Duplicate (**MSD**), along with the MS, is used to monitor the precision (**RPD**) of the method and to indicate possible non homogeneity of the sample matrix.

Equations used for determining percent recovery and relative percent difference (RPD) are as follows:

MBS % Recovery = (MBS result / MBS spike level) x 100
MS % Recovery = [(MS result - MX result) / MS spike level] x 100
RPD ={ | MS result - MSD result | / [(MS result + MSD result) / 2]} x 100

We continue to strive to improve the quality of service to our clients. We welcome any questions or comments you may have about this information, or about **D&M Laboratories** in general. Please contact a Project Manager for further information.

LABORATORY FOOTNOTES

SAMPLE RECEIPT

(1) Sample containers were received broken.
(2) The samples were not properly refrigerated during transport to the laboratory.
(3) The samples were not properly preserved.
(4) The information on the chain-of-custody does not match the information on the sample containers.
(5) The samples were received after the required holding time.

BLANK RESULT

(6) This analyte was detected in the method blank above the reporting limit.
(7) This analyte was detected in the trip blank above the reporting limit.

SPIKE RECOVERY

(8) The matrix spike recovery was out-of-control due to the matrix effects. The MBS recovery was acceptable.
(9) The matrix spike recovery is not significant due to the high concentration of the analyte in the sample relative to the amount of spike added.
(10) The method of standard additions was performed and confirmed a matrix interference.

DUPLICATE RESULT

(11) The variation in spike recoveries reflects the nonhomogeneity of the sample.

SURROGATE RECOVERY

(12) Accurate quantitation of the surrogate was not possible due to the extent of sample dilution.
(13) The surrogate recovery was high due to the presence of interfering compounds in the sample.
(14) The surrogate recovery was low due to matrix effects. The analysis was repeated with similiar results.

DETECTION LIMITS

(15) The detection limit was raised due to the insufficient amount of sample available for analysis.
(16) The detection limit was raised due to the dilution required by high-level analytes in the sample.
(17) The detection limit was raised due to the dilution required by high-level non-target analytes in the sample.

CHROMATOGRAPHY NOTES

(18) These compounds co-elute; therefore, a total value is reported for both.
(19) The sample was tentatively identified and semi-quantitated based on the best chromatographic fit from the available standards.
(20) The sample chromatograph resembled an "aged" hydrocarbon product.
(21) Hydrocarbons were found in the range of gasoline and diesel but did not resemble the gasoline or diesel fingerprint.

HOLDING TIME

(22) This sample was extracted outside of the required holding time.
(23) This sample was analyzed outside of the required holding time.

L9309237

CHAIN-OF-CUSTODY RECORD

WHITE COPY - Original (Accompanies Samples) YELLOW COPY - Collector PINK COPY - Project Manager

Boring or Well Number	Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA (624)/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (M) gas	TITLE 22 METALS	WET Test	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TCLP	pH	ASBESTOS	FIELD NOTES:	Total Number Of Containers	Laboratory Note Number
mw-2		18.5	1430	Water	40ml VOA			X			X											6	
mw-3		18.65	1545	↓	↓			X			X											8	
mw-4		16.4	1240	↓	↓			X			X											6	
Trip Blank		-	1100	↓	↓			X			X											4	

SAMPLES RECEIVED IN GOOD CONDITION
NO BROKEN OR LEAKING CONTAINERS

COOLER CUSTODY SEALS INTACT ☐ NOT INTACT ☐ N/A

COOLER TEMPERATURE ~~Cold~~

Courier - 24 VOAs

RECEIVED
D&M LABORATORIES
'93 SEP 25 PM 1:58

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
C. Mitsuyasu	9/24/93 / 1630	~~UPS #~~ Cal. Overnite 5910 ~~0433-3619-684~~
~~UPS # Cal. Overnite 5910 0433-3619-684~~		J. Jackson

LABORATORY NOTES:

preserved w/ HCl.

Normal turnaround

ANALYTICAL LABORATORY: D+M Lab

LABORATORY CONTACT: Robin Cochran

D&M CONTACT: Chuck Snell PHONE: 415 243-3809

JOB NO.: 04979-990 SHEET 1 OF 1

PROJECT Carter Hawley Hale

LOCATION 1911 Telegraph Ave, Oakland

COLLECTOR C. Mitsuyasu DATE OF COLLECTION 9/24/93

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