REPORT
MONITORING WELL INSTALLATION AND SAMPLING
FORMER CHEVRON SERVICE STATION
1911 TELEGRAPH AVENUE
FOR CARTER HAWLEY HALE

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

DAMES & MOORE

b:CBS4.042

DAMES & MOORE

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August 20, 1993

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

Attention: Mr. Howard Wallach, Vice President
Construction Management

Report
Monitoring Well Installation and Sampling
Former Chevron Service Station
1911 Telegraph Avenue
For Carter Hawley Hale

1.0 INTRODUCTION

This report, prepared by Dames & Moore, presents the results of installation and sampling of three groundwater monitoring wells at the former Chevron Service Station site at 1911 Telegraph Avenue in Oakland, California (Plate 1). This investigation 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. This field investigation was conducted in accordance with Dames & Moore's proposal 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 closure of the site.

In a letter, dated October 13, 1992, the RWQCB requested further investigation of the groundwater conditions at the site. This investigation was conducted in response to that letter.

3.0 PURPOSE AND SCOPE

The purpose of the investigation was to collect information on groundwater gradient, flow direction and chemistry necessary to evaluate the possible presence of fuel hydrocarbons beneath the site. The investigation consisted of the following tasks:

- Drilling three soil borings to depths of 25 to 30 feet below ground surface (bgs) at the locations shown on Plate 2;
- Field screening of soil samples from the borings using a photoionization detector (PID);
- Collecting a total of four soil samples from the borings at selected depths (based on field screening) for analyses of total petroleum hydrocarbon as gasoline (TPH-gas) by EPA Method 8015M and benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8020;
- Installing and developing a 4-inch PVC monitoring well in each soil boring;
- Surveying each well and measuring water levels with respect to mean sea level;

- Collecting one water sample from each of the three wells for analyses of TPH-gas by EPA Method 8015M, BTEX by EPA Method 8020, and volatile organic compounds (VOCs) by EPA Method 624;

- Evaluating the data generated as a result of this investigation; and,

- Preparing this report presenting our investigative methods, findings, and conclusions.

4.0 FIELD INVESTIGATION

Dames & Moore conducted the field investigation at the site on June 14 through June 21, 1993. All drilling, well installation and development was conducted under the supervision of a Dames & Moore geologist. Field procedures are described in the following sections.

4.1 DRILLING AND SOIL SAMPLING

Dames & Moore contacted Underground Service Alert (USA) and contracted West Coast Locators of San Jose, California to locate underground utilities near the boring locations. Gregg Drilling and Testing, Inc. of Pacheco, California, was contracted to drill, install, and develop the three monitoring wells, designated as MW-2 through MW-4. The locations of the three wells are shown on Plate 2.

Pilot borings were advanced using a truck-mounted drill rig equipped with 6-inch-diameter hollow-stem augers. Continuous core samples were collected from each boring from 5 feet bgs to the total depth of the boring, using a 5-foot-long, 2½" inner diameter split-spoon sampler. The total depth of the pilot borings at MW-2 and MW-3 was 30 feet, and 25 feet at MW-4. Boring logs for each well are presented in Appendix A. Soils were classified in accordance with the Unified Soil Classification System described on Plate A-4 in Appendix A.

Soil samples were collected from selected depths from MW-2, MW-3, and MW-4. A PID was used to screen the core immediately upon retrieval, with the readings for each interval recorded directly onto the boring logs. Soil samples were then collected from the intervals with the highest readings. Samples were packed into 3" stainless steel soil sample rings with both ends tightly covered with teflon seals and plastic endcaps. Samples were packed to minimize headspace in the sample rings. Soil rings were sealed in plastic sample bags and placed in a cooler with ice for preservation during shipment to D&M Laboratories in Petaluma, California. A chain-of-custody (COC) record was prepared and shipped with the samples to the laboratory. A copy of the COC record is included in Appendix B.

4.2 MONITORING WELL INSTALLATION

Pilot borings were reamed with a 10¾-inch hollow-stem auger to depths of 25 feet bgs at MW-2, 30 feet bgs at MW-3, and 24 feet bgs at MW-4. Monitoring wells were constructed of 4-inch diameter schedule 40 PVC, with 0.020-inch slotted schedule 40 PVC used in the screened interval of each well. The annular space between the borehole and the screen was backfilled with Monterey #3 sandpack from the bottom of each boring to a depth of at least one foot above the top of the screened interval. A one foot-thick bentonite seal was placed in the annulus above the sandpack, and the remainder of the annulus grouted with Portland cement to six inches bgs. The well was completed slightly above ground surface with a locking cap and traffic-rated Christy Box embedded in concrete. Construction details for each of the three monitoring wells are presented in Appendix A.

4.3 WELL DEVELOPMENT AND GROUNDWATER SAMPLING

The wells were developed and purged on June 21, 1993, by Gregg Drilling and Testing, Inc. Wells were developed by surging and bailing. A Dames & Moore geologist monitored the pH, conductivity, temperature, and turbidity of the well water during development. After approximately six casing volumes were removed and the water parameters stabilized, the wells were allowed to recharge for one hour before sampling. Groundwater samples submitted for chemical analysis were collected using disposable bailers and bottom emptying devices. Forty-milliliter (ml) glass vials were filled, labeled, sealed in plastic bags, and

placed in a cooler with ice for preservation during shipment to D&M Laboratories. A chain-of-custody (COC) record was prepared and shipped with the samples to the laboratory. A copy of the COC record is included in Appendix A.

4.4 WATER LEVEL MONITORING

On June 21 and June 29, 1993, water levels were measured in each well using an electronic water level indicator; these levels are summarized in Table 1. The elevation of each well was surveyed with respect to mean sea level by Samuel Kushner, a licensed land surveyor from Oakland, California.

4.5 SOIL AND WATER DISPOSAL

Drill cuttings and wastewater generated during the field program (drilling, sampling, decontamination and development) were placed in DOT-approved 55-gallon drums and stored on-site pending evaluation of disposal options.

5.0 INVESTIGATION RESULTS

5.1 GROUNDWATER GRADIENT AND FLOW DIRECTION

Based on the measured water levels, groundwater at the site appears to flow to the east-southeast with an approximate gradient of 0.002. Groundwater contours are shown on Plate 7.

Prior to drilling, Dames & Moore conducted a brief review of files at the RWQCB and had several discussions with Mr. Tom Peacock and Ms. Susan Hugo of the ACDEH regarding available groundwater flow data in the site vicinity. Nearby sites for which groundwater flow data are available are listed below:

- Greyhound Terminal, Castro Street and San Pablo Avenue (1,200 feet northwest of site): Groundwater flow direction ranged from northeast to southwest due to the

presence of a pumping-induced groundwater divide at the site (S. Hugo, personal communication).

- Goodyear, 2025 Telegraph Avenue (600 feet north-northwest of site): Groundwater flow direction was to the southeast in April 1993 (T. Peacock, personal communication).

- Exxon Service Station, 2225 Telegraph Avenue (1,100 feet north-northeast of site): Groundwater flow direction was to south and southwest in October 1990, changed to radially inward flow by February 1992 because of remediation-related groundwater pumping (Harding Lawson Associates, 1992)

- City Blue, 1700 Jefferson Street (1,000 feet southwest of site): Groundwater flow was to the north (date unknown, groundwater pumping is ongoing at site) (T. Peacock, personal communication).

As indicated by these flow data, groundwater flow in the site vicinity is highly variable, which likely results from potential factors such as remediation-related pumping, leakage from underground water pipelines, underground structures (such as the nearby Bay Area Rapid Transit (BART) tunnel and station), and other miscellaneous influences.

5.2 CHEMICAL RESULTS FOR SOIL

Chemical test results for soil samples are presented in Table 2. Benzene was detected in the 13 and 18 foot samples from MW-2, and the 10 foot sample from MW-4, at 1.70, 0.019, and 0.0078 milligrams per kilogram (mg/kg), respectively. Toluene, ethylbenzene, and xylenes were detected in only the 13 foot sample collected from MW-2, at concentrations of 0.042, 0.120, and 0.190 mg/kg, respectively. The detection limits for benzene, toluene, ethylbenzene and xylenes were each 0.005 mg/kg. TPH-gas was detected in only the 13 foot sample from MW-2 at a concentration of 0.77 mg/kg. The detection limit for TPH-gas was 0.2 mg/kg. The laboratory results are included in Appendix B.

As indicated on the soil boring logs (Plates 3, 4 and 5), high PID readings were observed from the soil core in boring MW-3, with significantly lower detections observed for borings MW-2 and MW-3. However, hydrocarbon odors were only observed in borings MW-2 and MW-4, which corresponds with the TPH-gas detections in soil samples from those borings. Based on these data, it appears that the PID detections in boring MW-3 were not due to the presence of gasoline or other hydrocarbons with moderate to low odor thresholds. Dames & Moore's experience with these conditions at other sites suggests that the high PID detections in boring MW-3 may have been due to moisture conditions or other, possibly naturally occurring, organic compounds in the soil vapor.

5.3 CHEMICAL RESULTS FOR GROUNDWATER

Table 3 summarizes the analytical results for the groundwater samples. The laboratory results are included in Appendix B. The only TPH-gas detection occurred in well MW-2 at a concentration of 11 mg/l. Except for a low concentration of benzene in well MW-4, BTEX detections were also limited to well MW-2. Maximum BTEX concentrations from EPA Method 624 and 8020 analyses for well MW-2 were as follows: 3.9 mg/l benzene, 0.015 mg/l toluene, 0.11 mg/l ethylbenzene, and 0.011 mg/l xylenes. Other constituents detected in the EPA Method 624 analyses included the chlorinated solvents 1,1-dichloroethylene (1,1-DCE), tetrachloroethylene (or perchloroethylene, PCE), and trichloroethylene (TCE). With the exception of a low PCE detection in well MW-3 (0.0084 mg/l), the chlorinated solvents were limited in occurrence to well MW-2.

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.

6.0 SUMMARY AND CONCLUSIONS

Based on the results of Dames & Moore's recent 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

present groundwater levels, appears 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 suggest that flow directions may vary significantly with time. The chlorinated solvents 1,1-DCE, PCE, and 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 is presently located cross-gradient of the gasoline USTs and upgradient of the waste oil UST.

7.0 REFERENCES

Harding Lawson Associates, 1992, Quarterly Technical Report, First Quarter of 1992, Exxon Station, 2225 Telegraph Avenue, Oakland, California, Job No. 2251,162.03, May 21.

Hugo, Susan, 1993, ACDEH, personal communication, June 8.

Peacock, Tom, 1993, Alameda County Department of Environmental Health (ACDEH), personal communication, June 14.

-oOo-

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

Very truly yours,

DAMES & MOORE

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

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

TABLE 1
WELL CONSTRUCTION AND WATER LEVELS
FORMER CHEVRON SERVICE STATION
1911 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

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

bgs = below ground surface
msl = mean sea level

TABLE 2
SUMMARY OF SOIL CHEMICAL ANALYSES
FORMER CHEVRON SERVICE STATION
1911 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

Well Number	Sample Number	Depth (feet bgs)	TPH-Gas (mg/kg)	B	T	E	X
				(mg/kg)			
MW-2	MW-2 - 2A	13	0.77	1.700	0.042	0.120	0.190
MW-2	MW-2 - 2B	18	ND	0.019	ND	ND	ND
MW-3	MW-3 - 3C	20	ND	ND	ND	ND	ND
MW-4	MW-4 - 4A	10	ND	0.0078	ND	ND	ND
Detection Limits			0.2	0.005	0.005	0.005	0.005

Key:

bgs = below ground surface
TPH-gas = Total petroleum hydrocarbons by EPA Method 8015M
BTEX = Benzene, toluene, ethylbenzene and xylenes by EPA Method 8020
mg/kg = milligram per kilogram, equivalent to parts per million

TABLE 3
SUMMARY OF GROUNDWATER CHEMICAL ANALYSIS
FORMER CHEVRON SERVICE STATION
1911 TELEGRAPH AVENUE
OAKLAND, CALIFORNIA

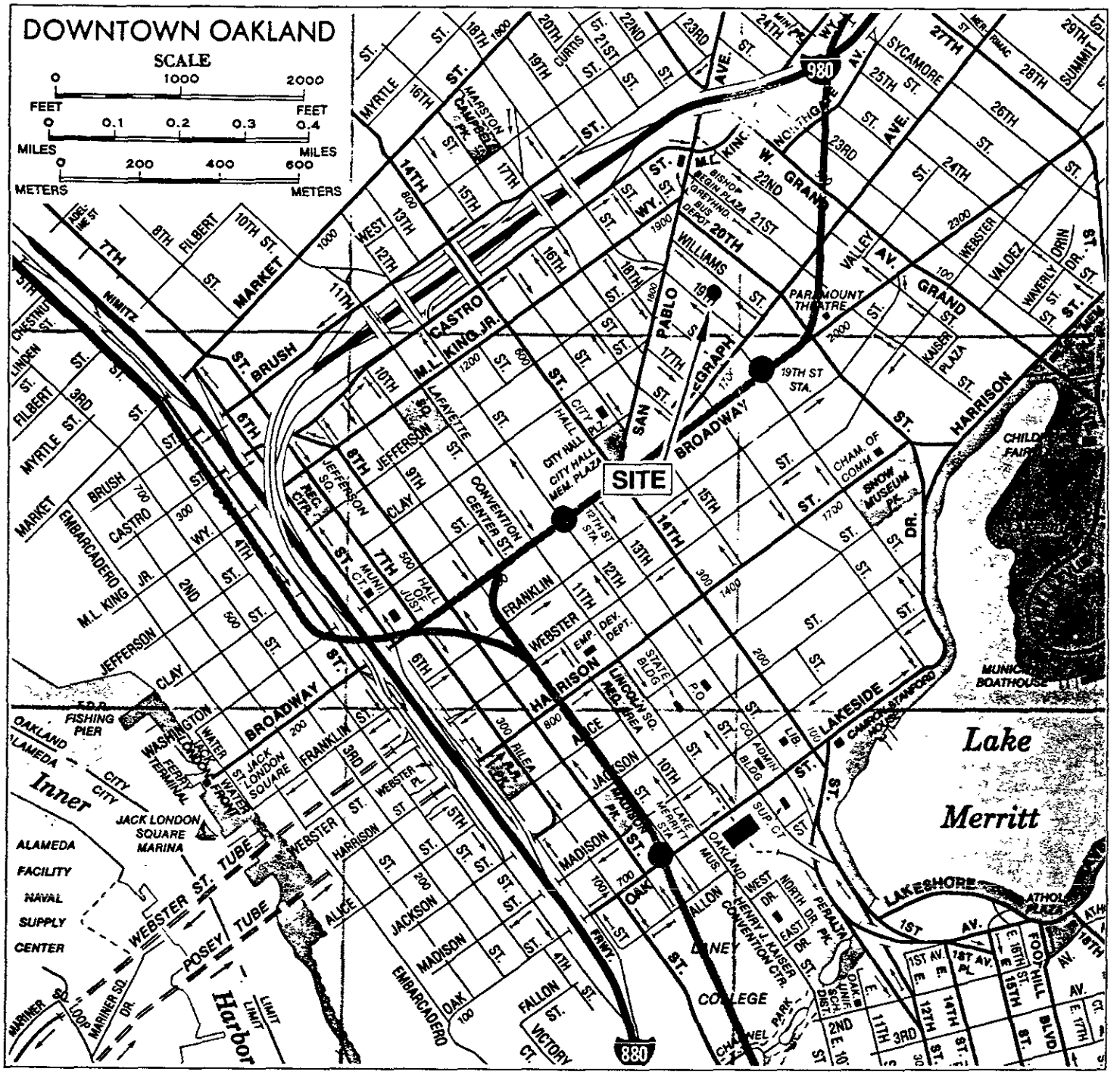
Well Number	TPH-Gas	B	T	E	X	1,1-DCE	PCE	TCE
MW-2	11	3.60 (2.90)	0.015 (0.013)	0.11 (0.11)	0.011 (0.0072)	0.0012	0.008	0.089
MW-3	ND	ND (ND)	ND (ND)	ND (ND)	ND (ND)	ND	0.0084	ND
MW-4	ND	0.0015 (0.0015)	ND (ND)	ND (ND)	ND (ND)	ND	ND	ND
Detection Limits	0.05	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.0005
MCL	--	0.001	--	0.680	1.75	0.006	0.005	0.005

Key:

All values are in milligrams per liter.

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	=	Not detected
--	=	MCL not established

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



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

N

SITE LOCATION MAP

August 1993
12606-068-128

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

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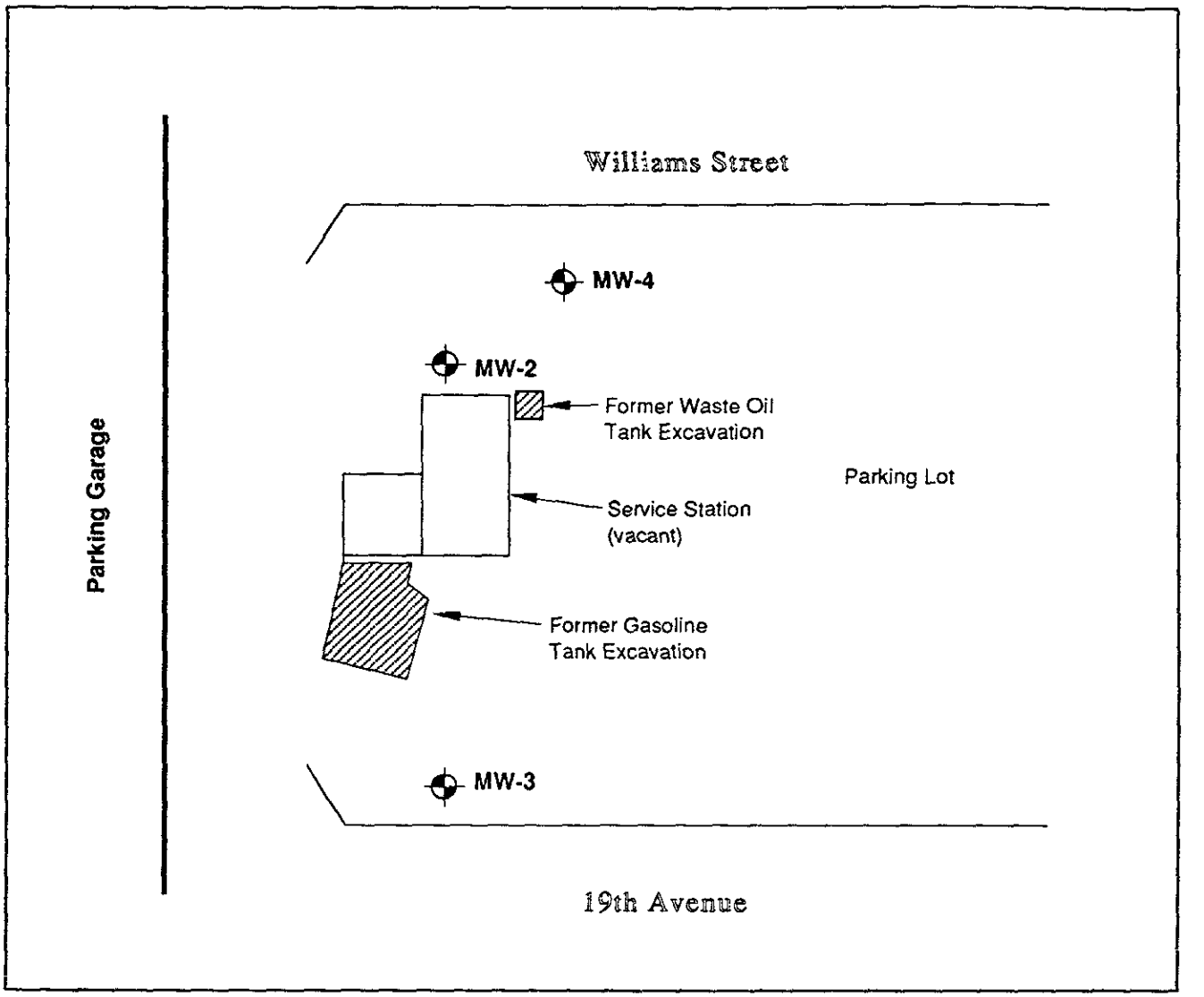
PLATE 1



KEY

Monitoring Well Location

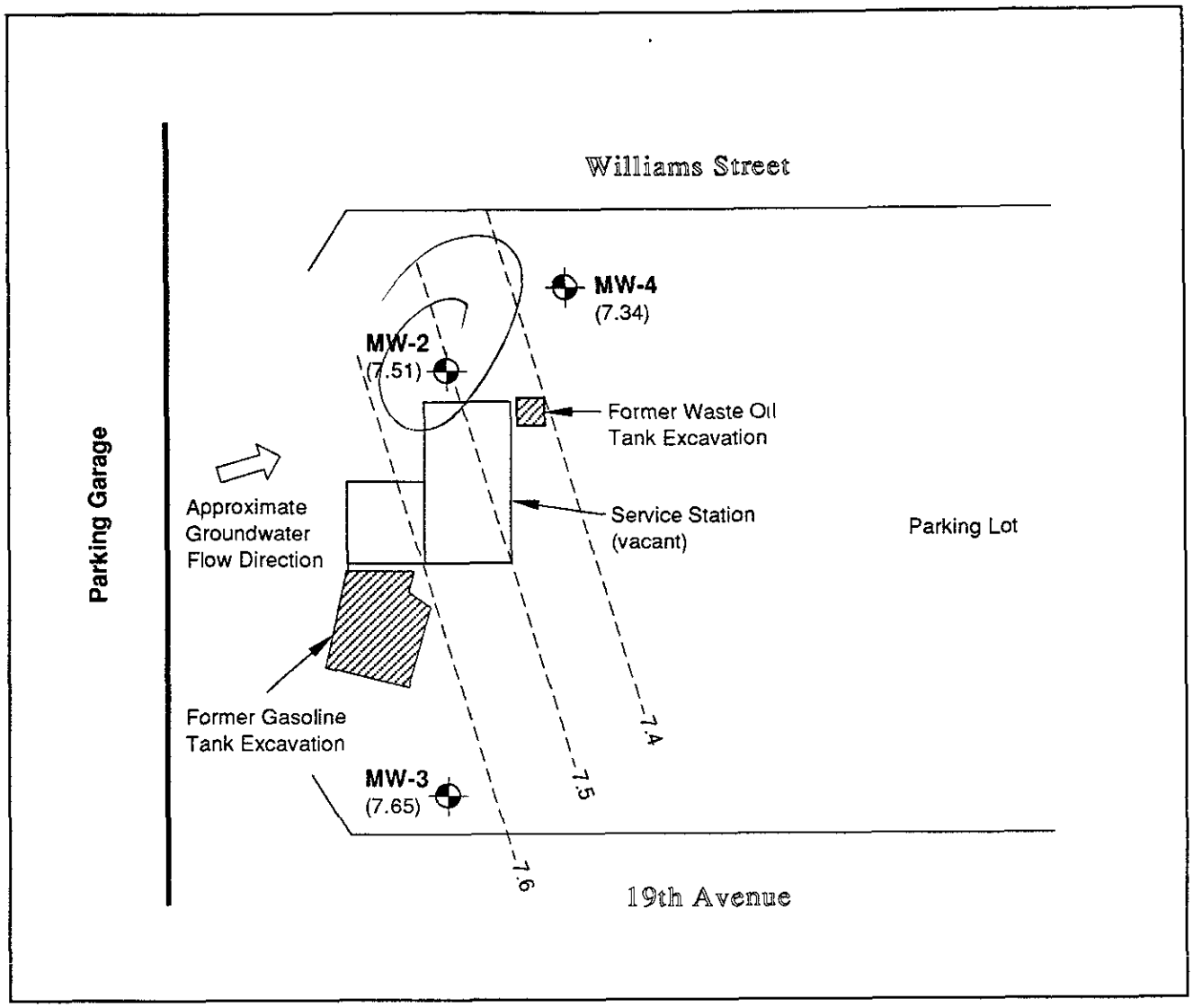
N

0 100 feet

SITE PLAN

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

DAMES & MOORE PLATE 2



Elevations refer to mean sea level.

KEY

Monitoring Well Location

(7.51) Groundwater Elevation (feet)

7.6 – – – Groundwater Surface Elevation Contour

N

0 100 feet

GROUNDWATER CONTOURS
JUNE 29, 1993

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

August 1993
12606-068-128

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PLATE 3

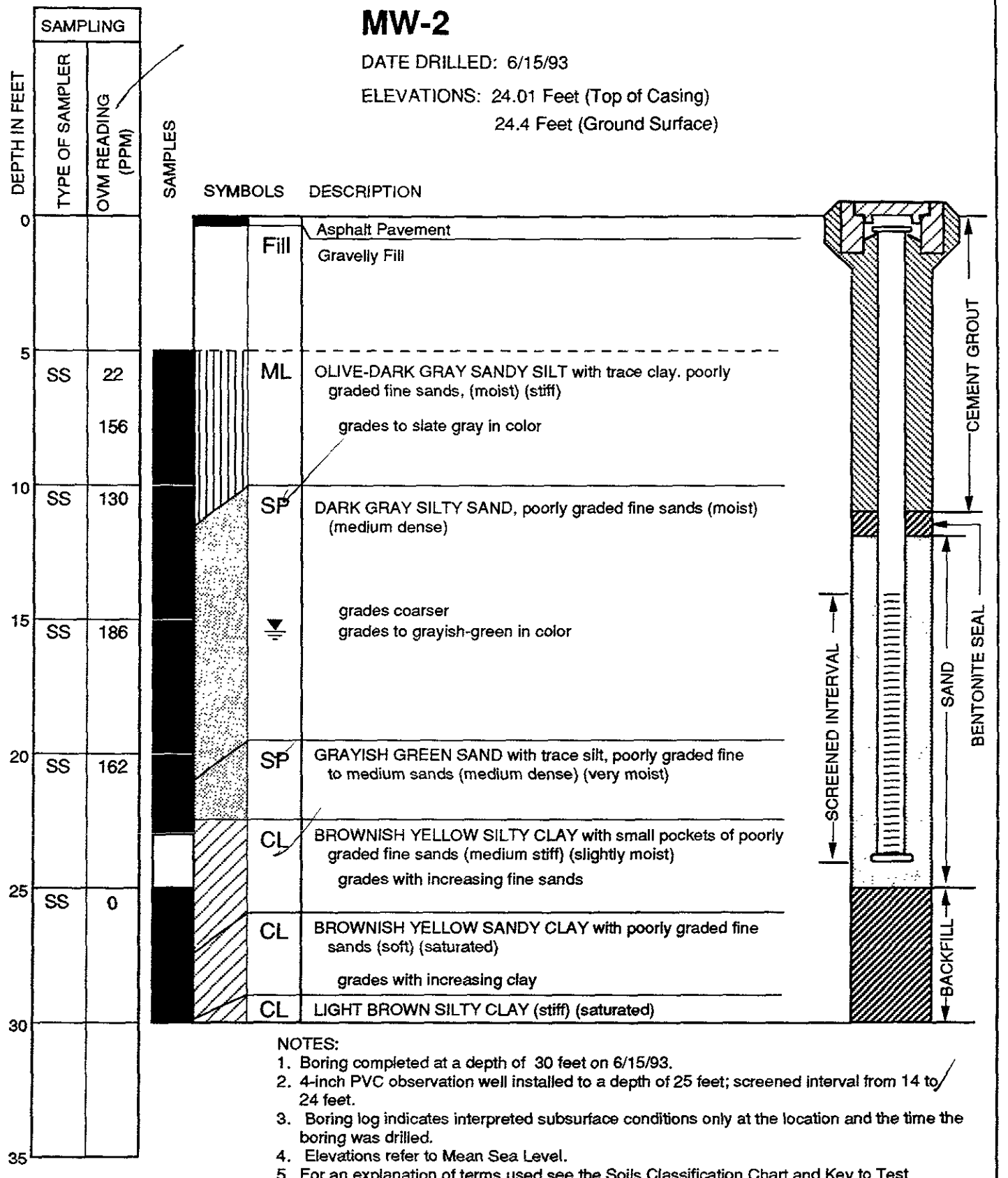
APPENDIX A

SOIL BORING LOGS AND WELL CONSTRUCTION DETAILS

MW-2

DATE DRILLED: 6/15/93

ELEVATIONS: 24.01 Feet (Top of Casing)
24.4 Feet (Ground Surface)



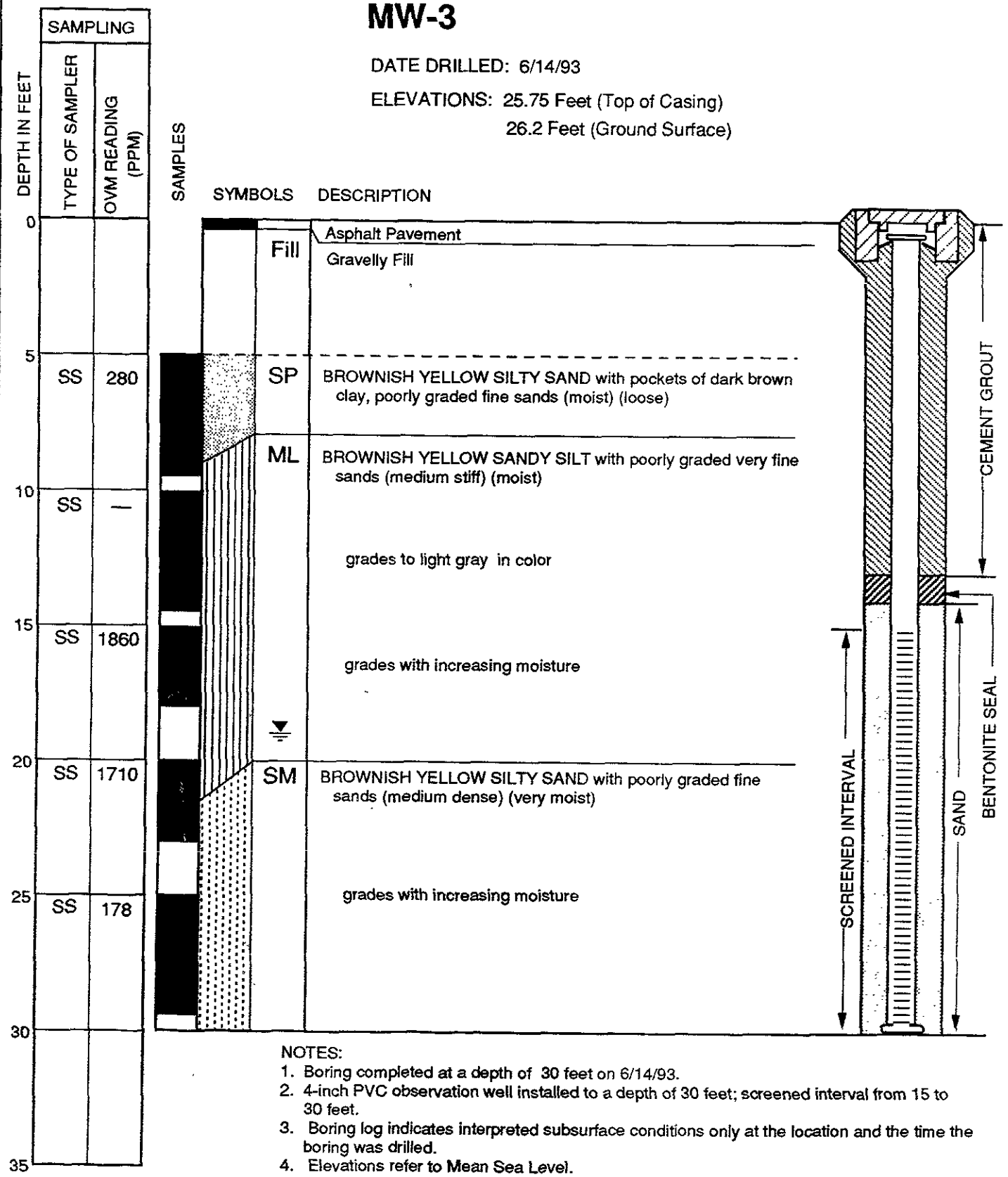
NOTES:
1. Boring completed at a depth of 30 feet on 6/15/93.
2. 4-inch PVC observation well installed to a depth of 25 feet; screened interval from 14 to 24 feet.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. Elevations refer to Mean Sea Level.
5. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate 6.

LOG OF BORING
Dames & Moore

MW-3

DATE DRILLED: 6/14/93

ELEVATIONS: 25.75 Feet (Top of Casing)
26.2 Feet (Ground Surface)



NOTES:

1. Boring completed at a depth of 30 feet on 6/14/93.
2. 4-inch PVC observation well installed to a depth of 30 feet; screened interval from 15 to 30 feet.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. Elevations refer to Mean Sea Level.
5. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate 6.

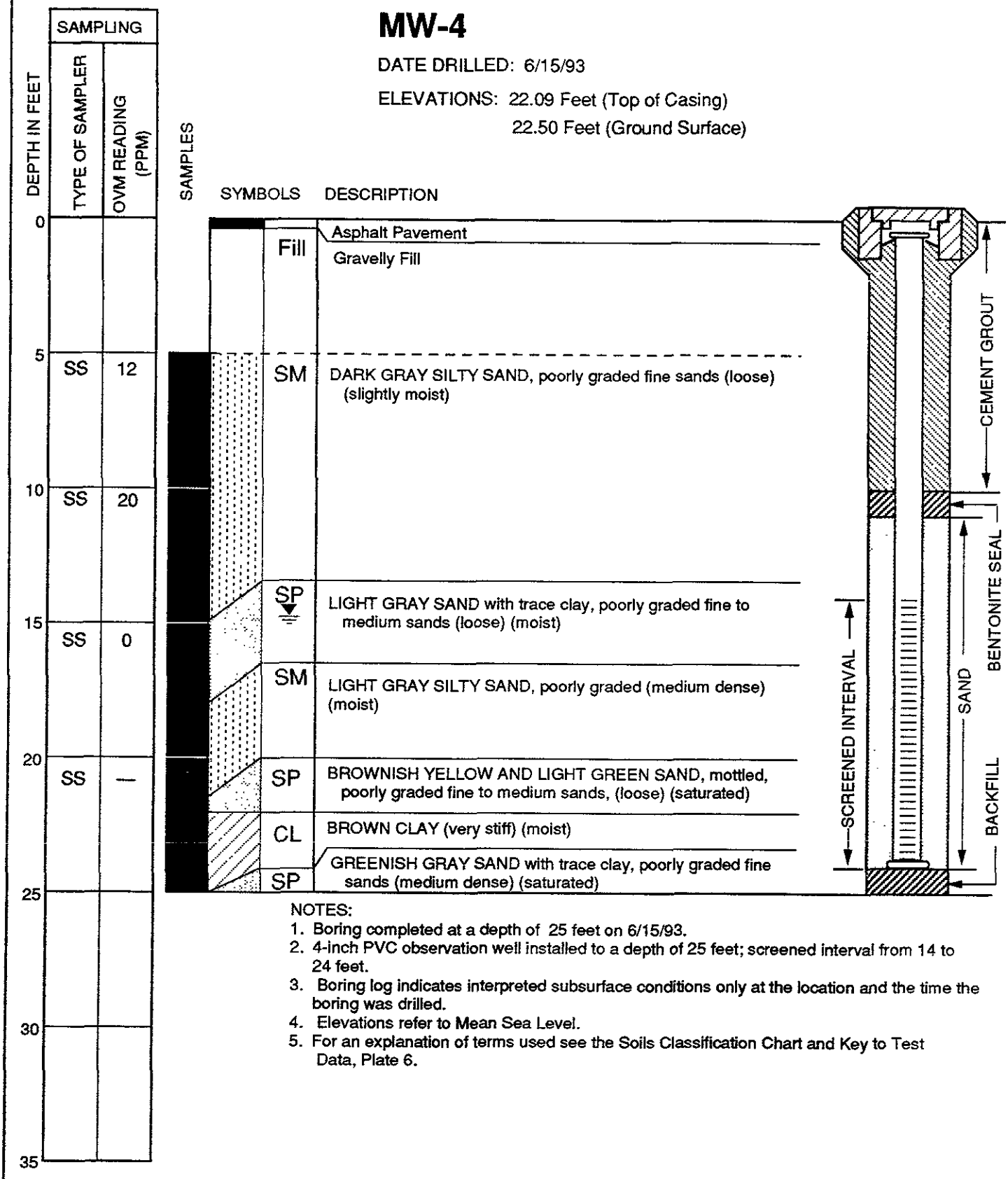
LOG OF BORING

Dames & Moore

MW-4

DATE DRILLED: 6/15/93

ELEVATIONS: 22.09 Feet (Top of Casing)
22.50 Feet (Ground Surface)



NOTES:

1. Boring completed at a depth of 25 feet on 6/15/93.
2. 4-inch PVC observation well installed to a depth of 25 feet; screened interval from 14 to 24 feet.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. Elevations refer to Mean Sea Level.
5. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate 6.

LOG OF BORING

Dames & Moore

UNIFIED SOIL CLASSIFICATION SYSTEM

SYMBOL	LETTER	DESCRIPTION	MAJOR DIVISIONS		
	GW	WELL-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	CLEAN GRAVELS (LITTLE OR NO FINES)	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO.4 SIEVE SIZE	COARSE-GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO.200 SIEVE SIZE
	GP	POORLY-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES			
	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		
	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES			
	SW	WELL-GRADED SAND OR GRAVELLY SANDS, LITTLE OR NO FINES	CLEAN SANDS (LITTLE OR NO FINES)	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO.4 SIEVE SIZE	
	SP	POORLY-GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES			
	SM	SILTY SANDS, SAND-SILT MIXTURES	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		
	SC	CLAYEY SANDS, SAND-CLAY MIXTURES			
	ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	SILTS & CLAYS LIQUID LIMIT LESS THAN 50		FINE-GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO.200 SIEVE SIZE
	CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS			
	OL	ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY			
	MH	ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY	SILTS & CLAYS LIQUID LIMIT GREATER THAN 50		
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
	PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	HIGHLY ORGANIC SOILS		

FOR VISUAL CLASSIFICATION, THE 1/4" SIZE MAY BE USED AS EQUIVALENT TO THE NO.4 SIEVE SIZE

THE NO.200 U.S. STANDARD SIEVE IS ABOUT THE SMALLEST PARTICLE VISIBLE TO THE NAKED EYE

KEY TO SAMPLES

- INDICATES UNDISTURBED SAMPLE
- INDICATES DISTURBED SAMPLE
- INDICATES NO RECOVERY

TYPES OF SOIL SAMPLERS

U - DAMES & MOORE TYPE "U" SAMPLER
P - PISTON-TUBE SAMPLER 3" DIAMETER
PT - PITCHER TUBE SAMPLER
A - HAND AUGER
SS – SPLIT SPOON TYPE SAMPLER
CA – MODIFIED CALIFORNIA SAMPLER

SOIL CLASSIFICATION CHART AND KEY TO TEST DATA

Dames & Moore

APPENDIX B

LABORATORY RESULTS
CHAIN OF CUSTODY

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

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

June 24, 1993

Customer Project: 12606-068-128
Laboratory Job: L9306166

On June 17, 1993 we received 4 sample(s) for analysis. Samples were analyzed by the following method(s):

Gasoline & BTEX (EPA 8015M/8020M)

Deborah Fisher
Project Manager

Laboratory Director
Christine Horn

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 12606-068-128
Sample Id: MW-2-2A
Lab Id: L9306166-1

Collected: 14-JUN-93
Received: 17-JUN-93
Reported: 23-JUN-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
GAS/BTEX-S						
Benzene	1700	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Ethyl Benzene	120	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Toluene	42.	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Xylene	190	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Gasoline	0.77	0.20	mg/Kg	1	18-JUN-93	18-JUN-93
-	-					
Comments:	None					
-	-					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 12606-068-128
Sample Id: MW-2-28
Lab Id: L9306166-2

Collected: 14-JUN-93
Received: 17-JUN-93
Reported: 23-JUN-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
GAS/BTEX-S						
Benzene	19.	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Ethyl Benzene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Toluene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Xylene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Gasoline	ND <	0.20	mg/Kg	1	18-JUN-93	18-JUN-93
-	-					
Comments:	None					
-	-					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 12606-068-128
Sample Id: MW-3-3C
Lab Id: L9306166-3

Collected: 14-JUN-93
Received: 17-JUN-93
Reported: 23-JUN-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
GAS/BTEX-S						
Benzene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Ethyl Benzene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Toluene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Xylene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Gasoline	ND <	0.20	mg/Kg	1	18-JUN-93	18-JUN-93
-	-					
Comments:	None					
-	-					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 12606-068-128
Sample Id: MW-4-4A
Lab Id: L9306166-4

Collected: 14-JUN-93
Received: 17-JUN-93
Reported: 23-JUN-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
GAS/BTEX-S						
Benzene	7.8	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Ethyl Benzene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Toluene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Xylene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Gasoline	ND <	0.20	mg/Kg	1	18-JUN-93	18-JUN-93
-	-					
Comments:	None					
-	-					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: UG1808-4

Collected:
Received: 23-JUN-93
Reported: 23-JUN-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
GAS/BTEX-S						
Benzene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Ethyl Benzene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Toluene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Xylene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Gasoline	ND <	0.20	mg/Kg	1	18-JUN-93	18-JUN-93

Comments: None

DEM Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG1808-5

Reported: 23-JUN-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-S							
Benzene	53.0	ug/Kg	50	ug/Kg	106	18-JUN-93	18-JUN-93
Ethyl Benzene	55.	ug/Kg	50	ug/Kg	110	18-JUN-93	18-JUN-93
Toluene	54.	ug/Kg	50	ug/Kg	109	18-JUN-93	18-JUN-93
Xylene	160	ug/Kg	150	ug/Kg	107	18-JUN-93	18-JUN-93
Gasoline	4.7	mg/Kg	5	mg/Kg	94	18-JUN-93	18-JUN-93
-	-						
Comments:	None						
-	-						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG1808-1

Collected:
Received: 23-JUN-93
Reported: 23-JUN-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
GAS/BTEX-S						
Benzene	19.	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Ethyl Benzene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Toluene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Xylene	ND <	5.0	ug/Kg	1	18-JUN-93	18-JUN-93
Gasoline	ND <	0.20	mg/Kg	1	18-JUN-93	18-JUN-93
Comments:	None					

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG1808-2

Reported: 23-JUN-93

Parameter	Value	Units	Spike	Units	%Rec	Extracted	Analyzed
GAS/BTEX-S							
Benzene	62.0	ug/Kg	50	ug/Kg	86	18-JUN-93	18-JUN-93
Ethyl Benzene	50.	ug/Kg	50	ug/Kg	100	18-JUN-93	18-JUN-93
Toluene	49.	ug/Kg	50	ug/Kg	98	18-JUN-93	18-JUN-93
Xylene	150	ug/Kg	150	ug/Kg	98	18-JUN-93	18-JUN-93
Gasoline	4.4	mg/Kg	5	mg/Kg	87	18-JUN-93	18-JUN-93
Comments:	None						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG1808-3

Reported: 23-JUN-93

Parameter	Value	Units	%Rec	RPD	Extracted	Analyzed
GAS/BTEX-S						
Benzene	61.0	ug/Kg	84	2.4	18-JUN-93	18-JUN-93
Ethyl Benzene	50.	ug/Kg	100	0.0	18-JUN-93	18-JUN-93
Toluene	50.	ug/Kg	100	2.0	18-JUN-93	18-JUN-93
Xylene	150	ug/Kg	97	0.70	18-JUN-93	18-JUN-93
Gasoline	4.4	mg/Kg	88	0.90	18-JUN-93	18-JUN-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.

CHAIN-OF-CUSTODY RECORD

WHITE COPY - Original accompanies samples YELLOW COPY - Collector PINK COPY - Project Manager

EB0676

Boring or Well Number	Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020 (BTEX)	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (MSJ&S)	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	2A	13'	1020	Soil	3" STAINLESS	X				X											SAMPLES COLLECTED 6/14	1	
MW-2	2B	18'	1030	Soil	↓	X				X											↓ ↓	1	
MW-3	3C	20'	1115	Soil		X				X											SAMPLES COLLECTED 6/15	1	
MW-4	4A	10'	1320	Soil	↓	X				X											↓ ↓	1	

COOLER CUSTODY SEALS INTACT ☐ NOT INTACT ☐ N/A

COOLER TEMPERATURE COLD °C

SAMPLES RECEIVED IN GOOD CONDITION
NO BROKEN OR LEAKING CONTAINERS

RECEIVED
JUN 17 1993
Dames & Moore

RELINQUISHED BY: (Signature) DATE/TIME 6/16/93 1520 RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

W.Y.

ANALYTICAL LABORATORY: D&M LABS

LABORATORY CONTACT: DEBBIE FISHER

D&M CONTACT: CHUCK SNEE PHONE: 415 243-3809

LABORATORY NOTES:

DO 8015M ANALYSIS FOR GASOLINE
8020 BTEX ONLY

JOB NO.: 12606-068-128 SHEET 1 OF 1

PROJECT CARTER HAWLEY HALE

LOCATION 1911 TELEGRAPH

COLLECTOR R.B CONEY DATE OF COLLECTION 6/14-6/15/93

4 SOILS.

DAMES & MOORE
221 MAIN STREET, SUITE 600
SAN FRANCISCO, CALIFORNIA 94105-1907
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COURIER

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

July 7, 1993

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

Customer Project: 12606-068-128
Laboratory Job: L9306198

On June 22, 1993 we received 3 sample(s) for analysis. Samples were analyzed by the following method(s):

Volatile Organic Compounds (EPA 624)

Gasoline & BTEX (EPA 8015M/8020M)

Deborah Fisher
Project Manager

Laboratory Director
Mary Janney

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 12606-068-128
Sample Id: MW-2
Lab Id: L9306198-1

Collected: 21-JUN-93
Received: 22-JUN-93
Reported: 16-JUL-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
624W						
Benzene	3600	50.	ug/L	1	01-JUL-93	01-JUL-93
Bromodichloromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Bromoform	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Bromomethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Carbon Tetrachloride	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chloroethane	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Chloroform	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chloromethane	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Dibromochloromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1-Dichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1-Dichloroethene	1.2	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichloropropane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Ethyl Benzene	110	0.50	ug/L	1	01-JUL-93	01-JUL-93
Methylene Chloride	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Tetrachloroethene	8.0	1.0	ug/L	1	01-JUL-93	01-JUL-93
Toluene	15.	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trichloroethene	89.	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trichlorofluoromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Vinyl Chloride	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Xylenes	11.	0.50	ug/L	1	01-JUL-93	01-JUL-93
-	-					
Comments:	None					
-	-					
GAS/BTEX-W						
Benzene	2900	0.50	ug/L	1	23-JUN-93	23-JUN-93
Ethyl Benzene	110	0.50	ug/L	1	23-JUN-93	23-JUN-93
Toluene	13.	0.50	ug/L	1	23-JUN-93	23-JUN-93
Xylene	7.2	0.50	ug/L	1	23-JUN-93	23-JUN-93
Gasoline	11.	0.050	mg/L	1	23-JUN-93	23-JUN-93
-	-					
Comments:	-					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 12606-068-128
Sample Id: MW-3
Lab Id: L9306198-2

Collected: 21-JUN-93
Received: 22-JUN-93
Reported: 07-JUL-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
624W						
Benzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Bromodichloromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Bromoform	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Bromomethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Carbon Tetrachloride	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chloroethane	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Chloroform	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chloromethane	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Dibromochloromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1-Dichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1-Dichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichloropropane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Ethyl Benzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Methylene Chloride	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Tetrachloroethene	8.4	1.0	ug/L	1	01-JUL-93	01-JUL-93
Toluene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trichlorofluoromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Vinyl Chloride	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Xylenes	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
-	-					
Comments:	None					
-	-					
GAS/BTEX-W						
Benzene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Ethyl Benzene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Toluene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Xylene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Gasoline	ND <	0.050	mg/L	1	23-JUN-93	23-JUN-93
-	-					
Comments:	-					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Dames & Moore-San Francisco
Project Id: 12606-068-128
Sample Id: MW-4
Lab Id: L9306198-3

Collected: 21-JUN-93
Received: 22-JUN-93
Reported: 07-JUL-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
624W						
Benzene	1.5	0.50	ug/L	1	01-JUL-93	01-JUL-93
Bromodichloromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Bromoform	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Bromomethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Carbon Tetrachloride	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chloroethane	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Chloroform	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chloromethane	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Dibromochloromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1-Dichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1-Dichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichloropropane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Ethyl Benzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Methylene Chloride	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Tetrachloroethene	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Toluene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trichlorofluoromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Vinyl Chloride	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Xylenes	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Comments:	None					
GAS/BTEX-W						
Benzene	1.5	0.50	ug/L	1	23-JUN-93	23-JUN-93
Ethyl Benzene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Toluene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Xylene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Gasoline	ND <	0.050	mg/L	1	23-JUN-93	23-JUN-93
Comments:						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG1810-5

Collected: 01-JUL-93
Received: 06-JUL-93
Reported: 06-JUL-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
624W						
Benzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Bromodichloromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Bromoform	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Bromomethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Carbon Tetrachloride	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chloroethane	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Chloroform	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Chloromethane	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Dibromochloromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,3-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,4-Dichlorobenzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1-Dichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1-Dichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trans-1,2-Dichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,2-Dichloropropane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Cis-1,3-Dichloropropene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trans-1,3-Dichloropropene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Ethyl Benzene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Methylene Chloride	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
1,1,2,2-Tetrachloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Tetrachloroethene	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Toluene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1,1-Trichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
1,1,2-Trichloroethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trichloroethene	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Trichlorofluoromethane	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93
Vinyl Chloride	ND <	1.0	ug/L	1	01-JUL-93	01-JUL-93
Xylenes	ND <	0.50	ug/L	1	01-JUL-93	01-JUL-93

Comments: None

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG1810-6

Reported: 06-JUL-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
624W							
Benzene	9.7	ug/L	10	ug/L	97%	01-JUL-93	01-JUL-93
Chlorobenzene	9.9	ug/L	10	ug/L	99%	01-JUL-93	01-JUL-93
1,1-Dichloroethene	9.2	ug/L	10	ug/L	92%	01-JUL-93	01-JUL-93
Toluene	9.8	ug/L	10	ug/L	98%	01-JUL-93	01-JUL-93
Trichloroethene	9.9	ug/L	10	ug/L	99%	01-JUL-93	01-JUL-93

Comments: None

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Water Spike
Lab Id: WG1810-1

Reported: 06-JUL-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
624W							
Benzene	9.2	ug/L	10	ug/L	92%	17-JUN-93	17-JUN-93
Chlorobenzene	9.9	ug/L	10	ug/L	99%	17-JUN-93	17-JUN-93
1,1-Dichloroethene	8.5	ug/L	10	ug/L	85%	17-JUN-93	17-JUN-93
Toluene	9.6	ug/L	10	ug/L	96%	17-JUN-93	17-JUN-93
Trichloroethene	9.5	ug/L	10	ug/L	95%	17-JUN-93	17-JUN-93
Comments:	None						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Water Spike Duplicat
Lab Id: WG1810-2

Reported: 06-JUL-93

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
624W						
Benzene	9.7	ug/L	97%	4.6	17-JUN-93	17-JUN-93
Chlorobenzene	10.	ug/L	104%	4.5	17-JUN-93	17-JUN-93
1,1-Dichloroethene	8.6	ug/L	86%	1.3	17-JUN-93	17-JUN-93
Toluene	10.	ug/L	101%	5.1	17-JUN-93	17-JUN-93
Trichloroethene	10.	ug/L	101%	5.8	17-JUN-93	17-JUN-93
-	-					
Comments:	None					
-	-					

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG1884-6

Reported: 22-JUL-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-W							
Benzene	ND <	ug/L	25	ug/L		23-JUN-93	23-JUN-93
Ethyl Benzene	ND <	ug/L	25	ug/L		23-JUN-93	23-JUN-93
Toluene	ND <	ug/L	25	ug/L		23-JUN-93	23-JUN-93
Xylene	ND <	ug/L	75	ug/L		23-JUN-93	23-JUN-93
Gasoline	ND <	mg/L	1	mg/L		23-JUN-93	23-JUN-93
-	-						
Comments:	-						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG1884-7

Reported: 22-JUL-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-W							
Benzene	23.0	ug/L	25	ug/L	92	23-JUN-93	23-JUN-93
Ethyl Benzene	24.0	ug/L	25	ug/L	96	23-JUN-93	23-JUN-93
Toluene	23.0	ug/L	25	ug/L	92	23-JUN-93	23-JUN-93
Xylene	70.0	ug/L	75	ug/L	93	23-JUN-93	23-JUN-93
Gasoline	0.890	mg/L	1	mg/L	89	23-JUN-93	23-JUN-93
-	-						
Comments:	-						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG1884-1

Collected:
Received: 30-JUN-93
Reported: 01-JUL-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
GAS/BTEX/N-W						
Benzene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Ethyl Benzene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Toluene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Xylene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Naphthalene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Gasoline	ND <	0.050	mg/L	1	23-JUN-93	23-JUN-93
Comments:	MX = 6177-06					

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG1884-2

Reported: 01-JUL-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-W							
Benzene	23.0	ug/L	25	ug/L	92	23-JUN-93	23-JUN-93
Ethyl Benzene	24.	ug/L	25	ug/L	96	23-JUN-93	23-JUN-93
Toluene	24.	ug/L	25	ug/L	96	23-JUN-93	23-JUN-93
Xylene	71.	ug/L	75	ug/L	95	23-JUN-93	23-JUN-93
Comments:	MS = 8020 spike, MX = 6177-06						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG1884-3

Reported: 01-JUL-93

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
GAS/BTEX-W						
Benzene	24.0	ug/L	96	4.3	23-JUN-93	23-JUN-93
Ethyl Benzene	24.	ug/L	96	0.0	23-JUN-93	23-JUN-93
Toluene	24.	ug/L	96	0.0	23-JUN-93	23-JUN-93
Xylene	72.	ug/L	96	1.4	23-JUN-93	23-JUN-93
Comments:	MSD = 8020 spike. MX = 6177-06					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG1884-11

Collected:
Received: 30-JUN-93
Reported: 01-JUL-93

Parameter	Value	Limit	Units	Dilution	Extracted	Analyzed
GAS/BTEX/N-W						
Benzene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Ethyl Benzene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Toluene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Xylene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Naphthalene	ND <	0.50	ug/L	1	23-JUN-93	23-JUN-93
Gasoline	ND <	0.050	mg/L	1	23-JUN-93	23-JUN-93

Comments: MX = 6177-07

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG1884-12

Reported: 01-JUL-93

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-W							
Gasoline	0.960	mg/L	1	mg/L	96	23-JUN-93	23-JUN-93

Comments:

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG1884-13

Reported: 01-JUL-93

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
GAS/BTEX-W						
Gasoline	0.860	mg/L	86	11.	23-JUN-93	23-JUN-93

Comments:

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.

CHAIN-OF-CUSTODY RECORD 193067-98

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) / 8020	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				WATER	VOAS			X		X												8	
MW-3				↓	↓			X		X												8	
MW-4				↓	↓			X		X												8	

COOLER CUSTODY SEALS INTACT ☐ NOT INTACT ☑ N/A

COOLER TEMPERATURE COLD °C

SAMPLES RECEIVED IN GOOD CONDITION
NO BROKEN OR LEAKING CONTAINERS

RECEIVED
JUL 12 11:50:02
DAMES & MOORE

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
	6.21.93 1730	#167
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

LABORATORY NOTES:

PLEASE ANALYZE EACH SAMPLE FOR:

8240

8015M (GASOLINE) / 8020

ANALYTICAL LABORATORY: D&M

LABORATORY CONTACT: DEBBIE FISHER

D&M CONTACT: CHUCK SNELL PHONE: 415-243-3809

DAMES & MOORE
221 MAIN STREET, SUITE 600
SAN FRANCISCO, CALIFORNIA 94105-1907
(415) 896-5858 FAX (415) 882-9261

JOB NO.: 12606-068-128 SHEET 1 OF 1

PROJECT CARTER, HANLEY, HALE

LOCATION 1911 TELEGRAPH, OAKLAND, CA

COLLECTOR RC DATE OF COLLECTION 6.21.93