REPORT
PHASE II SOIL AND GROUNDWATER INVESTIGATION
FORMER OAKLAND TRIBUNE GARAGE
OAKLAND, CALIFORNIA
FOR OAKLAND TRIBUNE

Job No. 19191-002-43
July 18, 1990

ARM1.004

DAMES & MOORE

DAMES & MOORE A PROFESSIONAL LIMITED PARTNERSHIP
2101 WEBSTER STREET, SUITE 300, OAKLAND, CALIFORNIA 94612 (415) 839-3600
FAX NO. (415) 839-4461

July 18, 1990
Job No. 19191-002-43

The Tribune
P.O. Box 24304
Oakland, California 84623

Attention: Mr. Mike Johnson

Transmittal
Phase II
Soil and Groundwater Investigation
2302 Valdez Street
Oakland, California

Dear Mr. Johnson:

Dames & Moore is pleased to submit our Phase II Soil and Groundwater Investigation Report for the former Oakland Tribune Garage located at 2303 Valdez Street in Oakland, California.

Please contact us if you have any questions regarding the contents of this report.

Very truly yours,

DAMES & MOORE

for David M. Klimberg
Associate

Bruce Scarbrough
Senior Geologist, R.G. #4931

cc: Ms. Tomme Young, Morrison & Foerster

ARM1.004

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1-1

2.0 SITE BACKGROUND 2-1

3.0 PURPOSE AND SCOPE OF SERVICES 3-1

4.0 FIELD INVESTIGATION 4-1
- 4.1 Soil Sampling and Testing 4-1
- 4.2 Monitoring Well Installation 4-2
- 4.3 Groundwater Sampling and Analysis 4-2
- 4.4 Water Level Monitoring 4-3
- 4.5 Waste Collection 4-3

5.0 FINDINGS 5-1
- 5.1 Geology 5-1
- 5.2 Hydrogeology 5-1
- 5.3 Soil Chemical Testing Results 5-2
- 5.4 Groundwater Chemical Testing Results 5-3
  - 5.4.1 Purgeable Aromatics 5-3
  - 5.4.2 Purgeable Halocarbons 5-4
- 5.5 Quality Assurance/Quality Control Results 5-4

6.0 DISCUSSION OF RESULTS 6-1

7.0 RECOMMENDATIONS 7-1

APPENDICES

Appendix A: Field Procedures
Appendix B: Laboratory Reports

LIST OF TABLES

1 Summary of Monitoring Well Installation Data, Former Oakland Tribune Garage, Oakland, California
2 Historical Groundwater Elevations, Former Oakland Tribune Garage, Oakland, California
3 Summary of Analytical Soil Samples, Former Oakland Tribune Garage, Oakland, California
4 Analytical Results of Groundwater Samples, Former Oakland Tribune Garage, Oakland, California

Page

LIST OF PLATES

1 Site Location Map
2 Site Plan
3 Groundwater Elevation Contour Map - May, 1990
4 BTEX Concentrations in Groundwater - May, 1990

1.0 INTRODUCTION

This report presents the results of a Phase II soil and groundwater investigation conducted by Dames & Moore at the former Oakland Tribune Garage facility ("the site") located at the intersection of Valdez and 23rd Streets in Oakland, California (see Plate 1, Site Location Map). The Phase II investigation was performed in general accordance with the scope of services presented in our proposal dated February 8, 1990 and accepted by the Oakland Tribune on March 6, 1990. We understand that Mr. Gil Wistar of the Alameda County Department of Environmental Health (ACDEH) reviewed our February 8, 1990 Phase II proposal and work plan and verbally approved the proposed scope of work during a March 5, 1990 telephone conversation with Ms. Erica Grubb of the Oakland Tribune.

2.0 SITE BACKGROUND

The former Oakland Tribune Garage facility is located at the northeast corner of the intersection of 23rd and Valdez Streets in Oakland, California as shown on Plate 1. The approximate 0.6 acre site consists of a 14,000 square foot building previously used by the Oakland Tribune for vehicle service and maintenance. The site also contains two fenced asphalt paved parking lots located on the north side of the building. Plate 2 illustrates the current site setting.

Within the building, three service bays for vehicle repair were located on the eastern side of the building and a gasoline dispensing pump was formerly located near the center of the building as shown in Plate 2. A floor sump was located in the northeastern corner of the building. This sump was removed and sealed in 1988.

Two underground fuel tanks used for the storage of gasoline and waste oil were located beneath the sidewalk directly outside the western side of the building (see Plate 2). Both tanks were emptied and removed in February 1988.

Initial site investigations conducted by J.H. Kleinfelder Associates and Clayton Environmental Consultants dating back to 1987 indicated the presence of petroleum hydrocarbons and related constituents in soil and groundwater underlying the site.

In July and August, 1989, Dames & Moore conducted a Phase I soil and groundwater site investigation that included reviewing work previously performed by other consultants at the site and conducting a Phase I field investigation including soil sampling and the installation of four on-site monitoring wells. The findings of the Phase I investigation along with a summary of previous investigations conducted at the site are presented in Dames & Moore's report titled "Phase I Soil and Groundwater Investigation, Former Oakland Tribune Garage, Oakland, California," dated September 20, 1989.

Based on the findings of the Phase I investigation, Dames & Moore recommended performing additional investigative field work (Phase II) to further evaluate the lateral extent of hydrocarbon constituents present in groundwater beneath the site vicinity. In addition to the Phase II investigation, Dames & Moore also recommended implementation of a quarterly groundwater monitoring program.

3.0 PURPOSE AND SCOPE OF SERVICES

The primary objectives of the Phase II investigation conducted by Dames & Moore were to:

- Further evaluate the downgradient lateral extent of gasoline constituents and other volatile organic compounds previously detected in the uppermost water-bearing zone underlying the site;

- Confirm the presence of carbon tetrachloride and chloroform previously detected in upgradient well MW-7; and

- Establish a quarterly groundwater monitoring program to evaluate temporal changes in contaminant concentrations in the groundwater.

To meet the above objectives, the following tasks were performed during the Phase II investigation:

- Installation of two groundwater monitoring wells at downgradient off-site locations;

- Collection and chemical analysis of soil samples from the well borings;

- Collection and chemical analysis of groundwater samples from the two newly installed off-site monitoring wells and the seven existing on-site monitoring wells;

- Measurement of groundwater levels in all on-site and off-site wells; and

4.0 FIELD INVESTIGATION

4.1 SOIL SAMPLING AND TESTING

A total of two soil borings (MW-8 and MW-9) were drilled during the Phase II field program. Both of the borings were subsequently completed as groundwater monitoring wells. Drilling and well installation was performed by Sierra Pacific Exploration of Concord, California, under the direction of an on-site Dames & Moore geologist. Soil boring and groundwater monitoring well locations are shown on Plate 2. Logs of borings and descriptions of drilling and soil sampling procedures are presented in Appendix A.

During advancement of the two borings, relatively undisturbed soil samples were collected at a minimum of every five feet from near the surface to the maximum depth of each boring. Each soil sample was screened in the field for the presence of volatile hydrocarbons using a Photoionization Detector (PID). PID readings for each sample were then recorded directly on the boring log.

Based on the results of the field screening, two soil samples collected from boring location MW-9 were submitted to ACCULAB Environmental Services of Petaluma, California (ACCULAB). Soil samples were analyzed for total petroleum hydrocarbons as gasoline (TPH) in accordance with EPA Method 8015, Modified, and benzene, toluene, ethylbenzene, and xylenes (BTEX) in accordance with EPA Method 8020. The presence of volatile hydrocarbons in soil samples collected at boring location MW-8 was not indicated by field screening; and therefore, no samples from MW-8 were submitted for chemical analysis. Complete analytical laboratory reports are presented in Appendix B. Chemical test results for the soil samples are discussed in Section 5.0.

4.2 MONITORING WELL INSTALLATION

Two groundwater monitoring wells were installed to evaluate groundwater quality in the uppermost water-bearing zone downgradient from the site. Locations of the two new wells are shown on Plate 2. Monitoring well MW-8 is located at the southeast corner of the intersection of Valdez and 23rd Streets, approximately 90 feet downgradient from the former underground storage tanks (USTs). Monitoring well MW-9 is located in the eastbound traffic lane of 23rd Street, approximately 60 feet downgradient of MW-2. Because the wells are located in the public right-of-way, it was necessary to secure encroachment and limited excavation permits from the City of Oakland Office of Public Works.

Because petroleum hydrocarbons reported in previous investigations at the site are generally less dense than water, it was anticipated that these constituents, where present, would be found near the water table. Therefore, the newly installed wells were designed to intersect the water table. Following installation, all four wells were developed by pumping until relatively sediment-free water was produced. Well construction and detailed installation and development procedures are presented in Appendix B and Table 1 of this report.

4.3 GROUNDWATER SAMPLING AND ANALYSIS

Groundwater samples were collected from the seven existing monitoring wells on May 14, 1990. Groundwater samples from the two newly installed wells were collected on May 18, 1990.

Groundwater samples, including one blind duplicate and a trip blank, were delivered to ACCULAB for chemical analysis. All samples, with the exception of MW-7 were analyzed for purgeable halocarbons and purgeable aromatics in accordance with EPA Methods 601 and 602, respectively. To confirm the presence of carbon tetrachloride and

chloroform detected in the July 1989 sampling, the groundwater sample collected from MW-7 was analyzed for volatile organic compounds in accordance with EPA Method 624.

Groundwater sampling procedures are described in Appendix A. Groundwater analytical laboratory results are presented in Appendix B. A discussion of groundwater chemical results is presented in Section 5.0.

4.4 WATER LEVEL MONITORING

Depth to groundwater measurements in each of the existing and new monitoring wells was measured on May 31, 1990, to assess groundwater elevations and gradients. Depths to groundwater in each well were measured using an electronic water level indicator. Groundwater elevation data collected during this investigation and historical groundwater elevation data are summarized on Table 2. The results of the water level monitoring program are discussed in Section 5.0.

4.5 WASTE COLLECTION

Soil cuttings and well development and purge water generated during the Phase II investigation were contained in DOT approved 55-gallon drums and stored on-site.

5.0 FINDINGS

5.1 GEOLOGY

A description of the regional geology and hydrogeology is presented in Section 4 of the Dames & Moore Phase I Soil and Groundwater Investigation report. Sediments encountered during drilling of borings MW-8 and MW-9 were similar to those previously encountered during the Phase I investigation. Sediments underlying the south side of 23rd Street can be divided into two units: an upper, fine-grained alluvial deposit consisting of yellowish red to greenish gray clay with some fine sand. This fine-grained upper unit was encountered in the upper 16 feet of both borings drilled along 23rd Street.

At boring location MW-8, the fine-grained unit overlies a coarser grained unit consisting predominantly of brown silty sand that grades into a brown gravelly sand that extends to the maximum depth explored (28 feet). At boring location MW-9, the upper fine-grained unit grades into a coarser grained unit comprised of interbedded clay and gravel deposits. The clay and gravel unit is relatively evenly interbedded in six to eight inch thicknesses and extends to the maximum depth explored (28 feet). Gravel encountered in both borings is similar and is comprised of black chert and red and green jasper clasts up to one inch in diameter.

5.2 HYDROGEOLOGY

The vadose (unsaturated) zone beneath the south side of 23rd Street extends from ground surface to a depth of approximately 16 feet below ground surface. Because soils within the vadose zone consist primarily of clays, the permeability of the zone is expected to be low.

Groundwater was encountered during drilling within the sand and gravel unit at approximately 16 feet below ground surface. Static depth to groundwater in the uppermost water bearing zone measured in the two new monitoring wells ranged from 12.7 to 14.8 feet below top of casing. The subsequent rise in water levels suggests that groundwater in the coarser-grained unit may be partially confined by the overlying clay unit.

Groundwater elevation data for May 1990 and August 1989 are presented in Table 2. Groundwater elevations measured in May 1990 were generally one foot higher than elevations recorded for the same wells in August 1989. The rise in groundwater elevations is likely a reflection of aquifer recharge from seasonal rainfall.

Groundwater elevations measured on May 31, 1990 were used to construct the groundwater elevation contour map shown on Plate 3. Interpretation of the groundwater contour map indicates groundwater flow is towards the south with an average hydraulic gradient of approximately 0.005 foot/foot. In general, the groundwater flow direction and gradient measured during this investigation is consistent with observations from previous investigations.

5.3 SOIL CHEMICAL TESTING RESULTS

Two soil samples collected from depths of 11 and 16 feet below ground surface at boring location MW-9 were submitted to ACCULAB for chemical analysis. The analytical results as summarized in Table 3 show the soil sample collected at a depth of 16 feet contained TPH as gasoline at a concentration of 2.2 milligrams per kilogram or mg/kg. BTEX were not detected above the method detection limit (MDL) in the 16-foot sample from MW-9. TPH and BTEX were not detected in the soil sample collected from a depth of 11 feet. Complete laboratory analytical reports are presented in Appendix B.

5.4 GROUNDWATER CHEMICAL TESTING RESULTS

The groundwater sampling program included collection of groundwater samples from each of the nine groundwater monitoring wells and submittal to ACCULAB for chemical analysis. As a quality control measure, one blind duplicate sample collected from MW-9 and one trip blank were also submitted along with the primary samples for chemical analysis. Laboratory analyses included purgeable halocarbons (EPA Method 601) and purgeable aromatics (EPA Method 602). To confirm the presence of carbon tetrachloride and chloroform detected in the upgradient well MW-7 during the July 1989 sampling episode, the groundwater sample from MW-7 was analyzed for volatile organic compounds using EPA Method 624. The results of these and previous analyses are presented on Table 4. Complete laboratory analytical reports are presented in Appendix B.

5.4.1 Purgeable Aromatics

Purgeable aromatic compounds including benzene, toluene and xylenes were detected above the MDL in wells MW-1, MW-2, MW-4, MW-5, and MW-9. Benzene was detected at concentrations ranging from 8.5 micrograms per liter or μg/l at MW-9 to 370 μg/l in MW-1. Concentrations of benzene detected are above the California Department of Health Services (DOHS) Drinking Water Action Level of 0.7 μg/l. Toluene was detected above the MDL in concentrations ranging from 1.0 μg/l in MW-5 to 130 μg/l in MW-1. Monitoring well MW-1 was the only well in which toluene concentration exceeded the DOHS Drinking Water Action Level of 100 μg/l for toluene. Xylenes were detected above the MDL in concentrations ranging from 4.4 μg/l in MW-5 to 130 μg/l in MW-4. Xylene concentrations detected in all monitoring wells are well below the established DOHS Drinking Water Action Level of 620 μg/l for xylenes. The distribution of benzene, toluene, and xylenes in monitoring wells is shown graphically on Plate 4.

5.4.2 Purgeable Halocarbons

No volatile halocarbon compounds were detected in the two newly installed downgradient wells MW-8 and MW-9. Several volatile halocarbon compounds were detected at relatively low concentrations in on-site wells MW-1, MW-4, MW-6, and MW-7. Volatile halocarbon compounds detected include carbon tetrachloride, chloroform, 1,2-dichlorobenzene, dichloroethanes and trichloroethene.

The only halocarbon compounds detected at concentrations exceeding the DOHS Action Levels for Drinking Water during the May 1990 sampling episode were 1,2-dichloroethane (1,2-DCA) and carbon tetrachloride. 1,2-DCA was detected at a concentration of 1.5 μg/l in well MW-6. This concentration only slightly exceeds the DOHS Action Level of 1.0 μg/l for 1,2-DCA. Carbon tetrachloride was detected at a concentration of 64 μg/l in upgradient well MW-7, exceeding the DHS Action Level of 0.5 μg/l.

5.5 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

The QA/QC program for groundwater sampling was designed to obtain a high confidence level in the data generated from this investigation. The field QA/QC program included the collection and analysis of a trip blank and a blind duplicate sample. These QA/QC samples were submitted to the laboratory for analysis to assess potential error introduced during sampling, transit, and laboratory analysis. The results of the field QA/QC program are discussed below:

Trip Blank

The purpose of the trip blank is to assess potential cross contamination of samples resulting from transport to the laboratory. Volatile organic compounds (VOCs) are reported to diffuse through (both into and out of) the caps used to seal vials.

During this groundwater sampling episode, one trip blank (labeled as TB-1) was submitted to the laboratory for analysis of purgeable aromatics (EPA Method 602) and purgeable halocarbons (EPA Method 601). No VOCs were reported above the MDL in the trip blank sample. The absence of VOCs in the trip blank samples suggests that the potential for cross contamination of groundwater samples through diffusion is remote.

Duplicate Sample

One duplicate sample from well MW-9 (labelled as MW-9A) was collected in the field and submitted "blind" to the laboratory for analysis to evaluate the reproducibility of the steps in the sampling and analysis program. The results of the primary and duplicate sample for MW-9 are presented in Table 4. The results from the duplicate sample analysis are judged to be consistent with the results from the primary sample. These results indicate that the field sampling and laboratory analysis procedures were reproducible for the sample location and analysis period.

6.0 DISCUSSION OF RESULTS

The results of our Phase II investigation confirm that the primary constituents present in the uppermost water-bearing zone underlying the site are the fuel hydrocarbon constituents benzene, toluene, ethylbenzene and xylenes (BTEX). With the exception of groundwater samples from on-site monitoring wells MW-4 and MW-5, BTEX concentrations in the seven on-site monitoring wells are similar to those reported in the previous sampling episode. BTEX compounds previously not detected in groundwater samples from MW-4 and MW-5 in August 1989 were detected above the MDL during the May 1990 sampling episode. The detection of BTEX compounds in wells MW-4 and MW-5 during this sampling episode may be the result of higher groundwater levels relative to August 1989.

Chemical test results of groundwater samples collected from the two newly installed downgradient off-site monitoring wells (MW-8 and MW-9) indicate that significant off-site migration of BTEX compounds has not occurred. BTEX were not detected above MDLs in MW-8, and only relatively low concentrations of BTEX were detected in MW-9. Based on available data and chemical distribution patterns shown in Plate 4, it is our judgement that BTEX concentrations likely attenuate rapidly downgradient of MW-9.

Similar to the August 1989 sampling episode, low concentrations of several halocarbon compounds were detected in four of the on-site monitoring wells (MW-1, MW-4, MW-6 and MW-7) during this sampling episode. With the exception of upgradient monitoring well MW-7, halocarbon concentrations measured in on-site wells were generally lower than concentrations measured in August 1989. The results of the gas chromatograph/mass spectrometer analysis (EPA Method 624) of groundwater from upgradient well MW-7, confirms the conclusion that groundwater containing chloroform and carbon tetrachloride is migrating onto the site from an upgradient off-site source. No halocarbon compounds were detected above the MDLs in either downgradient off-site well, indicating that off-site migration of halocarbon compounds has not occurred.

7.0 RECOMMENDATIONS

Based on the results of this investigation, we recommend that quarterly groundwater monitoring be conducted at the site for a minimum of one year. Based on the results of this monitoring program and consultation with the ACDEH, the need for further action will be evaluated.

TABLE 1
SUMMARY OF MONITORING WELL INSTALLATION DATA
FORMER OAKLAND TRIBUNE GARAGE, OAKLAND, CALIFORNIA

Monitoring Well	Well Depth[1]	Elevation TOP PVC[2]	Screened Interval[3]	Effective Interval[3]
MW-1[4]	31.5	22.87	14.0-30.0	12.0-31.5
MW-2[4]	31.5	22.59	14.0-26.0	11.0-31.5
MW-3[4]	26.5	22.51	12.0-25.0	10.0-26.5
MW-4[5]	25.5	22.65	10.0-25.0	8.0-25.5
MW-5[5]	27.5	22.44	12.0-27.0	10.0-27.5
MW-6[5]	26.0	21.76	10.5-25.5	8.5-26.0
MW-7[5]	26.0	21.76	10.5-25.5	8.5-26.0
MW-8[6]	26.8	22.00	13.8-26.8	10.0-26.8
MW-9[6]	25.5	19.98	11.5-25.5	8.0-25.5

NOTES:

(1) All depths recorded in feet, below ground surface.
(2) All elevations referenced to N.G.S. Mean Sea Level (City of Oakland Datum plus 3 feet).
(3) Screened and effective intervals are expressed in feet below ground surface.
(4) Two-inch diameter monitoring well installed by Clayton in August 1988.
(5) Four-inch diameter monitoring well installed by Dames & Moore in August 1989.
(6) Four-inch diameter monitoring well installed by Dames & Moore in May 1990.

TABLE 2 HISTORICAL GROUNDWATER ELEVATIONS FORMER OAKLAND TRIBUNE GARAGE, OAKLAND CALIFORNIA		
Monitoring Well	**August 1989**	**May 1990**
MW-1	7.08	8.22
MW-2	6.55	7.71
MW-3	6.98	8.03
MW-4	6.53	8.15
MW-5	6.74	7.76
MW-6	6.59	7.65
MW-7	7.34	8.43
MW-8	NA	7.20
MW-9	NA	7.29

NOTES:

(1) Elevations are given in feet above N.G.S. Mean Sea Level.
(2) NA: Data not available.

TABLE 3
SUMMARY OF ANALYTICAL
SOIL SAMPLES
FORMER OAKLAND TRIBUNE GARAGE, OAKLAND
CALIFORNIA

CONSTITUENT	UNITS	DETECTION LIMIT	MW-9 11 FT	MW-9 16 FT
TPH as gasline (Method 8015)	mg/Kg[1]	1.0	ND[2]	2.2
Benzene	mg/Kg	0.04	ND	ND
Toluene	mg/Kg	0.04	ND	ND
Ethylbenzene	mg/Kg	0.04	ND	ND
Total Xylenes	mg/Kg	0.04	ND	ND

Notes: 1) mg/Kg: milligrams per Kilogram or parts per million (ppm)
2) ND: Not detected above reported detection limit

TABLE 4
ANALYTICAL RESULTS OF GROUNDWATER SAMPLES[1]
FORMER OAKALND TRIBUNE GARAGE, OAKLAND, CALIFORNIA

Well No.	Date Sampled	Benzene	Toluene	Ethylben.[2]	Xylenes	1,2[3] Dichlorben.	1,3[4] Dichlorben.	1,4[5] Dichlorben.	1,1[6] DCA	1,2[7] DCA	TCE[8]	Carbon Tet.[9]	Chloro.[10]
MW-1	8/16/88	1000	300	400	600	<.05	<.03	<0.5	NA	NA	NA	NA	NA
	7/27/89	120	5.1	<1	260	0.5	<0.5	<0.5	1.2	1.9	1.4	0.7	2.6
	5/14/90	370	130	170	110	4	<0.5	<0.5	2.9	1	1.6	<0.5	<0.5
MW-2	8/16/88	<0.4	<0.3	<0.3	<0.4	<0.5	<0.3	<0.5	NA	NA	NA	NA	NA
	7/27/89	24	<1	<1	80	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5/14/90	30	12	120	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-3	8/16/88	52	1	4.9	17	20	2.8	31	NA	NA	NA	NA	NA
	7/27/89	<1	<1	<1	11	11	2.7	31	<0.5	<0.5	<0.5	0.7	0.5
	5/14/90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-4	8/15/89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<0.5	<0.5	<0.5
	5/14/90	220	20	120	180	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5
MW-5	8/15/89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	0.5
	5/14/90	43	1	9.4	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-6	8/15/89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<0.5
	5/14/90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	<0.5
MW-7	8/15/89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	20	4.6
	5/14/90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	64	16
MW-8	5/18/90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-9 Duplicate Sample Results in ( )	5/18/90	8.5(9.3)	8.1(9.0)	4.4(4.9)	5.4(6.6)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)

NOTES:

(1) All results reported in µg/L (micrograms per liter)
(2) Ethylbenzene
(3) 1,2 Dichlorobenzene
(4) 1,3 Dichlorobenzene
(5) 1,4 Dichlorobenzene
(6) 1,1 Dichlororethane
(7) 1,2 Dichloroethane
(8) Trichloroethene
(9) Carbon Tetrachloride
(10) Chloroform

TABLE 2 HISTORICAL GROUNDWATER ELEVATIONS FORMER OAKLAND TRIBUNE GARAGE, OAKLAND CALIFORNIA		
Monitoring Well	August 1989	May 1990
MW-1	7.08	8.22
MW-2	6.55	7.71
MW-3	6.98	8.03
MW-4	6.53	8.15
MW-5	6.74	7.76
MW-6	6.59	7.65
MW-7	7.34	8.43
MW-8	NA	7.20
MW-9	NA	7.29

NOTES:

(1) Elevations are given in feet above N.G.S. Mean Sea Level.
(2) NA: Data not available.

TABLE 3
SUMMARY OF ANALYTICAL
SOIL SAMPLES
FORMER OAKLAND TRIBUNE GARAGE, OAKLAND
CALIFORNIA

CONSTITUENT	UNITS	DETECTION LIMIT	MW-9 11 FT	MW-9 16 FT
TPH as gasline (Method 8015)	mg/Kg[1]	1.0	ND[2]	2.2
Benzene	mg/Kg	0.04	ND	ND
Toluene	mg/Kg	0.04	ND	ND
Ethylbenzene	mg/Kg	0.04	ND	ND
Total Xylenes	mg/Kg	0.04	ND	ND

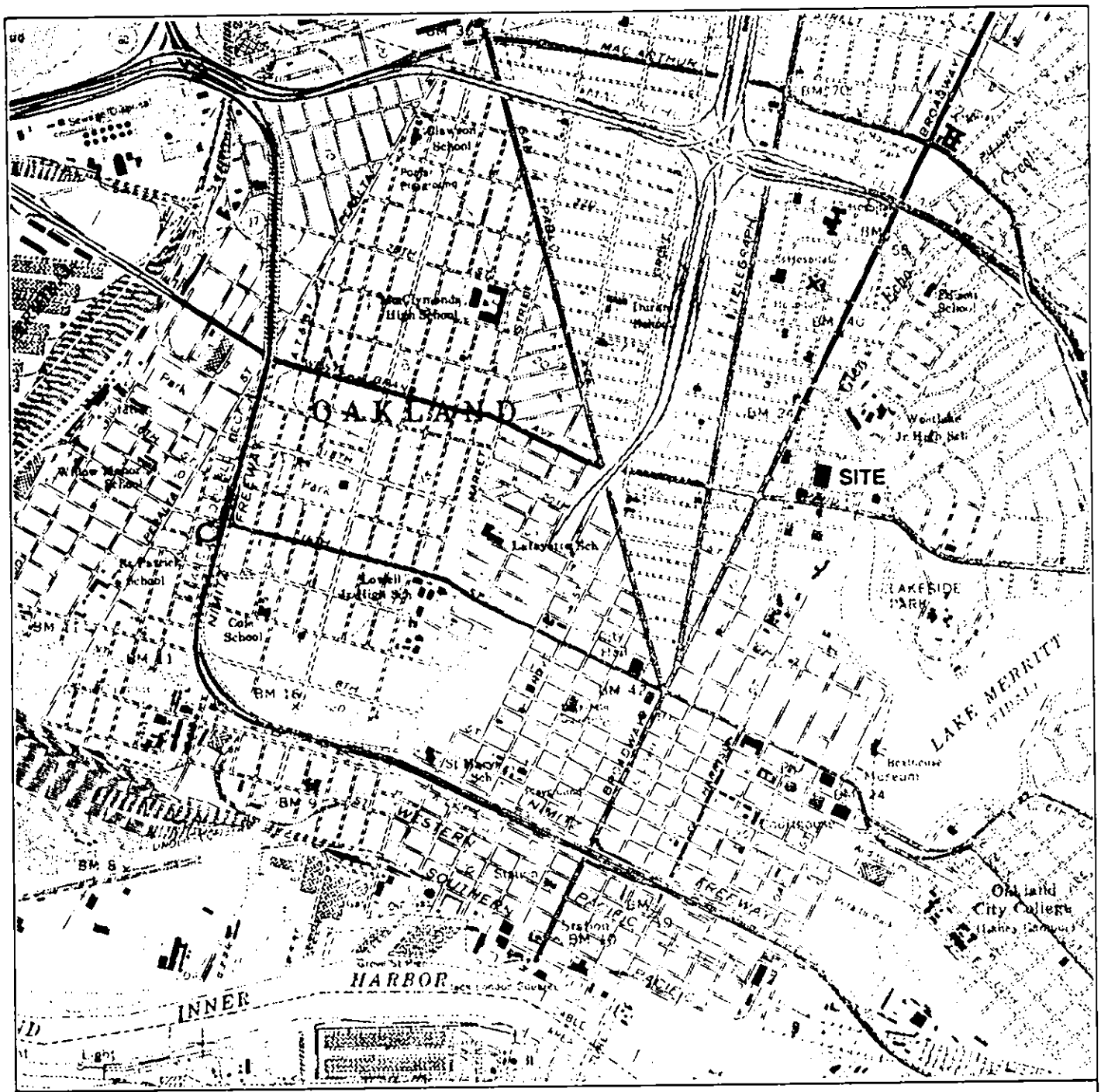
Notes: 1) mg/Kg: milligrams per Kilogram or parts per million (ppm)
2) ND: Not detected above reported detection limit

TABLE 4
ANALYTICAL RESULTS OF GROUNDWATER SAMPLES[1]
FORMER OAKALND TRIBUNE GARAGE, OAKLAND, CALIFORNIA

Well No.	Date Sampled	Benzene	Toluene	Ethylben.[2]	Xylenes	1,2[3] Dichlorben.	1,3[4] Dichlorben.	1,4[5] Dichlorben.	1,1[6] DCA	1,2[7] DCA	TCE[8]	Carbon Tet.[9]	Chloro.[10]
MW-1	8/16/88	1000	300	400	600	<.05	<.03	<0.5	NA	NA	NA	NA	NA
	7/27/89	120	5.1	<1	260	0.5	<0.5	<0.5	1.2	1.9	1.4	0.7	2.6
	5/14/90	370	130	170	110	4	<0.5	<0.5	2.9	1	1.6	<0.5	<0.5
MW-2	8/16/88	<0.4	<0.3	<0.3	<0.4	<0.5	<0.3	<0.5	NA	NA	NA	NA	NA
	7/27/89	24	<1	<1	80	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	5/14/90	30	12	120	20	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-3	8/16/88	52	1	4.9	17	20	2.8	31	NA	NA	NA	NA	NA
	7/27/89	<1	<1	<1	11	11	2.7	31	<0.5	<0.5	<0.5	0.7	0.5
	5/14/90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-4	8/15/89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.2	<0.5	<0.5	<0.5
	5/14/90	220	20	120	180	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5
MW-5	8/15/89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	0.5
	5/14/90	43	1	9.4	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-6	8/15/89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<0.5
	5/14/90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	<0.5
MW-7	8/15/89	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	20	4.6
	5/14/90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	64	16
MW-8	5/18/90	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-9 Duplicate Sample Results in ( )	5/18/90	8.5(9.3)	8.1(9.0)	4.4(4.9)	5.4(6.6)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)	<0.5(<0.5)

NOTES:

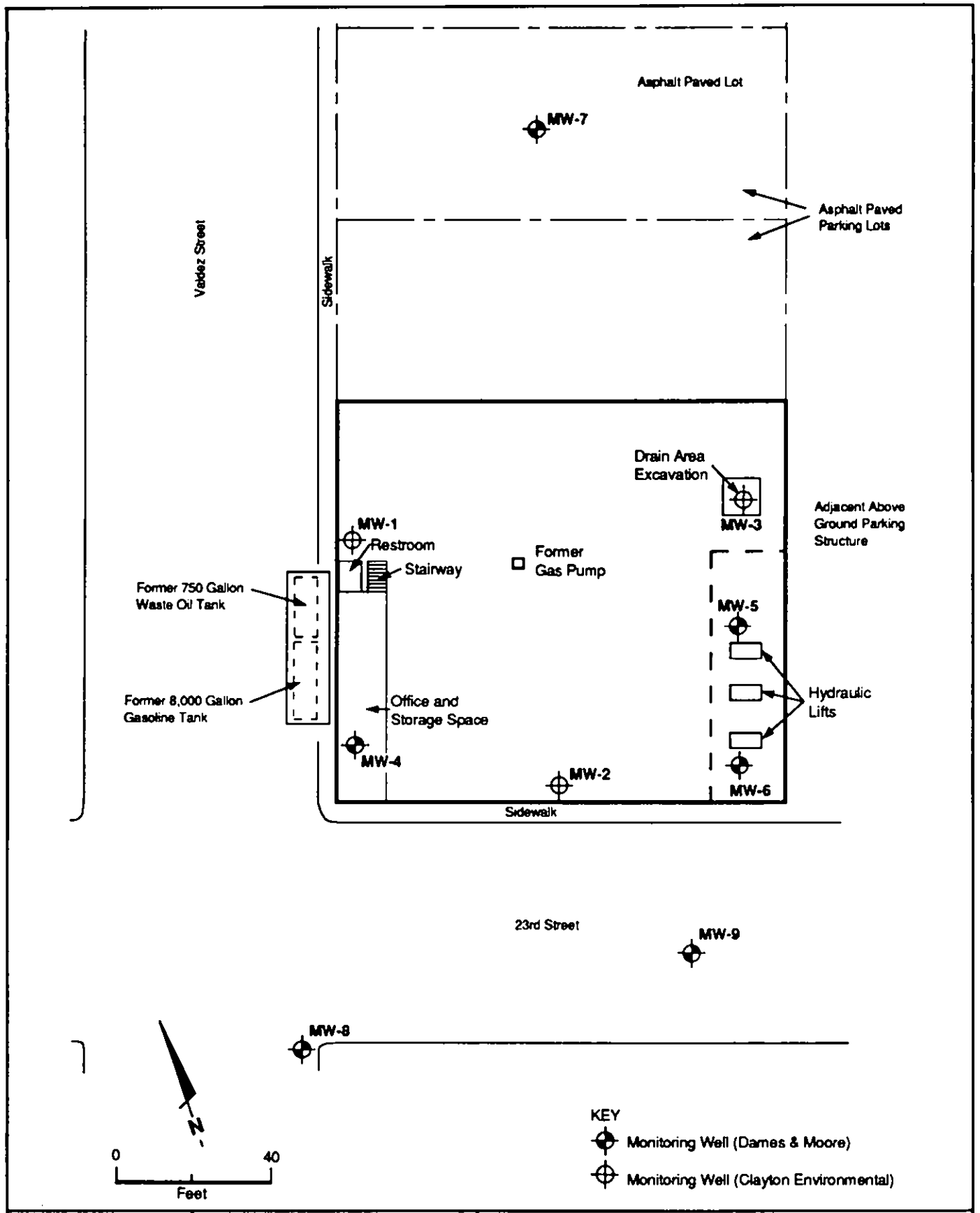
(1) All results reported in µg/L (micrograms per liter)
(2) Ethylbenzene
(3) 1,2 Dichlorobenzene
(4) 1,3 Dichlorobenzene
(5) 1,4 Dichlorobenzene
(6) 1,1 Dichlororethane
(7) 1,2 Dichloroethane
(8) Trichloroethene
(9) Carbon Tetrachloride
(10) Chloroform



Source: USGS, Oakland West, California

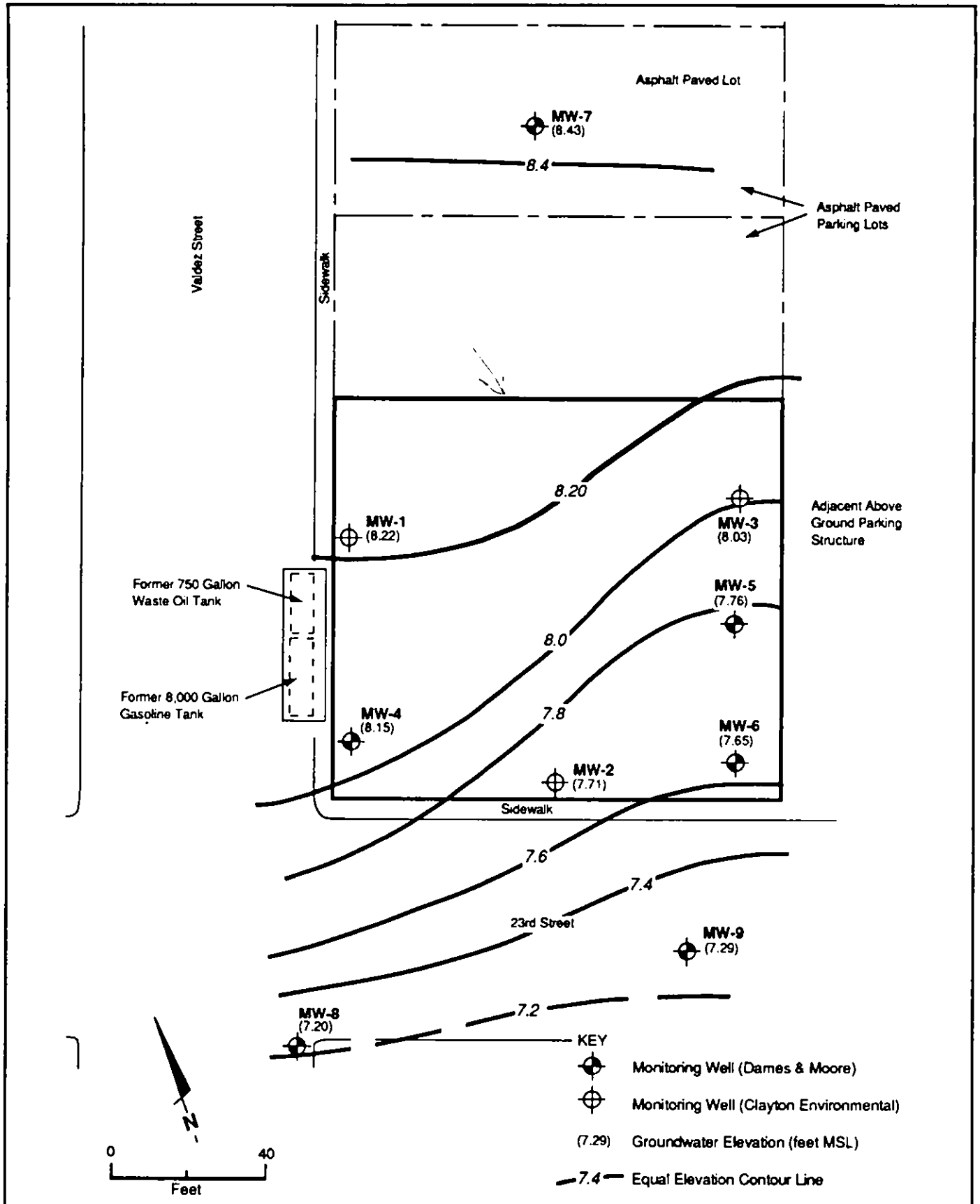
19191-002-043	Oakland Tribune	**SITE LOCATION MAP**
Dames & Moore	FORMER OAKLAND TRIBUNE GARAGE Oakland, California	

PLATE 1



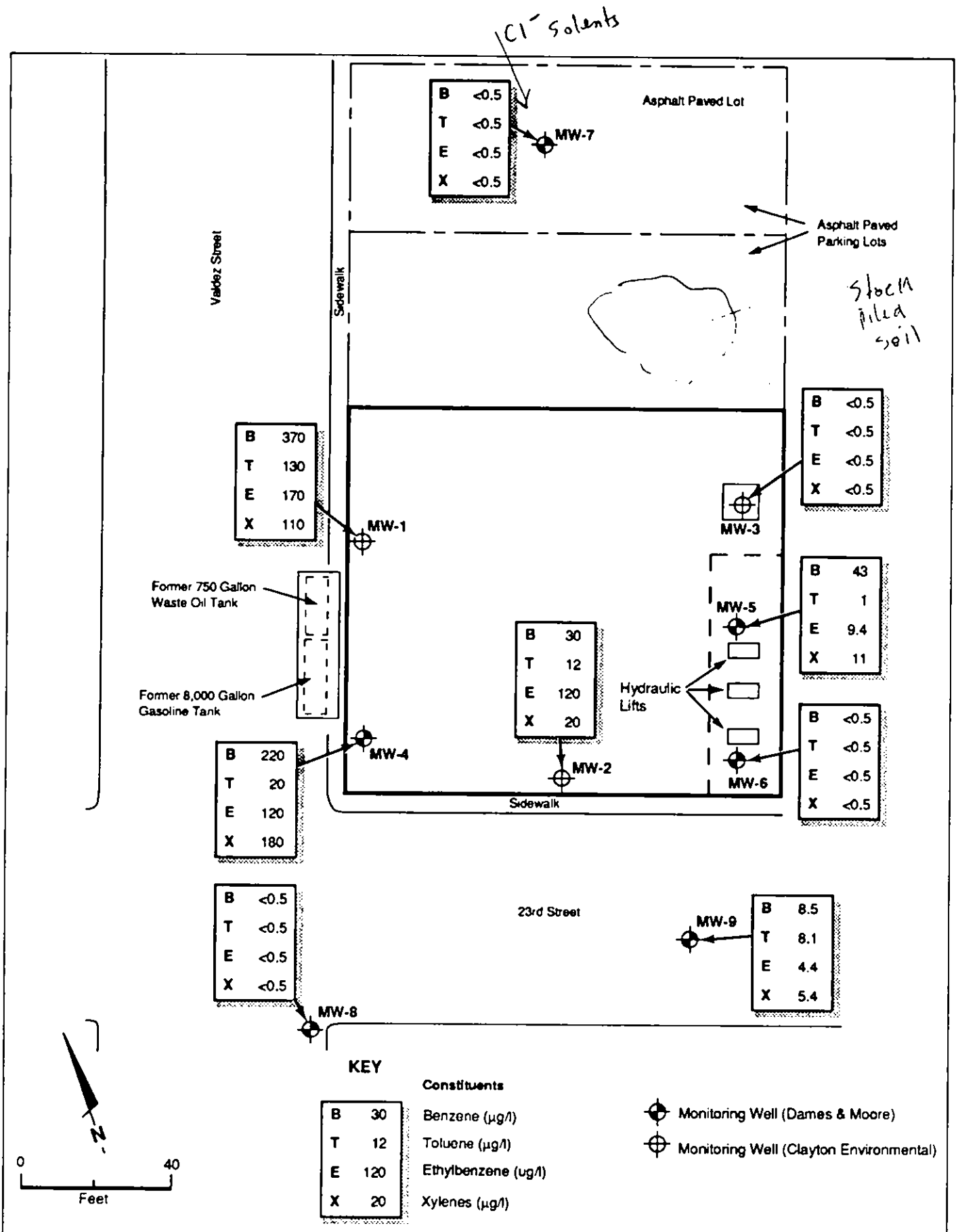
19191-002-043	Oakland Tribune	**SITE PLAN**
Dames & Moore	FORMER OAKLAND TRIBUNE GARAGE Oakland, California	

PLATE 2



19191-002-043	Oakland Tribune	**GROUNDWATER ELEVATION CONTOUR MAP - MAY, 1990**
Dames & Moore	FORMER OAKLAND TRIBUNE GARAGE Oakland, California	

PLATE 3



19191-002-043	Oakland Tribune	**BTEX CONCENTRATIONS IN GROUNDWATER MAY, 1990**
Dames & Moore	FORMER OAKLAND TRIBUNE GARAGE Oakland, California	

PLATE 4

APPENDIX A

FIELD PROCEDURES

INTRODUCTION

Dames & Moore conducted the Phase II field activities at the Oakland Tribune site in Oakland, California in May 1990. The scope of the Phase II field investigation included:

- Installation of two groundwater monitoring wells at selected locations;
- Chemical analysis of selected soil samples collected above the water table in the well borings;
- Measurement of the depth to groundwater in the two newly installed groundwater monitoring wells and seven existing wells; and
- Collection and chemical analysis of groundwater samples from the two new and seven existing wells.

DRILLING, SOIL SAMPLING, AND WELL INSTALLATION PROCEDURES

Dames & Moore conducted a drilling and well installation program at the Oakland Tribune site on May 14 and 15, 1990. Monitoring well locations are shown on Plate 3 of the main report. A Dames & Moore geologist was present during drilling to assist in obtaining relatively undisturbed samples of subsurface materials, to maintain a continuous log of the borings, to make detailed observations of site conditions, and to provide technical assistance as required. Graphic logs of borings are presented in

Plates A-1 and A-2. Upon retrieval from the borehole, soil samples were logged and classified according to the Unified Soil Classification System (Plate A-3).

Drilling was performed by Sierra Pacific Exploration 1 of Concord, California, using a Mobile B-53 truck-mounted rig with 12-inch diameter hollow stem auger drilling equipment. Relatively undisturbed soil samples were collected from each boring using a California Modified Split Spoon Sampler. Samples were collected at 5-foot intervals to the bottom of the boring or when drilling conditions indicated a change in lithology.

The sampler was driven with a 140-pound hammer falling 30 inches. Soil samples were collected in clean, 3-inch long stainless steel tubes. Between each sample depth, the samplers were cleaned with a solution of trisodium phosphate (TSP) in water, then double rinsed with distilled water, and reassembled with clean stainless steel rings. In addition, drilling and sampling equipment was steam cleaned between each boring to reduce the potential for cross-contamination.

Upon retrieval from the borehole, the sampler was disassembled and the soil samples recovered were visually logged and classified as to soil type, color, moisture content, visible evidence of contamination, and other data. The exposed ends of each stainless steel sample tube were covered with 2 mil Teflon sheeting and fitted with plastic end caps. The sample labels contained the following information: job number, boring number, depth, sample number, date, sample collector, location, and soil type.

Three sample tubes were typically recovered from each soil interval sampled. Two of the three sample tubes retrieved from each sampler were placed in an ice chest cooled with blue ice for potential chemical laboratory analysis. The remaining stainless steel tubes, as well as remaining soil samples not submitted for chemical testing, were shipped to the Dames & Moore soils laboratory.

Shortly after recovery, one of the two samples placed on ice was analyzed for total volatile organic compounds using a Photoionization Detector (PID). In this procedure, approximately 20 grams of the soil sample was placed in a clean glass jar. The top of the jar was covered with aluminum foil and sealed with a lid. After approximately 20 minutes, the lid of each jar was removed and the tip of the PID instrument was inserted through the aluminum foil and a headspace concentration recorded. The results of the PID headspace analysis was recorded directly on the boring log.

Based on the results of the PID screening procedure, two soil samples were selected from boring MW-9 and delivered to ACCULAB Environmental Services of Petaluma, California for laboratory chemical analysis. Standard EPA chain-of-custody protocols were followed.

The two soil borings were completed as 4-inch diameter groundwater monitoring wells using the following sequence of procedures:

- Steam cleaned, flush threaded, capped, 4-inch diameter Schedule 40 PVC casing was installed in the boring through the hollow stem of the augers. The wells were completed with 14 feet of 0.020-inch machine slotted screen and 12 to 14 feet of blank casing;

- Filter sand was deposited in the annular space between the wall of the borehole and the casing to a height of approximately 2 feet above the top of the slotted section;

- Bentonite pellets were deposited on top of the filter sand to form a one to three foot thick seal;

- A bentonite-cement mixture was tremied into the remaining annular space from the top of the bentonite layer to ground surface. A Christy box was grouted in at ground surface to complete the installation. Mr. Joe Levine, Construction Inspector, City of Oakland Office of Public Works, was present to observe Christy box installation and completion at both wells.

Following installation, each of the new monitoring wells was developed to remove sediment and silt. Well development consisted of surging and bailing to remove sediment and draw in fresh formation water. Development continued until the water produced was visually free of suspended sediment.

Following well installation, Samuel Kushner of Oakland, California surveyed the elevation of the new monitoring wells relative to the City of Oakland Datum. Well installation details are presented in Table 1.

GROUNDWATER SAMPLING PROCEDURES

Groundwater samples were collected from the seven existing groundwater monitoring wells (MW-1 through MW-7) on May 14, 1990 and the two newly installed wells (MW-8 and MW-9) on May 18, 1990. Prior to sampling, each well was purged by pumping or bailing until the measured temperature, pH and electrical conductivity of the water produced attained stable values to assure that fresh formation water entered the wells. A minimum of three to four casing volumes of water were removed from each well during purging. Wells were sampled using dedicated polyethylene bailers and rope.

Groundwater samples collected were submitted to ACCULAB for chemical analysis. The sample bottles were labeled with the following information: well number, sample number, date, collector name, owner, and location. Samples were stored in an

ice chest cooled with ice or blue ice. EPA recommended sample chain-of-custody records were maintained for each sample shipment.

The conductivity and pH meters were calibrated twice, once at the beginning of the day and once during the day. Meter probes and beakers were thoroughly rinsed with distilled water before and after each use.

MW-8

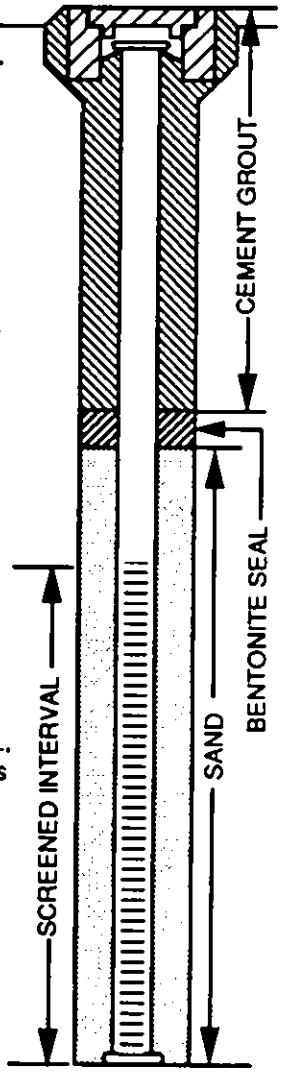
DATE DRILLED: 5/14/90

ELEVATION: 22.41 Feet

DEPTH IN FEET	SAMPLING: OVM READING (ppm)	SAMPLING: TYPE OF SAMPLER	SAMPLING: SAMPLING RESISTANCE
0	0	U	30
5	0	U	45
10	0	U	38
15	0	U	—
20	0	U	24
25	0	U	21
30			
35			

SAMPLES

SYMBOLS	DESCRIPTION
	ASPHALT
CL	YELLOWISH RED CLAY with black and brownish yellow mottling (slightly moist) (stiff) [FILL]
CL	DARK BROWN CLAY with trace of black mottling and trace coarse sand and fine gravel (moist)
SM	BROWN SILTY SAND with some iron oxide mottling, trace fine gravel, chert and jasper clasts, subrounded to angular
SP/GP	BROWN GRAVELLY SAND AND SANDY GRAVEL, subrounded to subangular, chert and jasper clasts up to 1.5" in diameter
	Increase in chert and jasper clasts up to 1" in diameter



NOTES:

1. Boring completed at a depth of 28.0 feet on 5/14/90.
2. 4-inch PVC observation well installed to a depth of 27.0 feet; screened interval from 14.0 to 27.0 feet.
3. Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.
4. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
5. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate A-3.

LOG OF BORING

Dames & Moore

MW-9

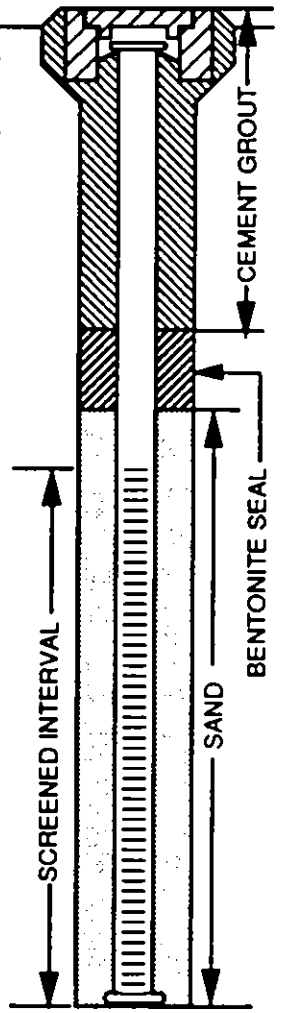
DATE DRILLED: 5/14/90

ELEVATION: 20.45 Feet

DEPTH IN FEET	SAMPLING: OVM READING (ppm)	SAMPLING: TYPE OF SAMPLER	SAMPLING: SAMPLING RESISTANCE
0	0	U	39
5	0	U	41
10	0	U	50
15	35	U	34
20	4	U	39
25	17	U	14
30			
35			

SAMPLES

SYMBOLS	DESCRIPTION
	ASPHALT
CL	YELLOWISH RED CLAY with black and brownish yellow mottling (slightly moist) (stiff) [FILL]
CL	GREENISH GRAY CLAY with some fine sand (dry) (stiff)
	Sandier with irregular yellowish red mottling (moist)
CL/GC	GREENISH GRAY CLAY with interbeds of coarse gravel, black chert and jasper clasts; strong hydrocarbon odor (wet)
	Becomes brown with some rounded white and gray chert and jasper clasts, trace of orange-brown mottling
	Decrease in gravel



NOTES:

1. Boring completed at a depth of 28.0 feet on 5/14/90.
2. 4-inch PVC observation well installed to a depth of 25.5 feet; screened interval from 11.5 to 25.5 feet.
3. Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.
4. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
5. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate A-3.

LOG OF BORING

Dames & Moore

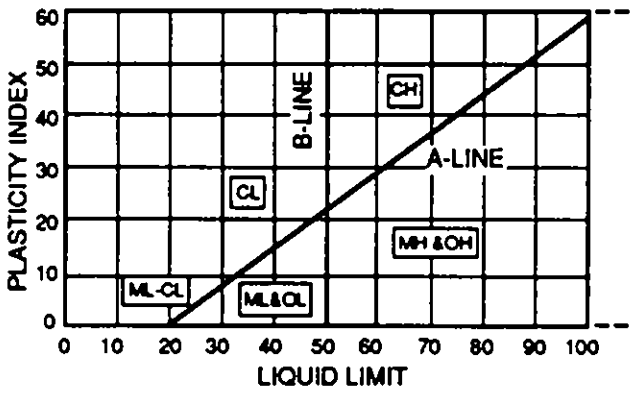
UNIFIED SOIL CLASSIFICATION SYSTEM

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

PLASTICITY CHART



KEY TO SAMPLES

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

KEY TO TEST DATA

LV - LABORATORY VANE SHEAR TEST
TV - TORVANE (PERFORMED IN FIELD)
PP - POCKET PENETROMETER
TXUU - TRIAXIAL COMPRESSION-UNCONSOLIDATED UNDRAINED
DSCU - DIRECT SHEAR-CONSOLIDATED UNDRAINED
AL - ATTERBERG LIMITS
GSA - GRAIN SIZE ANALYSES
C - CONSOLIDATION TEST

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

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

Bruce Scarbrough
Dames & Moore
221 Main Street, Ste. 600
San Francisco, CA 94105

Client Code: DAME28
Survey # OAK.TRIBUNE
Project/Release # 19191-002-043

L A B O R A T O R Y R E S U L T S

Date Collected: 05/15/90
Date Extracted: 05/19/90
Date Analyzed: 05/19/90

Laboratory Job No.: 903299
Date Received: 05/17/90
Date Reported: 05/23/90

ASSAY: TPH/GASOLINE (EPA 5020/8015)
MATRIX: SOIL

LABNO SMPLNO-ID	RESULTS	DET.LIM
13865 MW9-3A GASOLINE	ND	1.0 mg/kg
13866 MW9-4A GASOLINE	2.2 mg/kg	1.0 mg/kg

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE.

ENVIRONMENTAL SERVICES

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

L A B O R A T O R Y R E S U L T S

Date Collected: 05/15/90
Date Extracted: 05/19/90
Date Analyzed: 05/19/90

Laboratory Job No.: 903299
Date Received: 05/17/90
Date Reported: 05/23/90

ASSAY: TPH/BTEX (EPA 5020/8020)
MATRIX: SOIL

LABNO SMPLNO-ID	RESULTS	DET.LIM
13865 MW9-3A		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
13866 MW9-4A		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg

ENVIRONMENTAL SERVICES

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

Bruce Scarbrough
Dames & Moore
221 Main Street, Ste. 600
San Francisco, CA 94105

Client Code: DAME28
Survey # OAK.TRIBUNE
Project/Release # 19191-002-043

L A B O R A T O R Y R E S U L T S

Date Collected: 05/18/90
Date Extracted: 06/02/90
Date Analyzed: 06/02/90

Laboratory Job No.: 903353
Date Received: 05/21/90
Date Reported: 06/15/90

ASSAY:
PURGEABLES IN WATER (EPA 5030/601)

COMPOUNDS:	LAB#	14323	DET.	14325	DET.	14327	DET.
	SMP#	MW-8	LIM.	MW-9	LIM.	MW-9A	LIM.
PURGEABLES		ug/L		ug/L		ug/L	
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	0.5	ND	0.5	ND	0.5
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
2-CHLOROETHYLVINYL ETHER		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		ND	0.5	ND	0.5	ND	0.5
CHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.

DCF

ENVIRONMENTAL SERVICES

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

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 903353

COMPOUNDS:	LAB#	14323	DET.	14325	DET.	14327	DET.
	SMP#	MW-8	LIM.	MW-9	LIM.	MW-9A	LIM.
PURGEABLES		ug/L		ug/L		ug/L	
TRICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	0.5	ND	0.5	ND	0.5
VINYL CHLORIDE		ND	0.5	ND	0.5	ND	0.5

ENVIRONMENTAL SERVICES

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

L A B O R A T O R Y R E S U L T S

Date Collected: 05/18/90
Date Extracted: 06/02/90
Date Analyzed: 06/02/90

Laboratory Job No.: 903353
Date Received: 05/21/90
Date Reported: 06/15/90

ASSAY:
PURGEABLE AROMATICS IN WATER (EPA 5030/602)

COMPOUNDS: LAB#	14323	DET.	14325	DET.	14327	DET.
SMP#	MW-8	LIM.	MW-9	LIM.	MW-9A	LIM.
PURGEABLES	ug/L		ug/L		ug/L	
BENZENE	ND	0.5	8.5	0.5	9.3	0.5
CHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE	ND	0.5	4.4	0.5	4.9	0.5
TOLUENE	ND	0.5	8.1	0.5	9.0	0.5
XYLENE	ND	0.5	5.4	0.5	6.6	0.5

ENVIRONMENTAL SERVICES

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

Bruce Scarbrough
Dames & Moore
221 Main Street, Ste. 600
San Francisco, CA 94105

Client Code: DAME28
Survey #
OAKLAND TRIBUNE
Project/Release # 19191-002-043

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 903251
Date Collected: 05/14/90
Date Analyzed: 05/21/90
Date Received: 05/15/90
Date Reported: 06/15/90

ASSAY:
PURGEABLES BY GC/MS(EPA624)

COMPOUNDS:	LAB#	13614	DET.
	SMP#	MW-7	LIM.
PURGEABLES		ug/L	
BENZENE		ND	0.5
BROMODICHLOROMETHANE		ND	0.5
BROMOFORM		ND	0.5
BROMOMETHANE		ND	0.5
CARBON TETRACHLORIDE		64	0.5
CHLOROBENZENE		ND	0.5
CHLOROETHANE		ND	0.5
2-CHLOROETHYLVINYL ETHER		ND	1.0
CHLOROFORM		16	0.5
CHLOROMETHANE		ND	0.5
DIBROMOCHLOROMETHANE		ND	0.5
1,2-DICHLOROBENZENE		ND	0.5
1,3-DICHLOROBENZENE		ND	0.5
1,4-DICHLOROBENZENE		ND	0.5
1,1-DICHLOROETHANE		ND	0.5
1,2-DICHLOROETHANE		ND	0.5
1,1-DICHLOROETHENE		ND	0.2
TRANS-1,2-DICHLOROETHENE		ND	0.5
1,2-DICHLOROPROPANE		ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5
ETHYL BENZENE		ND	0.5
METHYLENE CHLORIDE		ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5
TETRACHLOROETHENE		ND	0.5

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.

DLF

ENVIRONMENTAL SERVICES

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

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 903251

COMPOUNDS:	LAB#	13614	DET.
	SMP#	MW-7	LIM.
PURGEABLES		ug/L	
TOLUENE		ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5
TRICHLOROETHENE		ND	0.5
TRICHLOROFLUOROMETHANE		ND	0.5
VINYL CHLORIDE		ND	1.0
XYLENES		ND	0.5

ND: NOT DETECTED

ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245 FAX: (707) 763-4085

L A B O R A T O R Y R E S U L T S

Date Collected: 05/14/90
Date Extracted: 05/20/90
Date Analyzed: 05/20/90

Laboratory Job No.: 903251
Date Received: 05/15/90
Date Reported: 06/15/90

ASSAY:
PURGEABLES IN WATER (EPA 5030/601)

COMPOUNDS: LAB# / SMP# / PURGEABLES	13608 MW-1 ug/L	DET. LIM. ug/L	13609 MW-4 ug/L	DET. LIM. ug/L	13610 MW-2 ug/L	DET. LIM. ug/L
BROMODICHLOROMETHANE	ND	0.5	ND	0.5	ND	0.5
BROMOFORM	ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE	ND	0.5	ND	0.5	ND	0.5
CARBON TETRACHLORIDE	ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE	ND	0.5	ND	0.5	ND	0.5
2-CHLOROETHYLVINYL ETHER	ND	1.0	ND	1.0	ND	1.0
CHLOROFORM	ND	0.5	ND	0.5	ND	0.5
CHLOROMETHANE	ND	0.5	ND	0.5	ND	0.5
DIBROMOCHLOROMETHANE	ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE	4.0	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE	2.9	0.5	ND	0.5	ND	0.5
1,2-DICHLOROETHANE	1.0	0.5	0.6	0.5	ND	0.5
1,1-DICHLOROETHENE	ND	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE	ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE	ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE	ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE	ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE	ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE	ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE	ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE	ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE	ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE	1.6	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE	ND	0.5	ND	0.5	ND	0.5
VINYL CHLORIDE	ND	0.5	ND	0.5	ND	0.5

ENVIRONMENTAL SERVICES

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

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 903251

COMPOUNDS: PURGEABLES	LAB# / SMP#	13611 MW-6	DET. LIM. ug/L	13612 MW-5	DET. LIM. ug/L	13613 MW-3	DET. LIM. ug/L
BROMODICHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
BROMOFORM		ND	0.5	ND	0.5	ND	0.5
BROMOMETHANE		ND	0.5	ND	0.5	ND	0.5
CARBON TETRACHLORIDE		ND	0.5	ND	0.5	ND	0.5
CHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
CHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
2-CHLOROETHYLVINYL ETHER		ND	1.0	ND	1.0	ND	1.0
CHLOROFORM		ND	0.5	ND	0.5	ND	0.5
CHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
DIBROMOCHLOROMETHANE		ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1-DICHLOROETHENE		1.5	0.5	ND	0.5	ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROPROPANE		ND	0.5	ND	0.5	ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5	ND	0.5	ND	0.5
METHYLENE CHLORIDE		ND	0.5	ND	0.5	ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TETRACHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	0.5	ND	0.5	ND	0.5
VINYL CHLORIDE		ND	0.5	ND	0.5	ND	0.5

ENVIRONMENTAL SERVICES

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

L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 903251

COMPOUNDS:	LAB#	13615	DET.
	SMP#	TB-1	LIM.
PURGEABLES		ug/L	
BROMODICHLOROMETHANE		ND	0.5
BROMOFORM		ND	0.5
BROMOMETHANE		ND	0.5
CARBON TETRACHLORIDE		ND	0.5
CHLOROBENZENE		ND	0.5
CHLOROETHANE		ND	0.5
2-CHLOROETHYLVINYL ETHER		ND	1.0
CHLOROFORM		ND	0.5
CHLOROMETHANE		ND	0.5
DIBROMOCHLOROMETHANE		ND	0.5
1,4-DICHLOROBENZENE		ND	0.5
1,3-DICHLOROBENZENE		ND	0.5
1,2-DICHLOROBENZENE		ND	0.5
1,1-DICHLOROETHANE		ND	0.5
1,2-DICHLOROETHANE		ND	0.5
1,1-DICHLOROETHENE		ND	0.5
TRANS-1,2-DICHLOROETHENE		ND	0.5
1,2-DICHLOROPROPANE		ND	0.5
CIS-1,3-DICHLOROPROPENE		ND	0.5
TRANS-1,3-DICHLOROPROPENE		ND	0.5
METHYLENE CHLORIDE		ND	0.5
1,1,2,2-TETRACHLOROETHANE		ND	0.5
TETRACHLOROETHENE		ND	0.5
1,1,1-TRICHLOROETHANE		ND	0.5
1,1,2-TRICHLOROETHANE		ND	0.5
TRICHLOROETHENE		ND	0.5
TRICHLOROFLUOROMETHANE		ND	0.5
VINYL CHLORIDE		ND	0.5

ENVIRONMENTAL SERVICES

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

L A B O R A T O R Y R E S U L T S

Date Collected: 05/14/90
Date Extracted: 05/20/90
Date Analyzed: 05/20/90

Laboratory Job No.: 903251
Date Received: 05/15/90
Date Reported: 06/15/90

ASSAY:
PURGEABLE AROMATICS IN WATER (EPA 5030/602)

COMPOUNDS: LAB# / SMP# / PURGEABLES	13608 MW-1 ug/L	DET. LIM. ug/L	13609 MW-4 ug/L	DET. LIM. ug/L	13610 MW-2 ug/L	DET. LIM. ug/L	13611 MW-6 ug/L	DET. LIM. ug/L
BENZENE	370	0.5	220	0.5	30	0.5	ND	0.5
CHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE	4.0	0.5	ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE	170	0.5	120	0.5	120	0.5	ND	0.5
TOLUENE	130	0.5	20	0.5	12	0.5	ND	0.5
XYLENE	110	0.5	180	0.5	20	0.5	ND	0.5

COMPOUNDS: LAB# / SMP# / PURGEABLES	13612 MW-5 ug/L	DET. LIM. ug/L	13613 MW-3 ug/L	DET. LIM. ug/L	13615 TB-1 ug/L	DET. LIM. ug/L
BENZENE	43	0.5	ND	0.5	ND	0.5
CHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
1,2-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
1,3-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
1,4-DICHLOROBENZENE	ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE	9.4	0.5	ND	0.5	ND	0.5
TOLUENE	1.0	0.5	ND	0.5	ND	0.5
XYLENE	11	0.5	ND	0.5	ND	0.5

QA/QC CONFIRMATION

(Please remember to include copy of proposal with report being reviewed)

Job Number: 19191-002-43 53xx

Job/Report Name: Phase II Soil and Groundwater Investigation
Former Oakland Tribune Garage, Oakland CA

Author(s): Andy Mork, Bruce Scarbrough

Date Report Submitted for Review: 7/2/90

Date Report Due to Client: 7/6/90

Author's Comments to Reviewer (e.g., draft or final, are recommendations delicate, has client seen previous versions of report. Include any information that gives reviewer a feeling for sensitivity of report and amount of review time that should be spent on it):

Review Comments (Attach additional sheets if necessary):

Resubmit: _____ **Approvals:** **Project Manager** Bruce Scarbrough

Copies: Job File **Lead Consultant** _____

Bound into end **Peer Reviewer** _____

of in-house report **Sub Group Leader** _____

DMK/2950b