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

September 20, 1989
Job No. 19191-001-43

DAMES & MOORE

DAMES & MOORE A PROFESSIONAL LIMITED PARTNERSHIP
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September 20, 1989
Job No. 19191-001-43

The Tribune
P.O. Box 24304
Oakland, California 94623

Attention: Ms. Erica B. Grubb, General Counsel

Report Transmittal
Soil and Groundwater
Investigation
2302 Valdez Street
Oakland, California

Dear Ms. Grubb:

Dames & Moore is plesed to submit our Phase I Soil and Groundwater Investigation Report for the former Oakland Tribune Garage located at 2302 Valdez Street in Oakland, California.

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

Very Truly Yours,

DAMES & MOORE

David M. Klimberg
Associate

Bruce Scarbrough
Project Manager

cc: Ms. Tommy Young

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1.0 INTRODUCTION

This report presents the results of a Phase I soil and groundwater investigation conducted by Dames & Moore at the former Oakland Tribune Garage facility ("the site") in Oakland, California. This investigation was performed in order to assist the Oakland Tribune comply with the requirements set forth by the Alameda County Health Care Services Agency in a June 22, 1988 letter. The primary purpose of the Phase I investigation was to further evaluate the nature and extent of petroleum hydrocarbons previously reported to be present in the soil and groundwater underlying the site. This investigation was conducted in accordance with our proposal dated May 12, 1989 and accepted by the Oakland Tribune on July 7, 1989.

2.0 BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

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, presumably used to drain fluids from cleaning the floors 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.

2.2 SITE HISTORY

Archival Sanborn Fire Insurance Maps at the University of California, Charles Doe Library were reviewed for the years 1889, 1903 and 1911. The 1889 and 1903 maps indicated the subject property was occupied by a wood-frame dwelling and livery shed, with single unit dwellings and vacant lots in the immediate vicinity.

The 1911 map indicated the property was occupied by the Vulcan Tire and Auto Service Center. In addition to single unit dwellings, the area to the north, east and west of the site was occupied by machine shops, carpentry shops, and auto repair facilities. Valdez Street terminated immediately south of the subject property on 23rd Street. Vacant lots and large, double lot size warehouses were located on the south side of 23rd Street, opposite the subject property.

The Sanborn Map index indicated that the library also contained a 1950 rendering of the subject area in Volume 2, Roll 41. Review of Rolls 41, 40 and 42 failed to locate the 1950 edition map.

The age of the building is unknown. However, the present outline of the building is the same as the structure depicted on the 1911 Sanborn Map. Information discussed below indicates the present structure was in place prior to 1943.

Jack Kinsner, long time Oakland Tribune Circulation Department employee, was interviewed by telephone regarding the Tribune operations at the garage and site history. The following information was related to Dames & Moore by Mr. Kinsner.

The Oakland Tribune acquired and occupied the subject property in late spring, 1943. Prior to this the site housed a gasoline filling station and repair garage. No modifications or additions were performed on the building as a result of change in ownership.

During the years of service as the Oakland Tribune Garage, operations conducted onsite included engine maintenance and repair, and tire repair. No facilities were present for body repair or paint work. The garage also provided limited parking space for delivery vehicles. The majority of the vehicles were parked on a lot immediately northeast of the garage on Valdez Street, or in the "lower lot", adjacent to the southeast on Waverly Street.

The underground gasoline and waste oil tanks were reportedly in place prior to acquisition by the Oakland Tribune. Mr. Kinsner could recall no incidents of leaks or spills during his association with the Tribune. Mr. Frank Louis, current Oakland Tribune Garage Manager, stated that the tanks had not been leak tested. However, weekly product inventory monitoring of the gasoline tank was performed by dipstick measurements of gasoline levels. No discrepancies were indicated as a result of this inventory check. Mr. Louis further maintained that gasoline release was from spillage and overflow as a consequence of sloppy tank filling procedures by service personnel.

The Oakland Tribune moved their garage facility from this location in 1986. The subject property is currently leased to a local car dealership for the purpose of warehousing new vehicles.

2.3 SUMMARY OF PREVIOUS INVESTIGATIONS

In July 1987, J.H. Kleinfelder Associates (Kleinfelder) performed a Preliminary Environmental Site Assessment (PSA) of the site for the Toothman Development Company. Kleinfelder identified three main areas of environmental concern at the site; the underground storage tanks, the floor sump, and the area near the gasoline pump. As part of the PSA, Kleinfelder drilled eight

soil borings and analyzed a total of seven soil samples collected at various depths from the borings. A site plan showing the soil boring locations and a table summarizing the analytical results are presented in Appendix A of this report.

Chemical results of a soil sample collected adjacent to the floor sump at a depth of 5 feet showed concentrations of 5400 mg/kg or parts per million (ppm) of oil and grease and 6500 ppm of total fuel hydrocarbons. In addition, benzene, ethylbenzene and toluene were also detected in the sample collected near the sump. Chemical results of soil samples collected in the vicinity of the underground storage tanks indicated no significant contamination; however, several soil samples exhibited strong hydrocarbon odors. Soil samples collected from other locations at the site did not exhibit any detectable odors, or compounds present at concentrations above the analytical detection limits.

On February 23, 1988, Clayton Environmental Consultants (Clayton) removed the two underground storage tanks from beneath the sidewalk. During removal, visible soil contamination was observed and soil samples were collected from beneath both tanks. Soil samples collected from directly beneath the tanks were reported to contain concentrations of total fuel hydrocarbons ranging from 46 to 4000 ppm, and oil and grease concentrations of 2400 and 6000 ppm. Approximately 30 cubic yards of visibly contaminated soil was excavated from beneath the tanks. Following excavation, additional soil samples were collected from the base of the excavation. These soil samples were found to contain no detectable levels of total fuel hydrocarbons; however oil and grease concentrations of 2400 and 12,000 ppm were reported. Excavation of soil was halted upon encountering groundwater at a depth of approximately 17.5 feet. The excavation was subsequently backfilled with imported fill and the sidewalk repaired. Sampling locations and a table summarizing the analytical results are presented in Appendix A.

On February 29, 1988, Clayton excavated approximately 30 cubic yards of soil from beneath the floor sump within the building. During excavation, the soil encountered to a depth of 15 feet exhibited discoloration and strong hydrocarbon odors. At a depth of 15 feet, a water-bearing gravelly sand unit was encountered, and the excavation ceased. Two soil samples collected from the sump excavation at a depth of 13 and 15 feet were reported to contain total fuel hydrocarbons at concentrations of 440 and 5500 ppm, respectively, and oil and grease at concentrations of 610 and 2100 ppm, respectively. The excavation was subsequently backfilled with imported fill. Sample locations and analytical results are presented in Appendix A.

In August 1988, Clayton drilled three soil borings which were converted to 2-inch diameter groundwater monitoring wells (MW-1, MW-2, and MW-3). Well locations are shown on Plate 3.

Soil samples collected during drilling of the borings were all reported to contain oil and grease at concentrations ranging from 210 to 3600 ppm. Analytical results of groundwater samples collected from two of the three wells (MW-1 and MW-3) indicate that groundwater underlying the site contains concentrations of benzene and toluene above the established California Department of Health Services (DHS) Drinking Water Action Levels of 0.7 and 100 µg/l or ppb, respectively. In addition, ethylbenzene, xylenes, and chlorinated benzenes were detected above the method detection limits (MDL), but at concentrations below DHS Drinking Water Action Levels.

3.0 PURPOSE AND SCOPE OF SERVICES

The primary objectives of the Phase I soil and groundwater investigation conducted by Dames & Moore were the following:

- Evaluate the potential for migration of contaminants from offsite sources onto the site;

- Confirm the presence of chemicals previously reported in the onsite soil and groundwater;

- Characterize site specific geologic and hydrogeologic conditions that may influence the fate and transport of chemicals detected on the site; and

- Further evaluate the sources and extent of onsite soil and groundwater contamination identified in the previous site investigations.

To meet the above objectives, the following tasks were performed:

- Research and review of pertinent available geologic and hydrogeologic information on the site vicinity;

- Interview of people knowledgable about the site history, with particular emphasis on the past operations at the site that may have resulted in the release of hazardous substances;

- Review of files maintained by the Regional Water Quality Control Board (RWQCB), DHS and EPA to identify and assess known areas of contamination in the site vicinity;

- Drilling of 12 onsite soil borings, four of which were completed as monitoring wells;

- Chemical analysis of selected soil samples collected above the water table in the borings;

- Measurement of groundwater elevation and performance of aquifer tests in each of the newly installed monitoring wells; and

- Collection and chemical analysis of groundwater samples from the three existing and four newly installed monitoring wells.

4.0 ENVIRONMENTAL SETTING

4.1 PHYSIOGRAPHY

The site is located on the gentle westward sloping East Bay Plain, approximately 0.5 miles north of Lake Merritt, at an elevation of 20 feet above sea level. The East Bay Plain is bound to the west by San Francisco Bay and to the east by the Diablo Range.

4.2 REGIONAL GEOLOGY AND HYDROGEOLOGY

The East Bay Plain comprises an area of approximately 114 square miles in Western Alameda County. It is situated in the San Francisco Bay depression, which is in part an irregular downwarp complicated by faulting principally along northwest-trending faults and modified by erosion and deposition.

Unconsolidated sediments of the East Bay Plain were derived primarily from erosion of the Diablo Range to the east. The unconsolidated units include older alluvium, Merritt Sand, Bay Mud, fluvial and interfluvial deposits, and younger alluvium.

The older and younger alluvium consist of a heterogeneous mixture of poorly consolidated to unconsolidated clay, silt, sand, and gravel. The sediments were derived mainly from the hills to the east and southeast and represent deposition in successive coalescing alluvial fans.

The Merritt Sand is a loose well-sorted, fine to medium grained sand and silt, with lenses of sandy clay and clay. It was derived chiefly as a wind and water deposited beach and near-shore deposit.

The Bay Mud is an unconsolidated dark plastic clay and silty clay rich in organic material. Locally, it contains stringers and lenses of poorly graded silt and sand as well as layers of peat.

The fluvial deposits are made up of unconsolidated, moderately graded, fine sand and silt deposited along streams and flood plains.

The interfluvial deposits are unconsolidated, plastic, moderately to well graded, silt and clay rich, inorganic material deposited from standing flood waters in poorly drained areas.

The older alluvium, younger alluvium, and Merritt Sand, with a cumulative thickness of more than 1000 feet, make up the groundwater reservoir of the East Bay Plain area. The older alluvium is considered to be the principal groundwater reservoir underlying the Bay Plain. The undivided bedrock units, exposed in the Diablo Range to the east, form the base and eastern boundaries of the reservoir.

Groundwater occurs under both unconfined and confined conditions and moves from the eastern part of the reservoir downgradient towards the San Francisco Bay. Recharge to the groundwater system occurs as surface infiltration, seepage from fluvial systems, and subsurface inflow from adjacent areas. Discharge of the system includes evapotranspiration, groundwater discharge to streams, underflow to the bay, spring discharge, and well pumping.

4.3 WATER QUALITY AND USE

Most groundwater in the East Bay Plain is used for irrigation or industrial purposes and most domestic water is supplied by the East Bay Municipal Utility District from surface water sources developed outside of the Plain Area. Groundwater in the East Bay Plain Area is chemically and biologically suitable for most uses. Its high dissolved solids content may, however, make treatment desirable for some uses. Objectionable amounts of

bacteria and nitrates have been found in some wells, but groundwater in the older alluvium has not been significantly degraded by toxics.

5.0 FIELD INVESTIGATION

5.1 SOIL SAMPLING AND TESTING PROGRAM

A total of 12 soil borings were drilled during the field program to investigate soil conditions at the Oakland Tribune site between August 3 and August 10, 1989. Four of the borings were subsequently completed as groundwater monitoring wells. Drilling and well installation was performed by All Terrain Drilling Company of Roseville, California under the direction of an on-site Dames & Moore geologist. Soil boring and groundwater monitoring well locations are shown on Plate 3. Logs of borings and detailed descriptions of drilling and soil sampling procedures are presented in Appendix B.

During advancement of each of the 12 boreholes (SB-1 through SB-12), relatively undisturbed soil samples were collected at a minimum of every five feet from near the surface to the maximum depth of each boring. Upon collection, soil samples were 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.

Three soil samples from each boring and two duplicate samples were submitted to ACCULAB Environmental Services of Petaluma, California for chemical analyses. Samples chosen for chemical analyses were selected on the basis of PID field screening results, visible evidence of contamination or odors and their location relative to potential sources (i.e underground storage tanks). Samples submitted to ACCULAB were analyzed for:

- Total recoverable hydrocarbons (TRH) in accordance with EPA Method 418.1;

- Total petroleum hydrocarbons (TPH) as gasoline in accordance with EPA Method 5030/8015; and

- Purgeable aromatic hydrocarbons in accordance with EPA Method 8020.

Because of the potential presence of waste oil, two soil samples with the highest reported TPH (418.1) concentrations were also analyzed for 17 CAM metals, priority pollutant semi-volatile compounds (EPA Method 8270), and PCBs (EPA Method 8080).

Selected soils samples not submitted for laboratory chemical analysis were analyzed by a Dames & Moore chemist for the presence of non-volatile petroleum hydrocarbons using thin-layer chromatography (TLC). A description of the TLC methodology is presented in Appendix B. Soil chemical laboratory analytical reports are presented in Appendix C. Soil chemical testing results are discussed in Section 6.0.

5.2 MONITORING WELL INSTALLATION

Four of the 12 soil borings were completed as 4-inch diameter groundwater monitoring wells at the locations shown on Plate 3. The wells were installed to evaluate groundwater quality in the uppermost water-bearing zone beneath the site. Wells MW-4, MW-5, and MW-6 were installed within the garage building. Well MW-7 was installed in the northernmost parking lot outside of the building at a location believed to be upgradient from potential onsite sources.

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.

5.3 GROUNDWATER SAMPLING AND ANALYSIS PROGRAM

Groundwater samples were collected from the three existing onsite 2-inch diameter monitoring wells on July 27, 1989. Groundwater samples from the newly installed 4-inch diameter wells were collected on August 15, 1989.

Groundwater samples, including one blind duplicate and a trip blank, were delivered to ACCULAB for chemical analysis. Water samples were analyzed for:

- Total recoverable hydrocarbons (EPA Method 418.1 or SM503E);
- Total petroleum hydrocarbons as diesel (EPA Method 3510/8015), Wells MW-1, MW-2 and MW-3, only;
- Total petroleum hydrocarbons as gasoline (EPA Method 5030/8015);
- Purgeable aromatics (EPA Method 602); and
- Purgeable halocarbons (EPA Method 601).

Groundwater sampling procedures are described in Appendix B. Groundwater analytical laboratory reports are presented in Appendix C. A discussion of the groundwater chemical results in presented in Section 6.0.

5.4 AQUIFER TESTING PROGRAM

An aquifer testing program was conducted to assess the hydrogeologic parameters of the uppermost water-bearing unit underlying the Oakland Tribune site. The testing program consisted of conducting falling head permeability (slug) tests in the four newly installed monitoring wells.

The falling head permeability tests were conducted by rapidly submerging a displacement instrument (PVC slug) below the static water level in each well being tested. The rate of recovery of the water level in the well casing is then monitored using an electric water level indicator until the water level recovers to within 90 percent of the static level.

The time-water level data generated was analyzed using a computer software package called SLUGIX which utilizes three analytical methods to calculate hydraulic conductivity of the aquifer materiel. Because the saturated soils underlying the site appear to be unconfined or partially confined, the Bouwer and Rice Method (Bouwer and Rice, 1976) was used to analyze the test data. Detailed descriptions of the field procedures and data plots are presented in Appendix B. Results of the aquifer testing program are discussed in Section 6.0.

5.5 WATER LEVEL MONITORING AND TIDAL INFLUENCE STUDY

The depth to groundwater from the top of the PVC casing in each of the monitoring wells was measured on August 22, 1989, to assess groundwater elevations and gradients. Depths to groundwater in each well were measured using a electronic water level indicator. Depth to groundwater and groundwater elevation data are summarized on Table 1. The results of the water level monitoring program are discussed in Section 6.0.

To evaluate the influence of diurnal tidal fluctuations of nearby Lake Merritt on the uppermost water-bearing zone, water levels in monitoring wells MW-5 and MW-6 were recorded continuously for a period of 24 hours. Water levels were recorded using a Envirolab electronic data logger equipped with pressure transducers capable of measuring water level changes within 0.01 foot. Data generated during the tidal influence study are presented in Appendix B. The results of the tidal influence study are presented in Section 6.0.

5.6 WASTE COLLECTION

Soil cuttings generated during the drilling of the onsite soil borings were stockpiled on plastic sheeting on the asphalt paved parking lot directly north of the building. Liquid wastes generated during the field investigation included decontamination rinse water and well development and purge water. All liquid wastes were contained in DOT approved 55-gallon drums and were stored onsite.

6.0 FINDINGS

6.1 FILE REVIEW

A review of the following Federal and State regulatory agency lists of sites under investigation was performed to identify and evaluate potential offsite sources of contamination within a one-half mile radius of the Oakland Tribune site. The following is a summary of the results of our file review.

Unites States Environmental Protection Agency, San Francisco, California:

- Reviewed CERCLIS List.

  No Superfund sites within one-half mile of site.

California Department of Health Services, Toxics Division, Emeryville, California:

- Reviewed Abandoned Sites List.
- Reviewed Hazardous Waste and Substances List.
- Reviewed Bond Expenditure Plans for Hazardous Substance Cleanup List.

  No records on file of soil and/or groundwater contamination within one-half mile of site.

Review of the Bay Area Regional Water Quality Control Board's (BARWQCB) listing of documented underground storage tank leaks generated a list of thirteen cases located within one-half mile of the site. Of these sites, further investigations were made of three that were believed to have greater potential influence on the subject site by virtue of their proximity and estimated hydrologically upgradient locations.

Patterson Property, 27th and Harrison

The file on this property has been checked out to BARWQCB personnel and is not available for review. A request to review this file has been placed, but as of this writing, the file has not been returned. This site is located approximately 800 feet northeast, and is estimated to be hydrologically upgradient.

Bill Cox Cadillac, 30 Bay Place

A leak was discovered during removal of a diesel fuel tank on December 1, 1988. Soil samples were taken from the sidewalls and bottom of the excavation. The file contained no further information. This site is located approximately 1,000 feet northeast, and is estimated to be hydrologically upgradient.

Pat Patterson Cadillac, 230 Bay Place

Pat Patterson Cadillac was using a 10,000 gallon gasoline tank that was not registered with the BARWQCB. A copy of the Permit Application and a Leak Tight Test Certificate of Tank Integrity dated July 25, 1988 was included in the file. The file contained no further information. This site is located approximately 1,100 feet east, and is estimated to be hydrologically cross-gradient.

Several hundred cubic yards of soil have been stockpiled on the parking lot across Valdez Street (northwest) from the subject property. The soil is piled in a two-to-three foot high lift, and appears to be arranged that way to facilitate passive aeration. A written request for information was submitted to the Freedom of Information Officer at the San Francisco Office of the United States Environmental Protection Agency (EPA). At the time of this writing, no information has been received from the EPA.

6.2 GEOLOGY AND HYDROGEOLOGY

6.2.1 Site Stratigraphy

Soils beneath the Oakland Tribune site were investigated to depths of 31.5 feet below the surface during Dames & Moore's field investigation. Soil boring logs generated during the field investigation were used to construct two geologic cross sections shown on Plates 3 and 4.

The eastern portion of the site is immediately underlain by one to five feet of fill materiel consisting primarily of dark brown clayey sand and silt. Borings drilled in the western portion of the site did not encounter materiel interpreted as fill. The fill is underlain by fine-grained alluvial deposits consisting of brown and yellowish-brown clays with lesser amounts of silt, sand and gravel. As shown in Plates 3 and 4, this fine grained horizon appears to be laterally extensive across the site and extends to depths of between 8 to 26 feet below the ground surface. This unit is underlain by a coarser-grained unit consisting predominantly of interbedded brown sand and gravel with traces of silt and clay. Gravels present within this unit consist primarily of chert and jasper. With the exception of boring SB-1, a distinct coarser-grained unit was encountered in each of the borings advanced during our field investigation. The coarser-grained unit ranges in thickness from 5 feet to greater than 13 feet. A brown sandy clay unit underlying the coarser-grained unit was encountered at depths ranging from 18 to 22 feet in borings

SB-2, SB-4, SB-7, and SB-11. This lower fine-grained unit was not fully penetrated by any of the onsite borings.

6.2.2 Hydrogeology

The vadose (unsaturated) zone beneath the Oakland Tribune site extends from ground surface to a depth of approximately 15 to 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 depths ranging from 15 to 22 feet below ground surface. Static depth to groundwater in the uppermost water bearing zone measured in the seven onsite monitoring wells ranged from 14.5 to 16 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.

Water level data and groundwater elevations are presented in Table 1. Groundwater elevations measured on August 22, 1989 were used to construct groundwater elevation contour map shown on Plate 5. Interpretation of the groundwater contour map indicates groundwater flow is towards the south with a average hydraulic gradient of approximately 0.004 ft/ft. The results of the tidal influence study indicate that the uppermost water-bearing zone underlying the site is not influenced by diurnal tidal fluctuations.

The transmissivity and hydraulic conductivity of the uppermost water-bearing zone were assessed by conducting falling head permeability tests on the four newly installed wells. Results of the permeability testing are summarized in Table 2. Hydraulic conductivity of the uppermost water-bearing zone ranges from 3.97×10^{-5} cm/sec to 2.67×10^{-4} cm/sec. These values suggest that the uppermost zone is low to moderately permeable.

Utilizing the average hydraulic gradient (approximately 0.004 based on the groundwater elevation contour map) and the porosity of the sandy and gravelly horizons (estimated at 35% based on typical values of similar unconsolidated deposits), the average groundwater velocity in the uppermost water-bearing zone was estimated to range from 0.5 to 3.2 feet/year, with an average value of 1.85 feet/year.

6.3 SOIL CHEMICAL TESTING RESULTS

A total of 39 soil samples (3 from each boring and 2 duplicate samples) were submitted to ACCULAB for laboratory chemical testing. A summary of soil samples and associated testing results is presented in Tables 3 and 4. Analytical laboratory reports are presented in Appendix C. A total of 17 soil samples were analyzed by Dames & Moore for the presence of non-volatile petroleum hydrocarbons (i.e. waste oil) using TLC. To evaluate the correlation between laboratory testing results and the TLC results, two samples submitted for laboratory analysis were also analyzed using the TLC procedure. The results of the TLC analysis are presented in Table 5.

6.3.1 Petroleum Hydrocarbons

Total recoverable hydrocarbons (TRH) were detected above the method detection limit (MDL) in only two soil samples submitted for chemical analysis. TRH were detected at a concentration of 10,200 milligrams per kilogram (mg/kg) or parts per million (ppm) at a depth of 16 feet at location SB-5 and at a concentration of 1150 ppm at a depth of 16 feet at location SB-12. Total petroleum hydrocarbons (TPH) as gasoline were also detected in these same two samples at concentrations of 428 and 520 ppm, respectively. In addition, TPH as gasoline was also detected above the MDL at boring locations SB-8, SB-3, and SB-4, at depths of 16 feet.

Petroleum hydrocarbons were not detected in any of the 17 soil samples analyzed using the TLC screening procedure. The absence of TRH in soil

samples analyzed by both laboratory method and the TLC method supports the validity of this screening procedure.

6.3.2 Purgeable Aromatics

Purgeable aromatic compounds were only detected in the four soil samples exhibiting detectable levels of TPH as gasoline. Benzene concentrations reported in soil samples ranged from 0.05 to 0.74 ppm. The highest benzene concentration was detected at a depth of 16 feet at location SB-12. Toluene, ethylbenzene and xylenes were also detected in the same four soil samples. Xylene concentrations were consistently detected at higher concentrations than other aromatic compounds. The relatively lower concentrations of benzene relative to xylenes suggests the hydrocarbon fuel release is not recent.

6.3.3 Other Chemicals

Soil samples collected from a depth of 16 feet at locations SB-5 and SB-12 were also analyzed by ACCULAB for 17 CAM metals, priority pollutant semi-volatile compounds, and PCBs. These two samples were selected for additional analyses because they exhibited the highest TRH concentrations of all samples analyzed. The results of these additional analyses are summarized on Table 4 and discussed below.

Both samples contained detectable concentrations of several CAM metals. However, metal concentrations detected in both samples were similar and are judged to be within a range of concentrations expected for natural soils.

Several polynuclear aromatic hydrocarbons (PNAs) were detected above the MDL in both samples. All PNA compounds were detected below a concentration of 1.0 ppm with the exception of naphthalene, 2-methylnaphthalene, and benzidine. Naphthalene was detected at the highest concentration at location SB-5 at 16 ppm. These high molecular weight compounds are common constituents of petroleum products such as diesel fuel and lubricating oils. In general,

these compounds are not very mobile in the environment and tend to absorb tightly onto soil particles.

PCBs were detected above the MDL in one of the samples analyzed. PCB Arochlor 42 and Arochlor 54 were reported at sample location SB-5 at concentrations of 0.385 and 0.175 ppm, respectively. The source of these low concentrations of PCBs detected at SB-5 may be from the discharge of PCB-contaminated hydraulic fluids. Similar to PNAs, PCBs are generally immobile in the environment and tend to absorb tightly onto soils.

6.4 GROUNDWATER CHEMICAL TESTING RESULTS

Groundwater samples were collected from the seven onsite monitoring wells and submitted to ACCULAB for chemical testing. As a quality control measure, one field duplicate sample collected from MW-5 was submitted blind to ACCULAB for analysis. A summary of the analytical results is presented in Table 6. Complete laboratory reports are presented in Appendix C.

6.4.1 Petroleum Hydrocarbons

Total recoverable hydrocarbons (TRH), oil and grease (O&G), and TPH as diesel were not detected above the MDL in any of the groundwater samples analyzed. TPH as gasoline was detected above the MDL in wells MW-1, MW-2, MW-3, MW-4, and MW-6. TPH as gasoline concentrations ranged from 0.052 milligrams per liter (mg/l) or ppm at well MW-6 to 9.8 ppm at well MW-2. TPH as gasoline was not detected above the MDL in the upgradient well MW-7. The distribution of TPH as gasoline in the onsite monitoring wells is shown graphically in Plate 7.

6.4.2 Purgeable Aromatics

Purgeable aromatic compounds including benzene, toluene and xylenes were detected above the MDL in wells MW-1, MW-2, and MW- 3. Benzene was detected

in wells MW-1 and MW-2 at concentrations of 120 micrograms per liter (µg/l) or parts per billion (ppb) and 24 ppb, respectively. Benzene concentrations in exceedance of the California Department of Health Services (DOHS) Drinking Water Action Level of 0.7 ppb were detected at wells MW-1 and MW- 2. Benzene was not detected in the upgradient well (MW-7).

Toluene and xylenes concentrations in well MW-1, MW-2, MW-3 ranged from 5.1 ppb to 260 ppb. Toluene and xylenes concentrations detected in the onsite wells are all well below the established DOHS Drinking Water Action Level standards. The distribution of benzene, toluene, and xylenes in the onsite monitoring wells is shown graphically in Plate 7.

6.4.3 Purgeable Halocarbons

Several volatile halocarbon compounds were detected at relatively low concentrations in all onsite monitoring wells, with the exception of well MW-2. Volatile hydrocarbon compounds detected include carbon tetrachloride, chloroform, dichlorobenzenes, dichloroethanes, and trichloroethene. Carbon tetrachloride and 1,4 dichlorobenzene were the only two compounds detected at levels in exceedance of established DOHS Drinking Water Action Level standards. The highest concentrations of carbon tetrachloride (20 ppb) and chloroform (4.6 ppb) were detected in the upgradient well MW-7. 1,4 dichlorobenzene was detected in only one well (MW-3), at a concentration of 31 ppb.

7.0 DISCUSSION

The results of our investigation confirm the presence of petroleum hydrocarbons and related constituents in the soil and groundwater underlying the site. The results of the onsite soil sampling and analysis program, suggests that petroleum hydrocarbons in onsite soils is relatively limited in areal and vertical extent. The presence of detectable concentrations of petroleum hydrocarbons in soil was limited to four sampling locations, three

on the western side of the building adjacent to the former underground storage tanks (SB-3, SB-4, and SB-12) and one location south of the former sump area in the car repair area (SB-5). At each of these locations, the detection of hydrocarbons was limited to the more permeable sandy and gravelly soil horizons occurring at a depth of approximately 15 to 16 feet below the ground surface. No petroleum hydrocarbons or related constituents, or visible evidence of contamination were detected in soil samples collected above a depth of 15 feet.

As indicated on the geologic cross section B-B'(Plate 5), it is likely that the base of the former underground storage tanks extended near or below the base of the uppermost clay unit. Fuel product leaking from the tank(s) would tend to accumulate and migrate along the more permeable sand and gravel horizons underlying the upper clay unit.

Analysis of soils adjacent to the former underground tanks indicates the hydrocarbons present are composed primarily of lighter fraction hydrocarbons indicative of gasoline. Hydrocarbons detected in a soil sample collected at location SB-5, approximately 35 feet south of the former sump, appear to be composed primarily of heavier hydrocarbons more indicative of oil or grease.

The results of the groundwater sampling and analysis program confirm the presence of petroleum hydrocarbons and related constituents, and several chlorinated hydrocarbon compounds in the uppermost water-bearing zone underlying the site. The highest concentration of petroleum hydrocarbon constituents was measured at Well MW-1, located directly northeast of the former underground storage tanks. Benzene, toluene, ethylbenzene and xylene concentrations measured during this investigation are significantly lower than concentrations previously measured in August 1988, although benzene concentrations in wells MW-1 and MW-2 are above DHS Drinking Water Action Levels. The detection of low concentrations of benzene and xylenes on the downgradient property boundary (MW-2) suggests that migration of these contaminants has occurred since the last sampling episode.

11/27

Not convinced that all contaminated soil has been removed from around tank pit / old floor drain; missing Plates 1-3

The source of the low concentrations of dichlorobenzenes, dichloroethanes and trichloroethene detected in groundwater at the site may be from the historical use of parts cleaning and degreasing agents commonly used in maintenance operations. However, the concentrations of carbon tetrachloride and chloroform detected in the upgradient well may indicate an offsite source for these solvent compounds. No conclusive evidence linking the presence of these contaminants to an off-site upgradient source was discovered during our file review. However, further information regarding the nature and extent of contamination at the Patterson property (27th and Harrison) located approximately 800 feet upgradient of the site warrants further investigation.

8.0 RECOMMENDATIONS

Based on the results of our soil and groundwater investigation, we recommend consideration of the following actions:

- Installation and sampling of two off-site monitoring wells located downgradient of the former underground tank on the south side of 23rd Street to evaluate potential off-site migration of contaminants;

- Resampling and analysis of upgradient monitoring well MW-7 for purgeable hydrocarbons using a GC/MS testing methodology (EPA Method 624) to confirm the presence of carbon tetrachloride and chloroform;

- Establishment of a quarterly groundwater monitoring program for a period of at least one year to further evaluate the apparent natural attenuation of contaminant concentrations;

- Collection of additional information regarding potential upgradient offsite sources not available during this investigation;

- Develop Site Remediation Plan, if necessary, following consultation with Alameda County Department of Health and Regional Water Quality Control Board, San Francisco Bay Region; and

- Collection and analysis of representative soil samples from the existing waste soil piles generated during the tank removal and sump excavation operations to evaluate disposal and/or treatment options.

TABLE 1

SUMMARY OF MONITORING WELL INSTALLATION DATA

FORMER OAKLAND TRIBUNE GARAGE, OAKLAND, CALIFORNIA

MONITORING WELL	WELL[1] DEPTH	ELEVATION[2] TOP PVC	DEPTH TO WATER (8/22/89)	ELEVATION[2] WATER	SCREENED[3] INTERVAL	EFFECTIVE[3] INTERVAL
MW-1[4]	31.5	22.87	15.79	7.08	14.0-30.0	12.0-31.5
MW-2[4]	31.5	22.59	16.04	6.55	14.0-26.0	11.0-31.5
MW-3[4]	26.5	22.51	15.53	6.98	12.0-25.0	10.0-26.5
MW-4[5]	25.5	22.65	16.12	6.53	10.0-25.0	8.0-25.5
MW-5[5]	27.5	22.44	15.70	6.74	12.0-27.0	10.0-27.5
MW-6[5]	26.0	22.58	15.99	6.59	10.5-25.5	8.5-26.0
MW-7[5]	26.0	21.76	14.42	7.34	10.5-25.5	8.5-26.0

Notes: 1) All depths and elevations recorded in feet.

2) All elevations referenced to N.G.S. Mean Sea Level.

3) Screened and effective intervals are expressed in feet below ground surface.

4) 2-inch diameter monitoring well installed by Clayton in August 1988.

5) 4-inch diameter monitoring well installed by Dames & Moore in Augusst 1989.

TABLE 2
RESULTS OF FIELD PERMEABILITY TESTS
FORMER OAKLAND TRIBUNE GARAGE, OAKLAND CALIFORNIA

Well	Screened Interval (Ft. below surface)	Calculated Hydraulic Conductivity (cm/sec)
MW-4	10-25	2.41×10^{-5}
MW-5	12-27	3.97×10^{-5}
MW-6	10.5-25.5	1.02×10^{-4}
MW-7	10.5-25.5	2.68×10^{-4}

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

CONSTITUENT	UNITS	DETECTION LIMIT	SB-1 6 ft	SB-1 11 ft	SB-1 21 ft	SB-2 6 ft	SB-2 11 ft	SB-2 21 ft	SB-3 6 ft	SB-3 11 ft	SB-3 16 ft	SB-4 6 ft	SB-4 11 ft	SB-4 16 ft
TOTAL RECOVERABLE HYDROCARBONS (418.1)	mg/kg	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PETROLEUM HYDROCARBONS (as GASOLINE 8015)	mg/kg	1.0	ND	ND	ND	ND	ND	ND	ND	ND	655	ND	ND	17
Benzene	mg/kg	0.04	ND	ND	ND	ND	ND	ND	ND	ND	0.31	ND	ND	0.05
Toluene	mg/kg	0.04	ND	ND	ND	ND	ND	ND	ND	ND	0.53	ND	ND	0.11
Ethylbenzene	mg/kg	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	mg/kg	0.04	ND	ND	ND	ND	ND	ND	ND	ND	2.34	ND	ND	0.58

NOTES: 1) Analysis performed by ACCULAB Environmental Services, Petaluma, CA.

2) ND: not detected at or above the method detection limit.

TABLE 3 (cont.)
SUMMARY OF ANALYTICAL RESULTS FOR
SOIL SAMPLES
FORMER OKLAND TRIBUNE GARAGE, OAKLAND, CALIFORNIA

CONSTITUENT	UNITS	DETECTION LIMIT	SB-5 6 ft	SB-5 11 ft	SB-5 16 ft	SB-5(DUP) 16 ft	SB-6 6 ft	SB-6(DUP) 11 ft	SB-6 11 ft	SB-6 16 ft	SB-7 6 ft	SB-7 11 ft	SB-7 11 ft	SB-7 (DUP) 16 ft
TOTAL RECOVERABLE HYDROCARBONS (418.1)	mg/kg	6	ND	ND	10,200	9,600	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PETROLEUM HYDROCARBONS (as GASOLINE 8015)	mg/kg	1.0	ND	ND	428	271	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	mg/kg	0.040	ND	ND	0.6	0.29	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	mg/kg	0.040	ND	ND	1.1	0.78	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	mg/kg	0.040	ND	ND	4.1	2.8	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	mg/kg	0.040	ND	ND	6.8	4.2	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 3 (cont.)
SUMMARY OF ANALYTICAL RESULTS FOR
SOIL SAMPLES
FORMER OKLAND TRIBUNE GARAGE, OAKLAND, CALIFORNIA

CONSTITUENT	UNITS	DETECTION LIMIT	SB-8 11 ft	SB-8 16 ft	SB-8 21 ft	SB-9 11 ft	SB-9 16 ft	SB-9 21 ft	SB-10 6 ft	SB-10 11 ft	SB-10 16 ft	SB-11 6 ft	SB-11 11 ft	SB-11 16 ft	SB-12 6 ft	SB-12 11 ft	SB-12 16 ft
TOTAL RECOVERABLE HYDROCARBONS (418.1)	mg/kg	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,150
TOTAL PETROLEUM HYDROCARBONS (as GASOLINE 8015)	mg/kg	1.0	7.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	560
Benzene	mg/kg	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.74
Toluene	mg/kg	0.04	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.70
Ethylbenzene	mg/kg	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0
Total Xylenes	mg/kg	0.04	0.09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14.2

TABLE 4
SUMMARY OF ANALYTICAL RESULTS FOR
SOIL SAMPLES
FORMER OAKLAND TRIBUNE GARAGE, OAKLAND CALIFORNIA

CONSTITUENTS	UNITS	DETECTION LIMIT	SB-5 16 ft	SB-12 16 ft
METALS (TOTAL)				
Arsenic	mg/kg	0.60	9.50	6.54
Barium	mg/kg	0.20	131	131
Beryllium	mg/kg	0.20	1.2	1.1
Cadmium	mg/kg	0.099	3.7	2.19
Cobalt	mg/kg	0.40	19.6	16.3
Chromium	mg/kg	0.40	71.9	54.8
Copper	mg/kg	0.20	18	74.6
Molybdenum	mg/kg	0.40	1.8	ND
Nickel	mg/kg	1.00	69.7	51.1
Lead	mg/kg	1.00	8.7	6.2
Vanadium	mg/kg	0.40	49.6	43.6
Zinc	mg/kg	0.20	29.4	27.3
SEMI-VOLATILES (8270)				
Anthracene	mg/kg	0.2	0.92	ND
Benzo(a)anthracene	mg/kg	0.2	0.33	0.21
Benzo(a)pyrene	mg/kg	0.2	ND	0.21
Benzo(g,h,i)perylene	mg/kg	0.2	ND	0.35
Benzidine	mg/kg	1.0	2.1	1.3
Chrysene	mg/kg	0.2	0.24	0.26
Fluoranthene	mg/kg	0.2	0.23	0.57
Indeno(1,2,3-c,d)-pyrene	mg/kg	0.2	ND	0.22
Napthalene	mg/kg	0.2	5.8	16
Phenanthrene	mg/kg	0.2	0.87	0.63
Pyrene	mg/kg	0.2	0.29	0.32
2-methyl-napthalene	mg/kg	0.2	9.1	13
PCBs (8080)				
Arochlor 42	mg/kg	0.01	0.385	ND
Arochlor 54	mg/kg	0.01	0.175	ND

NOTES: 1) ND: not detected above method detection limit
2) Only those compounds detected in at least one sample are reported
3) Analyses performed by ACCULAB Environmental Services of Petaluma, CA.

BS/7469b

TABLE 5
THIN LAYER CHROMATOGRAPHY (TLC) RESULTS
FOR SOIL SAMPLES
FORMER OAKLAND TRIBUNE GARAGE, OAKLAND, CALIFORNIA

SAMPLE LOCATION	SAMPLE DEPTH (FT)	TLC RESULT (ppm)	LABORATORY RESULTS (418.1)(1)	(8015)(2)
SB-1	1.5	ND(3)	*	*
SB-1	16	ND	*	*
SB-2	1.5	ND	*	*
SB-2	16	ND	*	*
SB-3	1.5	ND	*	*
SB-4	1.5	ND	*	*
SB-4	21	ND	*	*
SB-8	1.5	ND	*	*
SB-8	16	ND	ND	7.7
SB-8(DUP)	16	ND	*	*
SB-9	1.5	ND	*	*
SB-9	6	ND	*	*
SB-9	16	ND	ND	ND
SB-10	21	ND	*	*
SB-11	1.5	ND	*	*
SB-11	21	ND	*	*
SB-12	1.5	ND	*	*
SB-12	21	ND	*	*

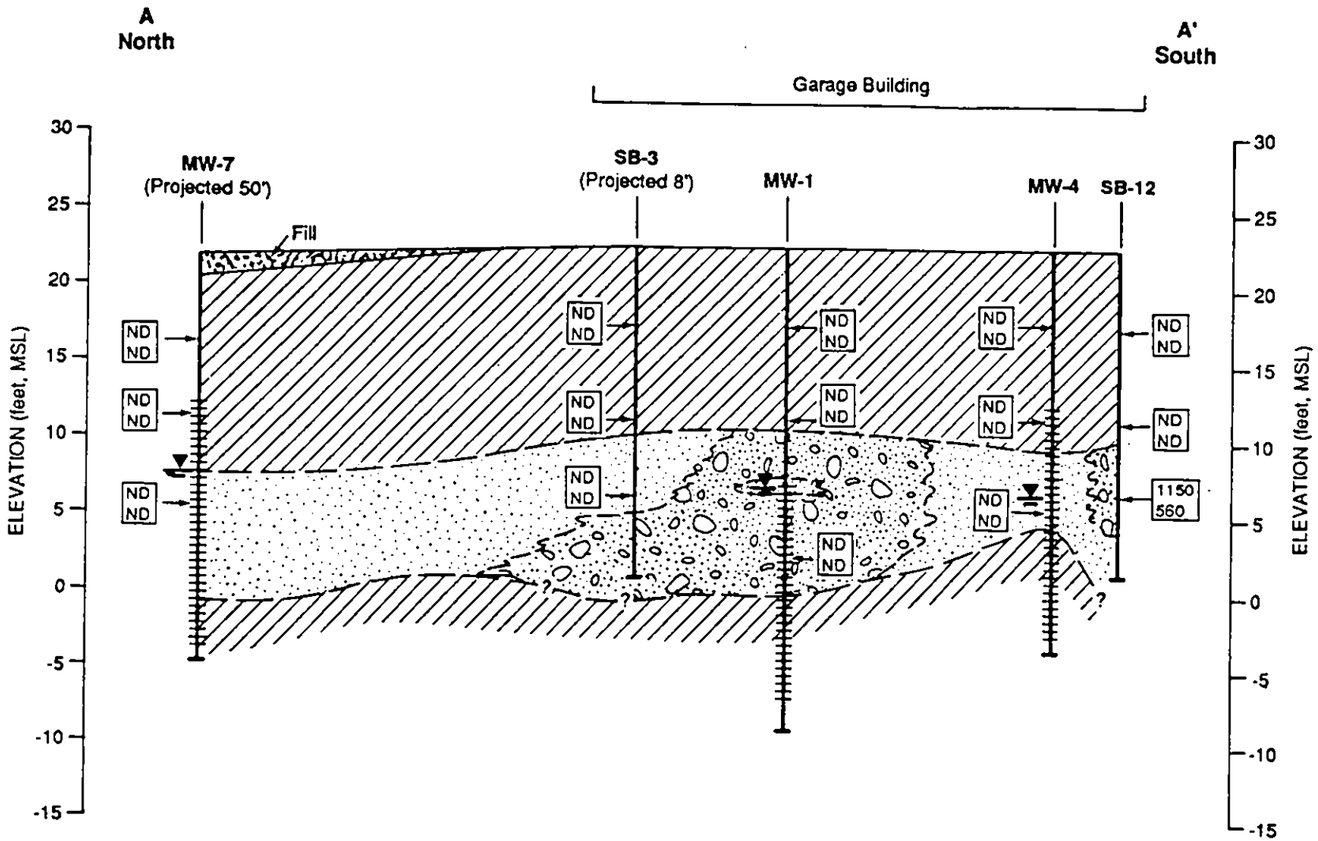
NOTES: 1) EPA Method 418.1
2) EPA Method 8015, Modified (Gasoline)
3) Detection limit for TLC analysis is approximately 50 mg/kg
ND: not detected
*: not tested

BS/7469b

TABLE 6
SUMMARY OF ANALYTICAL RESULTS FOR
GROUNDWATER SAMPLES
FORMER OAKLAND TRIBUNE GARAGE, OAKLAND, CALIFORNIA

CONSTITUENT	UNITS	DETECTION LIMIT	MW-1	MW-2	MW-3	MW-4	MW-5	FD-1 MW-5(DUP)	MW-6	MW-7	TRIP BLANK	DHS Action Level
Total Recoverable Hydrocarbons (418.1A)	mg/l	0.60	--	--	--	ND	ND	ND	ND	ND	--	NA
Oil and Grease (SM503E)	mg/l	5	ND	ND	ND	--	--	--	--	--	--	NA
Total Petroleum Hydrocarbons As Deisel (8015)	mg/l	0.75	ND	ND	ND	--	--	--	--	--	--	NA
Total Petroleum Hydrocarbons as Gasoline (8015)	mg/l	0.05	6.9	9.8	0.63	0.12	ND	ND	0.052	ND	--	NA
PURGEABLE AROMATICS (602)	µg/l											
Benzene	µg/l	0.5-1.0	120	24	ND	ND	ND	ND	ND	ND	ND	0.7
Toluene	µg/l	0.5-1.0	5.1	ND	ND	ND	ND	ND	ND	ND	ND	100
Ethylbenzene	µg/l	0.5-1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	680
Xylenes	µg/l	0.5-1.0	260	80	11	ND	ND	ND	ND	ND	ND	620
PURGEABLE HALOCARBONS (601)	µg/l	0.5-1.0										
Carbon Tetrachloride	µg/l	0.5-1.0	0.7	ND	0.7	ND	0.9	0.9	1.8	20	ND	0.5
Chloroform	µg/l	0.5-1.0	2.6	ND	0.5	ND	0.5	ND	ND	4.6	ND	100
1,4-Dichlorobenzene	µg/l	0.5-1.0	ND	ND	31	ND	ND	ND	ND	ND	ND	0.5
11,3-Dichlorobenzene	µg/l	0.5-1.0	ND	ND	2.7	ND	ND	ND	ND	ND	ND	130
1,2-Dichlorobenzene	µg/l	0.5-1.0	0.5	ND	11	ND	ND	ND	ND	ND	ND	130
1,1-Dichloroethane	µg/l	0.5-1.0	1.2	ND	ND	ND	ND	ND	ND	ND	ND	20
1,2-Dichloroethane	µg/l	0.5-1.0	1.9	ND	ND	2.2	ND	ND	ND	ND	ND	1.0
Trichlorethene	µg/l	0.5-1.0	1.4	ND	ND	ND	ND	ND	ND	ND	ND	5

Notes: 1) ND: not detected above method detection limit
2) NA: not applicable
3) --: not tested
4) All samples analyzed by ACCULAB Environmental Services, Petaluma, CA



KEY

MW-4

Monitoring Well

Screened Interval

SB-12

Exploratory Boring

ND / ND — Total Recoverable Hydrocarbons (418.1) in mg/kg; Total Petroleum Hydrocarbons as Gasoline (8015) in mg/kg

Groundwater Level Measured in Well (8/22/89)

Clays, Silty Clays, Sandy Clays

Sands, Gravelly Sands, Clayey Sands

Gravels, Sandy Clayey Gravels

NOTES:

(1) All contacts shown are projected between borings, and exact depths are not certain.

(2) Cross section locations shown on PLATE 3.

(3) Vertical Exageration = 3X

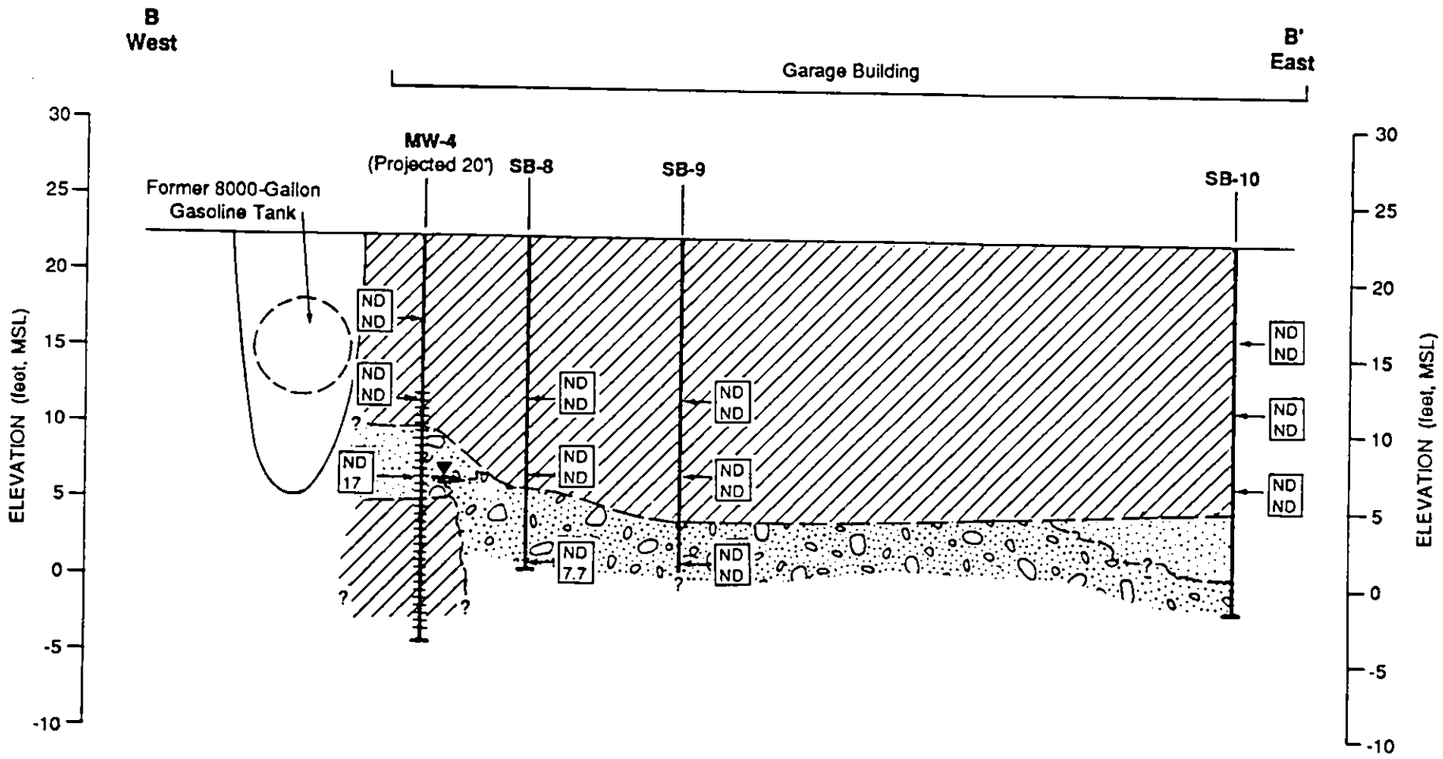
0 — 40

Feet

Horizontal Scale

19191-001-043	Oakland Tribune	GEOLOGIC CROSS SECTION A-A'
Dames & Moore	FORMER OAKLAND TRIBUNE GARAGE Oakland, California	

PLATE 4



KEY

MW-4

Monitoring Well

Screened Interval

SB-8

Exploratory Boring

ND / ND — Total Recoverable Hydrocarbons (418.1) in mg/kg; Total Petroleum Hydrocarbons as Gasoline (8015) in mg/kg

Groundwater Level Measured in Well (8/22/89)

Clays, Silty Clays, Sandy Clays

Sands, Gravelly Sands, Clayey Sands

Gravels, Sandy Clayey Gravels

NOTES:

(1) All contacts shown are projected between borings, and exact depths are not certain.

(2) Cross section locations shown on PLATE 3.

(3) Vertical Exageration = 3X

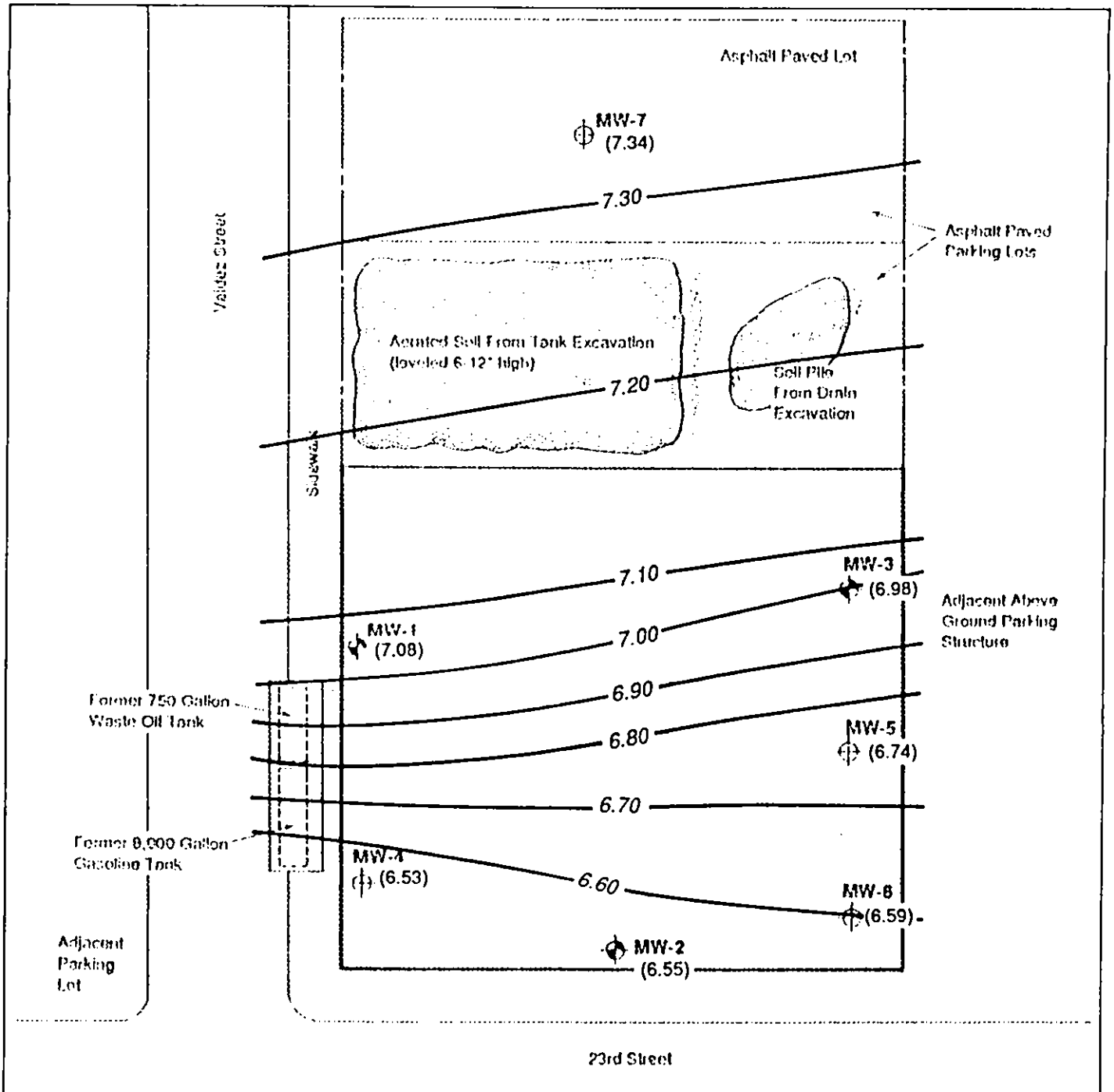
0 — 20

Feet

Horizontal Scale

19191-001-043	Oakland Tribune	GEOLOGIC CROSS SECTION B-B'
Dames & Moore	FORMER OAKLAND TRIBUNE GARAGE Oakland, California	

PLATE 5



KEY

- Monitoring Well (Dames & Moore)
- Monitoring Well (Clayton Environmental)
- (7.08) Groundwater Elevation (feet, MSL)
- 6.60 Equal Elevation Contour Line

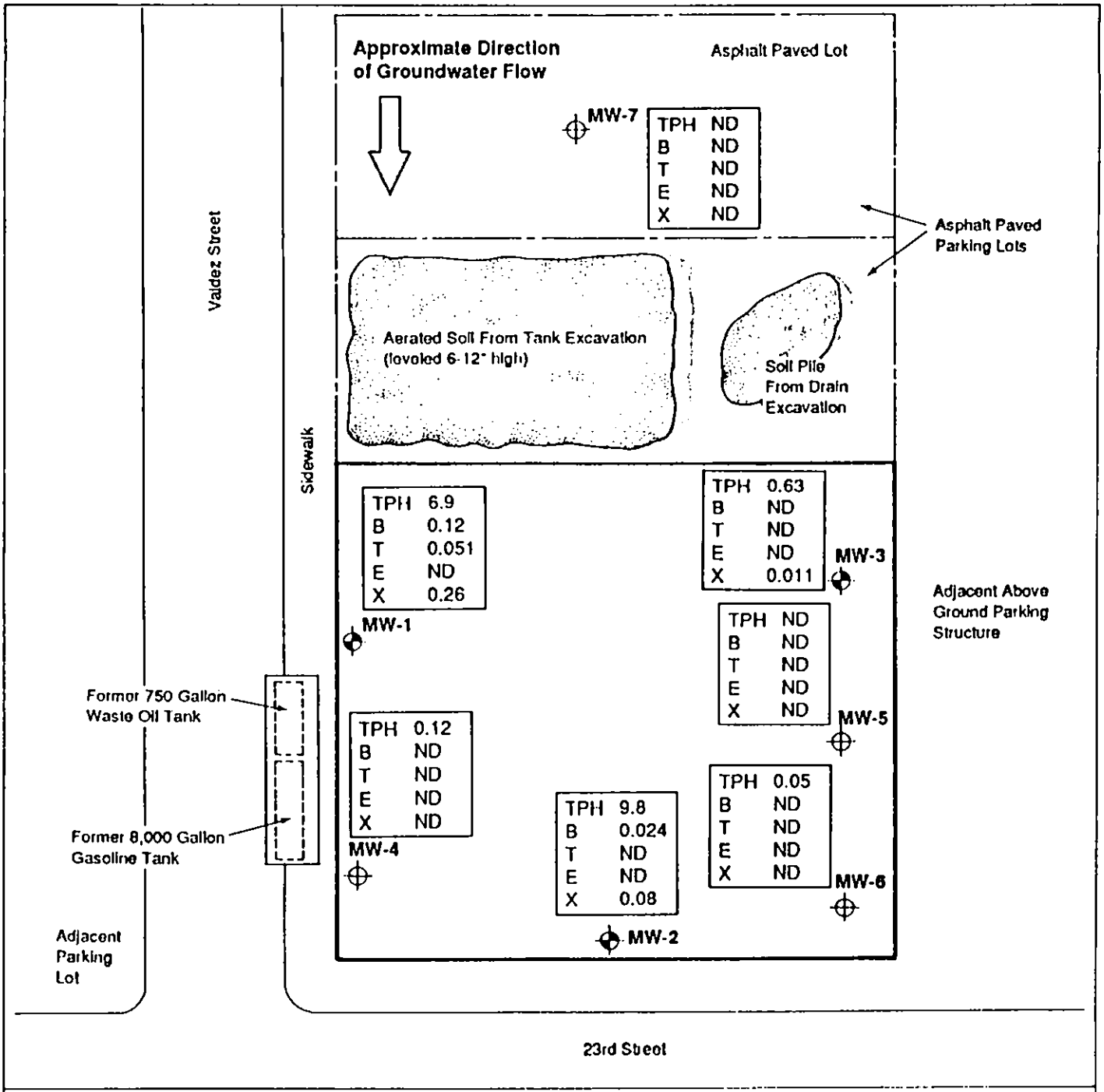
N

0 40

Feet

19191-001-043	Oakland Tribune	**GROUNDWATER ELEVATION CONTOUR MAP — AUGUST 22, 1989**
Dames & Moore	FORMER OAKLAND TRIBUNE GARAGE Oakland, California	

PLATE 6



KEY

- Groundwater Monitoring Well (Clayton Environmental)
- Groundwater Monitoring Well (Dames & Moore)

TPH	0.69	Total Petroleum Hydrocarbons (mg/l)
B	0.12	Benzene (mg/l)
T	0.051	Toluene (mg/l)
E	ND	Ethylbenzene (mg/l)
X	0.26	Xylenes (mg/l)

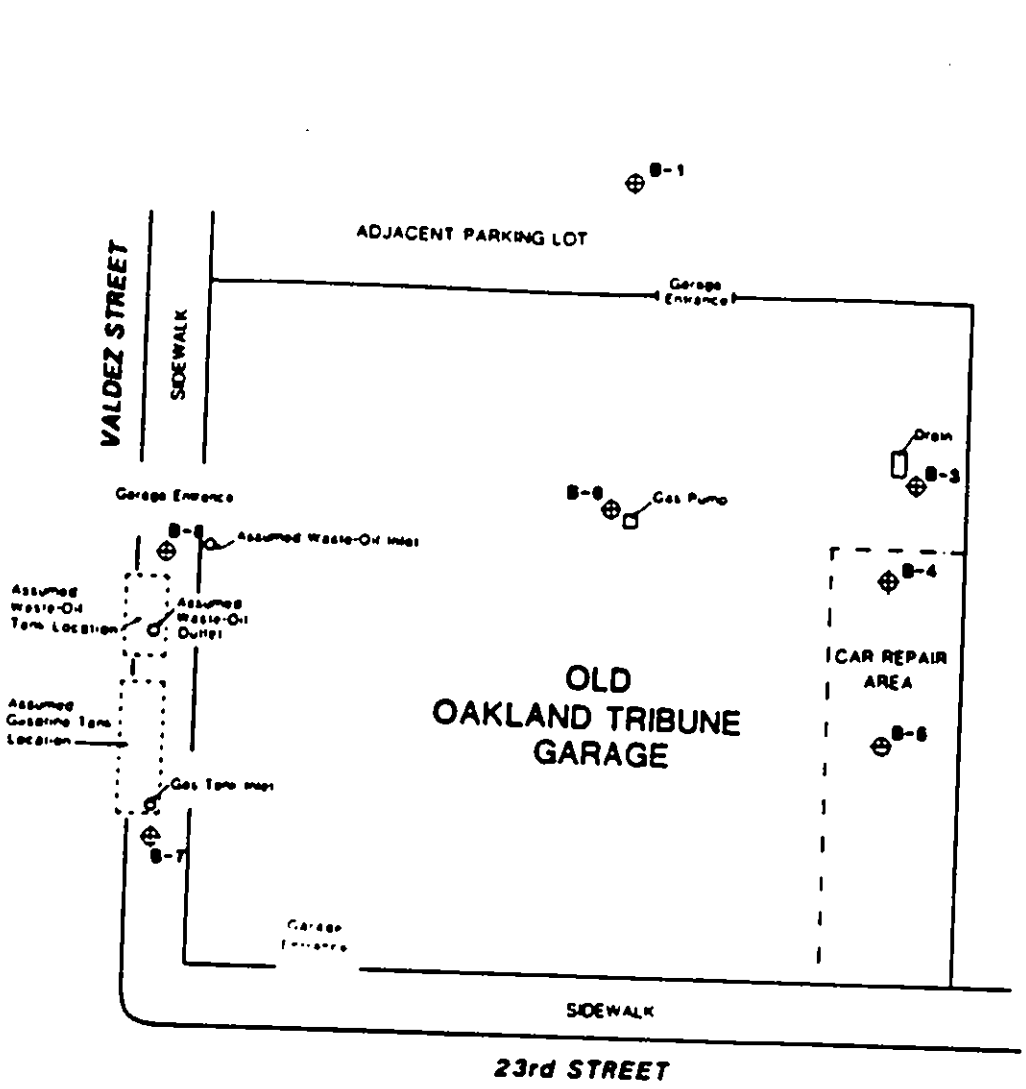
N

0 40

Feet

19191-001-043	Oakland Tribune	**TOTAL PETROLEUM HYDROCARBONS (GASOLINE) AND BTEX CONCENTRATIONS IN GROUNDWATER – JULY-AUGUST 1989**
Dames & Moore	FORMER OAKLAND TRIBUNE GARAGE Oakland, California	

PLATE 7



B-1 BORING

N

0 10 20
feet

J.H. KLEINFELDER & ASSOCIATES GEOTECHNICAL CONSULTANTS • MATERIALS TESTING LAND AND WATER RESOURCES	TOOTHMAN/TRIBUNE OAKLAND, CALIFORNIA	PLATE
PROJECT NO. 10-1720-01	SITE MAP	1

TABLE 2
Summary of Analytical Results*

ANALYSES	B-1 and B-2	B-3	B-4	B-5	B-6	B-7	B-8	Detection Limits
Oil and Grease	NT	5400	NT	NT	NT	ND	ND	50
Total Fuel Hydrocarbons	ND	6500	ND	ND	ND	ND	ND	10
Benzene	ND	0.6	ND	ND	ND	ND	ND	0.5**
Ethylbenzene	NT	8.3	NT	NT	NT	ND	ND	0.2
Toluene	ND	8.2	ND	ND	ND	ND	ND	0.5**
Semi-Quantified Results***								
Total Xylene Isomers**	ND	40	ND	ND	ND	ND	ND	
C_6H_{12}	NT	40	NT	NT	NT	ND	ND	
C_7H_{14}	NT	200	NT	NT	NT	2	ND	
C_9H_{16}	NT	20	NT	NT	NT	ND	ND	
C_9H_{18}	NT	20	NT	NT	NT	ND	ND	

* All results in mg/kg (parts per million)

** EPA Method 8240 has a detection limit of 0.2 ppm for Benzene, Toluene, and Xylene; Total Fuel Hydrocarbons + BTX has a detection limit of 0.5 ppm for Benzene, Toluene, and Xylene

*** Quantification of semi-quantified results is based upon comparison of total ion count of the compound with that of the nearest internal standard

ND Not Detected

NT Not Tested

TABLE 3

Soil Sampling
Summary of Laboratory Analysis

Clayton Project No. 45561-70

Laboratory Batch No.	Date of Sampling	Sample ID No. & Description	Analysis Requested	Detected Concentrations TPH (ppm)	VOC (ppm)	O&G (ppm)	BTE (pp
8802123	02/23/88	1.Gas @ 11'-fill	HOLD				
		2.Gas @ 11'-vent	HOLD				
		3.w/o @ 9'-fill	HOLD				
		4.w/o @ 9'-vent	O&G, TPH, VOC	46	B-0.27 T- E-2.10 X-10.00	6000	---
8802128	02/24/88	5.Gas @ 12'-fill	TPH & BTEX	4000	---	---	B-2. T-17 E-5. X-67
		6.Gas @ 12'-vent	TPH & BTEX	ND	---	---	B-0. T-ND E-0. X-0.
		7.w/o @ 10'-fill	TPH, O&G, VOC	100	ND	2400	
		8.Excavation Pile	TPH	1100	---	---	--
8802150	02/26/88	9.West End Exca. @ 18-1/2'	TPH, BTEX	ND	---	---	B-ND T-0.(E-ND X-ND
		10.East End Exca @ 18-1/2'	TPH, BTEX, O&G	ND	---	12,000	B-ND T-0.(E-0.1 X-0.2
		11.East Exc. @ 16'	O&G			2400	
880303	02/29/88	12.Drain Area @ 15'	O&G, TPH	5500 as Gas 1800 as Oil	--- ---	2100	--- ---
		13.Drain Area @ 13'	O&G, TPH	440 as Gas 510 as Oil	--- ---	610	--- ---
880878	08/10/88	14.Soil Pile NW	O&G, BTEX			750	ND
		15.Soil Pile SE	O&G, BTEX			750	ND
		16.Soil Pile Cntl	O&G, BTEX			970	ND

O&G Oil and Grease
TPH Total Petroleum Hydrocarbons
VOC Volatile Organic Compounds

TABLE 3
continued

Soil Sampling
Summary of Laboratory Analysis

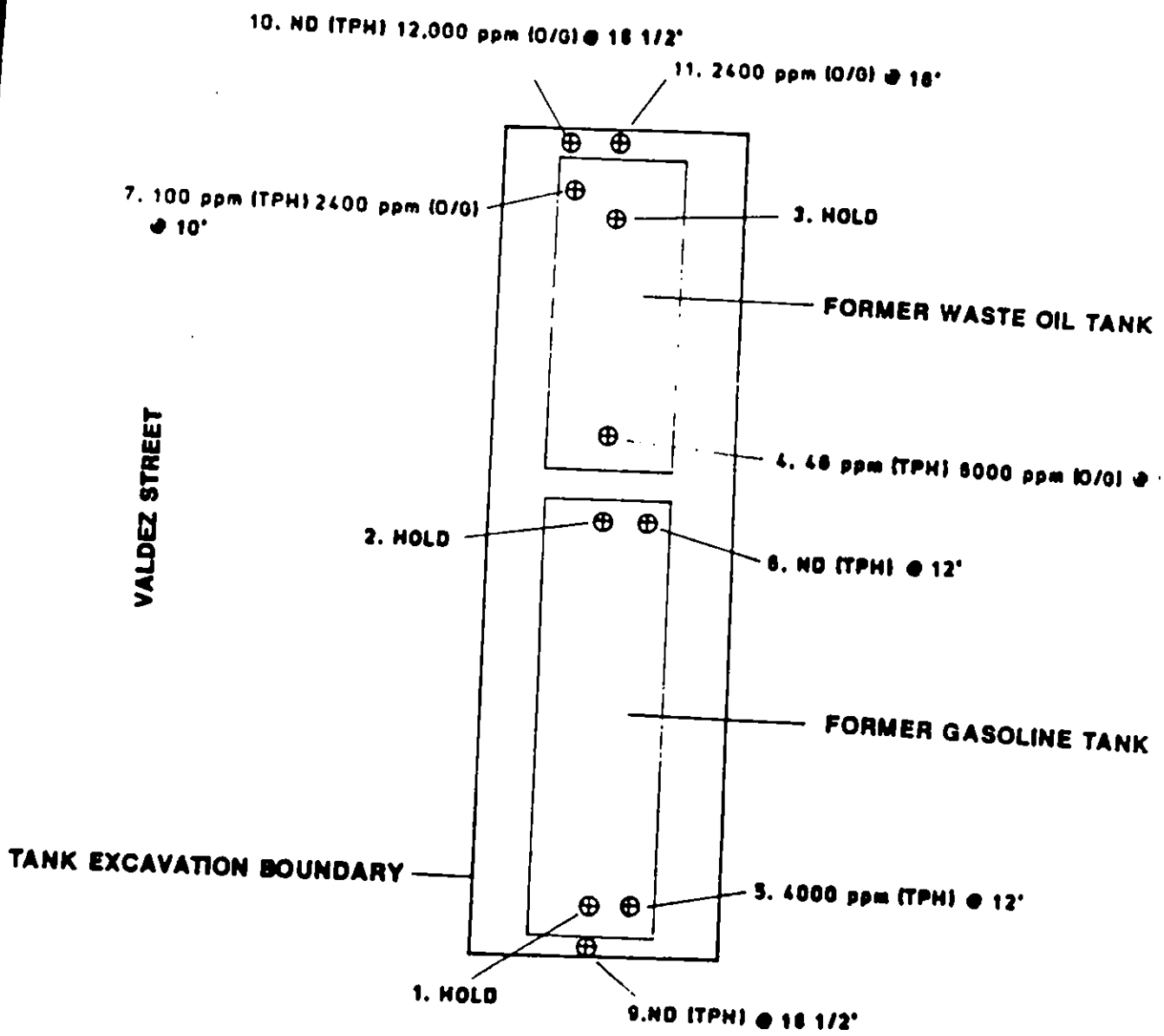
Clayton Project No. 45561-70

Laboratory Batch No.	Date of Sampling	Sample ID No. & Description	Analysis Requested	Detected Concentrations TPH (ppm)	VOC (ppm)	O&G (ppm)	BTEX (ppm)
880878	08/10/88	MW-1 @ 6-1/2'	O&G, BTEX			480	ND
		MW-1 @ 11-1/2'	O&G, BTEX			210	ND
		MW-2 @ 6-1/2'	O&G, BTEX			470	ND
		MW-2 @ 11-1/2'	O&G, BTEX			330	ND
		MW-2 @ 15'	O&G, BTEX			1600	B =
							T =
							E =
							X =
		MW-3 @ 11-1/2'	O&G, BTEX			3600	B =
							T =
							X =
		MW-3 @ 16-1/2'	O&G, BTEX			350	ND

TABLE 4

Water Sampling
Summary of Laboratory Analysis

Laboratory Batch No.	Date of Sampling	Sample ID No. & Description	Analysis Requested	Detected Concentrations TPH (ppb)	VOC (ppb)	O&G (ppb)	BTEX (ppb)
8808129	08/16/88	MW-1	BTEX				B = 10
							T = 4
							E = 3
		MW-2	BTEX				X = 6
							ND
		MW-3	BTEX				B = 52
							T = 4
							E = 1
							X = 17



LEGEND

(TPH) Total Petroleum Hydrocarbons

(O/G) Oil and Gas

1. Sample Identification Number

@ 12' depth

N

Clayton Environmental Consultants, Inc. A Marsh & McLennan Company

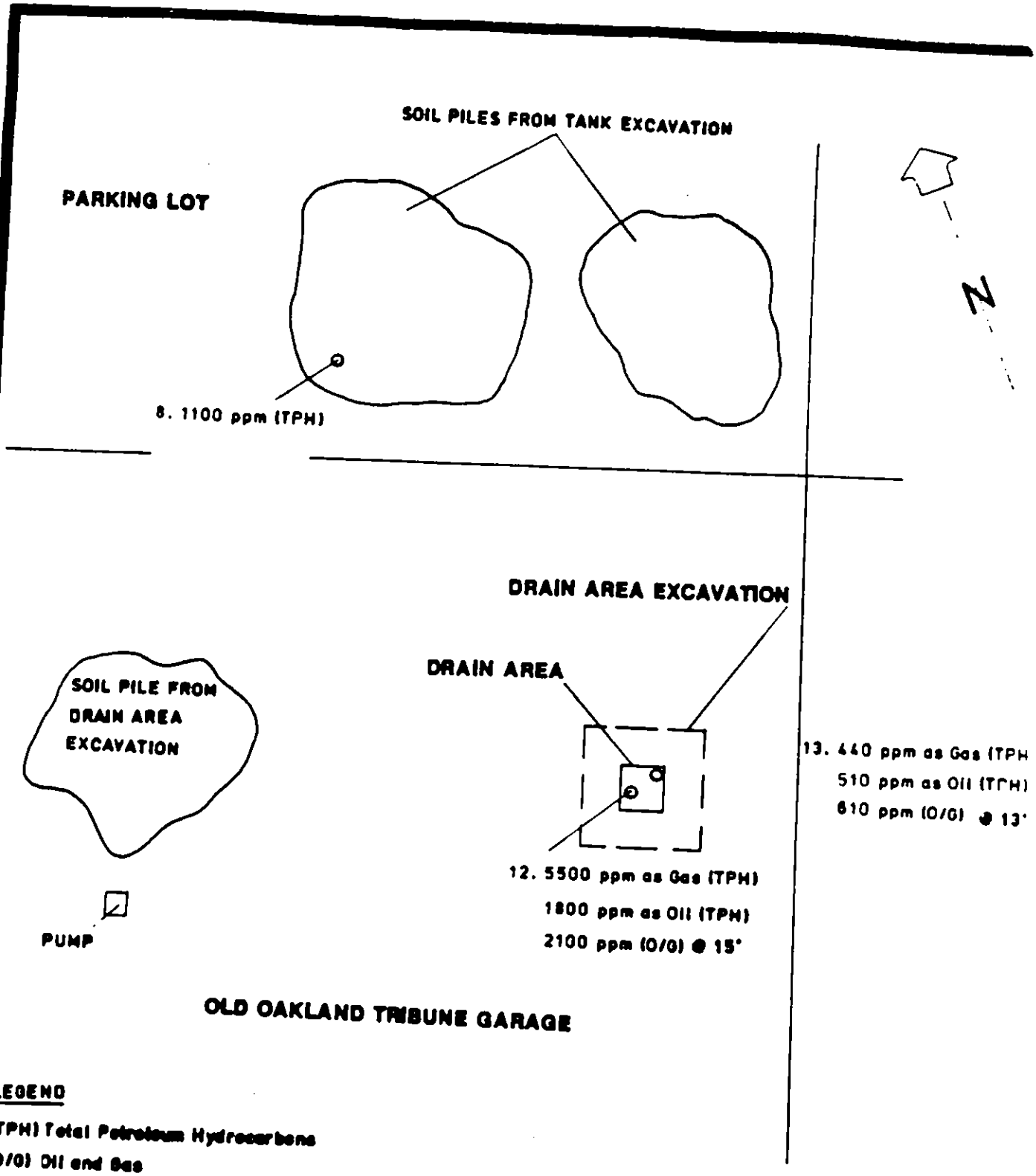
DETAIL OF SAMPLE LOCATIONS FROM FORMER WASTE OIL AND GASOLINE TANKS

THE OLD OAKLAND TRIBUNE GARAGE

OAKLAND, CALIFORNIA

FIGURE

3



LEGEND

(TPH) Total Petroleum Hydrocarbons
(O/G) Oil and Gas
1. Sample Identification Number
@ 12' depth

Clayton Environmental Consultants, Inc. A Marsh & McLennan Company

DETAIL OF SAMPLE LOCATIONS FROM INSIDE DRAIN AREA AND OUTSIDE SOIL PILE
THE OLD OAKLAND TRIBUNE GARAGE
OAKLAND, CALIFORNIA

FIGURE
4

APPENDIX B

FIELD PROCEDURES

INTRODUCTION

Dames & Moore conducted field activities at the Oakland Tribune site in Oakland, California between July and August 1989. The scope of the Phase I field investigation included:

- Drilling of 12 soil borings at selected onsite locations;
- Installation of 4 groundwater monitoring wells at selected onsite locations;
- Chemical analysis of selected soil samples collected above the water table in the well borings;
- Measurement of the depth to groundwater and performance of aquifer tests in each of the new groundwater monitoring wells; and,
- Collection and chemical analysis of groundwater samples from the 4 newly installed monitoring wells, and 3 existing wells.

DRILLING, SOIL SAMPLING, AND WELL INSTALLATION PROCEDURES

Dames & Moore conducted a drilling and well installation program at the Oakland Tribune site between August 3 and 10, 1989. The drilling program included drilling 12 soil borings to depths of 21.5 to 26.5 feet, and installation of groundwater monitoring wells at four of the boring locations. Monitoring well and boring 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 B-1 through B-12. Upon retrieval from the borehole, soil samples were logged and classified according to the Unified Soil Classification System (Plate B-13).

Drilling was performed by All Terrain Drilling Company of Roseville, California, using a CME truck-mounted rig with 8-inch diameter hollow stem auger drilling equipment. Relatively undisturbed soil samples were collected from each boring using a Dames & Moore U-Type Sampler. Samples were collected continuously from approximately 1 foot below ground surface to the water table encountered during drilling. After the water table was encountered, 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, fitted with plastic end caps, sealed with tape and labeled. 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 Detected (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, three soil samples were selected from each boring and delivered to ACCULAB Environmental Services of Petaluma, California for laboratory chemical analysis. Standard EPA chain-of-custody protocols were followed.

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

- Following drilling and sampling, the borehole was reamed to a diameter of 12-inches using hollow stem auger drilling equipment;

- 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 fifteen feet of 0.020-inch machine slotted screen and ten to twelve 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.

Following well installation, each of the new monitoring wells was developed to remove sediment and silt. Well development consisted of pumping using a centrifugal pump to remove sediment and draw in fresh formation water. Development continued until the water produced was visually free of suspended sediment. Generally, six to ten casing volumes of water were removed.

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

THIN LAYER CHROMATOGRAPHY PROCEDURES

Selected soil samples collected from the soil borings were screened for the presence of petroleum hydrocarbons using thin layer chromatography (TLC). TLC was used to estimate concentrations of total petroleum hydrocarbons present in the samples. The history of the site suggested that motor oil was an appropriate standard to use in the TLC analysis.

Five grams of soil from each sample were placed in a 40 ml glass vial containing 5 ml of hexane extractant. The soil/hexane mixture was then agitated and allowed to sit for 5 to 10 minutes. A 20 microliter aliquot of the hexane was dispensed onto the base of a silica-gel coated TLC glass plate and the plate placed into a separation tank containing hexane. When the

separation process was complete, the plate was then removed from the tank and examined using an ultraviolet (UV) light and/or iodine staining.

The resulting pattern on the plate is characteristic of the type of hydrocarbon present in the sample (i.e., motor oil, diesel fuel, hydraulic fluid). Hydrocarbon concentration in each of the samples were estimated by comparing the size and intensity of the pattern observed to that of the standards. Motor oil standards with concentration of 100 and 1,000 ppm were prepared and used to estimate hydrocarbon concentrations in the soil samples. After comparing sample plates to the standard plates, estimates of TPH (i.e., greater than, less than, or approximately equal) were logged in a sample notebook. The detection limit for the TLC methodology is approximate 50 ppm.

GROUNDWATER SAMPLING PROCEDURES

Groundwater samples were collected from the three existing groundwater monitoring wells (MW-1 through MW-3) on July 27, 1989 and the four newly installed wells on August 15, 1989. Prior to sampling, each well was purged by pumping until the measured temperature, pH, and electrical conductivity of the water produced attained stable values to assure that fresh formation water entered the wells. Three to four casing volumes of water were removed from each well during purging. Wells were sampled using dedicated polyethene bailers and rope.

Groundwater samples collected were submitted to ACCULAB Environmental Services of Petaluma, California 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.

Electrical conductivity and pH meters were calibrated at the beginning of each sampling day. Calibration was checked twice, once during the day and

once at the end of the day. Meter probes and beakers were thoroughly rinsed with distilled water before and after each use.

AQUIFER TESTING PROCEDURES

In-situ falling head permeability tests (slug tests) were performed in the four (4) newly installed monitoring wells MW-4 through MW-7 on August 17, 1989. The horizontal hydraulic conductivity values calculated from the slug test data are considered representative of the formation material within the immediate vicinity of the well.

In a falling head slug test a known volume ("slug") is rapidly introduced below the static water level in each well and the water level recovery rate is measured and recorded. This was achieved by introducing a clean weighted PVC slug into the well. The rate of recovery of the displaced water level was then measured at specified intervals with an electronic water level indicator until the water level had returned to static conditions.

Slug test data were analyzed using a computer software package created by Interpex Limited of Golden, Colorado. The computer program, called SLUGIX, employs methods developed by Bouwer and Rice (1976) for unconfined conditions and Cooper et al. (1967) for confirmed conditions. Data plots for the slug tests are presented in Plates B-14 through B-17.

BORING SB-1

DATE DRILLED: 8/3/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE	SAMPLES	SYMBOLS	DESCRIPTION
0	0	U	3		SC	CONCRETE FLOOR DARK BROWN CLAYEY SAND, fine (slightly moist) (very loose) [FILL]
5	0	U	20		CL	BROWN SANDY CLAY with some small gravel, 2-5 mm in diamater (slightly moist) (medium stiff)
10	0	U	68			Grades with brownish yellow mottling and large amount of subangular to subrounded gravel, 2-35 mm in diameter (slightly moist) (very stiff)
15	0	U	17			Decreasing gravel, increasing moisture
20	0	U	70			Grades with gray mottling; gravel 2-15 mm in diameter (moist) (very stiff to hard)
25	0	U	46			Gravel increasing in diameter up to 7 cm, mostly jasper and chert (wet)
30						
35						

NOTES:

1. Boring completed at a depth of 26.5 feet on 8/3/89.
2. 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.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate B-13.

LOG OF BORING

Dames & Moore

BORING SB-2

DATE DRILLED: 8/3/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE	SAMPLES	SYMBOLS	DESCRIPTION
0						CONCRETE FLOOR
	0	U	6		SM	DARK BROWN SILTY SAND, fine (slightly moist) (loose to very loose) [FILL]
5	0	U	72		CL	BROWN TO BROWNISH YELLOW SANDY GRAVELLY CLAY with minor black mottling, gravels up to 5mm in diameter (very stiff to hard)
10	0	U	50		SC	BROWN TO BROWNISH YELLOW CLAYEY SAND with some gravel (slightly moist) (very dense)
15	0	U	57			Grades with some clay pockets and gravel up to 30mm in diameter
20	0	U	91		SP	BROWN AND BROWNISH YELLOW GRAVELLY SAND (very moist) (very dense)
25	0	U	68		CL	BROWN SANDY CLAY with some gravel (hard)
30						
35						

NOTES:

1. Boring completed at a depth of 24.5 feet on 8/3/89.
2. 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.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate B-13.

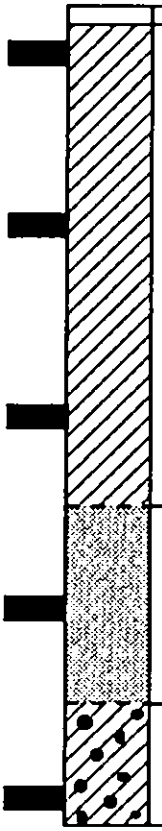
LOG OF BORING

Dames & Moore

BORING SB-3

DATE DRILLED: 8/3/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0	0	U	35
5	0	U	29
10	0	U	36
15	>1000	U	76
20	10	U	95
25			
30			
35			



SAMPLES	SYMBOLS	DESCRIPTION
		CONCRETE FLOOR
	CL	BROWN GRAVELLY SANDY CLAY with rootlets (slightly moist) (stiff to very stiff)
		Grades with decreasing organics, less gravel
		Grades light brown with some iron oxide staining
	SP	BROWN GRAVELLY SAND with some clay and strong gasoline odor; gravels angular to subrounded 5-10mm in diameter (moist) (stiff to hard)
		Grades with sand and angular to subrounded gravel up to 30mm in diameter
	GC	CLAYEY SANDY GRAVEL with slight gasoline odor, gravels up to 20mm in diameter (wet) (dense)

NOTES:

1. Boring completed at a depth of 21.5 feet on 8/3/89.
2. 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.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate B-13.

LOG OF BORING

Dames & Moore

BORING SB-4 / MW-4

DATE DRILLED: 8/8/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0	0	U	36
5	0	U	35
10	0	U	39
15	8	U	40
20	0	U	23
25	0	U	76
30			
35			

SAMPLES | SYMBOLS | DESCRIPTION

CONCRETE FLOOR

CL — BROWN SANDY SILTY CLAY with small pockets of light brown silty clay; trace iron oxide staining; (slightly moist) (stiff)

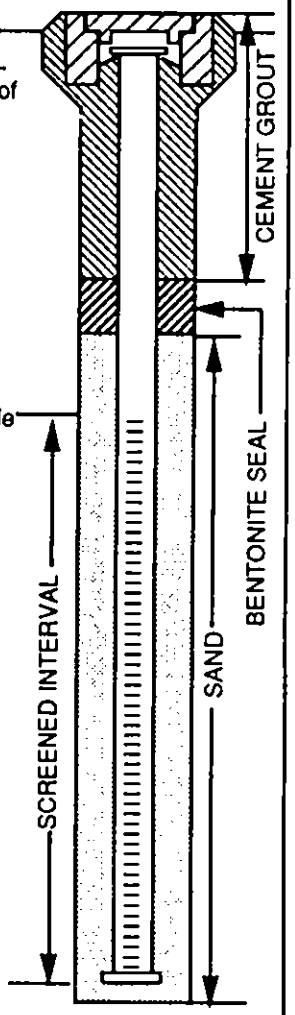
Grades with black mottling (moist)

Grades light brown with silty clayey sand lenses and trace gravel up to 1cm in diameter; iron oxide nodules (slightly moist)

SP — BROWNISH AND GREENISH GRAY MOTTLED SAND with slight odor (moist) (medium dense)

CL — BROWN TO LIGHT BROWN SANDY CLAY with orange mottling; some gravel up to 7cm in diameter (moist) (stiff to medium stiff)

Grades with large amount of angular gravel



NOTES:

1. Boring completed at a depth of 26.5 feet on 8/8/89.
2. 4-inch PVC observation well installed to a depth of 25.5 feet; screened interval from 10.0 to 25.0 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 B-13.

LOG OF BORING

Dames & Moore

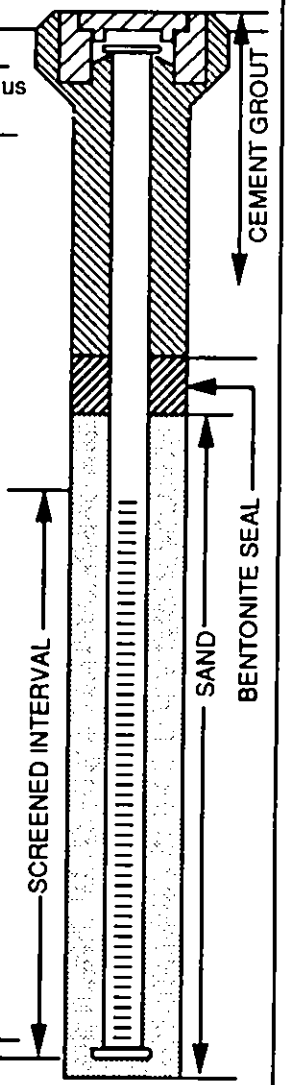
BORING SB-5 / MW-5

DATE DRILLED: 8/9/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0			
5	0	U	41
10	2	U	38
15	200	U	60
20	0	U	41
25	2	U	86
30			
35			

SAMPLES

SYMBOLS	DESCRIPTION
	CONCRETE FLOOR
ML	BROWN SILT with abundant brick and miscellaneous debris [FILL]
CL	BROWN SILTY CLAY with iron oxide staining and minor black mottling (slightly moist) (stiff)
	Grades light brown, with increasing gravel
GP	BROWN SANDY GRAVEL with some silt, slight gasoline odor
CL	BROWN TO LIGHT BROWN SANDY GRAVELLY CLAY, gravels up to 1cm in diameter (moist) (stiff to very stiff)
GW	BROWN SANDY CLAYEY GRAVEL, gravel up 2cm in diameter, composed of chert, jasper & quartz (very moist to wet)



NOTES:

1. Boring completed at a depth of 26.5 feet on 8/9/89.
2. 4-inch PVC observation well installed to a depth of 27.5 feet; screened interval from 12.0 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 B-13.

LOG OF BORING

Dames & Moore

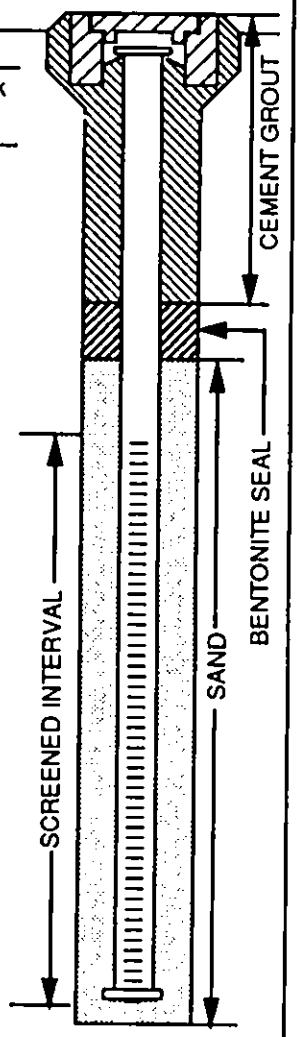
BORING SB-6 / MW-6

DATE DRILLED: 8/9/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0	0	U	31
5	0	U	35
10	0	U	24
15	0.5	U	85
20	1.5	U	47
25	2.5	U	118
30			
35			

SAMPLES

SYMBOLS	DESCRIPTION
	CONCRETE FLOOR
CL	BROWN SILTY SANDY CLAY with abundant brick and miscellaneous debris [FILL]
CL / SC	BROWN SANDY CLAY AND CLAYEY SAND with some coarse sand and gravel up to 3mm in diameter, black mottling (slightly moist)
	Grades to brown sandy clay, minor iron oxide staining (stiff)
SP	BROWN SAND, medium to fine, with some fine gravel (very moist) (very dense)
	Grades with some clay Gravels become larger, up to 2.5cm
GC	SANDY CLAYEY GRAVEL, mostly chert, quartz and jasper up to 1.5cm in diameter (very moist to wet)



NOTES:

1. Boring completed at a depth of 26.5 feet on 8/9/89.
2. 4-inch PVC observation well installed to a depth of 26.0 feet; screened interval from 10.5 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 B-13.

LOG OF BORING

Dames & Moore

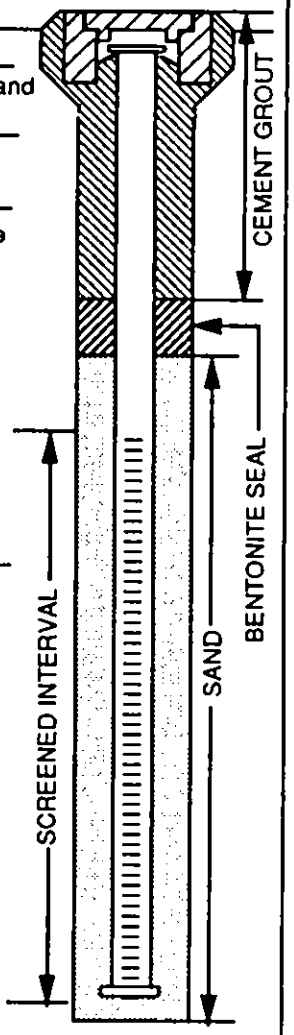
BORING SB-7 / MW-7

DATE DRILLED: 8/10/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0	0	U	20
5	0	U	47
10	0	U	30
15	0	U	62
20	0	U	57
25	0	U	34
30			
35			

SAMPLES

SYMBOLS	DESCRIPTION
	ASPHALT/GRAVEL
SM	BROWN SILTY SAND with some brick fragments and other debris (FILL)
CL	BROWN CLAY with minor black mottling (slightly moist) (stiff to very stiff)
CL/SC	SANDY CLAY AND CLAYEY SAND with some fine gravel, minor iron oxide staining
SP	BROWNISH YELLOW SAND, medium to fine, some fine gravel and trace of clay (very moist) (dense)
	Grades coarser with yellowish red mottling and some clayey gravel lenses
CL	BROWNISH YELLOW AND LIGHT BROWN MOTTLED SANDY CLAY with black mottling (moist) (medium dense)



NOTES:

1. Boring completed at a depth of 26.5 feet on 8/9/89.
2. 4-inch PVC observation well installed to a depth of 26.0 feet; screened interval from 10.5 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 B-13.

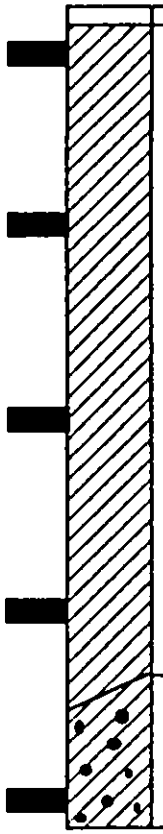
LOG OF BORING

Dames & Moore

BORING SB-8

DATE DRILLED: 8/7/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0	0	U	28
5	1	U	46
10	1	U	30
15	20	U	38
20	10	U	46
25			
30			
35			



SYMBOLS	DESCRIPTION
	CONCRETE FLOOR
CL	BROWN SILTY CLAY with some sand, minor black mottling, trace fine, angular gravels up to 5mm in diameter (slightly moist) (stiff)
	Decreasing gravel, becomes slightly stiffer
	Grades with light brown color and black and tan mottling
	Grades with brownish yellow color Becomes very sandy with trace gravel, slight odor
GC	LIGHT BROWN CLAYEY GRAVEL (moist to wet)

NOTES:

1. Boring completed at a depth of 21.5 feet on 8/3/89.
2. 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.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate B-13.

LOG OF BORING

Dames & Moore

BORING SB-9

DATE DRILLED: 8/7/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0	0	U	26
5	0	U	46
10	0	U	32
15	10	U	31
20	10	U	80
25			
30			
35			

SYMBOLS	DESCRIPTION
	CONCRETE FLOOR
CL	BROWNISH YELLOW SILTY SANDY CLAY with dark brown and orange mottling (slightly moist) (stiff)
	Grades brown with iron oxide staining (hard)
	Grades lighter brown with less sand
CL	GREENISH GRAY SANDY GRAVELLY CLAY with slight odor (slightly moist) (stiff to very stiff)
GW	BROWN SILTY SANDY GRAVEL with trace clay (very moist to wet)

NOTES:

1. Boring completed at a depth of 21.5 feet on 8/7/89.
2. 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.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate B-13.

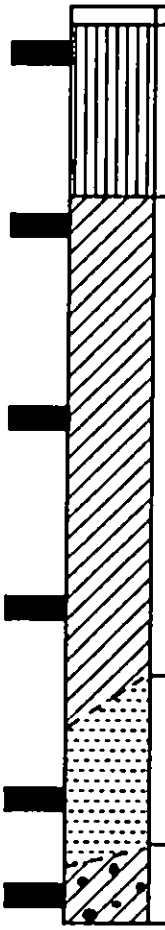
LOG OF BORING

Dames & Moore

BORING SB-10

DATE DRILLED: 8/7/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0	0	U	14
5	0	U	58
10	0	U	41
15	2	U	25
20	0	U	57
	0	U	37
25			
30			
35			



SYMBOLS	DESCRIPTION
	CONCRETE FLOOR
ML	DARK BROWN CLAYEY SILT with some sand (dry to slightly moist) (loose) [FILL]
CL	BROWN TO BROWNISH YELLOW SILTY SANDY CLAY with gravel, black mottling (stiff to hard)
	Grades to brown to light brown with less sand, iron oxide or manganese nodules (slightly moist) (very stiff)
	Grades brown to brownish yellow with more sand
SC	LIGHT BROWN CLAYEY SAND, medium to fine, with black mottling and gravel (moist) (medium dense)
GC	BROWN CLAYEY SANDY GRAVEL, fine (very moist)

NOTES:

1. Boring completed at a depth of 24.0 feet on 8/7/89.
2. 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.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate B-13.

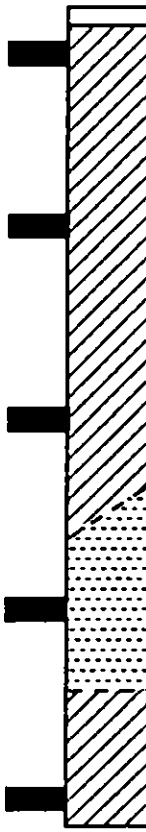
LOG OF BORING

Dames & Moore

BORING SB-11

DATE DRILLED: 8/7/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0	0	U	21
5	0	U	53
10	5	U	32
15	0	U	76
20	0.5	U	26
25			
30			
35			



SYMBOLS	DESCRIPTION
	CONCRETE FLOOR
CL	BROWN SANDY CLAY with some fine gravel up to 4mm (slightly moist) (stiff)
	Grades with increasing sand
	Grades with black and tan mottling, some silt, decreasing sand
SC	BROWN-ORANGE TO BROWN CLAYEY GRAVELLY SAND with gravel lenses, gravel primarily chert, up to 2cm in diameter (slightly moist)
CL	BROWN TO LIGHT BROWN SANDY GRAVELLY CLAY with orange and black mottling (moist) (stiff)

NOTES:

1. Boring completed at a depth of 24.0 feet on 8/7/89.
2. 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.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate B-13.

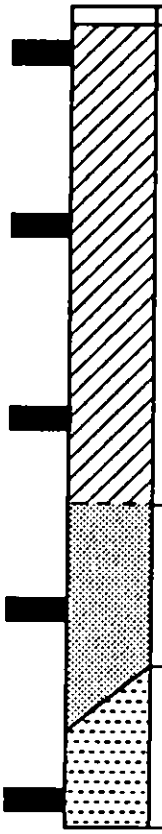
LOG OF BORING

Dames & Moore

BORING SB-12

DATE DRILLED: 8/8/89

DEPTH IN FEET	SAMPLING: OVA READING (PPM)	SAMPLING: SAMPLER TYPE	SAMPLING: SAMPLING RESISTANCE
0	0	U	32
5	0	U	26
10	0	U	27
15	20	U	94
20	20	U	59
25			
30			
35			



SYMBOLS	DESCRIPTION
	CONCRETE FLOOR
CL	BROWN TO LIGHT BROWN SANDY CLAY with iron oxide staining (slightly moist) (stiff)
	Grades brown with minor black mottling and some very fine gravel 1-3mm in diameter
	Grades lighter brown with increasing sand, iron oxide staining and black mottling
GW	BROWN AND GREENISH GRAY SANDY CLAYEY GRAVEL, angular to subrounded up to 4cm, gasoline odor (very moist)
SC	LIGHT BROWN CLAYEY SAND with some brownish yellow mottling and gravel, rounded to subangular up to 5cm, mostly chert, jasper and quartz

NOTES:

1. Boring completed at a depth of 21.5 feet on 8/7/89.
2. 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.
3. Boring log indicates interpreted subsurface conditions only at the location and the time the boring was drilled.
4. For an explanation of terms used see the Soils Classification Chart and Key to Test Data, Plate B-13.

LOG OF BORING

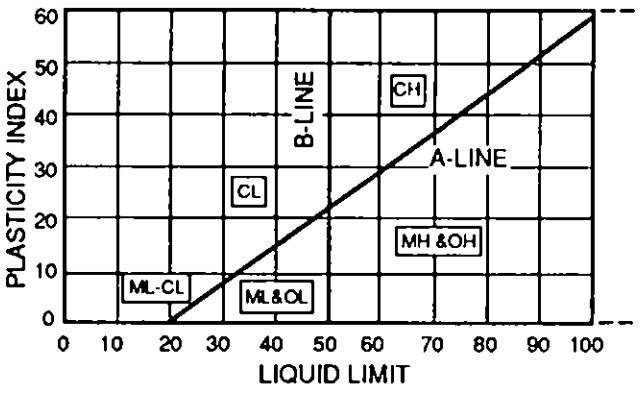
Dames & Moore

UNIFIED SOIL CLASSIFICATION CHART

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	FOR VISUAL CLASSIFICATION, THE 1/4" SIZE MAY BE USED AS EQUIVALENT TO THE 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			

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

PLASTICITY CHART



KEY TO SAMPLES

- INDICATES UNDISTURBED SAMPLES
- INDICATES DISTURBED SAMPLE
- INDICATES NO RECOVERY IN SAMPLE

KEY TO TEST DATA

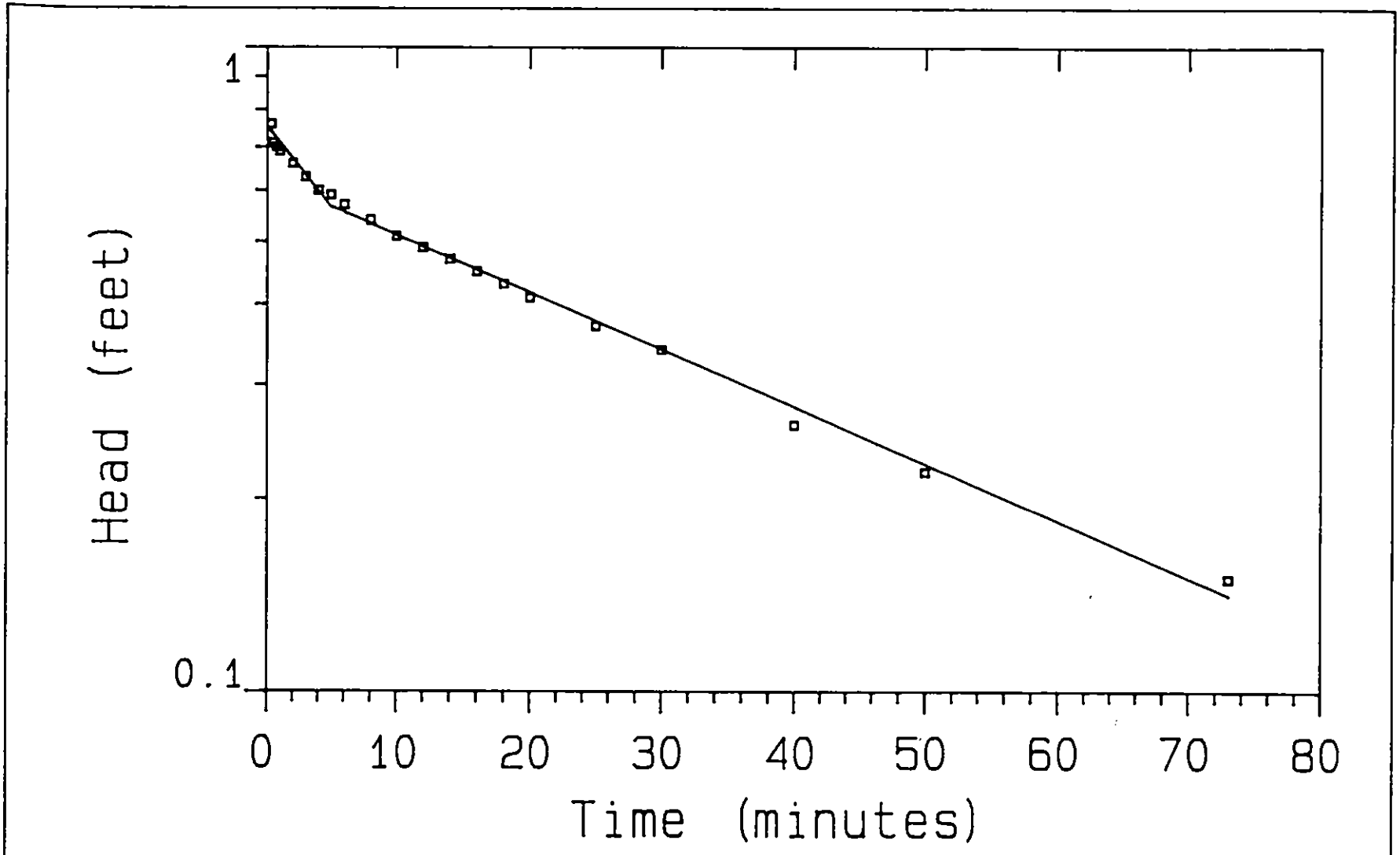
LV - LABORATORY VANE SHEAR TEST
TV - TORVANE (PERFORMED IN FIELD)
PP - POCKET PENETROMETER
TXUU - TRIAXIAL COMPRESSION-UNCONSOLIDATED UNDRAINED
DSCU - DIRECT SHEAR-CONSOLIDATED UNDRAINED
AL - ATTERBERG LIMITS
GSA - GRAIN SIZE ANALYSES
C - CONSOLIDATION TEST

TYPES OF SOIL SAMPLERS

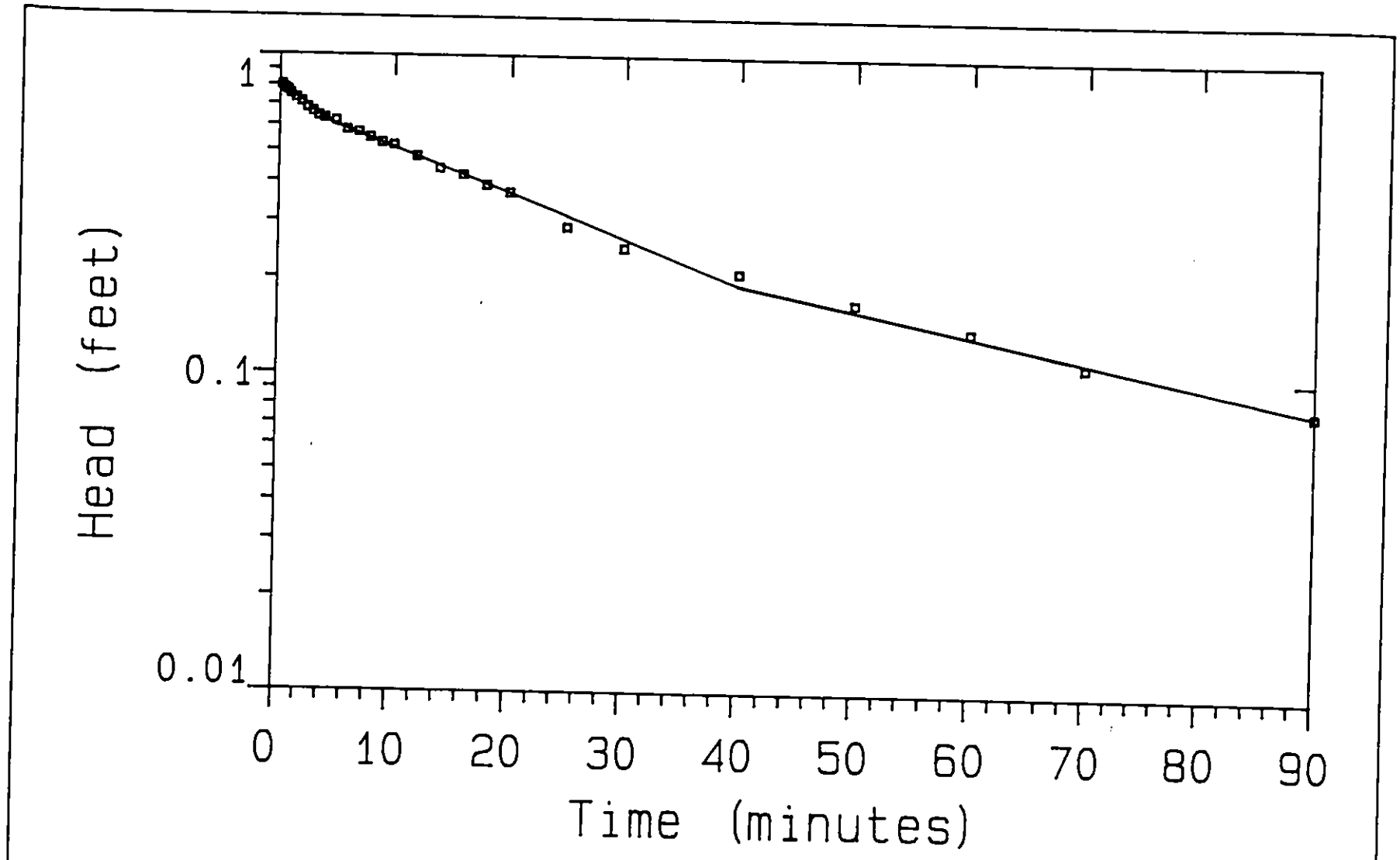
U - DAMES & MOORE TYPE "U" SAMPLER

SOIL CLASSIFICATION CHART AND KEY TO TEST DATA

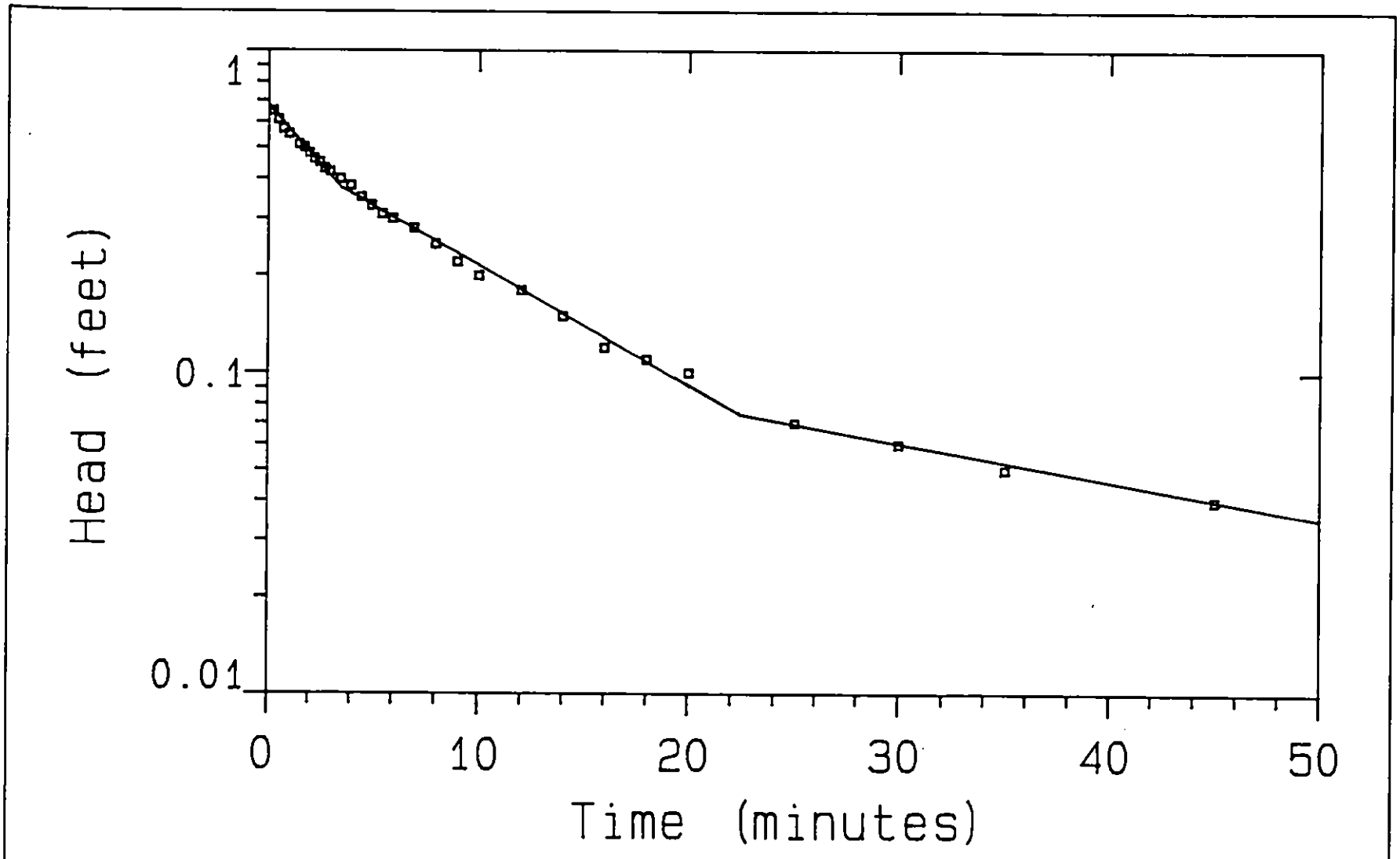
Dames & Moore



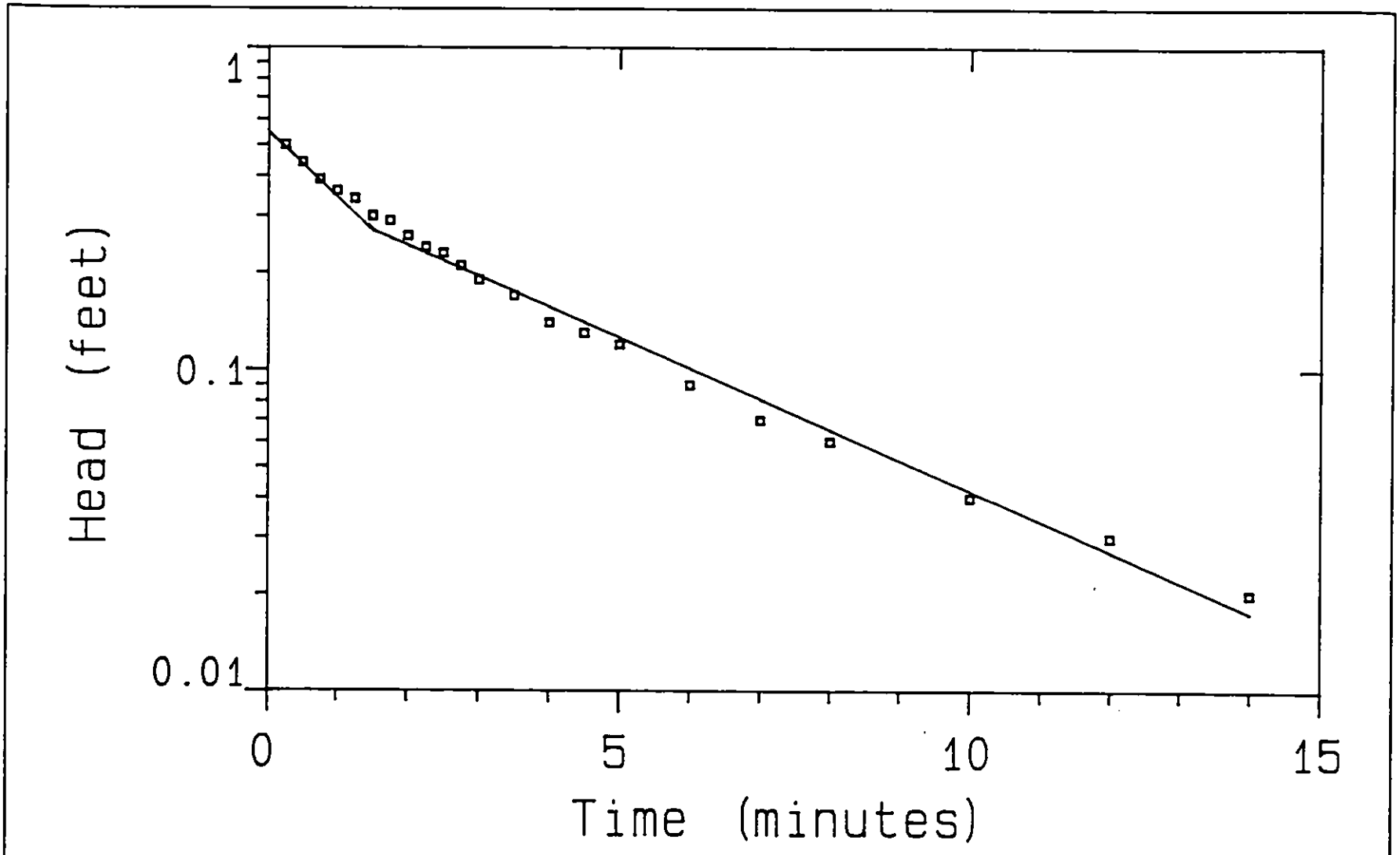
MODEL TYPE: BOUWER and RICE	for: Oakland Tribune	Oakland Tribune Garage
CONDUCTIVITY: 2.414E-5 cm/sec	by: Dames and Moore - SFO	Well: MW-4
TRANSMISSIVITY: .003679 sq. cm/sec	WELL DATA: Units: ft	2302 Valdez Street
INITIAL HEAD: .7600 ft	AQUIFER: Shallow	Alameda Co.
Data Set: mw-4fall / Date: 8/17/89	THICKNESS: 5.000	
	SCREEN: top: 10.00 base: 25.00	
	DIAMETER: casing: .3340 intake: 1.000	
	DEPTH: Water Table: 16.18 TD: 25.00	



MODEL TYPE: BOUWER and RICE CONDUCTIVITY: 3.968E-5 cm/sec TRANSMISSIVITY: .01391 sq. cm/sec INITIAL HEAD: .8000 ft Data Set: mw-5fall Date: 8/17/89	for: Oakland Tribune by: Dames and Moore - SFO WELL DATA: Units: ft AQUIFER: Shallow THICKNESS: 11.50 SCREEN: top: 12.00 base: 27.00 DIAMETER: casing: .3340 intake: 1.000 DEPTH: Water Table: 15.75 TD: 27.00	Oakland Tribune Garage Well: MW-5 2302 Valdez Street Alameda Co.



MODEL TYPE: BOUWER and RICE CONDUCTIVITY: .0001023 cm/sec TRANSMISSIVITY: .03119 sq. cm/sec INITIAL HEAD: .6500 ft Data Set: mw-6fall | Date: 8/17/89	for: Oakland Tribune by: Dames and Moore - SFO WELL DATA: Units: ft AQUIFER: Shallow THICKNESS: 10.00 SCREEN: top: 10.50 base: 25.50 DIAMETER: casing: .3340 intake: 1.000 DEPTH: Water Table: 16.03 TD: 25.50	Oakland Tribune Garage Well: MW-6 2302 Valdez Street Alameda Co.



MODEL TYPE: BOUWER and RICE	for: Oakland Tribune	Oakland Tribune Garage
CONDUCTIVITY: .0002676 cm/sec	by: James and Moore - SFO	
TRANSMISSIVITY: .07342 sq. cm/sec	WELL DATA: Units: ft	Well: MW-7
INITIAL HEAD: .5000 ft	AQUIFER: Shallow	2302 Valdez Street
Data Set: mw-7fall / Date: 8/17/89	THICKNESS: 9.000	Alameda Co.
	SCREEN: top: 10.50 base: 25.50	
	DIAMETER: casing: .3340 intake: 1.000	
	DEPTH: Water Table: 14.42 TD: 25.50	

Job No. 19191-001-43
8/23/89
John Cranston

Tidal Study
Oakland Tribune

Start Date: 8/21/89 End Date: 8/22/89
Start Time: 11:40 End Time: 14:55

Time From Start (minutes)	Transducer Readings (feet) SB-6	SB-5
0	8.98	7.53
15	8.98	7.50
30	8.99	7.49
45	8.99	7.49
60	8.99	7.49
75	8.99	7.49
90	9.00	7.49
105	9.00	7.49
120	9.00	7.49
135	9.00	7.50
150	9.00	7.50
165	9.00	7.50
180	9.00	7.50
195	9.01	7.50
210	9.01	7.50
225	9.00	7.50
240	9.01	7.50
255	9.01	7.50
270	9.01	7.50
285	9.01	7.50
300	9.01	7.50
315	9.01	7.50
330	9.01	7.50
345	9.01	7.50
360	9.01	7.50
375	9.01	7.50
390	9.02	7.50
405	9.02	7.50
420	9.02	7.50
435	9.01	7.50
450	9.01	7.50
465	9.01	7.50
480	9.01	7.50
495	9.01	7.50
510	9.01	7.50
525	9.01	7.50
540	9.01	7.49
555	9.01	7.49
570	9.01	7.49
585	9.01	7.49

600	9.01	7.49
615	9.01	7.49
630	9.01	7.49
645	9.01	7.49
660	9.01	7.49
675	9.01	7.49
690	9.01	7.49
705	9.01	7.49
720	9.01	7.49
735	9.01	7.49
750	9.01	7.49
765	9.01	7.49
780	9.01	7.49
795	9.01	7.49
810	9.01	7.49
825	9.02	7.49
840	9.01	7.49
855	9.02	7.49
870	9.02	7.49
885	9.02	7.49
900	9.01	7.49
915	9.01	7.49
930	9.01	7.49
945	9.01	7.49
960	9.01	7.49
975	9.01	7.48
990	9.01	7.48
1005	9.01	7.48
1020	9.01	7.48
1035	9.01	7.48
1050	9.01	7.48
1065	9.01	7.48
1080	9.01	7.49
1095	9.01	7.49
1110	9.01	7.48
1125	9.01	7.48
1140	9.01	7.48
1155	9.01	7.48
1170	9.00	7.47
1185	9.00	7.47
1200	9.01	7.47
1215	9.01	7.48
1230	9.00	7.47
1245	9.01	7.48
1260	9.00	7.48
1275	9.00	7.47
1290	9.00	7.47
1305	9.00	7.47
1320	9.00	7.47
1335	9.00	7.47
1350	9.00	7.47
1365	9.00	7.47
1380	9.00	7.47
1395	9.00	7.46
1410	9.00	7.46
1425	9.00	7.46

1440	9.00	7.46
1455	9.00	7.46
1470	9.00	7.47
1485	9.00	7.47
1500	9.00	7.47
1515	9.01	7.47
1530	9.00	7.47
1545	9.01	7.47
1560	9.01	7.47
1575	9.01	7.47
1590	9.01	7.47
1605	9.01	7.47
1620	9.01	7.47

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

Client Code: DAME28
Survey # OAK.TRIBUNE
Project/Release # 19191-001-043

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

Laboratory Job No.: 893573
Date Collected: 08/03/89
Date Received: 08/04/89
Date Analyzed: 08/11/89
Date Reported: 08/15/89

TOTAL PETROLEUM HYDROCARBONS(EPA 418.1)

MATRIX:SOIL

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	DET.LIM. mg/kg
45946	SB1-2C	TPH	ND	6
45947	SB1-3C	TPH	ND	6
45948	SB1-5C	TPH	ND	6
45949	SB2-2C	TPH	ND	6
45950	SB2-3C	TPH	ND	6
45951	SB2-5C	TPH	ND	6
45952	SB3-2C	TPH	ND	6
45953	SB3-3C	TPH	ND	6
45954	SB3-4C	TPH	ND	6

ANALYST:JAN TOISTER

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.

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

Date Collected: 08/03/89
Date Extracted: 08/10/89
Date Analyzed: 08/10/89

Laboratory Job No.: 893573
Date Received: 08/04/89
Date Reported: 08/15/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5020/8015/8020
MATRIX: SOIL

LABNO	SMPLNO-ID	RESULTS	DET.LIM
45946	SB1-2C		
	GASOLINE	ND	1.0 mg/kg
45947	SB1-3C		
	GASOLINE	ND	1.0 mg/kg
45948	SB1-5C		
	GASOLINE	ND	1.0 mg/kg
45949	SB2-2C		
	GASOLINE	ND	1.0 mg/kg
45950	SB2-3C		
	GASOLINE	ND	1.0 mg/kg
45951	SB2-5C		
	GASOLINE	ND	1.0 mg/kg
45952	SB3-2C		
	GASOLINE	ND	1.0 mg/kg
45953	SB3-3C		
	GASOLINE	ND	1.0 mg/kg
45954	SB3-4C		
	GASOLINE	655 mg/kg	5.7 mg/kg

ANALYST:ROBERT REMLINGER

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

Date Collected: 08/03/89
Date Extracted: 08/10/89
Date Analyzed: 08/10/89

Laboratory Job No.: 893573
Date Received: 08/04/89
Date Reported: 08/15/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5020/8015/8020
MATRIX: SOIL

LABNO SMPLNO-ID	RESULTS	DET.LIM
45946 SB1-2C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
45947 SB1-3C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
45948 SB1-5C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
45949 SB2-2C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
45950 SB2-3C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg

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

Laboratory Job No.: 893573

ABNO SMPLNO-ID	RESULTS	DET.LIM
45951 SB2-5C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
45952 SB3-2C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
45953 SB3-3C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
45954 SB3-4C		
BENZENE	0.31 mg/kg	0.19 mg/kg
TOLUENE	0.53 mg/kg	0.19 mg/kg
ETHYLBENZENE	ND	0.19 mg/kg
XYLENE	2.34 mg/kg	0.19 mg/kg

ANALYST:ROBERT REMLINGER

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

Client Code: DAME28
Survey #
OAKLAND TRIBUNE GAR
Project/Release # 19191-001-43

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

Laboratory Job No.: 893650
Date Received: 08/10/89
Date Reported: 08/22/89

Date Analyzed: 08/16/89

TOTAL PETROLEUM HYDROCARBONS(EPA 418.1)

MATRIX:SOIL

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	DET.LIM. mg/kg
46667	SB-12-2C	TPH	ND	6
46668	SB-12-3C	TPH	ND	6
46669	SB-12-4C	TPH	1,150	6
46670	SB-4-2C	TPH	ND	6
46671	SB-4-3C	TPH	ND	6
46672	SB-4-4C	TPH	ND	6

ANALYST:JAN TOISTER

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE

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

Date Extracted: 08/17/89
Date Analyzed: 08/17/89

Laboratory Job No.: 893650
Date Received: 08/10/89
Date Reported: 08/22/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5020/8015/8020)
MATRIX: SOIL

LABNO	SMPLNO-ID	RESULTS	DET.LIM
46667	SB-12-2C GASOLINE	ND	1.0 mg/kg
46668	SB-12-3C GASOLINE	ND	1.0 mg/kg
46669	SB-12-4C GASOLINE	560 mg/kg	12.0 mg/kg
46670	SB-4-2C GASOLINE	ND	1.0 mg/kg
46671	SB-4-3C GASOLINE	ND	1.0 mg/kg
46672	SB-4-4C GASOLINE	17.0 mg/kg	1.0 mg/kg

ANALYST:ROBERT REMLINGER

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

Laboratory Job No.: 893650
Date Extracted: 08/17/89
Date Received: 08/10/89
Date Analyzed: 08/17/89
Date Reported: 08/22/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5020/8015/8020)
MATRIX: SOIL

LABNO SMPLNO-ID	RESULTS	DET.LIM
46667 SB-12-2C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46668 SB-12-3C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46669 SB-12-4C		
BENZENE	0.74 mg/kg	0.39 mg/kg
TOLUENE	0.70 mg/kg	0.39 mg/kg
ETHYLBENZENE	1.00 mg/kg	0.39 mg/kg
XYLENE	14.2 mg/kg	0.39 mg/kg
46670 SB-4-2C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46671 SB-4-3C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg

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

Laboratory Job No.: 893650

LABNO	SMPLNO-ID	RESULTS	DET.LIM
46672	SB-4-4C		
	BENZENE	0.050 mg/kg	0.040 mg/kg
	TOLUENE	0.11 mg/kg	0.040 mg/kg
	ETHYLBENZENE	ND	0.040 mg/kg
	XYLENE	0.580 mg/kg	0.040 mg/kg

ANALYST:ROBERT REMLINGER

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

Client Code: DAME28
Survey # OAK.TRIBUNE
Project/Release # 19191-001-43

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

Laboratory Job No.: 893689
Date Received: 08/14/89
Date Reported: 08/24/89

Date Analyzed: 08/23/89

TOTAL PETROLEUM HYDROCARBONS(EPA 418.1)

MATRIX:SOIL TOTAL DIGEST

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	CA TTLC	DET.LIM. mg/kg
46938	SB6-6.0-2C	TPH	ND		6
46939	SB6-11.0-3C	TPH	ND		6
46940	SB6-16.0-4C	TPH	ND		6
46941	SB5-6.0-1C	TPH	ND		6
46942	SB5-11.0-2C	TPH	ND		6
46943	SB5-16.0-3C	TPH	10,200		150
46944	SB7-6.0-2C	TPH	ND		6
46945	SB7-11.0-3C	TPH	ND		6
46946	SB7-16.0-4C	TPH	ND		6
46947	FD-1	TPH	9,600		150
46948	FD-2	TPH	ND		6

THIS REPORT HAS BEEN REVIEWED AND APPROVED FOR RELEASE

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

Laboratory Job No.: 893689

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	CA TTLC	DET.LIM. mg/kg
46949	FD-3	TPH	ND		6

ANALYST:JAN TOISTER

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

Laboratory Job No.: 893689
Date Extracted: 08/17/89
Date Received: 08/14/89
Date Analyzed: 08/17/89
Date Reported: 08/24/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5020/8015/8020
MATRIX: SOIL

LABNO SMPLNO-ID	RESULTS	DET.LIM
46938 SB6-6.0-2C		
GASOLINE	ND	1.0 mg/kg
46939 SB6-11.0-3C		
GASOLINE	ND	1.0 mg/kg
46940 SB6-16.0-4C		
GASOLINE	ND	1.0 mg/kg
46941 SB5-6.0-1C		
GASOLINE	ND	1.0 mg/kg
46942 SB5-11.0-2C		
GASOLINE	ND	1.0 mg/kg
46943 SB5-16.0-3C		
GASOLINE	428 mg/kg	1.3 mg/kg
46944 SB7-6.0-2C		
GASOLINE	ND	1.0 mg/kg
46945 SB7-11.0-3C		
GASOLINE	ND	1.0 mg/kg
46946 SB7-16.0-4C		
GASOLINE	ND	1.0 mg/kg
46947 FD-1		
GASOLINE	271 mg/kg	1.0 mg/kg

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

Laboratory Job No.: 893689

LABNO	SMPLNO-ID	RESULTS	DET.LIM
46948	FD-2 GASOLINE	ND	1.0 mg/kg
46949	FD-3 GASOLINE	ND	1.0 mg/kg

ANALYST:ROBERT REMLINGER

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

Laboratory Job No.: 893689
Date Extracted: 08/17/89
Date Analyzed: 08/17/89
Date Received: 08/14/89
Date Reported: 08/24/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5020/8015/8020
MATRIX: SOIL

LABNO SMPLNO-ID	RESULTS	DET.LIM
46938 SB6-6.0-2C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46939 SB6-11.0-3C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46940 SB6-16.0-4C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46941 SB5-6.0-1C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46942 SB5-11.0-2C		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg

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

Laboratory Job No.: 893689

LABNO	SMPLNO-ID	RESULTS	DET.LIM
46943	SB5-16.0-3C		
	BENZENE	0.600 mg/kg	0.057 mg/kg
	TOLUENE	1.10 mg/kg	0.057 mg/kg
	ETHYLBENZENE	4.1 mg/kg	0.057 mg/kg
	XYLENE	6.8 mg/kg	0.057 mg/kg
46944	SB7-6.0-2C		
	BENZENE	ND	0.040 mg/kg
	TOLUENE	ND	0.040 mg/kg
	ETHYLBENZENE	ND	0.040 mg/kg
	XYLENE	ND	0.040 mg/kg
46945	SB7-11.0-3C		
	BENZENE	ND	0.040 mg/kg
	TOLUENE	ND	0.040 mg/kg
	ETHYLBENZENE	ND	0.040 mg/kg
	XYLENE	ND	0.040 mg/kg
46946	SB7-16.0-4C		
	BENZENE	ND	0.040 mg/kg
	TOLUENE	ND	0.040 mg/kg
	ETHYLBENZENE	ND	0.040 mg/kg
	XYLENE	ND	0.040 mg/kg
46947	FD-1		
	BENZENE	0.29 mg/kg	0.040 mg/kg
	TOLUENE	0.78 mg/kg	0.040 mg/kg
	ETHYLBENZENE	2.8 mg/kg	0.040 mg/kg
	XYLENE	4.2 mg/kg	0.040 mg/kg
46948	FD-2		
	BENZENE	ND	0.040 mg/kg
	TOLUENE	ND	0.040 mg/kg
	ETHYLBENZENE	ND	0.040 mg/kg
	XYLENE	ND	0.040 mg/kg

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

Laboratory Job No.: 893689

LABNO	SMPLNO-ID	RESULTS	DET.LIM
46949	FD-3		
	BENZENE	ND	0.040 mg/kg
	TOLUENE	ND	0.040 mg/kg
	ETHYLBENZENE	ND	0.040 mg/kg
	XYLENE	ND	0.040 mg/kg

ANALYST:ROBERT REMLINGER

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

Client Code: DAME28
Survey # OAK.TRIBUNE
Project/Release # 19191-001-043

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

Laboratory Job No.: 893613
Date Received: 08/08/89
Date Reported: 08/22/89

Date Analyzed: 08/11/89

TOTAL PETROLEUM HYDROCARBONS(EPA 418.1)

MATRIX:SOIL

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	DET.LIM. mg/kg
46250	3CSB8	TPH	ND	6
46251	4CSB8	TPH	ND	6
46252	5CSB8	TPH	ND	6
46253	3CSB9	TPH	ND	6
46254	4CSB9	TPH	ND	6
46255	5CSB9	TPH	ND	6
46256	2CSB10	TPH	ND	6
46257	3CSB10	TPH	ND	6
46258	4CSB10	TPH	ND	6
46259	2CSB11	TPH	ND	6
46260	3CSB11	TPH	ND	6

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE

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

Laboratory Job No.: 893613

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	DET.LIM. mg/kg
46261	4CSB11	TPH	ND	6

ANALYST:JAN TOISTER

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

Laboratory Job No.: 893613
Date Extracted: 08/16/89
Date Analyzed: 08/16/89
Date Received: 08/08/89
Date Reported: 08/22/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5020/8015/8020)
MATRIX: SOIL

LABNO	SMPLNO-ID	RESULTS	DET.LIM
46250	3CSB8 GASOLINE	ND	1.0 mg/kg
46251	4CSB8 GASOLINE	7.7 mg/kg	1.0 mg/kg
46252	5CSB8 GASOLINE	ND	1.0 mg/kg
46253	3CSB9 GASOLINE	ND	1.0 mg/kg
46254	4CSB9 GASOLINE	ND	1.0 mg/kg
46255	5CSB9 GASOLINE	ND	1.0 mg/kg
46256	2CSB10 GASOLINE	ND	1.0 mg/kg
46257	3CSB10 GASOLINE	ND	1.0 mg/kg
46258	4CSB10 GASOLINE	ND	1.0 mg/kg
46259	2CSB11 GASOLINE	ND	1.0 mg/kg

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

Laboratory Job No.: 893613

LABNO	SMPLNO-ID	RESULTS	DET.LIM
46260	3CSB11 GASOLINE	ND	1.0 mg/kg
46261	4CSB11 GASOLINE	ND	1.0 mg/kg

ANALYST:ROBERT REMLINGER

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

Laboratory Job No.: 893613
Date Extracted: 08/16/89
Date Analyzed: 08/16/89
Date Received: 08/08/89
Date Reported: 08/22/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5020/8015/8020)
MATRIX: SOIL

LABNO SMPLNO-ID	RESULTS	DET.LIM
46250 3CSB8		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46251 4CSB8		
BENZENE	ND	0.040 mg/kg
TOLUENE	0.050 mg/kg	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	0.090 mg/kg	0.040 mg/kg
46252 5CSB8		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46253 3CSB9		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46254 4CSB9		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg

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

Laboratory Job No.: 893613

LABNO SMPLNO-ID	RESULTS	DET.LIM
46255 5CSB9		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46256 2CSB10		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46257 3CSB10		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46258 4CSB10		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46259 2CSB11		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg
46260 3CSB11		
BENZENE	ND	0.040 mg/kg
TOLUENE	ND	0.040 mg/kg
ETHYLBENZENE	ND	0.040 mg/kg
XYLENE	ND	0.040 mg/kg

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

Laboratory Job No.: 893613

LABNO	SMPLNO-ID	RESULTS	DET.LIM
46261	4CSB11		
	BENZENE	ND	0.040 mg/kg
	TOLUENE	ND	0.040 mg/kg
	ETHYLBENZENE	ND	0.040 mg/kg
	XYLENE	ND	0.040 mg/kg

ANALYST:ROBERT REMLINGER

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

Client Code: DAME28
Survey # OAK.TRIBUNE
Project/Release # 19191-001-43

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

Laboratory Job No.: 893862
Date Received: 08/22/89
Date Reported: 08/31/89

Date Analyzed: 08/29/89

MERCURY (AA FLAMELESS EPA 7470)
ARSENIC IN WASTE BY AA-GF 7060)
SELENIUM IN WASTE BY AA-G 7740)

MATRIX:SOIL ,ACID DIGEST

LABNO	SMPLNO	COMPOUND	FOUND mg/kg	CA TTLC	DET.LIM. mg/kg
48212	SB-12-4C	HG	ND	20	0.040
		AS	6.54	500	0.60
		SE	ND	100	0.60

ANALYST:PRECY ROBINSON

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.

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

Laboratory Job No.: 893862
Date Received: 08/22/89
Date Reported: 08/31/89

Date Analyzed: 08/24/89

ASSAY:METAL SCAN BY ICP(EPA 6010)

LABNO	SMPLNO-ID	RESULTS		CA TTLC	DET. LIM.	
48212	SB-12-4C SOIL					
	AG	ND		500	0.20	mg/kg
	BA	131	mg/kg	10,000	0.20	mg/kg
	BE	1.1	mg/kg	75	0.20	mg/kg
	CD	2.19	mg/kg	100	0.100	mg/kg
	CO	16.3	mg/kg	8,000	0.40	mg/kg
	CR	54.8	mg/kg	2,500	0.40	mg/kg
	CU	74.6	mg/kg	2,500	0.20	mg/kg
	MO	ND		3,500	0.40	mg/kg
	NI	51.1	mg/kg	2,000	1.00	mg/kg
	PB	6.2	mg/kg	1,000	1.00	mg/kg
	SB	ND		500	10.0	mg/kg
	TL	ND		700	4.0	mg/kg
	V	43.6	mg/kg	2,400	0.40	mg/kg
	ZN	27.3	mg/kg	5,000	0.20	mg/kg

ND=Not Detected

ANALYST:NANCY S.TESCHE

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

Laboratory Job No.: 893862
Date Extracted: 08/22/89
Date Received: 08/22/89
Date Analyzed: 08/25/89
Date Reported: 08/31/89

SEMIVOLATILES BY GC/MS(EPA 8270)

COMPOUNDS:	LAB#	48212	DET.
	SMP#	SB-12-4C	LIM.
BNA		mg/kg	
4-CHLORO-3-METHYLPHENOL		ND	0.2
2-CHLOROPHENOL		ND	0.2
2,4-DICHLOROPHENOL		ND	0.2
2,4-DIMETHYLPHENOL		ND	0.2
2,4-DINITROPHENOL		ND	1.0
2-METHYL-4,6-DINITROPHENOL		ND	1.0
2-NITROPHENOL		ND	0.2
4-NITROPHENOL		ND	1.0
PENTACHLOROPHENOL		ND	1.0
PHENOL		ND	0.2
2,4,6-TRICHLOROPHENOL		ND	0.2
ACENAPHTHENE		ND	0.2
ACENAPHTHYLENE		ND	0.2
ANTHRACENE		ND	0.2
BENZO(a)ANTHRACENE		0.21	0.2
BENZO(b)FLUORANTHENE		ND	0.2
BENZO(k)FLUORANTHENE		ND	0.2
BENZO(a)PYRENE		0.21	0.2
BENZO(g,h,i)PERYLENE		0.35	0.2
BENZIDINE		1.3	1.0
BIS(2-CHLOROETHYL)ETHER		ND	0.2
BIS(2-CHLOROETHOXY)METHANE		ND	0.2
BIS(2-ETHYLHEXYL)PHTHALATE		ND	0.2
BIS(2-CHLOROISOPROPYL)ETHER		ND	0.2
4-BROMOPHENYL PHENYL ETHER		ND	0.2
BUTYL BENZYL PHTHALATE		ND	0.2
2-CHLORONAPHTHALENE		ND	0.2
4-CHLOROPHENYL PHENYL ETHER		ND	0.2
CHRYSENE		0.26	0.2

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

Laboratory Job No.: 893862

COMPOUNDS: BNA	LAB# 48212 SMP# SB-12-4C mg/kg	DET. LIM.
DIBENZO(a,h)ANTHRACENE	ND	0.2
DI-n-BUTYL PHTHALATE	ND	0.2
1,2-DICHLOROBENZENE	ND	0.2
1,3-DICHLOROBENZENE	ND	0.2
1,4-DICHLOROBENZENE	ND	0.2
3,3'-DICHLOROBENZIDINE	ND	0.5
DIETHYL PHTHALATE	ND	0.2
DIMETHYL PHTHALATE	ND	0.2
2,4-DINITROTOLUENE	ND	0.2
2,6-DINITROTOLUENE	ND	0.2
DIOCTYL PHTHALATE	ND	0.2
FLUORANTHENE	0.57	0.2
FLUORENE	ND	0.2
HEXACHLOROBENZENE	ND	0.2
HEXACHLOROBUTADIENE	ND	0.2
HEXACHLOROETHANE	ND	0.2
HEXACHLOROCYCLOPENTADIENE	ND	1.0
INDENO(1,2,3-c,d)PYRENE	0.22	0.2
ISOPHORONE	ND	0.2
NAPHTHALENE	16	0.2
NITROBENZENE	ND	0.2
N-NITROSODIMETHYLAMINE	ND	0.2
N-NITROSODI-n-PROPYLAMINE	ND	0.2
N-NITROSODIPHENYLAMINE	ND	0.2
PHENANTHRENE	0.63	0.2
PYRENE	0.32	0.2
1,2,4-TRICHLOROBENZENE	ND	0.2
ANILINE	ND	0.2
BENZOIC ACID	ND	1.0
BENZYL ALCOHOL	ND	0.2
4-CHLOROANALINE	ND	0.2
DIBENZOFURAN	ND	0.2
2-METHYL-NAPHTHALENE	13	0.2
2-METHYL-PHENOL	ND	1.0
4-METHYL-PHENOL	ND	1.0
2-NITROANILINE	ND	0.2
3-NITROANILINE	ND	0.2
4-NITROANILINE	ND	1.0

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

Laboratory Job No.: 893862

COMPOUNDS:	LAB#	48212	DET.
	SMP#	SB-12-4C	LIM.
BNA		mg/kg	
2,4,5-TRICHLOROPHENOL		ND	0.2

SURROGATE RECOVERIES

PHENOL-D5	83%
2-FLUOROPHENOL	63%
NITROBENZENE-D5	62%
2-FLUOROBIPHENYL	88%
2,4,6-TRIBROMOPHENOL	92%
TERPHENYL-D14	67%

ND: NOT DETECTED.

ANALYST:PAUL MILLS

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

Laboratory Job No.: 893862
Date Extracted: 08/22/89
Date Received: 08/22/89
Date Analyzed: 08/22/89
Date Reported: 08/31/89

ASSAY:PCBS IN SOIL/WASTE (GC/ECD EPA 8080)
MATRIX:SOIL

LABNO	SMPLNO-ID	RESULTS	DET.LIM
48212	SB-12-4C		
PCBs		ND	0.029 ug/gm

ND=Not Detected
RESULTS WERE QUANTITATED AGAINST AROCHLORS 1242,1254 AND 1260.
ANALYST:MARSHA MANIX

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

Client Code: DAME28
Survey # OAK.TRIBUNE
Project/Release # 19191-001-43

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

Laboratory Job No.: 893907
Date Received: 08/24/89
Date Reported: 09/07/89

Date Analyzed: 08/30/89

MERCURY (AA FLAMELESS EPA 7470)
ARSENIC IN WASTE BY AA-GF 7060)
SELENIUM IN WASTE BY AA-G 7740)

MATRIX:SOIL ,ACID DIGEST

LABNO SMPLNO	COMPOUND	FOUND mg/kg	CA TTLC	DET.LIM. mg/kg
48907 SB5-16.0-3	HG	ND	20	0.040
	AS	9.50	500	0.60
	SE	ND	100	0.60

ANALYST:PRECY ROBINSON

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.

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

Laboratory Job No.: 893907
Date Received: 08/24/89
Date Reported: 09/07/89

Date Analyzed: 08/29/89

ASSAY:METAL SCAN BY ICP(EPA 6010)

LABNO	SMPLNO-ID	RESULTS			DET. LIM.	
48907	SB5-16.0-3C SOIL			CA TTLC		
	AG	ND		500	0.20	mg/kg
	BA	131	mg/kg	10,000	0.20	mg/kg
	BE	1.2	mg/kg	75	0.20	mg/kg
	CD	3.70	mg/kg	100	0.099	mg/kg
	CO	19.6	mg/kg	8,000	0.39	mg/kg
	CR	71.9	mg/kg	2,500	0.39	mg/kg
	CU	18.0	mg/kg	2,500	0.20	mg/kg
	MO	1.8	mg/kg	3,500	0.39	mg/kg
	NI	69.7	mg/kg	2,000	0.99	mg/kg
	PB	8.7	mg/kg	1,000	0.99	mg/kg
	SB	ND		500	9.9	mg/kg
	TL	ND		700	3.9	mg/kg
	V	49.6	mg/kg	2,400	0.39	mg/kg
	ZN	29.4	mg/kg	5,000	0.20	mg/kg

ND=Not Detected
ANALYST:NANCY S.TESCHE

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

Laboratory Job No.: 893907
Date Extracted: 08/24/89
Date Analyzed: 08/25/89
Date Received: 08/24/89
Date Reported: 09/07/89

SEMIVOLATILES BY GC/MS(EPA 8270)

COMPOUNDS:	LAB#	48907	DET.
	SMP#	SB5-16.0-3C	LIM.
BNA		mg/kg	
4-CHLORO-3-METHYLPHENOL		ND	0.2
2-CHLOROPHENOL		ND	0.2
2,4-DICHLOROPHENOL		ND	0.2
2,4-DIMETHYLPHENOL		ND	0.2
2,4-DINITROPHENOL		ND	1.0
2-METHYL-4,6-DINITROPHENOL		ND	1.0
2-NITROPHENOL		ND	0.2
4-NITROPHENOL		ND	1.0
PENTACHLOROPHENOL		ND	1.0
PHENOL		ND	0.2
2,4,6-TRICHLOROPHENOL		ND	0.2
ACENAPHTHENE		ND	0.2
ACENAPHTHYLENE		ND	0.2
ANTHRACENE		0.92	0.2
BENZO(a)ANTHRACENE		0.33	0.2
BENZO(b)FLUORANTHENE		ND	0.2
BENZO(k)FLUORANTHENE		ND	0.2
BENZO(a)PYRENE		ND	0.2
BENZO(g,h,i)PERYLENE		ND	0.2
BENZIDINE		2.1	1.0
BIS(2-CHLOROETHYL)ETHER		ND	0.2
BIS(2-CHLOROETHOXY)METHANE		ND	0.2
BIS(2-ETHYLHEXYL)PHTHALATE		ND	0.2
BIS(2-CHLOROISOPROPYL)ETHER		ND	0.2
4-BROMOPHENYL PHENYL ETHER		ND	0.2
BUTYL BENZYL PHTHALATE		ND	0.2
2-CHLORONAPHTHALENE		ND	0.2
4-CHLOROPHENYL PHENYL ETHER		ND	0.2
CHRYSENE		0.24	0.2

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

Laboratory Job No.: 893907

COMPOUNDS: BNA	LAB# 48907 SMP# SB5-16.0-3C mg/kg	DET. LIM.
DIBENZO(a,h)ANTHRACENE	ND	0.2
DI-n-BUTYL PHTHALATE	ND	0.2
1,2-DICHLOROBENZENE	ND	0.2
1,3-DICHLOROBENZENE	ND	0.2
1,4-DICHLOROBENZENE	ND	0.2
3,3'-DICHLOROBENZIDINE	ND	0.5
DIETHYL PHTHALATE	ND	0.2
DIMETHYL PHTHALATE	ND	0.2
2,4-DINITROTOLUENE	ND	0.2
2,6-DINITROTOLUENE	ND	0.2
DIOCTYL PHTHALATE	ND	0.2
FLUORANTHENE	0.23	0.2
FLUORENE	ND	0.2
HEXACHLOROBENZENE	ND	0.2
HEXACHLOROBUTADIENE	ND	0.2
HEXACHLOROETHANE	ND	0.2
HEXACHLOROCYCLOPENTADIENE	ND	1.0
INDENO(1,2,3-c,d)PYRENE	ND	0.2
ISOPHORONE	ND	0.2
NAPHTHALENE	5.8	0.2
NITROBENZENE	ND	0.2
N-NITROSODIMETHYLAMINE	ND	0.2
N-NITROSODI-n-PROPYLAMINE	ND	0.2
N-NITROSODIPHENYLAMINE	ND	0.2
PHENANTHRENE	0.87	0.2
PYRENE	0.29	0.2
1,2,4-TRICHLOROBENZENE	ND	0.2
ANILINE	ND	0.2
BENZOIC ACID	ND	1.0
BENZYL ALCOHOL	ND	0.2
4-CHLOROANALINE	ND	0.2
DIBENZOFURAN	ND	0.2
2-METHYL-NAPHTHALENE	9.1	0.2
2-METHYL-PHENOL	ND	1.0
4-METHYL-PHENOL	ND	1.0
2-NITROANILINE	ND	0.2
3-NITROANILINE	ND	0.2
4-NITROANILINE	ND	1.0

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

Laboratory Job No.: 893907

COMPOUNDS:	LAB#	48907	DET.
	SMP#	SB5-16.0-3C	LIM.
BNA		mg/kg	
2,4,5-TRICHLOROPHENOL		ND	0.2

SURROGATE RECOVERIES

PHENOL-D5	75%
2-FLUOROPHENOL	64%
NITROBENZENE-D5	72%
2-FLUOROBIPHENYL	83%
2,4,6-TRIBROMOPHENOL	74%
TERPHENYL-D14	66%

ND: NOT DETECTED.

ANALYST: PAUL MILLS

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

Date Extracted: 08/24/89
Date Analyzed: 08/25/89

Laboratory Job No.: 893907
Date Received: 08/24/89
Date Reported: 09/07/89

ASSAY:PESTICIDES AND PCBS IN SOIL(EPA 8080)
MATRIX:SOIL

LABNO	SMPLNO-ID	RESULTS		DET.LIM	
48907	SB5-16.0-3C				
	ALDRIN	ND		0.01	ug/gm
	ARO42	0.385	ug/gm	0.015	ug/gm
	ARO54	0.175	ug/gm	0.015	ug/gm
	ARO60	ND		0.015	ug/gm
	BHC-ALPHA	ND		0.01	ug/gm
	BHC-BETA	ND		0.015	ug/gm
	BHC-DELTA	ND		0.020	ug/gm
	BHC-GAMMA	ND		0.010	ug/gm
	DDD	ND		0.025	ug/gm
	DDE	ND		0.010	ug/gm
	DDT	ND		0.025	ug/gm
	DIELDRIN	ND		0.005	ug/gm
	ENDOSULFAN	ND		0.025	ug/gm
	ENDOSULFAN2	ND		0.010	ug/gm
	ENDOSULFAN SULFATE	ND		0.050	ug/gm
	ENDRIN	ND		0.015	ug/gm
	ENDRIN ALDEHYDE	ND		0.050	ug/gm
	HEPTACHLOR	ND		0.010	ug/gm
	HEPTACHLOR EPOXIDE	ND		0.025	ug/gm

ND=Not Detected
RESULTS FOR AROCHLORS WERE QUANTITATED AGAINST AROCHLORS 1242,1254 AND 1260.
ANALYST:MARSHA MANIX

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Erik Skov
Dames & Moore
221 Main Street, Ste. 600
San Francisco, CA 94105

Client Code: DAME43
Survey # TRIBUNEOAKLAND
Project/Release # 19191-001-43

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

Date Collected: 07/27/89
Date Extracted: 08/10/89
Date Analyzed: 08/11/89

Laboratory Job No.: 893445
Date Received: 07/28/89
Date Reported: 08/23/89

ASSAY: WASTE OIL (EPA3510/SM503E)
MATRIX: LIQUID

LABNO	SMPLNO-ID	WASTE OIL mg/L	DETECTION LIMIT mg/L
45008	MW-1	ND	5
45009	MW-2	ND	5
45010	MW-3	ND	5

ANALYST:ROBERT REMLINGER

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.

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

Date Collected: 07/27/89
Date Extracted: 08/03/89
Date Analyzed: 08/04/89

Laboratory Job No.: 893445
Date Received: 07/28/89
Date Reported: 08/23/89

ASSAY: TPH/DIESEL (EPA 3510/8015)
MATRIX: WATER

LABNO SMPLNO-ID	RESULTS	DET.LIM
45008 MW-1		
DIESEL	ND	0.75 mg/L
45009 MW-2		
DIESEL	ND	0.75 mg/L
45010 MW-3		
DIESEL	ND	0.30 mg/L

ANALYST:ROBERT REMLINGER

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

Date Collected: 07/27/89
Date Extracted: 08/01/89
Date Analyzed: 08/01/89

Laboratory Job No.: 893445
Date Received: 07/28/89
Date Reported: 08/23/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5030/8015/602)
MATRIX: WATER

LABNO	SMPLNO-ID	RESULTS	DET.LIM
45008	MW-1		
	GASOLINE	6.9 mg/L	0.12 mg/L
45009	MW-2		
	GASOLINE	9.8 mg/L	0.20 mg/L
45010	MW-3		
	GASOLINE	0.63 mg/L	0.05 mg/L

ANALYST:ROBERT REMLINGER

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

Date Collected: 07/27/89
Date Extracted: 08/01/89
Date Analyzed: 08/01/89

Laboratory Job No.: 893445
Date Received: 07/28/89
Date Reported: 08/23/89

ASSAY: TPH/GASOLINE/BTEX (EPA 5030/8015/602)
MATRIX: WATER

LABNO SMPLNO-ID	RESULTS	DET.LIM
45008 MW-1		
BENZENE	0.12 mg/L	0.001 mg/L
TOLUENE	0.051 mg/L	0.001 mg/L
ETHYLBENZENE	ND	0.001 mg/L
XYLENE	0.26 mg/L	0.001 mg/L
45009 MW-2		
BENZENE	0.024 mg/L	0.001 mg/L
TOLUENE	ND	0.001 mg/L
ETHYLBENZENE	ND	0.001 mg/L
XYLENE	0.080 mg/L	0.001 mg/L
45010 MW-3		
BENZENE	ND	0.001 mg/L
TOLUENE	ND	0.001 mg/L
ETHYLBENZENE	ND	0.001 mg/L
XYLENE	0.011 mg/L	0.001 mg/L

ANALYST:ROBERT REMLINGER

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

Laboratory Job No.: 893445
Date Received: 07/28/89
Date Reported: 08/23/89

Date Collected: 07/27/89

PURGEABLES IN WATER (EPA 5030/601)

COMPOUNDS:	LAB#	45008	DET.	45009	DET.	45010	DET.
	SMP#	MW-1	LIM.	MW-2	LIM.	MW-3	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		0.7	0.5	ND	0.5	0.7	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		2.6	0.5	ND	0.5	0.5	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	31.0	0.5
1,3-DICHLOROBENZENE		ND	0.5	ND	0.5	2.7	0.5
1,2-DICHLOROBENZENE		0.5	0.5	ND	0.5	11.0	0.5
1,1-DICHLOROETHANE		1.2	0.5	ND	0.5	ND	0.5
1,2-DICHLOROETHANE		1.9	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
TRICHLOROETHENE		1.4	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	0.5	ND	0.5	ND	0.5
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

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

Laboratory Job No.: 893445

COMPOUNDS:	LAB#	45008	DET.	45009	DET.	45010	DET.
	SMP#	MW-1	LIM.	MW-2	LIM.	MW-3	LIM.
PURGEABLES			ug/L		ug/L		ug/L

ANALYST:DAVE BUSCH

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

Client Code: DAME28
Survey # OAK.TRIBUNE
Project/Release # 19191-001-43

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

Laboratory Job No.: 893763
Date Received: 08/17/89
Date Reported: 09/07/89

Date Analyzed: 08/28/89

TOTAL PETROLEUM HYDROCARBONS(EPA 418.1)

MATRIX:WATER

LABNO	SMPLNO	COMPOUND	FOUND mg/L	DET.LIM. mg/L
47508	MW-7	TPH	ND	0.60
47509	MW-5	TPH	ND	0.60
47510	MW-6	TPH	ND	0.60
47511	MW-4	TPH	ND	0.60
47512	FD-1	TPH	ND	0.60

ANALYST:JAN TOISTER

THIS REPORT HAS BEEN REVIEWED
AND APPROVED FOR RELEASE.

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

Laboratory Job No.: 893763
Date Received: 08/17/89
Date Reported: 09/07/89

Date Extracted: 08/30/89
Date Analyzed: 08/30/89

ASSAY: TPH/GASOLINE (EPA 5030/8015)
MATRIX: LIQUID

LABNO SMPLNO-ID	RESULTS	DET.LIM
47508 MW-7 GASOLINE	ND	50 ug/L
47509 MW-5 GASOLINE	ND	50 ug/L
47510 MW-6 GASOLINE	52 ug/L	50 ug/L
47511 MW-4 GASOLINE	120 ug/L	50 ug/L
47512 FD-1 GASOLINE	ND	50 ug/L

ANALYST:ROBERT REMLINGER

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

Laboratory Job No.: 893763
Date Extracted: 08/23/89
Date Analyzed: 08/23/89
Date Received: 08/17/89
Date Reported: 09/07/89

PURGEABLES IN WATER (EPA 5030/601)

COMPOUNDS: PURGEABLES	LAB# 47508 SMP# MW-7	DET. LIM. ug/L	47509 MW-5	DET. LIM. ug/L	47510 MW-6	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	20.0	0.5	0.9	0.5	1.8	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	4.6	0.5	0.5	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
TRICHLOROETHENE	ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE	ND	0.5	ND	0.5	ND	0.5
VINYL CHLORIDE	ND	1.0	ND	1.0	ND	1.0

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

Laboratory Job No.: 893763

COMPOUNDS:	LAB#	47511	DET.	47512	DET.	47513	DET.
	SMP#	MW-4	LIM.	FD-1	LIM.	BLANK	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	0.9	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		2.2	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
TRICHLOROETHENE		ND	0.5	ND	0.5	ND	0.5
TRICHLOROFLUOROMETHANE		ND	0.5	ND	0.5	ND	0.5
VINYL CHLORIDE		ND	1.0	ND	1.0	ND	1.0

ANALYST:DAVE BUSCH

ACCULAB
ENVIRONMENTAL SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
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L A B O R A T O R Y R E S U L T S

Laboratory Job No.: 893763
Date Extracted: 08/23/89
Date Received: 08/17/89
Date Analyzed: 08/23/89
Date Reported: 09/07/89

PURGEABLE AROMATICS IN WATER (EPA 602)

COMPOUNDS:	LAB#	47508	DET.	47509	DET.	47510	DET.	47511	DET.
	SMP#	MW-7	LIM.	MW-5	LIM.	MW-6	LIM.	MW-4	LIM.
PURGEABLES		ug/L		ug/L		ug/L		ug/L	
BENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5	ND	0.5	ND	0.5

COMPOUNDS:	LAB#	47512	DET.	47513	DET.
	SMP#	FD-1	LIM.	BLANK	LIM.
PURGEABLES		ug/L		ug/L	
BENZENE		ND	0.5	ND	0.5
ETHYL BENZENE		ND	0.5	ND	0.5
TOLUENE		ND	0.5	ND	0.5
XYLENE		ND	0.5	ND	0.5

ANALYST:DAVE BUSCH