GROUNDWATER MONITORING REPORT

Cavanaugh Motors Facility
1700 Park Street
Alameda, California

July 31, 1995

Prepared for

Mr. Dave Cavanaugh
Cavanaugh Motors
1700 Park Street
Alameda, California 94501

Prepared by

TMC Environmental Inc.
13908 San Pablo Avenue, Suite 101
San Pablo, California 94806

Project No. 101090

CERTIFICATION OF PROFESSIONAL SUPERVISION

Groundwater Monitoring Report
Cavanaugh Motors Facility
1700 Park Street
Alameda, California

TMC ENVIRONMENTAL, Inc. supervised the preparation of this Groundwater Monitoring Report, dated July 31, 1995, for the Cavanaugh Motors facility in the City of Alameda, Alameda County, California. Techniques and standards of care common to the consulting geologic profession in California, were used in the preparation of this report.

This document, signed and stamped with seal, follows section 7835 of the Geologist and Geophysicists Act, Business and Professionals Code, State of California and the requirements of the California Regional Water Quality Control Board, San Francisco Bay Region.

Michael Princevalle
Soil Scientist/Senior Project Manager

Donald Chung
Project Engineer

TMC Environmental, Inc. certifying professional:

Mark T. Youngkin, Vice President
Certified Engineering Geologist No. EG-1380
License expires June 30, 1996.

Date: 7-31-95

TABLE OF CONTENTS

GROUNDWATER MONITORING REPORT
1700 PARK STREET, ALAMEDA, CALIFORNIA

Table of Contents, continued

ATTACHMENTS

GROUNDWATER MONITORING REPORT
1700 Park Street, Alameda, California

1.0 SUMMARY OF FINDINGS

In December 1989 and August 1990, two underground storage tanks (a gasoline tank and a waste oil tank) were removed from separate locations on the site. In April, 1990, and January 1991, approximately 120 cubic yards of accessible contaminated soils were excavated from the tank locations. Approximately 120 cubic yards of contaminated soils are being treated on site.

TMC ENVIRONMENTAL, INC. (**TMC**) subsequently installed six groundwater monitoring wells at the site and are indicated in this report as MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6. Monitoring well MW-1, which was located in the former gasoline tank excavation pit, has since been destroyed with the authorization of the Alameda County Health Care Services Agency, Department of Environmental Health, Division of Hazardous Materials (ACHCSA), and under permit from the Alameda County Flood Control and Water District, Zone Seven (ZONE 7). The well destruction was performed by Bay Area Exploration, Inc. (BAE), a State licensed drilling contractor, on February 27, 1995. Monitoring well MW-2 is located up-gradient from the former gasoline tank and is near the southern limits of the site. Monitoring well MW-4 is located in the western portion of the site,"cross-gradient" from the former gasoline tank. Groundwater monitoring well MW-6 is located within the limits of the former waste oil tank excavation inside the existing auto repair shop. Monitoring wells MW-3 and MW-5 are located in the down gradient direction from the former waste oil tank.

Due to the proximity of buildings, not all of the soil contamination was excavated from the former gasoline tank pit. In March, 1993, **TMC** installed a soil vapor extraction system in the vicinity of the former gasoline tank to remediate gasoline-contaminated soils (associated with the former gasoline tank) remaining at the site. To verify that the soil contamination was remediated, four soil borings were placed within the soil contaminant plume. **TMC** performed this work August 25, 1994. Sample results revealed that the soil vapor extraction system was effective in remediating soil contamination that remained in the vicinity of the former gasoline tank. With the authorization of the ACHCSA, the vapor wells associated with this system were subsequently destroyed by BAE on February 27, 1995 under permit from ZONE 7. **TMC** supervised all well destruction activities.

Per the request of the ACHCSA, **TMC** installed an additional groundwater monitoring well (August 25, 1994) down gradient from the former gasoline tank. This well was constructed similarly to the existing monitoring wells and is indicated as MW-7 on the attached plates. Chemical analysis of soil samples recovered from this well revealed non-detectable levels of gasoline and benzene, toluene, ethylbenzene, and xylene (BTEX).

Per the authorization of the ACHCSA, **TMC** modified the quarterly sampling schedule as follows: sample MW-7 quarterly; sample MW-3, MW-5, and MW-6 semi-annually; and discontinue

sampling of MW-2 and MW-4. However, groundwater elevation data is collected from all wells during every sampling episode. The elevation data is subsequently used in the calculation of the average groundwater gradient and flow direction across the site.

During the July 12, 1995 sampling event, samples were recovered from MW-3, MW-5, MW-6, and MW-7. The samples revealed non-detectable levels of gasoline, diesel, and BTEX. However, low levels of chlorobenzene (5.6 ppb) and 1,1,1-trichloroethane (0.6 ppb) were detected in samples recovered from MW-6, the former waste oil tank location.

Groundwater gradient and direction was estimated by using water levels measurements from monitoring wells MW-2, MW-4 and MW-5. Recent groundwater data indicates that groundwater continues to flow in a north westerly direction, with a horizontal gradient of 0.0147 feet/foot.

2.0 GENERAL SITE INFORMATION

2.1 SITE LOCATION

The Cavanaugh Motors property, called "site" in this report, is at the following address and description (see Plate 1, Site Vicinity Map):

1700 Park Street, City of Alameda
Alameda County, California
Appraisers parcel number: APN 70-192-21-1 and 24
Lots 1, 2, 3, portion of 4, 7 Block E of Alameda
Station Homestead Tract (Book 17 page 60)

The site is at the northeast corner of the intersection of Park Street and Buena Vista Avenue. The corner lot is approximately 150 feet by 200 feet in dimension.

2.2 RESPONSIBLE PARTY

The current property owners are:

Lee and Dave Cavanaugh
1700 Park Street
Alameda, California 94501

Mr. Dave Cavanaugh is the site contact, and can be reached at (510) 523-5246.

2.3 CONSULTANT OF RECORD

The consultant of record for this project is:

TMC Environmental Inc. (TMC)
13908 San Pablo Avenue, Suite 101
San Pablo, California 94806

The contacts for **TMC** are Mr. Tom Ghigliotto, or Mr. Michael Princevalle, Senior Project Manager. Mr. Ghigliotto and Mr. Princevalle can be reached at (510) 232-8366.

2.4 LEAD IMPLEMENTING AGENCY

The enforcing agency authorized by the Regional Water Quality Control Board (RWQCB) to oversee this site is:

Alameda County Health Care Services Agency
Department of Environmental Health
Division of Hazardous Materials
1131 Harbor Bay Parkway, Alameda, California 94501

The officer overseeing this case is Ms. Eva Chu. Ms. Chu can be called at (510) 337-2864.

TMC followed the guidelines of the enforcing agency and the Bay Area Regional Water Quality Control Board (RWQCB) in preparing this report. The investigation, reclamation, and reporting guidelines applicable to leaking underground fuel tanks, available through these agencies, apply to this site. These guidelines are available from the Alameda County Health Care Services Agency (ACHCSA).

2.5 SITE CONDITION

The site is presently being used as an automobile dealership and repair facility. The property is located in a commercial and residential neighborhood. Current activities include: a new car show-room; sales offices; parts storage and distribution; outside car storage; and a vehicle repair shop; see Plate 2, Site Plan. No underground storage facilities currently exist at the site.

Foot and vehicle traffic is heavy in this neighborhood and site. The site contains a large building with paved parking areas and driveways. Access to the dealership is from both Park Street that borders the property on the north, and from Buena Vista Avenue that borders the property on the south. A gasoline station and automobile dealers occur across Park Street to the west and south, respectively. A motor vehicle repair shop bounds the site on the northeast. Adjacent to the site on the eastern portion of the site is a residential neighborhood.

Six groundwater monitoring wells exist at the site. These are indicated in this report and on Plate 2, Site Plan, as MW-2, MW-3, MW-4, MW-5, MW-6 and MW-7. These wells are constructed to monitor the shallow water bearing zone beneath the site. Monitoring well MW-1, which was

located in the former gasoline tank excavation pit, was destroyed on February 27, 1995 with the authorization of the ACHCSA and under permit from ZONE 7.

2.6 GEOLOGY

The site is approximately one half mile west of the Oakland Estuary and Inner Harbor Waterway. San Francisco Bay is about one mile west of the site. The Inner Harbor Waterway connects San Leandro Bay and San Francisco Bay. As suggested by U.S. Geological Survey geological publications, the site is on the Alameda Bay Plain that has an alluvial fan environment. The Merritt Sand Formation is the main stratigraphic unit in the upper aquifer. This unit usually has unconsolidated beach sand and near shore deposits. Borings on the site have encountered unconsolidated sands and clayey sands. Lenses of clayey sand occur in the sand. It appears that groundwater in the Merritt Sand Formation is unconfined. Groundwater is approximately eight feet below surface grade (BSG) at the site during most of the year, but may rise to within five feet BSG during winter rainfall.

2.7 ENVIRONMENTAL SITE WORK

In December 1989 and August 1990, two underground storage tanks (one gasoline and one automotive waste oil) were removed from separate locations at the site; see Plate 2. Soil samples recovered during the tank removal activities revealed the presence of petroleum materials. The soils found to be contaminated, and accessible, were excavated and stockpiled on site. Approximately 120 cubic yards of contaminated soil were removed and stockpiled on site. Site conditions prevented the complete removal of contaminated soils associated with the gasoline tank.

Subsequent to the tank removals and soil excavation, **TMC** performed a subsurface soils and groundwater investigation at the site. As part of the investigation, six groundwater monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5 and MW-6. Detectable levels of gasoline were found in soils and groundwater in the vicinity of the former gasoline tank. Detectable levels of diesel/kerosene and dichlorobenzene were found in the vicinity of the former waste oil tank. Results of this investigation work and the subsequent quarterly monitoring indicate ground water contamination associated with the former tanks is localized.

During the subsurface investigation work, four vapor extraction wells (VW-1, VW-2, VW-3 and VW-4) were installed at the site. The purpose of the extraction wells was to remediate the contaminated soils in the vicinity of the former gasoline tank. **TMC** constructed a soil vapor extraction system in February 1993. Initial pilot tests of the system revealed that elevated groundwater levels at the site (due to high rainfall) hampered the effectiveness of the system. Once the groundwater levels dropped, the system was started (July 7, 1993). Its operation continued until influent soil - vapor readings declined and stabilized to approximately 40 ppm. The system was shut down January 24, 1994.

On August 25, 1994, **TMC** drilled four soil borings in the vicinity of MW-1 and the former gasoline tank. These borings are indicated as VB-1, VB-2, VB-3, and VB-4. The purpose of this work was to verify that the soil vapor extraction system was effective in remediating soil contaminated soils associated with the former tank.

TMC additionally constructed a groundwater monitoring well approximately 10 feet down gradient from the former gasoline tank, indicated as MW-7.

Results of the soil samples recovered from the verification bores (VB-1 through VB-4) and the groundwater monitoring well MW-7 revealed detectable levels of Ethyl Benzene in sample VB3-2 (7 - 7½ feet) of 12 parts per billion (ppb). All other soil samples had non-detectable levels of the target analytes.

On February 27, 1995 **TMC** supervised the destruction of monitoring well MW-1 and the vapor recovery wells. MW-1 was destroyed in anticipation of excavation activities scheduled to occur in the immediate vicinity of the former well and the former gasoline tank. The vapor extraction wells were destroyed as they were no longer in use. The well destruction activities were approved by the ACHCSA and were permitted by ZONE 7 prior to the commencement of work.

3.0 GROUNDWATER SAMPLING

On July 12, 1995 **TMC** recovered groundwater samples from monitoring wells MW-3, MW-5, MW-6, and MW-7 in accordance with the sampling schedule set forth in the ACHCSA letter dated December 29, 1994.

The ground water samples from wells MW-3, MW-5, MW-6, and MW-7 were analyzed for the target chemicals of total petroleum hydrocarbons as gasoline (TPH-g), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Samples recovered from wells MW-3, MW-5, and MW-6 were additionally analyzed for TPH as diesel (TPH-d) and purgeable halocarbons (EPA Method 8010/601). The following tables summarize recent and previous analyses results. Table 1, Gasoline and BTEX Results for Groundwater Samples, lists the TPH-g and BTEX results for samples recovered from the site during the four most recent sampling episodes.

TABLE 1 GASOLINE AND BTEX RESULTS FOR GROUND WATER SAMPLES

Date Sampled	*Monitoring Well*	*TPH-g ug/L*	*Benzene ug/L*	*Toluene ug/L*	*Ethyl benzene ug/L*	*Xylenes ug/L*
		September 1994 Groundwater Sampling				
9-15-94	**MW-1**	**4900**	**150**	**340**	**100**	**410**
9-15-94	**MW-2**	**ND<50**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
9-15-94	**MW-3**	**ND<50**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
9-15-94	**MW-4**	**ND<50**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
9-15-94	**MW-5**	**ND<50**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
9-15-94	**MW-6**	**ND<50**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
9-15-94	**MW-7**	**ND<50**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
		January 13, 1995 Groundwater Sampling				
1-13-95	**MW-1**	**11000**	**260**	**770**	**310**	**1200**
1-13-95	**MW-2**	**ns**	**ns**	**ns**	**ns**	**ns**
1-13-95	**MW-3**	**NA**	**NA**	**NA**	**NA**	**NA**
1-13-95	**MW-4**	**ns**	**ns**	**ns**	**ns**	**ns**
1-13-95	**MW-5**	**NA**	**NA**	**NA**	**NA**	**NA**
1-13-95	**MW-6**	**NA**	**NA**	**NA**	**NA**	**NA**
1-13-95	**MW-7**	**ND<50.0**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
		April 26, 1995 Groundwater Sampling				
4-26-95	**MW-2**	**ns**	**ns**	**ns**	**ns**	**ns**
4-26-95	**MW-3**	**ns**	**ns**	**ns**	**ns**	**ns**
4-26-95	**MW-4**	**ns**	**ns**	**ns**	**ns**	**ns**
4-26-95	**MW-5**	**ns**	**ns**	**ns**	**ns**	**ns**
4-26-95	**MW-6**	**ns**	**ns**	**ns**	**ns**	**ns**
4-26-95	**MW-7**	**ND<50.0**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
		July 12, 1995 Groundwater Sampling				
7-12-95	**MW-3**	**ND<50.0**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**

Date Sampled	*Monitoring Well*	*TPH-g ug/L*	*Benzene ug/L*	*Toluene ug/L*	*Ethyl benzene ug/L*	*Xylenes ug/L*
7-12-95	**MW-5**	**ND<50.0**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
7-12-95	**MW-6**	**ND<50.0**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**
7-12-95	**MW-7**	**ND<50.0**	**ND<0.5**	**ND<0.5**	**ND<0.5**	**ND<0.5**

ND - Not detected below reporting limits; NA - Not analyzed; ns - Not sampled

Samples collected from MW-7 (located down gradient of the former gasoline tank) continue to reveal non-detectable levels of TPH-g and BTEX. TPH-g and BTEX were also non-detectable in samples recovered from wells MW-3, MW-5, and MW-6. Samples from MW-3, MW-5, and MW-6 were last analyzed for TPH-g and BTEX in September, 1994. TPH-g and BTEX were not detected in the samples at that time, and had not been detected in wells MW-3, MW-5, and MW-6 since the August, 1993 sampling episode.

Table 2 presents historic results of laboratory analyses for total petroleum hydrocarbons (Diesel/Kerosene, Oil and Grease ranges) and purgeable halocarbons (Chlorobenzene). This table presents the results of the past four sampling events.

TABLE 2 DIESEL, OIL & GREASE AND CHLOROBENZENE RESULTS FOR WATER SAMPLES

Date Sampled	*Monitoring Well*	*Diesel ug/L*	*Kerosene ug/L*	*Oil & Grease mg/L*	*Chlorobenzene ug/L*
		September 1994 Groundwater Sampling			
9-15-94	**MW-3**	**ND<50**	**N/A**	**ND<5**	**ND<0.4**
9-15-94	**MW-5**	**ND<50**	**N/A**	**ND<5**	**ND<0.4**
9-15-94	**MW-6**	**ND<50**	**N/A**	**ND<5**	**4.6**
		January 13, 1995 Groundwater Sampling			
1-13-95	**MW-3**	**ND<50**	**N/A**	**ND<0.5**	**ND**
1-13-95	**MW-5**	**ND<50**	**N/A**	**ND<0.5**	**1.1**
1-13-95	**MW-6**	**210**	**N/A**	**ND<0.5**	**5.0**
		April 26, 1995 Groundwater Sampling			

Date Sampled	*Monitoring Well*	*Diesel ug/L*	*Kerosene ug/L*	*Oil & Grease mg/L*	*Chlorobenzene ug/L*
4-26-95	**MW-3**	**ns**	**ns**	**ns**	**ns**
4-26-95	**MW-5**	**ns**	**ns**	**ns**	**ns**
4-26-95	**MW-6**	**ns**	**ns**	**ns**	**ns**
		July 12, 1995 Groundwater Sampling			
7-12-95	**MW-3**	**ND<50.0**	**ns**	**ND<5.0**	**ND<0.4**
7-12-95	**MW-5**	**ND<50.0**	**ns**	**ND<5.0**	**ND<0.4**
7-12-95	**MW-6**	**ND<50.0**	**ns**	**ND<5.0**	**5.6**

ND - NOT DETECTED BELOW REPORTING LIMITS
NA - NOT ANALYZED BY LABORATORY
ns - NOT SAMPLED
+ - DOES NOT MATCH DIESEL STANDARD (POSSIBLE MOTOR OIL HYDROCARBONS)
• - KEROSENE RANGE NOT REPORTED DUE TO OVERLAP OF HYDROCARBON RANGES

4.0 GROUNDWATER MEASUREMENTS

After the wells were uncapped for sampling and measurement, each was allowed to equilibrate with atmospheric pressure. The wells were periodically measured until two successive measurements of the water elevation in each well agreed within 0.01 of a foot. Details of groundwater measuring are in Attachment 3, Records of Water Sample Collection. By measuring the water levels in three groundwater monitoring wells, MW-2, MW-4, and MW-5, **TMC** calculated the down gradient direction and horizontal gradient. Table 3 summarizes groundwater level data collected over the past four sampling episodes.

TABLE 3 GROUNDWATER MEASUREMENTS FROM MONITORING WELLS

Date	*Well Label*	*Water Level*	*Casing Elevation (msl)*	*Water Elevation (msl)*
9-15-94	**MW-1**	**-8.04**	**16.34**	**8.30**
9-15-94	**MW-2**	**-7.95**	**16.72**	**8.77**
9-15-94	**MW-3**	**-8.28**	**15.89**	**7.61**
9-15-94	**MW-4**	**-8.15**	**16.35**	**8.20**

Date	*Well Label*	*Water Level*	*Casing Elevation (msl)*	*Water Elevation (msl)*
9-15-94	MW-5	-7.68	15.13	7.45
9-15-94	MW-6	-8.10	15.98	7.88
9-15-94	MW-7	-8.13	16.31	8.18
1-13-95	MW-1	-5.59	16.34	10.75
1-13-95	MW-2	-5.64	16.72	11.08
1-13-95	MW-3	-5.94	15.89	9.95
1-13-95	MW-4	-6.27	16.35	10.08
1-13-95	MW-5	-5.13	15.13	10.00
1-13-95	MW-6	-5.49	15.98	10.49
1-13-95	MW-7	-5.72	16.31	10.59
4-26-95	MW-2	-5.27	16.72	11.45
4-26-95	MW-3	*	15.89	
4-26-95	MW-4	-6.17	16.35	10.18
4-26-95	MW-5	-5.47	15.13	9.66
4-26-95	MW-6	-5.38	15.98	10.60
4-26-95	MW-7	-5.37	16.31	10.94
7-12-95	MW-2	-6.55	16.72	10.17
7-12-95	MW-3	-7.38	15.89	8.51
7-12-95	MW-4	-7.19	16.35	9.16
7-12-95	MW-5	-6.74	15.13	8.39
7-12-95	MW-6	-6.84	15.98	9.14
7-12-95	MW-7	-6.76	16.31	9.55

* Could not remove well cover - defective bolts

Table 4 summarizes the estimated groundwater down-gradient flow direction and horizontal gradient for the past four sampling episodes. **TMC** used a three point solution to estimate the direction and gradient. Groundwater level data from MW-2, MW-4 and MW-5 were used in the estimate.

TABLE 4 GROUNDWATER GRADIENT AND DIRECTION

Measurement Date	*Down Gradient Direction*	*Horizontal Gradient*	*Average Water Level feet above msl*
9-15-94	**North 1.5 degrees West**	**0.008 ft/ft**	**8.19**
1-13-95	**North 43 degrees West**	**0.011 ft/ft**	**10.42**
4-26-95	**North 29.5 degrees West**	**0.015 ft/ft**	**10.57**
7-12-95	**North 18 degrees West**	**0.015 ft/ft**	**9.15**

Review of previous groundwater measurements indicate the down gradient direction and the horizontal gradient vary between groundwater sampling measurement episodes. The variation is relatively low for measurements of this type of measurement. The changing groundwater gradient and elevations indicate the shallow water bearing zone is sensitive to seasonal changes in rainfall.

The most recent data indicates a North 18 degrees West flow direction at an average horizontal gradient of 0.015 ft/ft. The horizontal gradient is similar to the topographic slope of the lot. Groundwater measurement episodes indicate a range of flow directions from N 43°W to N 19°E, and a range of horizontal gradients from 0.005 to 0.015 ft/ft. Plate 3, Groundwater Gradient Map, and the attached worksheet illustrate the most recent (April 1995) horizontal gradient calculated across the site.

5.0 WATER SAMPLE DATA QUALITY

The quality assurance and quality control (QA/AC) review of the new sample data for this report indicates that the data is acceptable for the purpose and objectives of this project. **TMC** did not review data summarized from previous reports. The U.S. Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW-846) and the California Department of Health Services (DOHS) Leaking Underground Fuel Tank (LUFT) Manual were used to evaluate the sampling data since the SW-846 and LUFT methodologies were primarily used to analyze the samples. The samples were analyzed by Advanced Materials Engineering Research (AMER) of Sunnyvale, California, a State-certified analytical laboratory. The certified laboratory reports and chain-of-custody forms are presented in the attachments.

5.1 QUALITY OF GROUNDWATER SAMPLES

During sampling, all monitoring wells were purged of at least 3 bore volumes of water, in accordance with EPA protocol. At the end of purging, the well water was clear in all wells. The deionized water equipment blank for the sampling reported no detectable compounds.

5.2 CHAIN OF CUSTODY DOCUMENTATION

Complete chain-of-custody forms were maintained for all samples from the time of their collection until their submission to the laboratory. No errors in chain-of-custody protocol were noted.

5.3 SAMPLE ANALYSES QUALITY CONTROL

Based on the QC data reviewed, the TPH-gasoline and TPH-diesel analyses by EPA Method 8015M, and the benzene, toluene, ethylbenzene, and total xylenes (BTEX) analysis by EPA Method 8020 appear reasonably representative. The oil and grease and the purgeable halocarbons analyses by Method 5520BF and EPA Method 8010, respectively, also appear to be reasonably representative.

Samples were analyzed within the Regional Water Quality Control Board specified 7-day maximum holding time for water samples. Matrix spike/matrix spike duplicate percent recoveries and relative percent differences (RPD's) were either within EPA-specified limits or were within limits set by professional judgment where no EPA limits exist.

6.0 COMMENTS AND SCHEDULE OF ACTIVITIES

TMC believes that a pocket of gasoline contamination may remain in the capillary fringe in the vicinity of MW-1, and not subject to vapor extraction remediation. **TMC** proposes to excavate the contaminated materials surrounding MW-1, estimated to be 10 cubic yards. The contaminated soils will be stockpiled, treated, and disposed of along with the existing soil pile. The efficacy of this proposed excavation will be increased if it is performed when the groundwater table is depressed. Historically, it appears that groundwater levels are lowest during the late summer months (August/September). Therefore, excavation activities are scheduled for August 1995.

The next quarterly sampling event, scheduled for October 1995, will entail the sampling of monitoring well MW-7 only. Groundwater samples from MW-7 will be analyzed for TPH-g and BTEX by EPA Methods 8015M/8020. However, groundwater elevation data will be collected from all wells.

7.0 LIMITATIONS

The procedures and opinions in this report agree with professional practice as provided in the guidelines of the California Regional Water Quality Control Board for addressing fuel leaks from underground tanks. This report is only part of the ongoing work required by the lead implementing agency at this site. The lab test results rely on limited data collected at the sampling

location only. Budget constraints restrict the amount of testing allowed. The lab test results may not apply to the general site as a whole. Therefore, **TMC** Environmental Inc. cannot have complete knowledge of the underlying conditions. **TMC** provides the information in the resulting report to the client so that the client may make a more informed decision about site conditions. The professional opinion and judgement in the reports is subject to revisions in light of new information. **TMC** does not state or imply any guarantees or warranties that the subject property is or is not free of environmental impairment. Monitoring wells and soil venting wells are temporary sampling and remediation wells that eventually must be permitted and destroyed by a licensed driller at the client's expense.

CHART 1
MW-6 QUARTERLY SAMPLING RESULTS for DIESEL

Cavanaugh Motors

1700 Park Street, Alameda, California

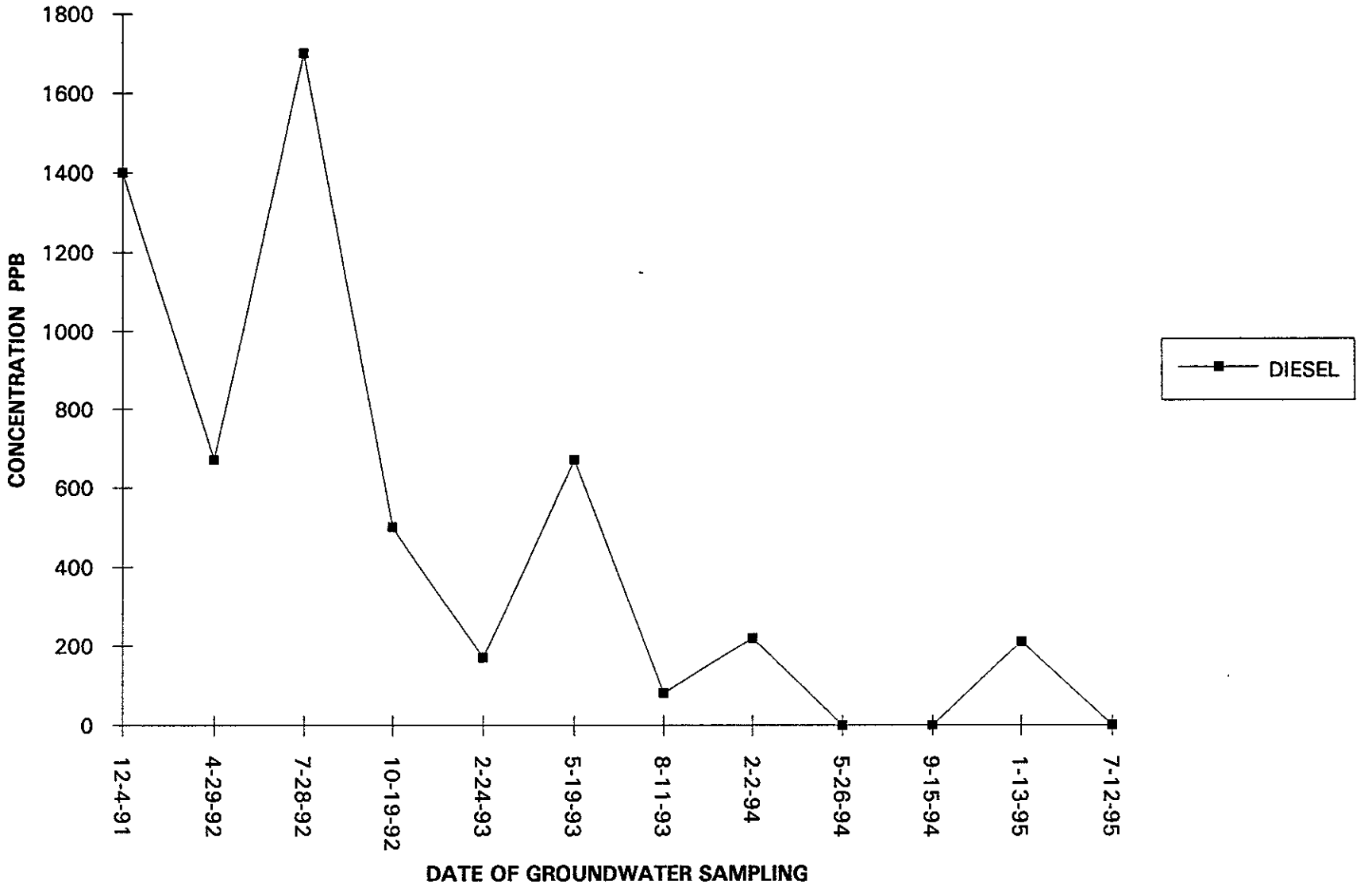
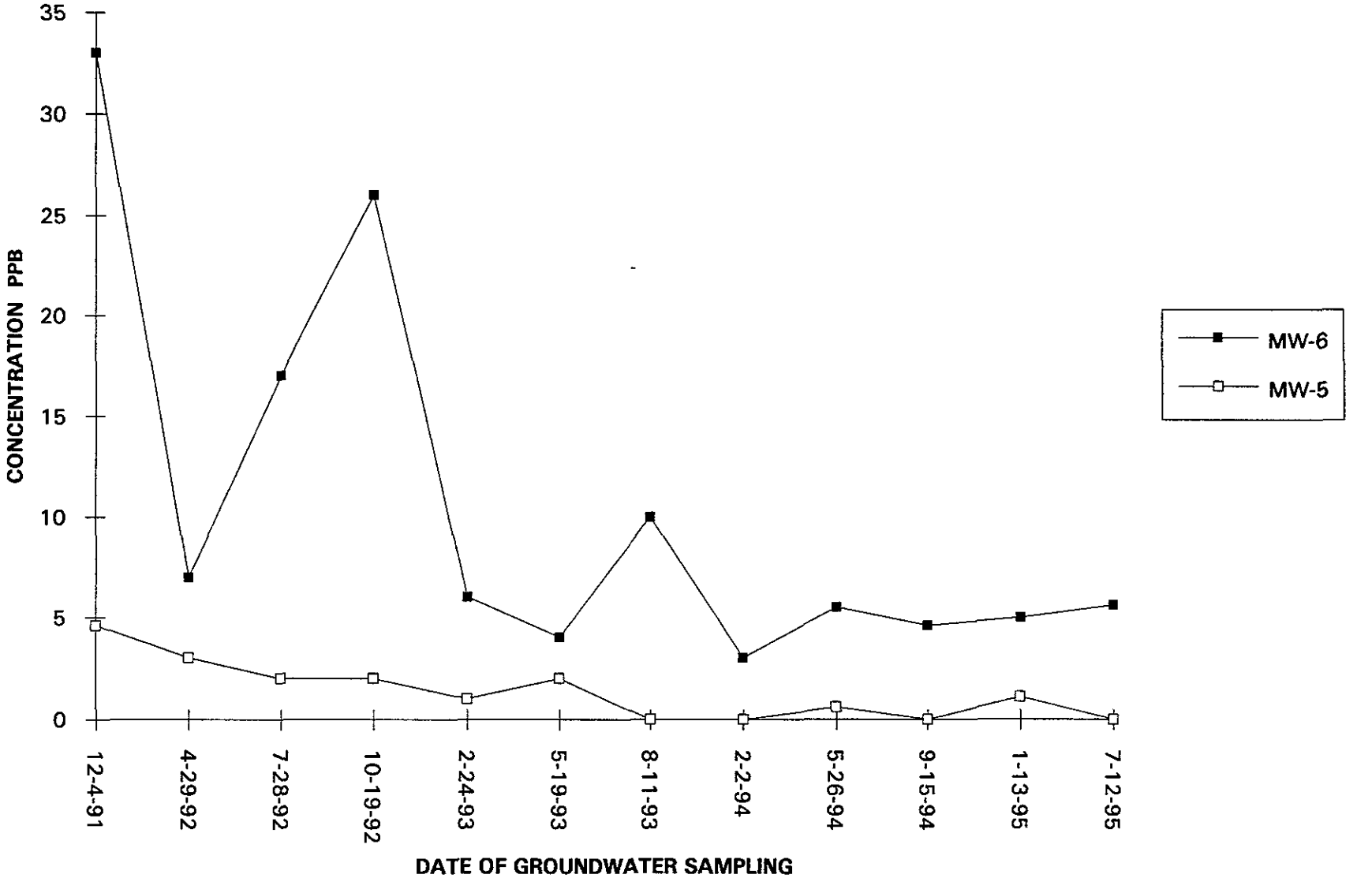
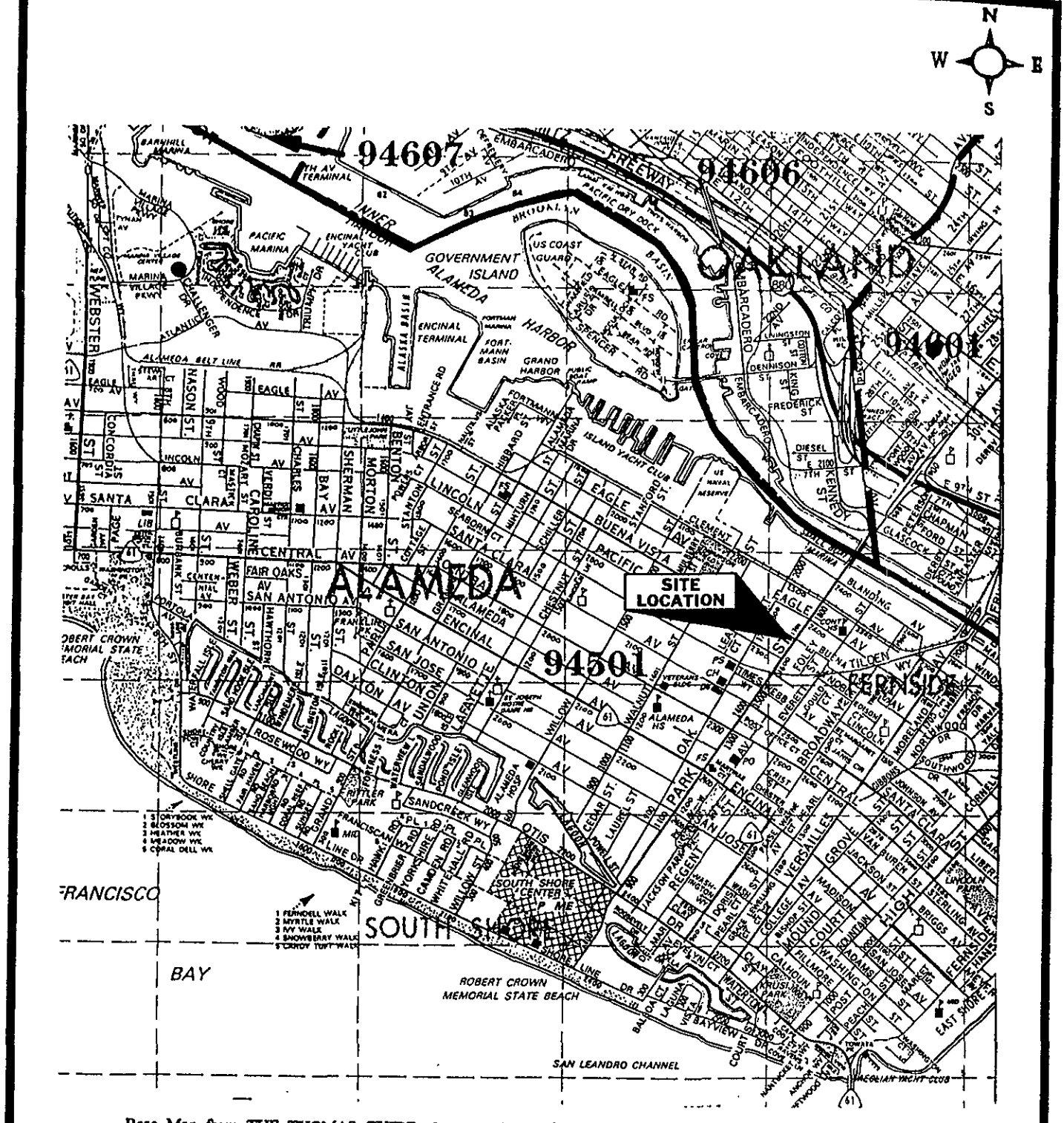


CHART 2
MW-5 and MW-6 QUARTERLY SAMPLING RESULTS for CHLOROBENZENE
Cavanaugh Motors





Base Map from THE THOMAS GUIDE; San Francisco, Alameda, and Contra Costa Counties, 1995 Edition

TMC Environmental, Inc.

SITE VICINITY MAP

CAVANAUGH MOTORS

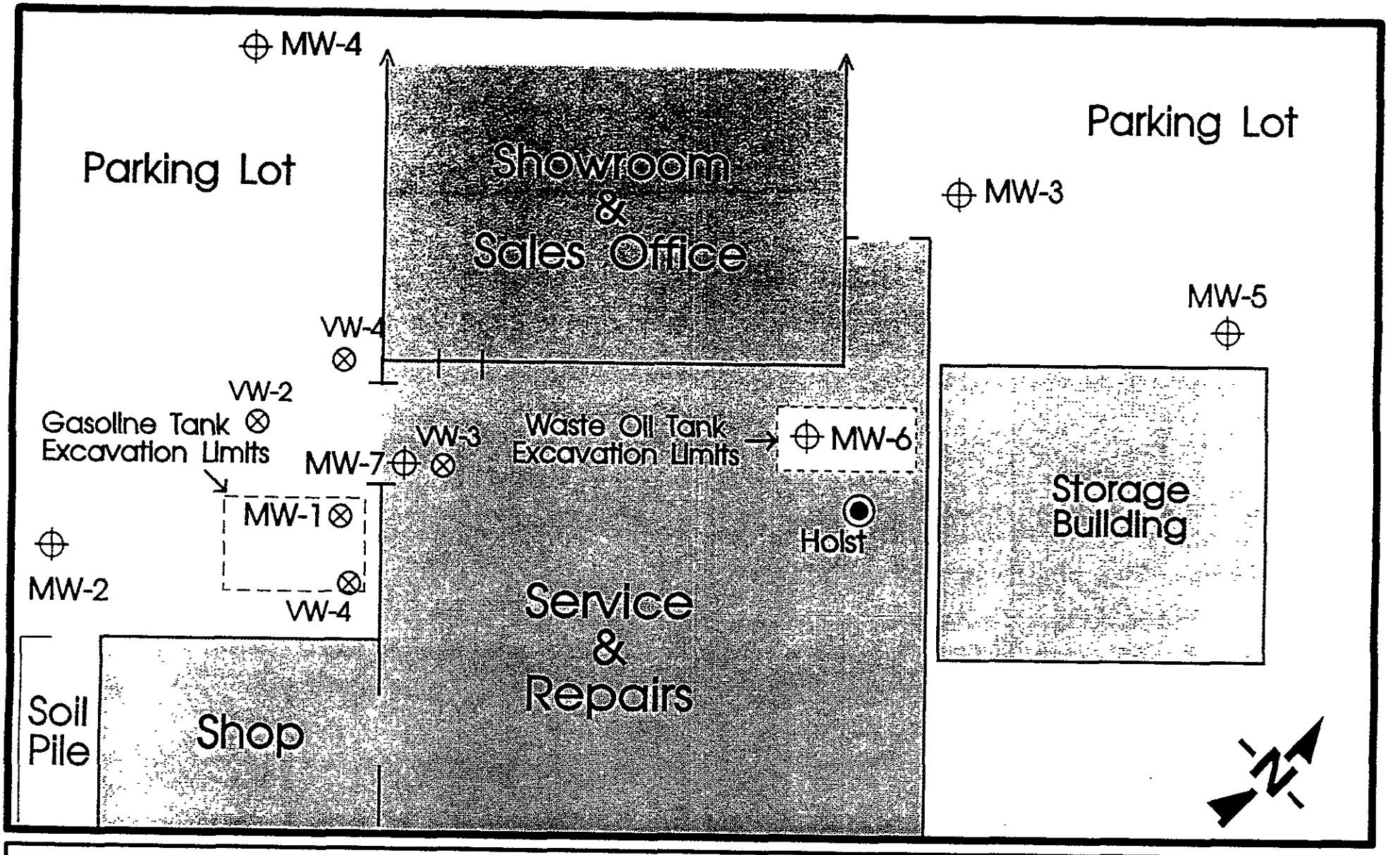
1700 Park Street

Alameda, California

Project # 101090

PLATE

1



LEGEND

MW-0 Monitoring Well

MW-0 Destroyed Monitoring or Vapor Extraction Well (destroyed 2/27/95)

Building Interiors

Scale 1 Inch=20 ft.

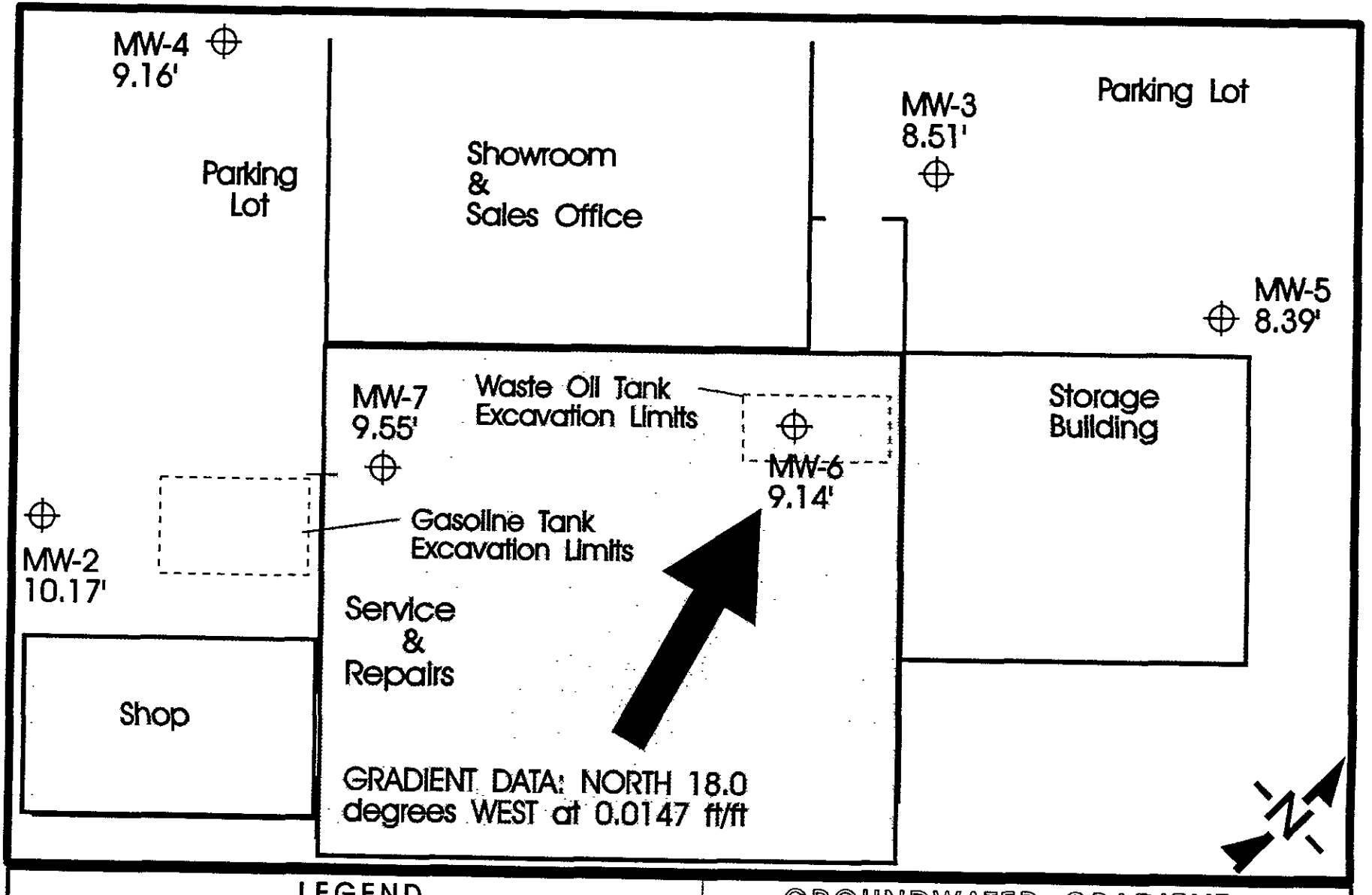
SITE PLAN

Cavanaugh Motors

1700 Park Street, Alameda California

Project Number 101090

TMC ENVIRONMENTAL INC. SAN PABLO, CALIFORNIA PLATE 2



LEGEND

MW-0
1.00 ft

All Elevations Are In Feet MSL.

Project# 101090 July 1995
Approximate Scale: 1 Inch = 20 feet

GROUNDWATER GRADIENT MAP

Cavanaugh Motors

1700 Park Street, Alameda Ca

TMC ENVIRONMENTAL INC. SAN PABLO, CA

PLATE 3

ATTACHMENT 1

LABORATORY REPORTS

AMER
Advanced Materials Engineering Research, Inc.

ANALYSIS REPORT
(ELAP Certificate No. 1909)
EPA METHOD 8015M

CLIENT:
TMC Environmental, Inc.
13908 San Pablo Avenue, Suite 101
San Pablo, CA 94806
MATRIX: WATER
PROJECT MANAGER: Tom Ghigliotto
PROJECT: 1700 Park Street, #101090

DATE SAMPLED: 07-12-95
DATE RECEIVED: 07-12-95
DATE REPORTED: 07-20-95
AMER ID: E1227

Client I.D.	AMER I.D.	8015M/ TPH-GASOLINE	DF
MW-5	E5071234	ND	1
MW-3	E5071235	ND	1
MW-6	E5071236	ND	1
MW-7	E5071237	ND	1
Units		ug/L	
Method Detection Limit		50ug/L	

ND Not Detected. All analytes recorded as ND were found to be at or below the detection limit. Sample Detection Limit is equal to the Method Detection Limit X the Dilution Factor.

Reviewed By

Lei Chen, Laboratory Manager

250 Santa Ana Court, Sunnyvale, CA 94086 • Tel. (408) 738-3033 • Fax. (408) 738-3035

AMER
Advanced Materials Engineering Research, Inc.

ANALYSIS REPORT
(ELAP Certificate No. 1909)
EPA METHOD 8015M

CLIENT:
TMC Environmental, Inc.
13908 San Pablo Avenue, Suite 101
San Pablo, CA 94806
MATRIX: WATER
PROJECT MANAGER: Tom Ghigliotto
PROJECT: 1700 Park Street, #101090

DATE SAMPLED: 07-12-95
DATE RECEIVED: 07-12-95
DATE REPORTED: 07-20-95
AMER ID: E1227

Client I.D.	AMER I.D.	8015M/ TPH-DIESEL	DF
MW-5	E5071234	ND	1
MW-3	E5071235	ND	1
MW-6	E5071236	ND	1
Units		ug/L	
Method Detection Limit		50ug/L	

ND Not Detected. All analytes recorded as ND were found to be at or below the detection limit.
Sample Detection Limit is equal to the Method Detection Limit X the Dilution Factor.

Reviewed By

Lei Chen, Laboratory Manager

250 Santa Ana Court, Sunnyvale, CA 94086 • Tel. (408) 738-3033 • Fax. (408) 738-3035

AMER
Advanced Materials Engineering Research, Inc.

ANALYSIS REPORT
(ELAP Certificate No. 1909)
EPA METHOD 602/8020

CLIENT:
TMC Environmental, Inc.
13908 San Pablo Avenue, Suite 101
San Pablo, CA 94806
MATRIX: WATER
PROJECT MANAGER: Tom Ghigliotto
PROJECT: 1700 Park Street, #101090

DATE SAMPLED: 07-12-95
DATE RECEIVED: 07-12-95
DATE REPORTED: 07-20-95
AMER ID: E1227

Client I.D.	AMER I.D.	Benzene	Toluene	Ethyl Benzene	Total Xylene	DF
MW-5	E5071234	ND	ND	ND	ND	1
MW-3	E5071235	ND	ND	ND	ND	1
MW-6	E5071236	ND	ND	ND	ND	1
MW-7	E5071237	ND	ND	ND	ND	1
Units		ug/L	ug/L	ug/L	ug/L	
Method Detection Limits		0.5ug/L	0.5ug/L	0.5ug/L	0.5ug/L	

ND Not Detected. All analytes recorded as ND were found to be at or below the detection limit. Sample Detection Limit is equal to the Method Detection Limit X the Dilution Factor.

Reviewed By

Lei Chen, Laboratory Manager

250 Santa Ana Court, Sunnyvale, CA 94086 • Tel. (408) 738-3033 • Fax. (408) 738-3035

AMER
Advanced Materials Engineering Research, Inc.

ANALYSIS REPORT
(ELAP Certificate No. 1909)
EPA METHODS

CLIENT:
TMC Environmental, Inc.
13908 San Pablo Avenue, Suite 101
San Pablo, CA 94806
MATRIX: WATER
PROJECT MANAGER: Tom Ghigliotto
PROJECT: 1700 Park Street, #101090

DATE SAMPLED: 07-12-95
DATE RECEIVED: 07-12-95
DATE REPORTED: 07-20-95
AMER ID: E1227

Client I.D.	AMER I.D.	5520BF TOG	DF
MW-5	E5071234	ND	1
MW-3	E5071235	ND	1
MW-6	E5071236	ND	1
Units		mg/L	
Method Detection Limit		5 mg/L	

ND Not Detected. All analytes recorded as ND were found to be under the limit of detection.
Sample Detection Limit is equal to the Method Detection Limit X the Dilution Factor.

Spike Recovery: 105%

Reported by:

Lei Chen, Laboratory Manager

250 Santa Ana Court, Sunnyvale, CA 94086 • Tel. (408) 738-3033 • Fax. (408) 738-3035

AMER

Advanced Materials Engineering Research, Inc.

ANALYSIS REPORT
(ELAP CERTIFICATE No. 1909)
EPA METHOD 601

Client: TMC Environmental, Inc.
13908 San Pablo Avenue, Suite 101
San Pablo, CA 94806
Project Manager: Tom Ghigliotto
Laboratory Report ID.: E1227
Sample Name: MW-3, E5071235
Project Name: 1700 Park Street, #101090

Date Sampled: 07-12-95
Date Received: 07-12-95
Date Analyzed: 07-18-95
Date Reported: 07-20-95
Matrix: WATER
Dilution Factor: 1

ANALYTES	RESULTS ug/l	MDL ug/l	ANALYTES	RESULTS ug/l	MDL ug/l
Bromodichloromethane	ND	0.8	1,1-Dichloroethene	ND	0.4
Bromoform	ND	0.8	cis-1,2-dichloroethene	ND	0.5
bromomethane	ND	2	trans-1,2-Dichloroethene	ND	0.4
Carbon tetrachloride	ND	0.4	1,2-Dichloropropane	ND	0.4
Chlorobenzene	ND	0.4	cis-1,3-Dichloropropene	ND	0.8
Chloroethane	ND	0.5	trans-1,3-Dichloropropene	ND	0.8
2-Chloroethyl vinyl ether	ND	0.4	Freon 113	ND	2
Chloroform	ND	0.4	Methylene Chloride	ND	4
Chloromethane	ND	2	1,1,2,2-Tetrachloroethane	ND	0.4
Dibromochloromethane	ND	0.8	Tetrachloroethene	ND	0.4
1,2-Dichlorobenzene	ND	0.8	1,1,1-Trichloroethane	ND	0.4
1,3-Dichlorobenzene	ND	0.4	1,1,2-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.4	Trichloroethene	ND	0.4
Dichlorodifluoromethane	ND	2	Trichlorofluoromethane	ND	0.8
1,1-Dichloroethane	ND	0.4	Vinyl Chloride	ND	0.5
1,2-Dichloroethane	ND	0.8			

SURROGATE COMPOUNDS	%RECOVERY	% CONTROL LIMITS
4-bromofluorobenzene	93	84-122

Notes
*Indicates extra compound requested by the client
NR-Analysis not requested
COC-Chain of Custody
ND-Analytes not detected at, or above the stated detection limit.
ppb-ug/l for waters; ug/kg for soils
DL-Detection Limit Factor
SDL-Sample Detection Limit-Multiply DL by the DL Factor to obtain the detection limit for a specific analyte
MDL- Method Detection Limit
Sample Detection Limit is equal to the MDL multiplied to the DF
Procedures:
This analysis was performed in using EPA Method 8010, EPA Method 8020, and EPA 5030
Certification:
California Department of Health Services ELAP Certificate #1909

Reviewed By:

Lei Chen, Laboratory Manager

AMER

Advanced Materials Engineering Research, Inc.

ANALYSIS REPORT
(ELAP CERTIFICATE No. 1909)
EPA METHOD 601

Client: TMC Environmental, Inc.
13908 San Pablo Avenue, Suite 101
San Pablo, CA 94806
Project Manager: Tom Ghigliotto
Laboratory Report ID.: E1227
Sample Name: MW-5, E5071234
Project Name: 1700 Park Street, #101090

Date Sampled: 07-12-95
Date Received: 07-12-95
Date Analyzed: 07-18-95
Date Reported: 07-20-95
Matrix: WATER
Dilution Factor: 1

ANALYTES	RESULTS ug/l	MDL ug/l	ANALYTES	RESULTS ug/l	MDL ug/l
Bromodichloromethane	ND	0.8	1,1-Dichloroethene	ND	0.4
Bromoform	ND	0.8	cis-1,2-dichloroethene	ND	0.5
bromomethane	ND	2	trans-1,2-Dichloroethene	ND	0.4
Carbon tetrachloride	ND	0.4	1,2-Dichloropropane	ND	0.4
Chlorobenzene	ND	0.4	cis-1,3-Dichloropropene	ND	0.8
Chloroethane	ND	0.5	trans-1,3-Dichloropropene	ND	0.8
2-Chloroethyl vinyl ether	ND	0.4	Freon 113	ND	2
Chloroform	ND	0.4	Methylene Chloride	ND	4
Chloromethane	ND	2	1,1,2,2-Tetrachloroethane	ND	0.4
Dibromochloromethane	ND	0.8	Tetrachloroethene	ND	0.4
1,2-Dichlorobenzene	ND	0.8	1,1,1-Trichloroethane	ND	0.4
1,3-Dichlorobenzene	ND	0.4	1,1,2-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.4	Trichloroethene	ND	0.4
Dichlorodifluoromethane	ND	2	Trichlorofluoromethane	ND	0.8
1,1-Dichloroethane	ND	0.4	Vinyl Chloride	ND	0.5
1,2-Dichloroethane	ND	0.8			

SURROGATE COMPOUNDS	%RECOVERY	% CONTROL LIMITS
4-bromofluorobenzene	94	84-122

Notes
*Indicates extra compound requested by the client
NR-Analysis not requested
COC-Chain of Custody
ND-Analytes not detected at, or above the stated detection limit.
ppb-ug/l for waters, ug/kg for soils
DL-Detection Limit Factor
SDL-Sample Detection Limit-Multiply DL by the DL Factor to obtain the detection limit for a specific analyte
MDL- Method Detection Limit
Sample Detection Limit is equal to the MDL multiplied to the DF
Procedures:
This analysis was performed in using EPA Method 8010, EPA Method 8020, and EPA 5030
Certification:
California Department of Health Services ELAP Certificate #1909

Reviewed By:

Lei Chen, Laboratory Manager

250 Santa Ana Court, Sunnyvale, CA 94086 · Tel. (408) 738-3033 · Fax. (408) 738-3035

AMER

Advanced Materials Engineering Research, Inc.

ANALYSIS REPORT
(ELAP CERTIFICATE No. 1909)
EPA METHOD 601

Client: TMC Environmental, Inc.
13908 San Pablo Avenue, Suite 101
San Pablo, CA 94806
Project Manager: Tom Ghigliotto
Laboratory Report ID.: E1227
Sample Name: MW-6, E5071236
Project Name: 1700 Park Street, #101090

Date Sampled: 07-12-95
Date Received: 07-12-95
Date Analyzed: 07-18-95
Date Reported: 07-20-95
Matrix: WATER
Dilution Factor: 1

ANALYTES	RESULTS ug/l	MDL ug/l	ANALYTES	RESULTS ug/l	MDL ug/l
Bromodichloromethane	ND	0.8	1,1-Dichloroethene	ND	0.4
Bromoform	ND	0.8	cis-1,2-dichloroethene	ND	0.5
bromomethane	ND	2	trans-1,2-Dichloroethene	ND	0.4
Carbon tetrachloride	ND	0.4	1,2-Dichloropropane	ND	0.4
Chlorobenzene	**5.6**	0.4	cis-1,3-Dichloropropene	ND	0.8
Chloroethane	ND	0.5	trans-1,3-Dichloropropene	ND	0.8
2-Chloroethyl vinyl ether	ND	0.4	Freon 113	ND	2
Chloroform	ND	0.4	Methylene Chloride	ND	4
Chloromethane	ND	2	1,1,2,2-Tetrachloroethane	ND	0.4
Dibromochloromethane	ND	0.8	Tetrachloroethene	ND	0.4
1,2-Dichlorobenzene	ND	0.8	1,1,1-Trichloroethane	**0.6**	0.4
1,3-Dichlorobenzene	ND	0.4	1,1,2-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.4	Trichloroethene	ND	0.4
Dichlorodifluoromethane	ND	2	Trichlorofluoromethane	ND	0.8
1,1-Dichloroethane	ND	0.4	Vinyl Chloride	ND	0.5
1,2-Dichloroethane	ND	0.8			

SURROGATE COMPOUNDS	%RECOVERY	% CONTROL LIMITS
4-bromofluorobenzene	95	84-122

Notes
*Indicates extra compound requested by the client.
NR-Analysis not requested.
COC-Chain of Custody
ND-Analytes not detected at, or above the stated detection limit.
ppb-ug/l for waters, ug/kg for soils
DL-Detection Limit Factor
SDL-Sample Detection Limit-Multiply DL by the DL Factor to obtain the detection limit for a specific analyte
MDL- Method Detection Limit
Sample Detection Limit is equal to the MDL multiplied to the DF
Procedures:
This analysis was performed in using EPA Method 8010, EPA Method 8020, and EPA 5030
Certification:
California Department of Health Services ELAP Certificate #1909

Reviewed By:

Lei Chen, Laboratory Manager

250 Santa Ana Court, Sunnyvale, CA 94086 • Tel. (408) 738-3033 • Fax. (408) 738-3035

EPA METHOD TEST QA/QC TABLE

AMER WORKORDER: E1227

AMER I.D.:	E1227-MSP	Analytical Method:	EPA M. 8015/8020 (602)
Project:	#101090	Analysis date:	07-16-95
Ext/Prep. Method:	EPA 5030	Analyst:	DL
Date:	07-16-95	Matrix:	Water
Analyst:	DL	Unit:	ug/L

Analyte	Sample Result	Spike Level	Matrix Spike Result	MS Recovery %	Matrix Spike Dul. Result	MSD Recovery %	Average Recovery %R	LCL %R	UCL %R	RPD %	UCL %RPD
Benzene	0.00	40.00	36.57	91	34.96	87	89	76	127	5	11
Toluene	0.00	40.00	37.75	94	36.00	90	92	76	125	5	13
Chlorobenzene	0.00	40.00	37.58	94	36.65	92	93	75	130	3	13
TPH-Gasoline	0.00	1000.00	961.94	96	961.92	96	96	70	130	0	30

Notes:
Sample Result-Concentration of Sample which is to used for Sample Spike & Sample Spike Duplicate
Spike Level- Level of Concentration Added to the Sample
MSP Result- Matrix Spike Result
MSP %R- Matrix Spike Percent Recovery
MSPD Result- Matrix Spike Duplicate Result
MSPD %R- Matrix Spike Dublicate Percent Recovery
AVG. %R - Average Recovery for MSP & MSPD % Recovery
LCL- Lower Criteria Level
UCL- Upper Criteria Level
RPD- Relative Percent Difference

EPA METHOD TEST QA/QC TABLE

AMER WORKORDER: E1227

AMER I.D.	E1227-MSP	Analytical Method:	EPA M. 8015
Project:	#101090	Analysis date:	07-13-95
Ext/Prep. Method:	EPA 3510	Analyst:	LC
Date:	07-13-95	Matrix:	Water
Analyst:	JX	Unit:	ug/L

Analyte	Sample Result	Spike Level	SP Result	SP %R	SPD Result	SPD %R	AVE. %R	LCL %R	UCL %R	RPD %	UCL %RPD
TPH-Diesel	0.00	1000	934	93	853	85	89	70	130	9	30

Notes:
Sample Result-Concentration of Sample
Spike Level- Level of Concentration Added to the Sample
SP Result- Sample Spike Result
SP %R- Sample Spike Percent Recovery
SPD Result- Sample Spike Duplicate Result
SPD %R- Sample Spike Dublicate Percent Recovery
AVE. % R.- Average Percent Recovery for SP & SPD % Recovery
LCL- Lower Criteria Level
UCL- Upper Criteria Level
RPD- Relative Percent Difference

EPA METHOD TEST QA/QC TABLE

AMER WORKORDER: E1227

AMER I.D. Number:	E1227-MSP	Analytical Method:	EPA M. 601
Project:	#101090	Analysis date:	07-18-95
Ext/Prep. Method:	EPA 5030	Analyst:	LC
Date:	07-18-95	Matrix:	Water
Analyst:	LC	Unit:	ug/l

Analyte	Sample Result	Spike Level	MSP Result	MSP %R	MSPD Result	MSPD %R	AVE. %R	LCL %R	UCL %R	RPD %	UCL %RPD
1,1-dichloroethene	0.00	50.00	40.11	80	37.49	75	78	61	145	7	14
Trichloroethene	0.00	50.00	46.70	93	45.27	91	92	71	120	3	14
Chlorobenzene	0.00	50.00	47.23	94	44.60	89	92	75	130	6	13

Notes:

Sample Result-Concentration of Sample which is to used for Sample Spike & Sample Spike Duplicate
Spike Level- Level of Concentration Added to the Sample
MSP Result- Matrix Spike Result
MSP %R- Matrix Spike Percent Recovery
MSPD Result- Matrix Spike Duplicate Result
MSPD %R- Matrix Spike Dublicate Percent Recovery
AVG. %R - Average Recovery for MSP & MSPD % Recovery
LCL- Lower Criteria Level
UCL- Upper Criteria Level
RPD- Relative Percent Difference
UCL % RPD - Upper Criteria Level Relative Percent Difference

TMC Environmental, Inc.
13908 San Pablo Ave.
Suite 101
San Pablo, California
(510) 232-8366

CHAIN OF CUSTODY RECORD ANALYSIS REQUEST FORM FOR ENVIRONMENTAL SAMPLING

JOB#: 101090	JOB ADDRESS: 1700 Park Street, Alameda, California	SAMPLER(S): Tom Ghigliotto & Donald Chung

LABORATORY NAME: Advanced Materials Engineering Research (AMER)
783 E. Eveyln Ave. Sunnyvale, CA 94086

LAB ID NO.	SAMPLE LABEL	SOIL	WATER	DATE	TIME	TPH-GAS	TPH-DIESEL	EPA 8020	EPA 8010	TOG/5520BF				
	EQB-5		✓	7/12/95	1038	~~✓~~	~~✓~~	~~✓~~ HOLD	~~✓~~	~~✓~~				
	MW-5		✓	7/12/95	1125	✓	✓	✓	✓	✓				
	MW-3 (~~MW-2~~)		✓	7/12/95	1215	✓	✓	✓	✓	✓				
	MW-6		✓	7/12/95	1240	✓	✓	✓	✓	✓				
	MW-7		✓	7/12/95	1310	✓		✓						

Special Instructions: Hold EQB-5

Relinquished By:		Recieved By:
(Print Name) TOM Ghigliotto (Signature) Tom Ghigliotto	Date: 7/12/95 Time: 1508	(Print Name) MASOUD MIRZA (Signature) Masoud Mirza
(Print Name) Masoud Mirza (Signature) Masoud Mirza	Date: 7/12/95 Time: [illegible]	(Print Name) KAyum Kuligi (Signature) [illegible]
(Print Name) (Signature)	Date: Time:	(Print Name) (Signature)
(Print Name) (Signature)	Date: Time:	(Print Name) (Signature)

LABORATORY NOTES: _____ DAYS TURNAROUND TIME FOR ANALYSIS RESULTS
PLEASE INCLUDE SAMPLE CONDITION REPORT WITH RESULTS

PLEASE FAX A COPY OF THE ANALYTICAL RESULTS TO THE FOLLOWING:
TMC ENVIRONMENTAL, INC. AT (510) 232-5133

ATTACHMENT 2

RECORD OF WATER SAMPLE COLLECTION

WELL MEASUREMENT LOG

JOB NAME: CAVANAUGH MOTORS	JOB NUMBER: 101090
DATE COLLECTED: 7/12/95	SAMPLERS NAME: D. CHUNG and T. GHIGLIOTTO
LOCATION: 1700 PARK STREET, ALAMEDA, CALIFORNIA	

WELL LABEL: MW-2

WELL HEAD COND: [X] CAPPED [X] LOCKED [X] DRY [ ] WATER [ ] DEBRIS [ ] REPLACE CAP [ ] REPLACE LOCK

[ ] OTHER (describe) : Some moisture on well cap

TIME MEASURED	1025	1048				
DEPTH IN FEET (MEASURE TO 0.01')	6.55'	6.55'				

WELL LABEL: MW-4

WELL HEAD COND: [X] CAPPED [X] LOCKED [X] DRY [ ] WATER [ ] DEBRIS [ ] REPLACE CAP [ ] REPLACE LOCK

[ ] OTHER (describe)

TIME MEASURED	1031	1051				
DEPTH IN FEET (MEASURE TO 0.01')	7.19'	7.19'				

WELL LABEL:

WELL HEAD COND: [ ] CAPPED [ ] LOCKED [ ] DRY [ ] WATER [ ] DEBRIS [ ] REPLACE CAP [ ] REPLACE LOCK

[ ] OTHER (describe)

TIME MEASURED						
DEPTH IN FEET (MEASURE TO 0.01')						

WELL LABEL:

WELL HEAD COND: [ ] CAPPED [ ] LOCKED [ ] DRY [ ] WATER [ ] DEBRIS [ ] REPLACE CAP [ ] REPLACE LOCK

[ ] OTHER (describe)

TIME MEASURED						
DEPTH IN FEET (MEASURE TO 0.01')						

WELL LABEL:

WELL HEAD COND: [ ] CAPPED [ ] LOCKED [ ] DRY [ ] WATER [ ] DEBRIS [ ] REPLACE CAP [ ] REPLACE LOCK

[ ] OTHER (describe)

TIME MEASURED						
DEPTH IN FEET (MEASURE TO 0.01')						

RECORD OF WATER SAMPLE COLLECTION

WELL LABEL:	DATE COLLECTED:	JOB NUMBER:
MW-3	7-12-95	101090

JOB NAME:	SAMPLER(S) NAME:
CAVANAUGH MOTORS	D. CHUNG AND T. GHIGLIOTTO

LOCATION: 1700 PARK STREET, ALAMEDA, CALIFORNIA

WELL HEAD CONDITIONS: [X] CAPPED [X] LOCKED [X] DRY [ ] WATER [ ] DEBRIS [ ] REPLACE CAP [ ] REPLACE LOCK [ ] OTHER:

TIME MEASURED	1014	1043	1053			
DEPTH TO WATER (MEASURE TO .01 FEET)	7.37'	7.38'	7.38'			

WELL PURGING METHOD

TOTAL DEPTH OF WELL:	DEPTH TO WATER:	DIAMETER OF WELL:
14.55'	7.38'	4"

VOLUME FACTOR = 0.17 FOR 2" CASING; 0.65 FOR 4" CASING; 1.47 FOR 6" CASING

PURGE VOLUME = 14.0 gallons

PURGE METHOD:	OVA -FID VAPOR READING, ppm:
DISPOSABLE BAILER	

WELL PURGING PARAMETERS

GALLONS	TIME	TEMPERATUTE degrees F	CONDUCTIVITY X 1000	pH	VISUAL TURBIDITY
0	1134	69.1	0.41	7.28	Clear
4.5	1142	69.3	0.43	7.80	Clear
9.0	1149	70.1	0.43	9.07	Clear
13.5	1159	71.1	0.42	6.78	Clear
14.0	1201	70.8	0.41	6.79	Clear

SAMPLING METHOD:	SAMPLE TURBIDITY:	TIME COLLECTED:
NEW DISPOSABLE BAILER	23.8 NTU	1215

PURGE WATER DESCRIPTION: [ ] SHEEN [ ] ODOR [ ] SILTY [ ] OTHER:

RECORD OF WATER SAMPLE COLLECTION

WELL LABEL:	DATE COLLECTED:	JOB NUMBER:
MW-5	7-12-95	101090

JOB NAME:	SAMPLER(S) NAME:
CAVANAUGH MOTORS	D. CHUNG AND T. GHIGLIOTTO

LOCATION: 1700 PARK STREET, ALAMEDA, CALIFORNIA

WELL HEAD CONDITIONS: [X] CAPPED [X] LOCKED [X] DRY [ ] WATER [ ] DEBRIS [ ] REPLACE CAP [X] REPLACE LOCK [ ] OTHER:

TIME MEASURED	1008	1042				
DEPTH TO WATER (MEASURE TO .01 FEET)	6.74'	6.74'				

WELL PURGING METHOD

TOTAL DEPTH OF WELL:	DEPTH TO WATER:	DIAMETER OF WELL:
19.19'	6.74'	2"

VOLUME FACTOR = 0.17 FOR 2" CASING; 0.65 FOR 4" CASING; 1.47 FOR 6" CASING

PURGE VOLUME = 6.5 gallons

PURGE METHOD:	OVA -FID VAPOR READING, ppm:
DISPOSABLE BAILER	

WELL PURGING PARAMETERS

GALLONS	TIME	TEMPERATUTE degrees F	CONDUCTIVITY X 1000	pH	VISUAL TURBIDITY
0	1057	70.3	0.39	6.38	Slightly Turbid/ Grey
2.0	1059	69.6	0.32	6.54	Slightly Turbid/ Brown
4.0	1108	67.4	0.30	6.72	Turbid/ Brown
6.0	1111	67.1	0.29	6.90	Turbid/ Brown
6.5	1113	66.8	0.29	6.91	Turbid/ Brown

SAMPLING METHOD:	SAMPLE TURBIDITY:	TIME COLLECTED:
DISPOSABLE BAILER	196.2 NTU	1125

PURGE WATER DESCRIPTION: [ ] SHEEN [ ] ODOR [X] SILTY [ ] OTHER:

RECORD OF WATER SAMPLE COLLECTION

WELL LABEL:	DATE COLLECTED:	JOB NUMBER:
MW-6	7-12-95	101090

JOB NAME:	SAMPLER(S) NAME:
CAVANAUGH MOTORS	D. CHUNG AND T. GHIGLIOTTO

LOCATION: 1700 PARK STREET, ALAMEDA, CALIFORNIA

WELL HEAD CONDITIONS: [X] CAPPED [X] LOCKED [X] DRY [ ] WATER [ ] DEBRIS [ ] REPLACE CAP [ ] REPLACE LOCK [ ] OTHER:

TIME MEASURED						
DEPTH TO WATER (MEASURE TO .01 FEET)	1019	1046				
	6.84'	6.84'				

WELL PURGING METHOD

TOTAL DEPTH OF WELL:	DEPTH TO WATER:	DIAMETER OF WELL:
19.28'	6.84'	2"

VOLUME FACTOR = 0.17 FOR 2" CASING; 0.65 FOR 4" CASING; 1.47 FOR 6" CASING

PURGE VOLUME = 6.5 gallons

PURGE METHOD:	OVA -FID VAPOR READING, ppm:
DISPOSABLE BAILER	

WELL PURGING PARAMETERS

GALLONS	TIME	TEMPERATUTE degrees F	CONDUCTIVITY X 1000	pH	VISUAL TURBIDITY
0	1224	71.3	2.27	7.00	Turbid/ Brown
2.0	1226	67.8	2.63	7.01	Turbid/ Dark Brown
4.0	1228	67.6	2.56	7.06	Turbid/ Dark Brown
6.0	1230	67.8	2.64	7.04	Turbid/ Dark Brown
6.5	1231	67.6	2.70	7.10	Turbid/ Dark Brown

SAMPLING METHOD:	SAMPLE TURBIDITY:	TIME COLLECTED:
DISPOSABLE BAILER	126.6 NTU	1240

PURGE WATER DESCRIPTION: [ ] SHEEN [ ] ODOR [X] SILTY [ ] OTHER:

RECORD OF WATER SAMPLE COLLECTION

WELL LABEL:	DATE COLLECTED:	JOB NUMBER:
MW-7	7-12-95	101090

JOB NAME:	SAMPLER(S) NAME:
CAVANAUGH MOTORS	D. CHUNG AND T. GHIGLIOTTO

LOCATION: 1700 PARK STREET, ALAMEDA, CALIFORNIA

WELL HEAD CONDITIONS: [X] CAPPED [ ] LOCKED [X] DRY [ ] WATER [ ] DEBRIS [ ] REPLACE CAP [ ] REPLACE LOCK [ ] OTHER:

TIME MEASURED	1038	1047				
DEPTH TO WATER (MEASURE TO .01 FEET)	6.76'	6.76'				

WELL PURGING METHOD

TOTAL DEPTH OF WELL:	DEPTH TO WATER:	DIAMETER OF WELL:
15.21'	6.76'	2"

VOLUME FACTOR = 0.17 FOR 2" CASING; 0.65 FOR 4" CASING; 1.47 FOR 6" CASING

PURGE VOLUME = 4.3 gallons

PURGE METHOD:	OVA -FID VAPOR READING, ppm:
DISPOSABLE BAILER	

WELL PURGING PARAMETERS

GALLONS	TIME	TEMPERATUTE degrees F	CONDUCTIVITY X 1000	pH	VISUAL TURBIDITY
0	1255	74.2	0.54	9.98	Clear
1.5	1258	70.2	0.48	9.97	Turbid/Brown
3.0	1300	68.9	0.48	10.64	Turbid/Brown
4.5	1303	68.0	0.48	10.67	Turbid/Brown

SAMPLING METHOD:	SAMPLE TURBIDITY:	TIME COLLECTED:
DISPOSABLE BAILER	197.1 NTU	1310

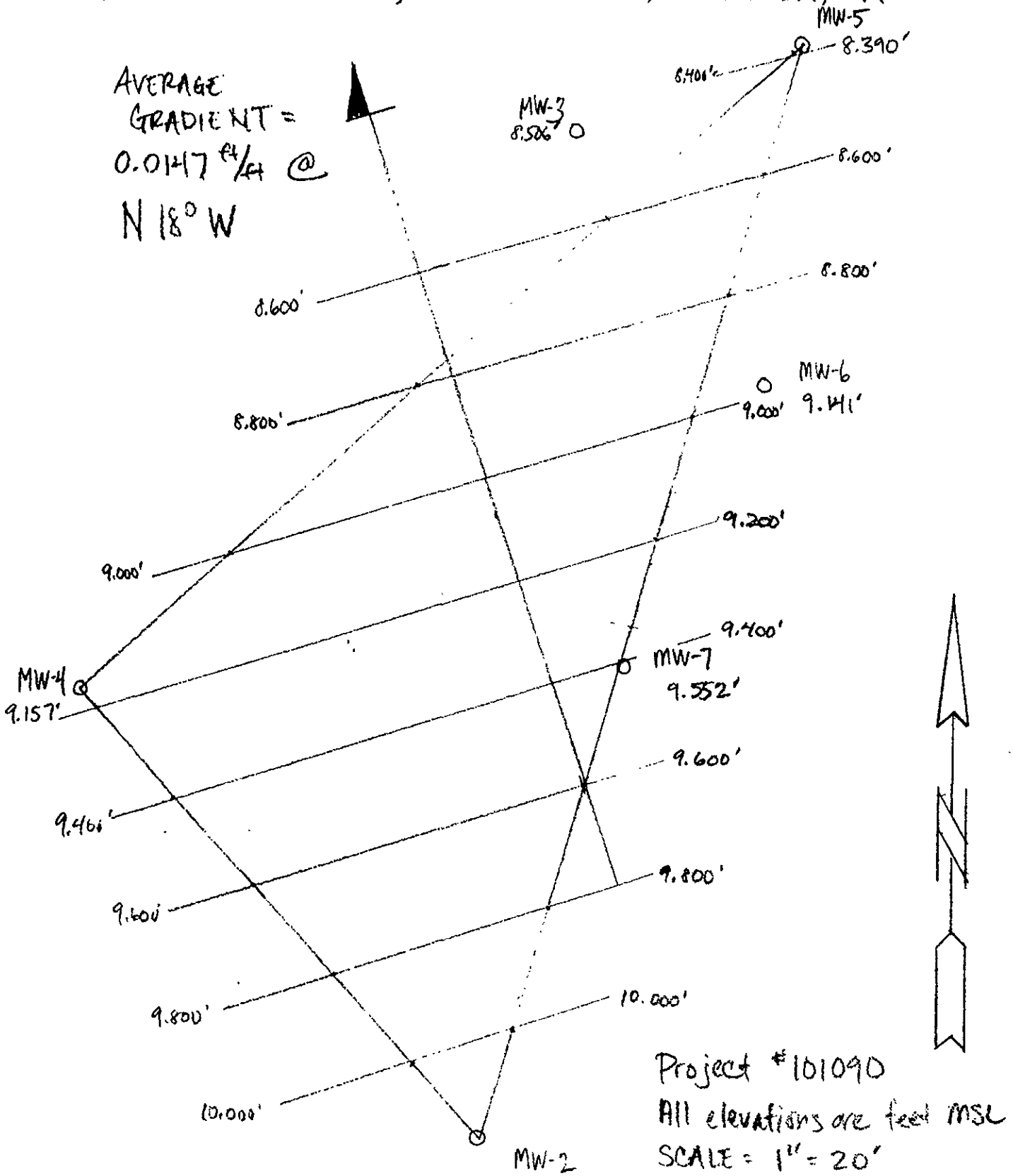
PURGE WATER DESCRIPTION: [ ] SHEEN [ ] ODOR [X] SILTY [ ] OTHER:

ATTACHMENT 3

GROUNDWATER GRADIENT WORKSHEET

GROUNDWATER GRADIENT WORKSHEET

CAVANAUGH MOTORS, 1700 PARK ST., ALAMEDA, CA



AVERAGE GRADIENT = 0.0147 ft/ft @ N 18° W

Project #101090

All elevations are feet MSL

SCALE: 1" = 20'

Wells Measured: 7-12-95

Map Drawn: 7-19-95