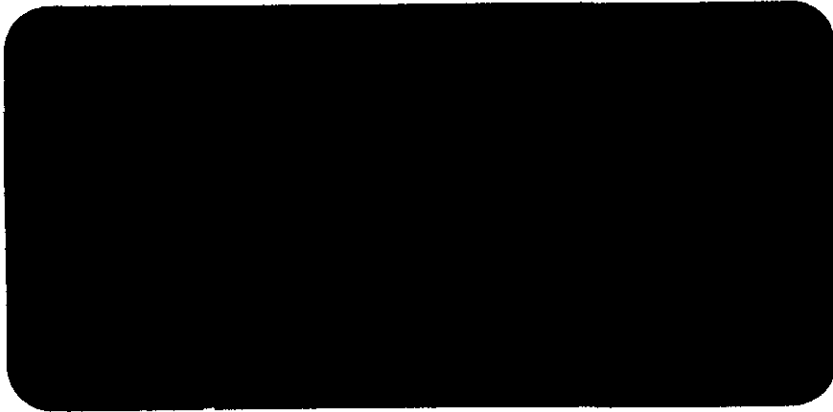


See
5/31/55



Environmental
Management, Inc.
6111 J. J. ...
Springfield, Mo.



"An Environmental Management Company"

GROUNDWATER
MONITORING REPORT

Cavanaugh Motors Facility
1700 Park Street
Alameda, California

May 18, 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

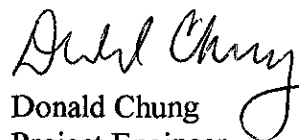
Groundwater Monitoring Report
Cavanaugh Motors Facility
1700 Park Street
Alameda, California

TMC ENVIRONMENTAL, Inc. supervised the preparation of this Groundwater Monitoring Report, dated May 18, 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.

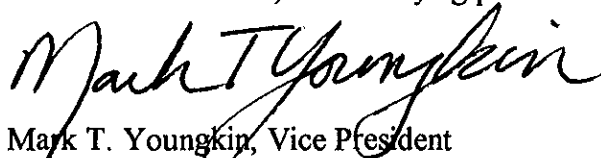


Michael Princevalle
Soil Scientist/Senior Project Manager



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:



5/18/95

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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 April 26, 1995 sampling event, a sample was recovered from MW-7. The sample revealed non-detectable levels of gasoline and BTEX. Groundwater samples recovered from this well during the September 1994 and January 1995 sampling events also revealed non-detectable levels of gasoline and BTEX.

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 groundwater flows in a north westerly direction, with a gradient of 0.0151 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 showroom; sales offices; parts storage and distribution; outside car storage; and a vehicle repair shop; see Plate 2, Site Plan. No underground storage facilities 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 April 26, 1995 TMC recovered groundwater samples from monitoring well MW-7 in accordance with the sampling schedule set forth in the ACHCSA letter dated December 29, 1994.

The ground water sample from MW-7 was analyzed for the target chemicals of total petroleum hydrocarbons as gasoline (TPH-g), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). The following tables summarize recent and previous analyses results. Table 1, Gasoline Results for Groundwater Samples, lists the historic gasoline results for samples recovered from the site and this sampling of MW-7.

TABLE 1 GASOLINE RESULTS FOR GROUND WATER SAMPLES

Date Sampled	Monitoring Well	TPH gas ug/L	Benzene ug/L	Toluene ug/L	Ethyl benzene ug/L	Xylenes ug/L
<i>June 1990 Groundwater Sampling</i>						
6-08-90	MW-1	28000	6200	7000	630	6100
6-08-90	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
6-08-90	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	0.9
6-08-90	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	0.9
<i>December 1990 Groundwater Sampling</i>						
12-17-90	MW-1	7200	620	250	1200	1400
12-17-90	MW-2	ND<50	1.1	ND<0.5	2.3	2.1
12-17-90	MW-3	140	ND<0.5	1.3	1.3	9.1
12-17-90	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	0.9
<i>July 1991 Groundwater Sampling</i>						
7-29-91	MW-1	21000	890	1900	320	1700
7-30-91	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	0.9
7-18-91	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	0.9
7-30-91	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	0.9
7-18-91	MW-5	ND<50	ND<0.5	ND<0.5	ND<0.5	0.9
7-18-91	MW-6	ND<50	1.3	ND<0.5	ND<0.5	1.6
<i>December 1991 Groundwater Sampling</i>						
12-4-91	MW-1	4300	3.2	1.3	88	630
12-4-91	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
12-4-91	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
12-4-91	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
12-4-91	MW-5	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
12-4-91	MW-6	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5

Date Sampled	Monitoring Well	TPH gas ug/L	Benzene ug/L	Toluene ug/L	Ethyl benzene ug/L	Xylenes ug/L
<i>April 1992 Groundwater Sampling</i>						
4-30-92	MW-1	16000	910	2000	250	1400
4-29-92	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
4-29-92	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
4-29-92	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
4-30-92	MW-5	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
4-30-92	MW-6	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
<i>July 1992 Groundwater Sampling</i>						
7-28-92	MW-1	12000	1200	2300	340	1800
7-27-92	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7-27-92	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7-27-92	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7-27-92	MW-5	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
7-28-92	MW-6	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
<i>October 1992 Groundwater Sampling</i>						
10-19-92	MW-1	5000	400	710	170	750
10-19-92	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
10-19-92	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
10-19-92	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
10-19-92	MW-5	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
10-19-92	MW-6	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
<i>February 1993 Groundwater Sampling</i>						
2-24-93	MW-1	8800	780	1200	230	1000
2-24-93	MW-2	ND<50	0.5	ND<0.5	ND<0.5	ND<0.5
2-24-93	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2-24-93	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5

Date Sampled	Monitoring Well	TPH gas ug/L	Benzene ug/L	Toluene ug/L	Ethyl benzene ug/L	Xylenes ug/L
2-24-93	MW-5	ND<50	ND<0.5	1.8	ND<0.5	ND<0.5
2-24-93	MW-6	ND<50	ND<0.5	6.8	ND<0.5	ND<0.5
<i>May 1993 Groundwater Sampling</i>						
5-19-93	MW-1	24000	2500	4700	560	3100
5-19-93	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
5-19-93	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
5-19-93	MW-4	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
5-19-93	MW-5	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
5-19-93	MW-6	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
<i>August 1993 Groundwater Sampling</i>						
8-11-93	MW-1	13000	1200	2100	350	2000
8-11-93	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
8-11-93	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
8-11-93	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
8-11-93	MW-5	ND<50	ND<0.5	ND<0.5	0.8	ND<0.5
8-11-93	MW-6	ND<50	ND<0.5	ND<0.5	7.9	ND<0.5
<i>February 1994 Groundwater Sampling</i>						
2-2-94	MW-1	7300	600	920	250	1,000
2-2-94	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2-2-94	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2-2-94	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2-2-94	MW-5	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
2-2-94	MW-6	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
<i>May 1994 Groundwater Sampling</i>						
5-26-94	MW-1	15000	1200	2000	370	1500
5-26-94	MW-2	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5

Date Sampled	Monitoring Well	TPH gas ug/L	Benzene ug/L	Toluene ug/L	Ethyl benzene ug/L	Xylenes ug/L
5-26-94	MW-3	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
5-26-94	MW-4	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
5-26-94	MW-5	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
5-26-94	MW-6	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
<i>September 1994 Groundwater Sampling</i>						
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
<i>January 13, 1995 Groundwater Sampling</i>						
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
<i>April 26, 1995 Groundwater Sampling</i>						
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

Date Sampled	Monitoring Well	TPH gas ug/L	Benzene ug/L	Toluene ug/L	Ethyl benzene ug/L	Xylenes ug/L
4-26-95	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 at the September 1994 and January 1995 sampling episodes.

Table 2 presents historic results of laboratory analyses for extractable petroleum hydrocarbons (Diesel/Kerosene, Oil and Grease) and purgeable halocarbons (Chlorobenzene). This table presents past sampling event data only, as monitoring wells MW-3, MW-5, and MW-6 were not sampled during the recent quarter.

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
<i>July 1991 Groundwater Sampling</i>					
7-18-91	MW-3	NA	NA	ND<5	NA
7-18-91	MW-5	NA	NA	ND<5	NA
7-18-91	MW-6	NA	NA	ND<5	NA
<i>December 1991 Groundwater Sampling</i>					
12-4-91	MW-3	ND<50	ND<50	ND<5	ND<1.0
12-4-91	MW-5	ND<50	ND<50	ND<5	4.6
12-4-91	MW-6	1,400	ND<50	ND<5	33
<i>April 1992 Groundwater Sampling</i>					
4-29-92	MW-3	ND<50	ND<50	ND<5	ND<1.0
4-29-92	MW-5	ND<50	ND<50	ND<5	3
4-29-92	MW-6	670	ND<50	ND<5	7
<i>July 1992 Groundwater Sampling</i>					
7-28-92	MW-3	ND<50	ND<50	ND<5	ND<1.0

Date Sampled	Monitoring Well	Diesel ug/L	Kerosene ug/L	Oil & Grease mg/L	Chlorobenzene ug/L
7-28-92	MW-5	ND<50	ND<50	ND<5	2
7-28-92	MW-6	1,700	ND<50	ND<5	17
<i>October 1992 Groundwater Sampling</i>					
10-19-92	MW-3	ND<50	ND<50	ND<5	ND<1.0
10-19-92	MW-5	ND<50	ND<50	ND<5	2
10-19-92	MW-6	500	ND<50	ND<5	26
<i>February 1993 Groundwater Sampling</i>					
2-24-93	MW-3	ND<50	ND<50	ND<5	ND<1.0
2-24-93	MW-5	ND<50	ND<50	ND<5	1
2-24-93	MW-6	ND<50	170 +	ND<5	6
<i>May 1993 Groundwater Sampling</i>					
5-19-93	MW-3	ND<50	ND<50	ND<5	ND
5-19-93	MW-5	ND<50	ND<50	ND<5	2
5-19-93	MW-6	670	ND<50	ND<5	4
<i>August 1993 Groundwater Sampling</i>					
8-11-93	MW-3	ND<50	ND<50	ND<5	ND<1
8-11-93	MW-5	ND<50	ND<50	ND<5	ND<1
8-11-93	MW-6	80	*	7.0	10
<i>February 1994 Groundwater Sampling</i>					
2-2-94	MW-3	ND<50	ND<50	ND<05	ND<1
2-2-94	MW-5	ND<50	ND<50	ND<5	ND<1
2-2-94	MW-6	ND<50	220	ND<5	3
<i>May 1994 Groundwater Sampling</i>					
5-24-94	MW-3	ND<50	N/A	ND<5	ND<0.4
5-24-94	MW-5	ND<50	N/A	ND<5	0.6
5-24-94	MW-6	ND<50	N/A	ND<5	5.5

Date Sampled	Monitoring Well	Diesel ug/L	Kerosene ug/L	Oil & Grease mg/L	Chlorobenzene ug/L
<i>September 1994 Groundwater Sampling</i>					
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
<i>January 13, 1995 Groundwater Sampling</i>					
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
<i>April 26, 1995 Groundwater Sampling</i>					
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

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 thirteen sampling episodes.

TABLE 3 GROUNDWATER MEASUREMENTS FROM MONITORING WELLS

<i>Date</i>	<i>Well Label</i>	<i>Water Level</i>	<i>Casing Elevation (msl)</i>	<i>Water Elevation (msl)</i>
6-20-90	MW2	-7.16	16.73	9.57
6-20-90	MW3	-7.37	15.89	8.52
6-20-90	MW4	-7.60	16.39	8.79
9-13-90	MW2	-8.78	16.73	7.95
9-13-90	MW3	-8.70	15.89	7.19
9-13-90	MW4	-8.80	16.39	7.59
12-17-90	MW2	-8.78	16.73	7.95
12-17-90	MW3	-8.42	15.89	7.47
12-17-90	MW4	-8.61	16.39	7.78
12-4-91	MW2	-7.99	16.73	8.74
12-4-91	MW3	-8.18	15.89	7.71
12-4-91	MW4	-8.26	16.39	8.13
4-29-92	MW2	-6.05	16.73	10.68
4-29-92	MW3	-6.73	15.89	9.16
4-29-92	MW4	-6.81	16.39	9.58
8-29-92	MW1	-7.92	16.39	8.47
8-29-92	MW2	-7.82	16.73	8.91
8-29-92	MW3	-8.21	15.89	7.68
8-29-92	MW4	-8.14	16.39	8.25
8-29-92	MW5	-7.57	15.13	7.56
8-29-92	MW6	-8.00	15.98	7.98
10-19-92	MW1	-8.44	16.39	7.95
10-19-92	MW2	-8.37	16.73	8.36
10-19-92	MW3	-8.58	15.89	7.31
10-19-92	MW4	-8.53	16.39	7.86
10-19-92	MW5	-7.96	15.13	7.17
10-19-92	MW6	-8.44	15.98	7.54

<i>Date</i>	<i>Well Label</i>	<i>Water Level</i>	<i>Casing Elevation (msl)</i>	<i>Water Elevation (msl)</i>
2-24-93	MW1	-5.36	16.39	11.03
2-24-93	MW2	-5.42	16.73	11.31
2-24-93	MW3	-6.11	15.89	9.78
2-24-93	MW4	-6.30	16.39	10.09
2-24-93	MW5	-5.32	15.13	9.81
2-24-93	MW6	-5.40	15.98	10.58
5-19-93	MW-1	-6.35	16.39	10.04
5-19-93	MW-2	-6.35	16.73	10.38
5-19-93	MW-3	-7.14	15.89	8.75
5-19-93	MW-4	-7.09	16.39	9.30
5-19-93	MW-5	-6.38	15.13	8.77
5-19-93	MW-6	-6.57	15.98	9.41
8-11-93	MW-1	-8.06	16.39	8.33
8-11-93	MW-2	-8.09	16.73	8.64
8-11-93	MW-3	-8.45	15.89	7.44
8-11-93	MW-4	-8.31	16.39	8.08
8-11-93	MW-5	-7.68	15.13	7.45
8-11-93	MW-6	-8.16	15.98	7.82
2-2-94	MW-1	-7.43	16.39	8.96
2-2-94	MW-2	-7.48	16.73	9.25
2-2-94	MW-3	-7.69	15.89	8.20
2-2-94	MW-4	-7.83	16.39	8.56
2-2-94	MW-5	-6.98	15.13	8.15
2-2-94	MW-6	-7.40	15.98	8.58
5-26-94	MW-1	-6.95	16.39	9.44
5-26-94	MW-2	-6.97	16.73	9.76

<i>Date</i>	<i>Well Label</i>	<i>Water Level</i>	<i>Casing Elevation (msl)</i>	<i>Water Elevation (msl)</i>
5-26-94	MW-3	-7.39	15.89	8.50
5-26-94	MW-4	-7.44	16.39	8.95
5-26-94	MW-5	-6.72	15.13	8.41
5-26-94	MW-6	-7.01	15.98	8.97
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
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

<i>Date</i>	<i>Well Label</i>	<i>Water Level</i>	<i>Casing Elevation (msl)</i>	<i>Water Elevation (msl)</i>
4-26-95	MW-7	-5.37	16.31	10.94

* Could not remove well cover - defective bolts

Table 4 summarizes the estimated groundwater down flow direction and horizontal gradient. 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

<i>Measurement Date</i>	<i>Down Gradient Direction</i>	<i>Horizontal Gradient</i>	<i>Average Water Level feet above msl</i>
6-20-90	North 26 degrees West	0.009 ft/ft	9.0
9-13-90	North 2 degrees East	0.005 ft/ft	7.9
12-17-90	North 19 degrees East	0.003 ft/ft	8.1
12-4-91	North 12 degrees West	0.008 ft/ft	8.5
4-29-92	North 20 degrees West	0.012 ft/ft	9.8
8-29-92	North 5 degrees West	0.009 ft/ft	8.1
10-19-92	North 2 degrees East	0.007 ft/ft	7.7
2-24-93	North 31 degrees West	0.014 ft/ft	10.4
5-19-93	North 7 degrees West	0.014 ft/ft	9.4
8-11-93	North 4 degrees West	0.008 ft/ft	7.96
2-24-94	North 12 degrees West	0.008 ft/ft	8.69
5-26-94	North 10 degrees West	0.010 ft/ft	8.91
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

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. The changing groundwater gradient and elevations indicate the shallow water bearing zone is sensitive to seasonal changes in rainfall.

The most recent data indicate a North 29.5 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 direction from N43°W to N19°E, and a range of horizontal gradient 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/QC) 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 TOTAL PETROLEUM HYDROCARBONS AS GASOLINE WITH BTEX

Based on the QC data reviewed, total petroleum hydrocarbons (TPH) as gasoline analysis by EPA Method 8015M and benzene, toluene, ethylbenzene, and total xylenes (BTEX) analyses by EPA Method 8020 appear 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.

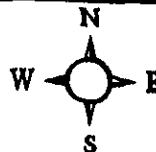
6.0 COMMENTS AND SCHEDULE OF ACTIVITIES

TMC believes that a pocket of gasoline contamination may remain in the capillary fringe in the vicinity of MW-1, and is 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 on the existing soil pile and treated. 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 tentatively scheduled for August 1995.

The next quarterly sampling event, scheduled for July 1995, will include monitoring wells MW-3, MW-5, MW-6, and MW-7. Groundwater samples from MW-7 will be analyzed for TPH-g and BTEX by EPA Methods 8015M/8020. Samples recovered from MW-3, MW-5, and MW-6 will be analyzed for TPH-Diesel by EPA Method 8015M, oil and grease by Method 5520BF, and purgeable halocarbons by EPA Method 8010.

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.



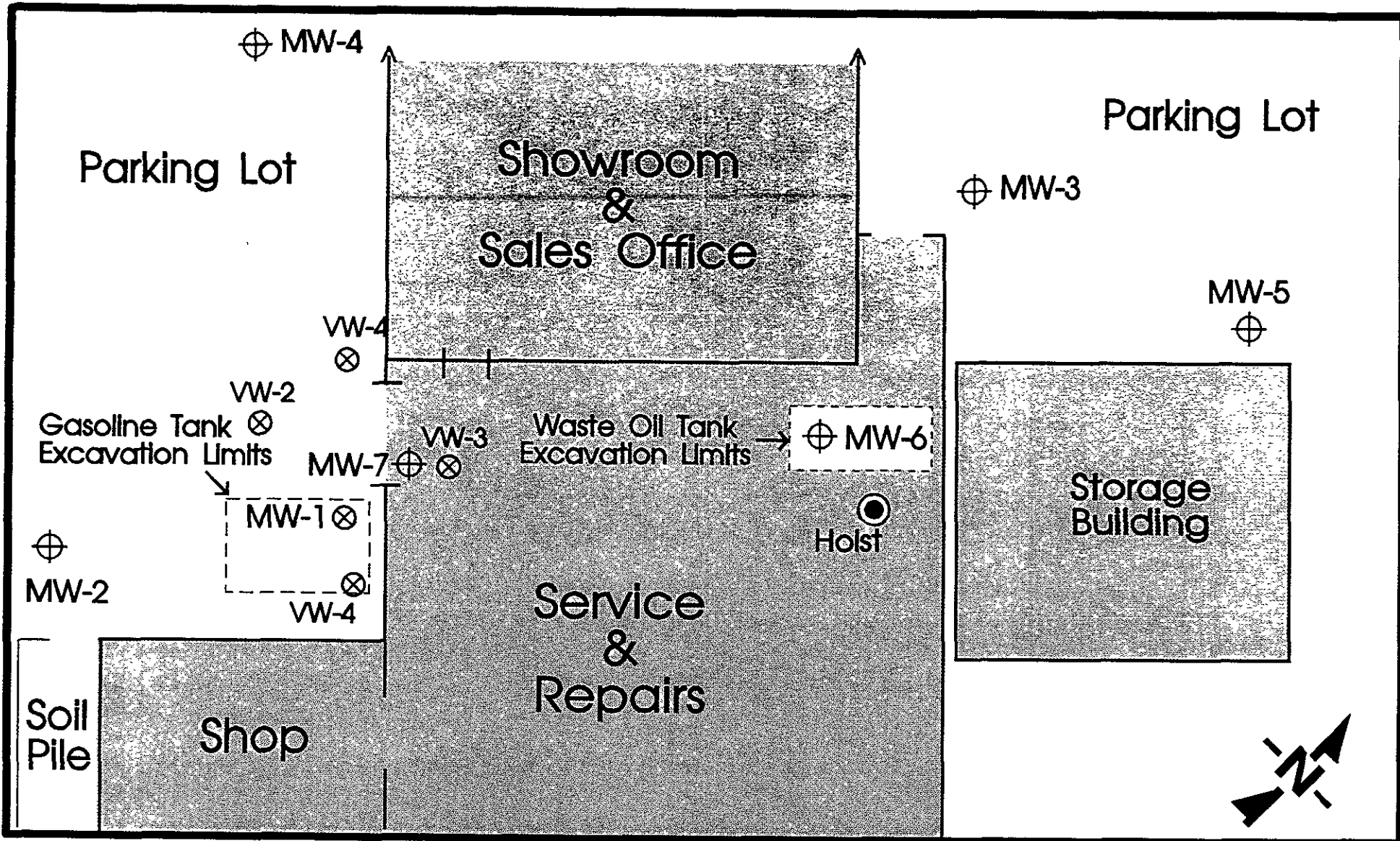
Base Map from THE THOMAS GUIDE; San Francisco, Alameda, and Contra Costa Counties, 1995 Edition



SITE VICINITY MAP
CAVANAUGH MOTORS
1700 Park Street
Alameda, California
Project # 101090

PLATE

1



LEGEND

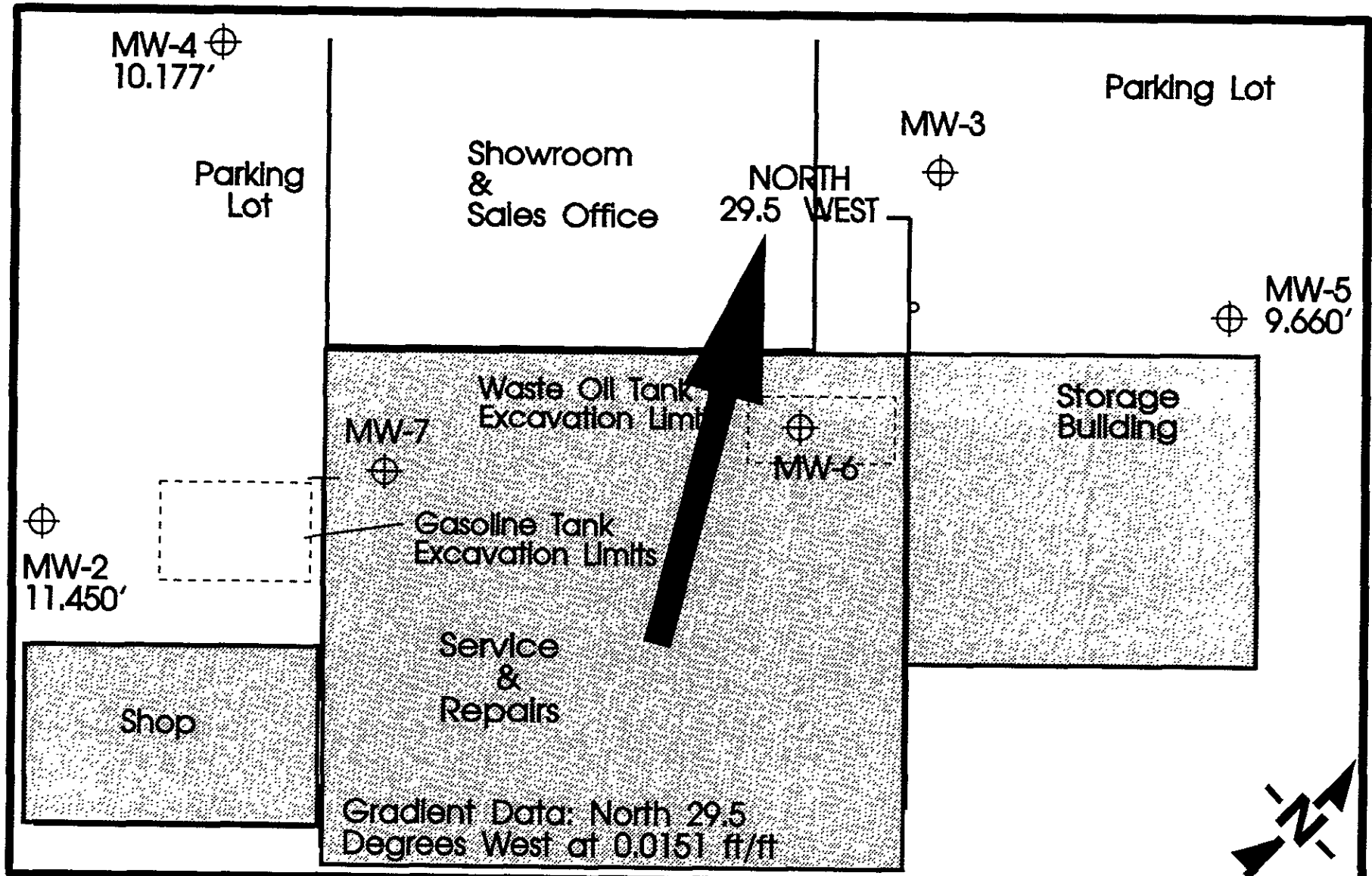
- MW-0 Monitoring Well
- Destroyed Monitoring Well or Vapor Extraction Well (destroyed 2/27/95)
- Building Interiors

Scale 1 Inch=20 ft.

SITE PLAN

Cavanaugh Motors

1700 Park Street, Alameda California
Project Number 101090



LEGEND

⊕
MW-0
1.00 ft

All Elevations Are In Feet MSL.

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

GROUNDWATER GRADIENT
MAP

Cavanaugh Motors

1700 Park Street, Alameda Ca

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

DATE SAMPLED: 04-26-95

DATE RECEIVED: 04-27-95

DATE REPORTED: 05-04-95

MATRIX: WATER

AMER ID: E1038


PROJECT MANAGER: Donald Chung

PROJECT: 1700 Park Street, 101090

Client I.D.	AMER I.D.	8015M/ TPH-GASOLINE	DF
MW-7	E5042713	ND	1
Units		ug/l	
Method Detection Limits		50ug/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.

Reviewed By


Lei Chen, Laboratory Mana

AMER

Advanced Materials Engineering Research, Inc.

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

CLIENT:

TMC Environmental, Inc.
13908 San Pablo Avenue, Suite 101
San Pablo, CA

DATE SAMPLED: 04-26-95
DATE RECEIVED: 04-27-95
DATE REPORTED: 05-04-95
AMER ID: E1038

MATRIX: WATER


PROJECT MANAGER: Donald Chung

PROJECT: 1700 Park Street, 101090

Client I.D.	AMER I.D.	Benzene	Toluene	Ethyl Benzene	Total Xylene	DF
MW-7	E5042713	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

EPA M. 8015/8020 TEST QA/QC TABLE

AMER WORKORDER: E1038

AMER I.D. E5042713-SP
 Project: #101090
 Ext/Prep. Method: EPA 5030
 Date: 05-02-95
 Analyst: BK

Analytical Method: EPA M. 8015/8020
 Analysis date: 05-02-95
 Analyst: BK
 Matrix: Water
 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
Benzene	0.00	40.00	37.51	94	40.10	100	97	76	127	7	11
Toluene	0.00	40.00	38.25	96	40.49	101	98	76	125	6	13
Chlorobenzene	0.00	40.00	39.15	98	40.08	100	99	75	130	2	13
TPH-Gasoline	0.00	1000.00	1037.32	104	1018.35	102	103	70	130	2	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
- SP Result- Sample Spike Result
- SP %R- Sample Spike Percent Recovery
- SPD Result- Sample Spike Duplicate Result
- SPD %R- Sample Spike Duplicate Percent Recovery
- AVE. % R.- Average Percent Recovery for SP & SPD % Recovery
- LCL- Lower Criteria Level
- UCL- Upper Criteria Level
- RPD- 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): Donald Chung
LABORATORY NAME: Advanced Materials Engineering Research (AMER) 783 E. Evelyn Ave. Sunnyvale, CA 94086		

LAB ID NO.	SAMPLE LABEL	SOIL	WATER	DATE	TIME	TPH-GAS/ BTEX								
	MW-7		X	4/26/95	1224	X								

Special Instructions:

Relinquished By:

Received By:

(Print Name) Donald Chung	Date: 4/27/95	(Print Name)
(Signature) <i>Donald Chung</i>	Time: 4:20	(Signature) <i>Robert Chappelle</i>
(Print Name) Robert Chappelle	Date: 4/27/95	(Print Name) Kayan King
(Signature) <i>Robert Chappelle</i>	Time: 1800	(Signature) <i>Kayan King</i>
(Print Name)	Date:	(Print Name)
(Signature)	Time:	(Signature)
(Print Name)	Date:	(Print Name)
(Signature)	Time:	(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

RECORD OF WATER SAMPLE COLLECTION

WELL LABEL: MW7	DATE COLLECTED: 4/26/95	JOB NUMBER: 101090
JOB NAME: CAVANAUGH MOTORS	SAMPLERS NAME: DONALD CHUNG	
LOCATION: 1700 PARK STREET ALAMEDA, CA		

WELL HEAD COND: CAPPED LOCKED DRY WATER DEBRIS REPLACE CAP REPLACE LOCK
 OTHER (describe)

TIME MEASURED	1115	1129				
DEPTH IN FEET (MEASURE TO 0.01')	5.37'	5.37'				

WELL PURGING METHOD

TOTAL DEPTH OF WELL: 15.21'	DEPTH TO WATER: 5.37'	DIAMETER OF WELL: 2"
-----------------------------	-----------------------	----------------------

PURGE VOLUME= TOTAL DEPTH- WATER DEPTH X VOLUME FACTOR X 3 VOLUMES = 5.0 GALLONS
 VOLUME FACTOR = 0.17 FOR 2" CASING; 0.65 FOR 4" CASING; 1.47 FOR 6" CASING

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

WELL PURGING PARAMETERS

GALLONS	TIME	TEMPERATURE degrees F	CONDUCTIVITY X 1000	pH	VISUAL TURBIDITY
0	1159	68.4	0.48	6.66	CLEAR
1.5	1202	66.4	0.48	6.92	TURBID, BROWN
3	1204	65.6	0.48	7.16	TURBID, BROWN
4.5	1207	65.3	0.45	7.69	TURBID, BROWN
5	1209	64.9	0.46	8.33	TURBID, BROWN

SAMPLING METHOD: NEW DISPOSABLE BAILER	SAMPLE TURBIDITY (NTU): 67.7	TIME COLLECTED: 1224
PURGE WATER DESCRIPTION:	<input type="checkbox"/> SHEEN <input type="checkbox"/> ODOR <input checked="" type="checkbox"/> SILTY <input type="checkbox"/> CLEAR <input checked="" type="checkbox"/> NO SHEEN <input checked="" type="checkbox"/> NO ODOR <input type="checkbox"/> OTHER (describe):	

NA = NOT AVAILABLE: pH METER MALFUNCTIONED

WELL MEASUREMENT LOG

JOB NAME: CAVANAUGH MOTORS	JOB NUMBER: 101090
DATE COLLECTED: 4/26/95	SAMPLERS NAME: D. CHUNG
LOCATION: 1700 PARK STREET, ALAMEDA, CALIFORNIA	

WELL LABEL: MW-2

WELL HEAD COND: CAPPED LOCKED DRY WATER DEBRIS REPLACE CAP REPLACE LOCK
 OTHER (describe) : Some moisture on well cap

TIME MEASURED	1049	1116			
DEPTH IN FEET (MEASURE TO 0.01')	5.27	5.27			

WELL LABEL: MW-3

WELL HEAD COND: CAPPED LOCKED DRY WATER DEBRIS REPLACE CAP REPLACE LOCK
 OTHER (describe) : Unable to remove well box cover

TIME MEASURED					
DEPTH IN FEET (MEASURE TO 0.01')					

WELL LABEL: MW-4

WELL HEAD COND: CAPPED LOCKED DRY WATER DEBRIS REPLACE CAP REPLACE LOCK
 OTHER (describe) : Water in box below top of casing

TIME MEASURED	1053	1121	1134		
DEPTH IN FEET (MEASURE TO 0.01')	6.16	6.17	6.17		

WELL LABEL: MW-5

WELL HEAD COND: CAPPED LOCKED DRY WATER DEBRIS REPLACE CAP REPLACE LOCK
 OTHER (describe) : Water in box below top of casing

TIME MEASURED	1101	1123	1053		
DEPTH IN FEET (MEASURE TO 0.01')	5.73	5.47	5.47		

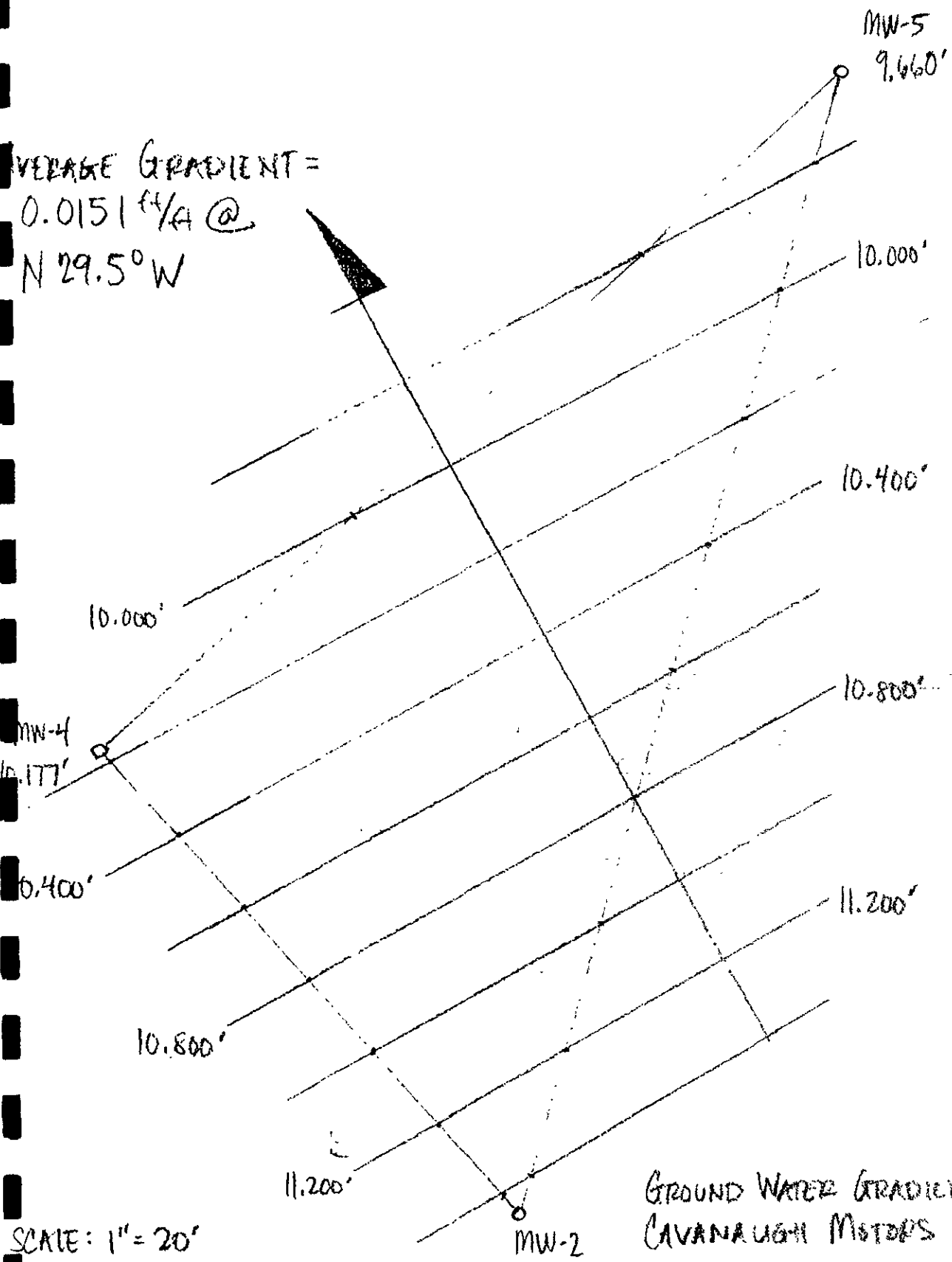
WELL LABEL: MW-6

WELL HEAD COND: CAPPED LOCKED DRY WATER DEBRIS REPLACE CAP REPLACE LOCK
 OTHER (describe) : Slight pressure release on open

TIME MEASURED	1107	1125			
DEPTH IN FEET (MEASURE TO 0.01')	5.38	5.38			

ATTACHMENT 3
GROUNDWATER GRADIENT WORKSHEET

AVERAGE GRADIENT =
0.0151 f⁴/A @
N 29.5° W



SCALE: 1" = 20'
ALL ELEVATIONS ARE FEET MSL
MAP DRAWN: 5/16/95
DATA COLLECTED: 4/26/95

GROUND WATER GRADIENT WORKSHEET
CAVANAUGH MOTORS
1700 PARK ST.
ALAMEDA, CA
#101090