HAGEMAN-AGUIAR, INC.
Underground Contamination Investigations, Groundwater Consultants, Environmental Engineering

QUARTERLY
GROUNDWATER SAMPLING REPORT

(sampled May 24, 1993)

QUALITY TUNE-UP
2780 Castro Valley Blvd
Castro Valley, CA

June 8, 1993

3732 Mt. Diablo Blvd. Suite 372 Lafayette, California 94549 (510) 284-1661 FAX (510) 284-1664

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I. INTRODUCTION

The site location is the Quality Tune-up facility in Castro Valley, California. The location of the site is shown in Figure 1. In conjunction with a previous service station operation, the site has historically operated four underground fuel storage tanks for a number of years.

In February 1987 the two 7,500 Gasoline tanks and one Waste Oil tank were removed by 4M Construction of Madera, California. Soil and groundwater samples were collected, and were subsequently analyzed by Trace Analysis Laboratory, Inc. Of the seven soil samples collected, only "Extractable Hydrocarbons" were detected in those soil samples collected in the vicinity of the Waste Oil tank location. Analysis of the groundwater sample indicated 26 mg/L (ppm) of Volatile Hydrocarbons, 420 µg/L (ppb) of Benzene, 2,000 µg/L (ppb) of Toluene and 9,400 µg/L (ppb) of Total Xylenes.

On June 11, 1991, the final 8,000-gallon underground storage tank was removed from the site by Minter & Fahy Construction, Inc, Pacheco, California. This underground tank was utilized for Gasoline storage until February 1987, at which time it was converted to Waste Oil storage. At the time of removal, the tank was apparently being utilized for storage of Waste Oil. Soil samples were collected from the tank excavation and were subsequently analyzed by Chromalab Laboratory, Inc., San Ramon, California. The results of laboratory analyses indicated no detectable of concentrations of Diesel, Gasoline, Benzene, Oil & Grease, Halogenated Volatile Organics (EPA 8010), or Semi-Volatile Organics (EPA 8270). A groundwater sample was collected from the tank excavation and was subsequently analyzed. The results of laboratory

analyses indicated no detectable of concentrations of Diesel, Gasoline, Benzene, Oil & Grease, Halogenated Volatile Organics (EPA 601), or Extractable Organics (EPA 625). Soil samples collected from the spoils pile indicated the presence of Gasoline at concentrations of up to 1.4 mg/kg (ppm), and Oil & Grease at concentrations of up to 24 mg/kg (ppm).

Subsequent to the underground tank removals, three on-site shallow groundwater monitoring wells were installed by Hageman-Aguiar, Inc., on May 20, 1992. The report of that soil and groundwater investigation was issued on July 17, 1992. The locations of the monitoring wells are shown in Figure 2.

On May 24, 1993, all three of the on-site monitoring wells were sampled for the laboratory analysis for dissolved petroleum constituents. In addition to the monitoring well sampling, other tasks included water level measurements for each monitoring well. This third "round" of groundwater sampling has been conducted as part of the quarterly groundwater monitoring program at the site, as required by the Alameda County Department of Environmental Health and the California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region.

FIGURE 1.
Site Location Map

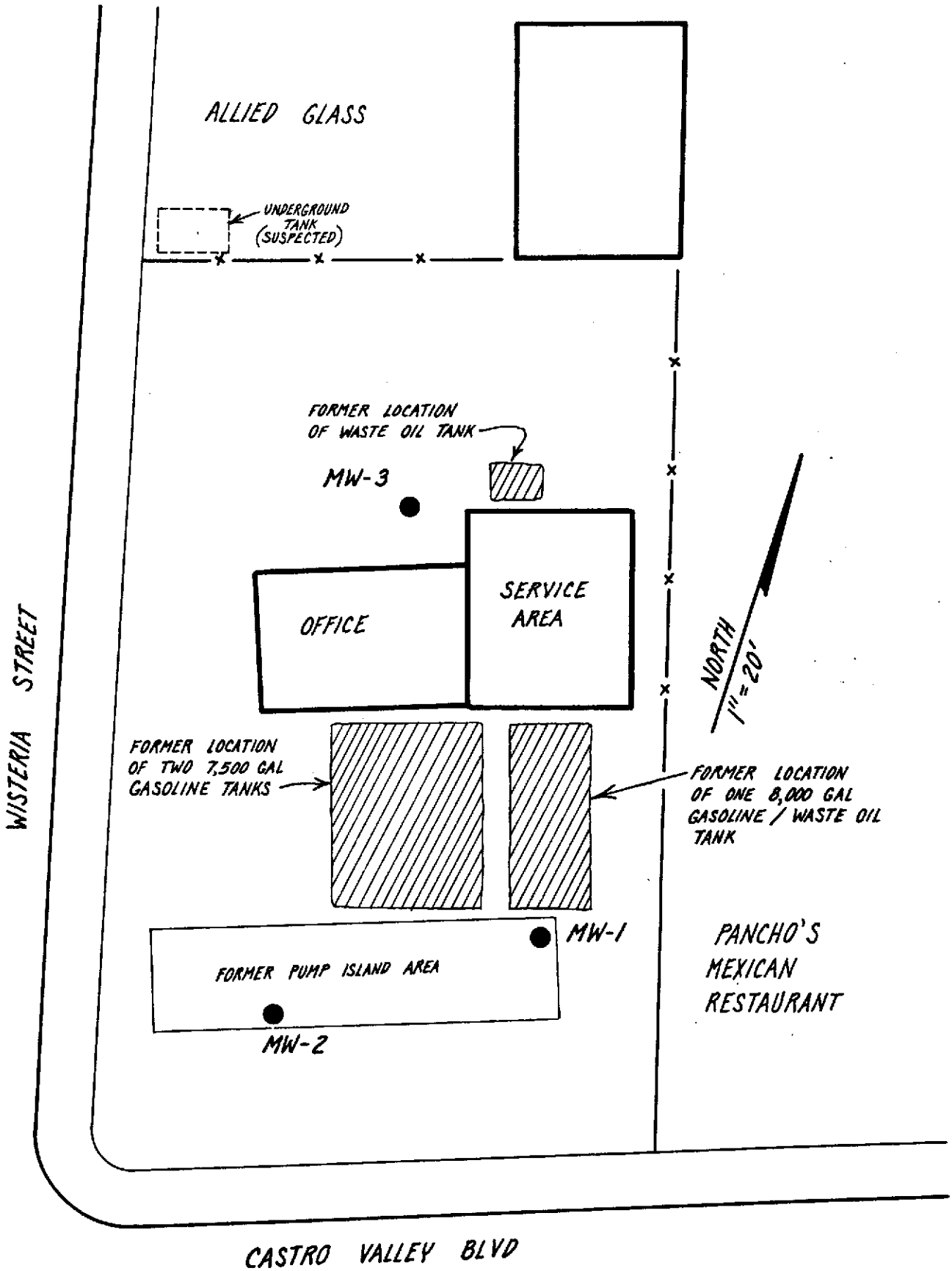


FIGURE 2.
Site Map.

II. FIELD WORK

Monitoring Well Sampling

On May 24, 1993, groundwater samples were collected from each of the three on-site monitoring wells (MW-1, MW-2 and MW-3). The locations of the monitoring wells are shown on Figure 2 (site map). Prior to groundwater sampling, each well was purged by bailing several casing volumes of water. Field conductivity, temperature, and pH meters were present on-site during the monitoring well sampling. As the purging process proceeded, the three parameters were monitored. Purging continued until readings appeared to have reasonably stabilized. After the water level in the well had attained 80% or more of the original static water level, a groundwater sample was collected using a clean teflon bailer. The water samples were placed inside appropriate 40 mL VOA vials and 1-litre amber bottles free of any headspace. The samples were immediately placed on ice, then transported under chain-of-custody to the laboratory at the end of the work day.

At the time each monitoring well was sampled, the following information was recorded in the field: 1) depth-to-water prior to purging, using an electrical well sounding tape, 2) identification of any floating product, sheen, or odor prior to purging, using a clear teflon bailer, 3) sample pH, 4) sample temperature, and 5) specific conductance of the sample.

Copies of the well sampling logs are included as Attachment A.

Wastewater Generation

All water removed from the wells during development and purging was drummed and stored on-site until the results of laboratory analyses were obtained. Based upon these results, the water should be sewered (if possible) as a non-hazardous liquid waste in accordance with local sewering agency permit requirements, or else it should be transported as a hazardous liquid waste under proper manifest to an appropriate TSD facility for treatment and disposal. The disposal of wastewater is the responsibility of the property owner (waste generator), and is beyond the scope of work as described in this report.

III. RESULTS OF WATER LEVEL MEASUREMENTS

Shallow Groundwater Flow Direction.

Shallow water table elevations were measured on May 24, 1993. These measurements are shown in Table 1. Figure 3 presents a contour map for the shallow groundwater table beneath the site. As shown in this figure, the data from these monitoring wells indicate that the shallow groundwater flow beneath the site was in the southerly direction during this most recent round of groundwater sampling.

Shallow Water Table Hydraulic Gradient

Figure 3 presents the contour map for the shallow groundwater table beneath the site. As shown in this figure, the shallow groundwater table through the center of the site appears to have a calculated hydraulic gradient of $dH/dL = 1'/37.5' = 0.027$.

Historical Water Level Measurements

In addition to the most recent measurement of the shallow water table elevations prior to the groundwater sampling on May 24, 1993, a tabulation of all historical water level measurements for the site has been completed. Table 2 presents the results of all water level measurements collected between May 20, 1992, and the present time.

TABLE 1.

Shallow Water Table Elevations
May 24, 1993

Well	Top of Casing Elevation (feet)	Depth to Water (feet)	Water Table Elevation (feet)
MW-1	163.70	10.43	153.27
MW-2	163.33	10.32	153.01
MW-3	163.35	8.46	154.89

Datum is Alameda County Benchmark Anita-CVB.
Standard surveyor brass disc on top-of-curb over drop inlet on Anita Avenue.
Elevation = 168.04 MSL

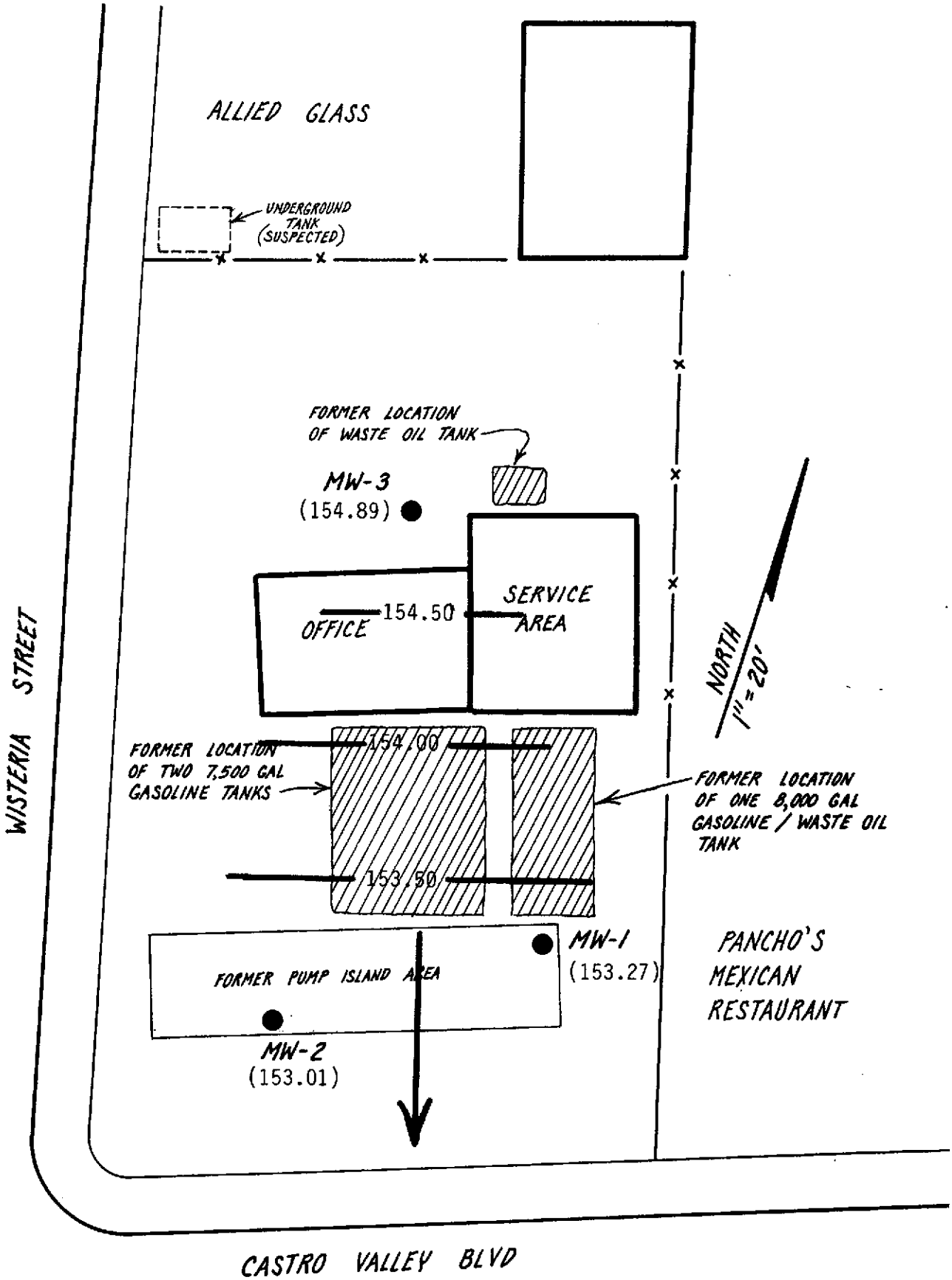


FIGURE 3.
Shallow Groundwater Table
Contour Map (measured May 24, 1993).

TABLE 2.

Historical Water Table Elevations
(feet)

Well	Date of Measurement								
	5-20-92	8-19-92	11-18-92	3-1-93	5-24-93				
MW-1	152.67	152.64	152.40	154.88	153.27				
MW-2	152.65	152.47	151.84	154.23	153.01				
MW-3	154.28	154.48	154.05	156.88	154.89				
Flow Direction	SE	SE	S	S	S				
Hydraulic Gradient	0.025	0.029	0.030	0.035	0.027				

IV. SHALLOW GROUNDWATER SAMPLING RESULTS

Laboratory Analysis

All analyses were conducted by a California State DOHS certified laboratory in accordance with EPA recommended procedures (Priority Environmental Laboratory, Milpitas, CA).

All shallow groundwater samples were analyzed for 1) total extractable petroleum hydrocarbons (EPA method 8015), 2) total petroleum hydrocarbons as Gasoline (EPA method 8015) and 3) Benzene, Toluene, Ethylbenzene, and Total Xylenes (EPA method 602).

Results of Laboratory Analysis.

Table 3 presents the results of the laboratory analysis of the groundwater samples collected from monitoring wells MW-1, MW-2 and MW-3. For this most recent round of quarterly sampling, dissolved Gasoline was detected in wells MW-1 and MW-3 at concentrations of 540 µg/L (ppb) and 1,100 µg/L (ppb), respectively. In addition, samples collected from wells MW-1, and MW-3 indicated the presence of Benzene at concentrations of 0.5 µg/L (ppb) and 1.5 µg/L (ppb), respectively.

As shown in Table 3, total petroleum hydrocarbons as Diesel was detected in all three monitoring wells MW-1, MW-2, and MW-3 at concentrations of 480 µg/L (ppb), 200 µg/L (ppb) and 580 µg/L (ppb), respectively. Since this is the first time that Diesel has been detected in any of the shallow groundwater samples collected from the site, a duplicate

TABLE 3.

Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	TPH as Kerosene (ug/L)	TPH as Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	Motor Oil (mg/L)
MW-1	05-20-92	**260**	ND	ND	ND	ND	**4.4**	**9.0**	ND
	08-19-92	ND	ND	ND	ND	ND	ND	ND	ND
	11-18-92	**160**	ND	ND	**0.9**	**4.0**	**2.6**	**9.4**	ND
	02-22-93	**9,000**	ND	ND	**15**	**34**	**46**	**91**	ND
	05-24-93	**540**	ND	**480**	**0.5**	**0.9**	**2.0**	**4.5**	ND
(duplicate)	05-24-93	---	ND	**420**	---	---	---	---	ND
MW-2	05-20-92	ND	ND	ND	ND	ND	ND	ND	ND
	08-19-92	ND	ND	ND	ND	ND	ND	ND	ND
	11-18-92	**70**	ND	ND	ND	ND	**0.9**	**6.7**	ND
	02-22-93	ND	ND	ND	ND	ND	ND	ND	ND
	05-24-93	ND	ND	**200**	ND	ND	ND	ND	ND
(duplicate)	05-24-93	---	ND	**210**	---	---	---	---	ND
Detection Limit		50	50	50	0.5	0.5	0.5	0.5	0.5

ND = Not Detected

TABLE 3. (continued)

Shallow Groundwater Sampling Results

Well	Date	TPH as Gasoline (ug/L)	TPH as Kerosene (ug/L)	TPH as Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	Motor Oil (mg/L)
MW-3	05-20-92	4,200	ND	ND	4.5	1.2	13	43	ND
	08-19-92	280	ND	ND	5.3	16	25	61	ND
	11-18-92	4,800	ND	ND	26	27	35	98	ND
	02-22-93	6,200	ND	ND	9.4	15	30	66	ND
	05-24-93	1,100	ND	580	1.5	3.4	4.1	9.9	ND
(duplicate)	05-24-93	---	ND	540	---	---	---	---	ND
Detection Limit		50	50	50	0.5	0.5	0.5	0.5	0.5

ND = Not Detected

laboratory analysis was performed for each sample. As shown in Table 3, the presence of Diesel has been confirmed.

A copy of the laboratory certificate for the water sample analyses is included as Attachment B.

Chemical Concentration Contours.

Figures 4, 5 and 6 show lines of equal concentration for Gasoline, Benzene and Diesel in the shallow groundwater. Since these lines have been drawn based upon relatively limited data (three data points), the plot represents only a small portion of the respective concentration plume. The plot does continue to suggest, however, that the dissolved concentrations are centered somewhere around the rear of the service/office building (vicinity of well MW-3).

Data Analysis

The most recent sampling data continue to suggest the possibility of migration of subsurface contamination from the adjoining Allied Glass property. Its location with respect to the concentration contours is consistent with the measured shallow groundwater flow direction beneath the subject site.

It should be noted that during the groundwater sampling **on February 22, 1993, the removal of two underground storage tanks from the Allied Glass property was observed by Hageman-Aguiar, Inc., field staff**. Follow-up conversation with Scott Seery, Alameda County Health, indicates that **holes in each of the tanks were observed by County personnel during the tank removals**. To date, the tank excavations on the Allied Glass

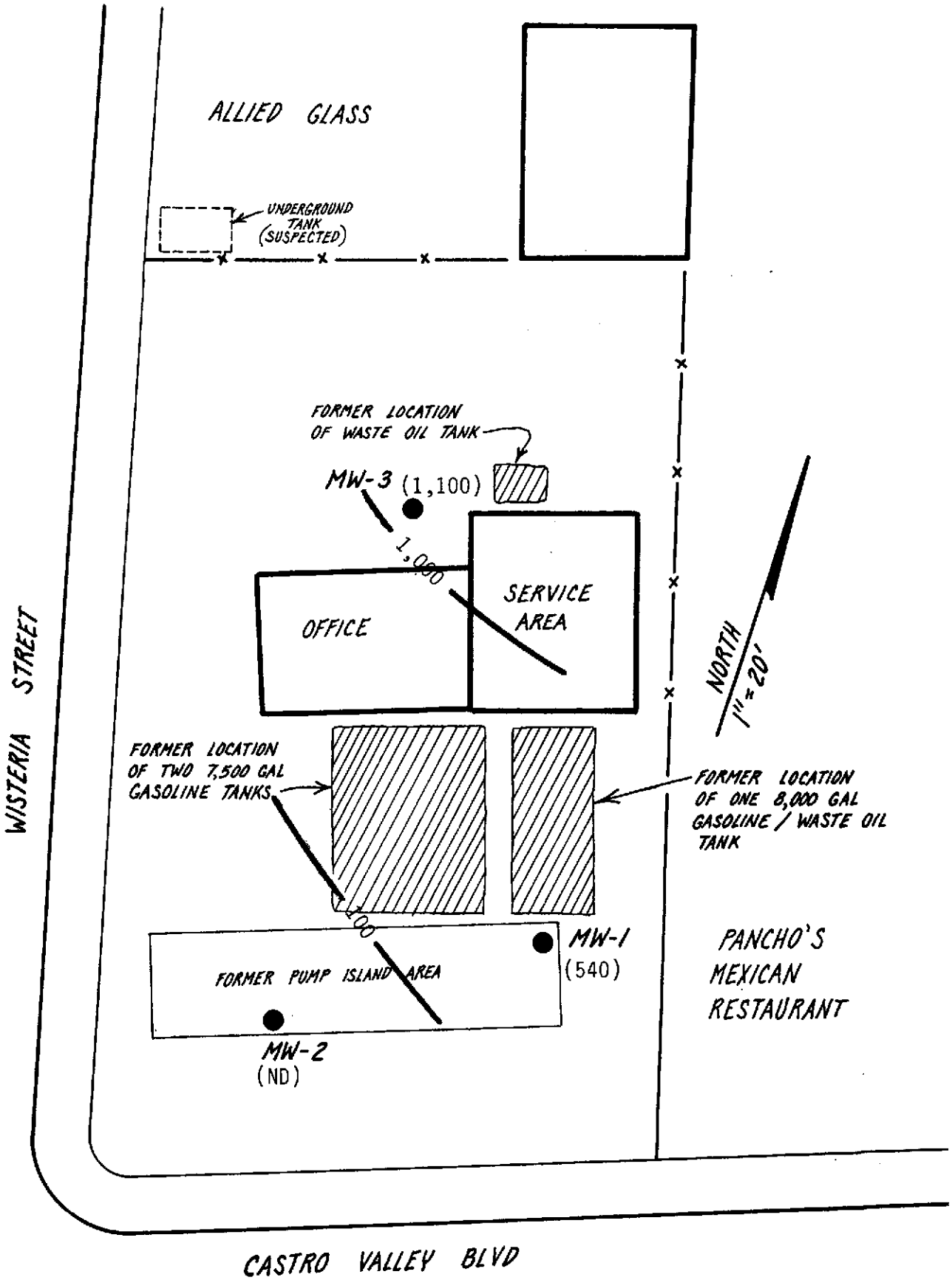


FIGURE 4.
Lines of Equal Concentration of Gasoline in ug/L (ppb) in the Shallow Groundwater.

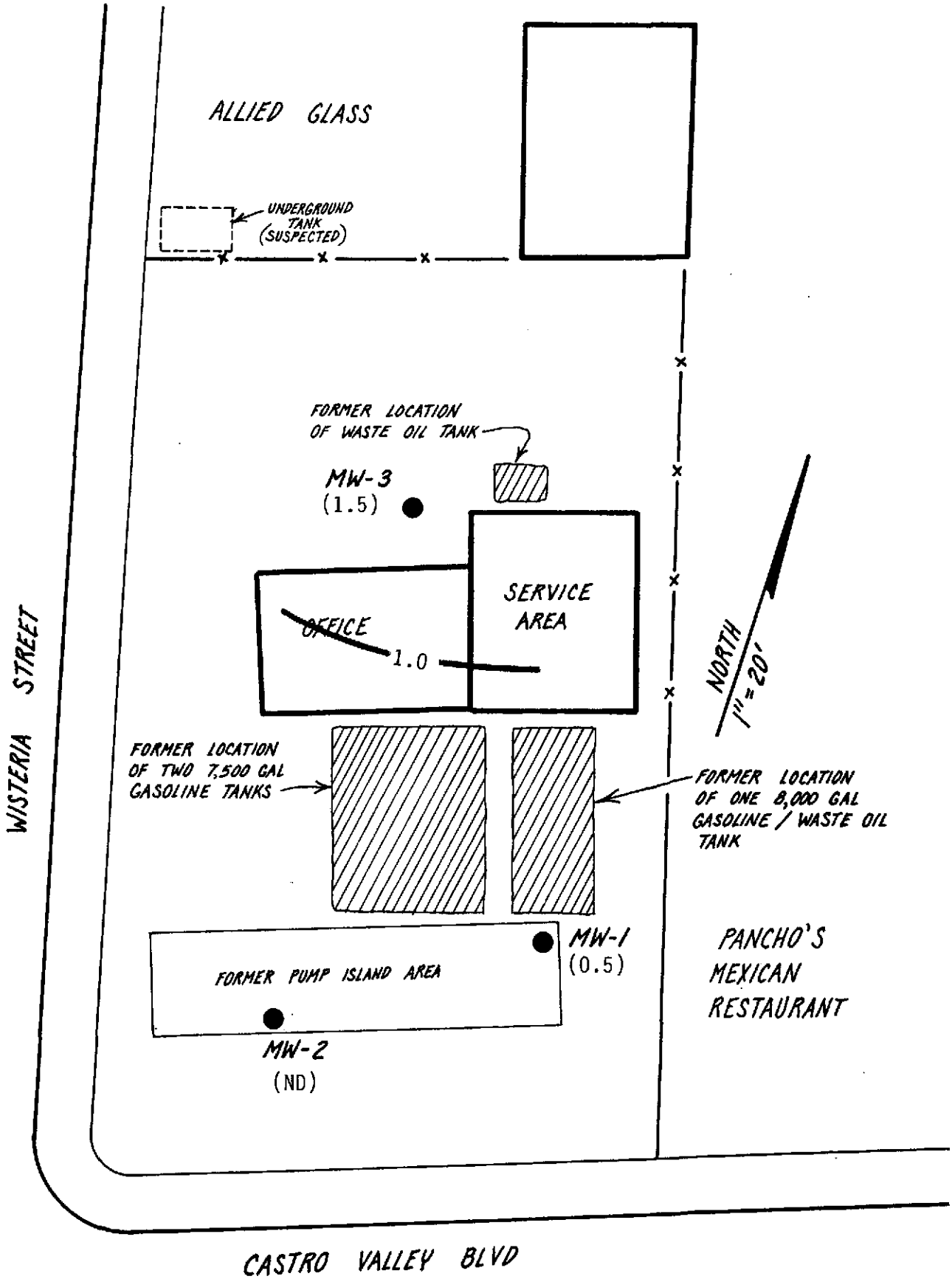


FIGURE 5.
Line of Equal Concentration of Benzene in ug/L (ppb) in the Shallow Groundwater.

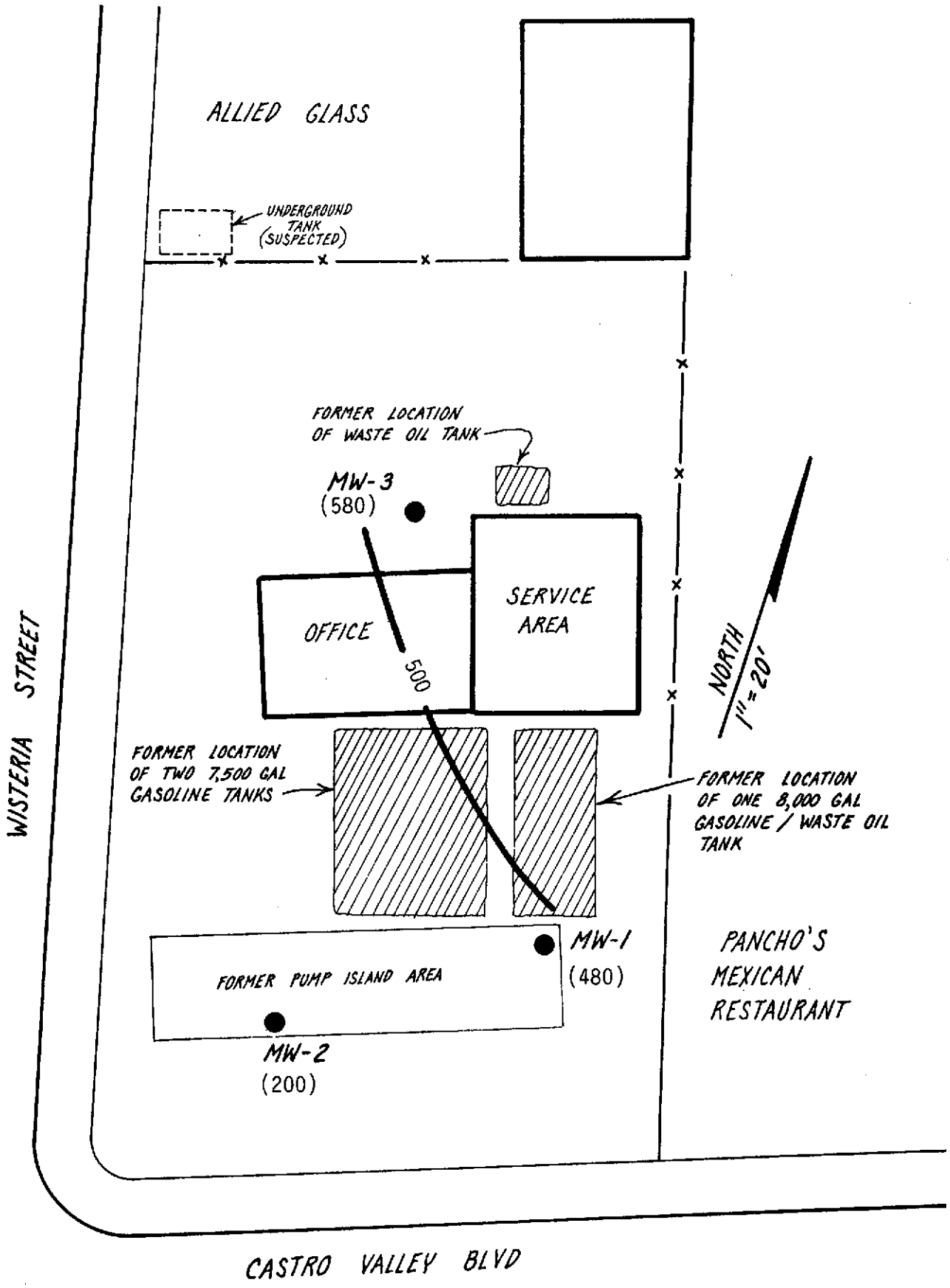


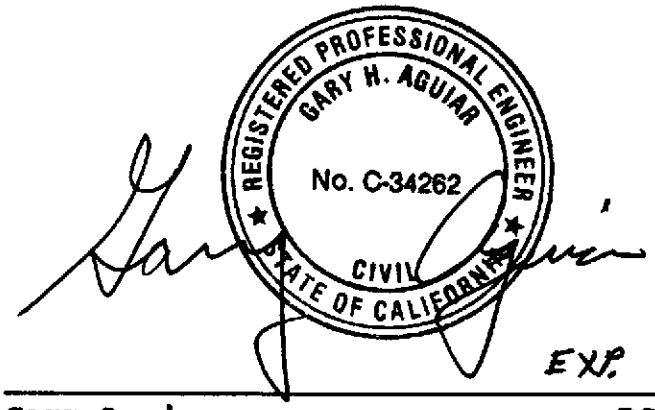
FIGURE 6.
Line of Equal Concentration of Diesel in ug/L (ppb) in the Shallow Groundwater.

property remain open and exposed to infiltration by rain water.

It is extremely important to note that the sudden appearance of Diesel in the shallow groundwater beneath the Quality Tune-Up site coincides with the tank removals on the Allied Glass property and subsequent allowance for the excavations to remain open for more than three months through the rainy season.

QUARTERLY REPORT
QUALITY TUNE-UP
2780 Castro Valley Blvd, Castro Valley, CA.

June 8, 1993



EXP. 9-30-95

Gary Aguiar **RCE 34262**

Rick Milelli **Environmental Engineer**

WELL SAMPLING LOG

Project/No. Quality Tune-Up

Page 1 of 3

Site Location Castro Valley

Date 5/24/93

Well No. MW 1

Time Began 1132

Weather Overcast / 65°F

Completed 1245

EVACUATION DATA

Description of Measuring Point (MP) Well Box At Grade

Total Sounded Depth of Well Below MP 24.81

Diameter of Casing 2"

- Depth to Water Below MP 10.43

= Water Column in Well 14.38

Gallons in Casing 2.3 + Annular Space (30% porosity) (X10) = Total Gallons 23

Gallons Pumped Prior to Sampling 23

Evacuation Method Teflon Bailer

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: None Detected
(thickness to 0.1 inch, if any)

Time	1132	1145	1200	1212
Gals Removed	0	8	16	23
Temperature	20.9	20.3	20.4	19.7
Conductivity	300	400	400	500
pH	7.4	7.3	7.3	7.2
Color / Odor	CLR / LT. HC	LT. GRY / NO	CLR / LT. HC	GRY / HC
Turbidity	Low	MED	Low	High

Comments: None

WELL SAMPLING LOG

Project/No. QUALITY TUNE-UP Page 2 of 3

Site Location CASTRO VALLEY

Date 5/24/93

Well No. MW 2

Time Began 1220
Completed 1315

Weather OVERCAST / 65°F

EVACUATION DATA

Description of Measuring Point (MP) WELL BOX AT GRADE

Total Sounded Depth of Well Below MP 20.90

Diameter of Casing 2"

- Depth to Water Below MP 10.32

= Water Column in Well 10.58

Gallons in Casing 1.7 + Annular Space (30% porosity) (X 10) = Total Gallons 17

Gallons Pumped Prior to Sampling 17

Evacuation Method TEFLON BAILER

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: NONE DETECTED
(thickness to 0.1 inch, if any)

Time	1220	1230	1240	1305
Gals Removed	0	6	11	17
Temperature	20.1	19.8	19.7	19.6
Conductivity	520	560	550	600
pH	7.4	7.3	7.4	7.3
Color / Odor	CLR/NO	LT. GRY/NO	GRY/NO	GRY/NO
Turbidity	LOW	MED	MED	MED

Comments: SLOW RECHARGE

WELL SAMPLING LOG

Project/No. QUALITY TUNE-UP

Page 3 of 3

Site Location CASTRO VALLEY

Date 5/24/93

Well No. MW-3

Time Began 1040
Completed 1235

Weather OVERCAST / 66°F

EVACUATION DATA

Description of Measuring Point (MP) WELL BOX AT GRADE

Total Sounded Depth of Well Below MP 24.76

Diameter of Casing 2"

- Depth to Water Below MP 8.46

= Water Column in Well 16.30

Gallons in Casing 2.6 + Annular Space (30% porosity) (X10) = Total Gallons 26

Gallons Pumped Prior to Sampling 26

Evacuation Method TEFLON BAILER

SAMPLING DATA / FIELD PARAMETERS

Inspection for Free Product: LIGHT SHEEN
(thickness to 0.1 inch, if any)

Time	1040	1055	1120	1216
Gals Removed	0	9	18	26
Temperature	20.4	19.7	19.3	19.1
Conductivity	700	700	650	600
pH	8.1	7.9	7.4	7.2
Color / Odor	CLR/HC	GRY/LT. HC	GRY/HC	GRY/HC
Turbidity	LOW	HIGH	HIGH	HIGH

Comments: SLOW RECHARGE

PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory

June 02, 1993 PEL # 9305063

HAGEMAN - AGUIAR, INC.

Attn: Gary Aguiar
Re: Three water samples for TEPH analysis.

Project name: Quality Tune-Up

Date sampled: May 24, 1993 Date submitted: May 24, 1993
Date extracted: Jun 01-02, 1993 Date analyzed: Jun 01-02, 1993

RESULTS:

SAMPLE I.D.	Kerosene (ug/L)	Diesel (ug/L)	Motor Oil (mg/L)	Stoddard Solvent (ug/L)
MW-1'Dupl'	N.D.	420	N.D.	N.D.
MW-2'Dupl'	N.D.	210	N.D.	N.D.
MW-3'Dupl'	N.D.	540	N.D.	N.D.
Blank	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	82.6%	91.5%	---	90.8%
Duplicate Spiked Recovery	---	96.0%	---	---
Detection limit	50	50	0.5	50
Method of Analysis	3510 / 8015	3510 / 8015	3510/ 8015	3510 / 8015

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

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(408) 946-9636

TEL # 9505063

INV # 23640

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 5/24/93 PAGE: 1 OF: 1

PROJECT MGR.: GARY AGUIAR
COMPANY: HAGEMAN-AGUIAR
ADDRESS: 3733 MT. DIABLO BLVD
LAFAYETTE, CA
PHONE: 510-284-1661 FAX: - -
SIGNATURE: [signature]

ANALYSIS REPORT

SAMPLE ID	DATE	TIME	MATRIX	LAB ID	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 E&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS EPA 418.1	TEPH										NUMBER OF CONTAINERS
MW 1	5-24-93	1245	H_2O			X						X										3
MW 2	5-24-93	1315	H_2O			X						X										3
MW 3	5-24-93	1235	H_2O			X						X										3

PROJECT INFORMATION
PROJECT NAME: QUALITY TUNE UP
PROJECT NUMBER:

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 9
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: NORM TAT

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
SIGNATURE: [signature] Date: 5-24-93	SIGNATURE: [signature] Date: 5/24/93	SIGNATURE: Date:	SIGNATURE: Date:
NAME: JEFF ROTH Time: 1450	NAME: VICTOR DUONG Time: 1450	NAME: Time:	NAME: Time:
COMPANY: HAGEMAN-AGUIAR	COMPANY: PEL	COMPANY:	COMPANY: