

July 20, 1993  
Project C92020

Ms. JoAnn Stewart, General Manager  
Good Chevrolet  
1630 Park Street  
Alameda, California 94501

Subject: July, 1993 Quarterly Ground Water Report for Good Chevrolet,  
1630 Park Street, Alameda, CA.

Dear Ms. Stewart:

As requested and authorized, the attached July, 1993 Quarterly Ground Water Monitoring Report has been prepared to document the monitoring well sampling efforts performed at the subject site. The report presents the recorded ground water elevations along with the ground water sampling protocols and the results of the analytical testing performed on ground water samples collected on July 8, 1993. The report also summarizes the findings recorded throughout the last year of monitoring and presents conclusions and recommendations based on these findings.

In summary, the water samples obtained from Monitoring Wells MW-1, MW-2, and MW-3 contained detectable concentrations of Total Petroleum Hydrocarbons as gasoline ranging from 3,200-6,400 ppb and Volatile Aromatic Compounds (Benzene, Toluene, Ethyl Benzene, and Xylenes); however, these concentrations are significantly reduced from the previous quarterly samples.

Based on the findings of the quarterly monitoring throughout the last year, it is concluded that a shallow (less than 10 feet deep) and localized area "source" of petroleum hydrocarbon exists in the immediate vicinity of the former underground gasoline storage tank and/or dispenser pump and that this "source" is responsible for the continued leaching of hydrocarbon products into the ground water. The actual location and aerial extent of the "source" has not been defined at this time; however, it is speculated that the source is located between Monitoring Wells MW-1 and MW-2 and the existing building or isolated beneath the building (located beneath where the former dispenser pump was located).

Correlation of ground water elevations with detectable concentrations of gasoline constituents, combined with the non-detectable results of the "up-gradient" ground water samples, supports the findings of a shallow and localized "on-site" source. The significant increase in concentrations detected during the previous quarter (following a period of high ground water) combined with the rapid reduction of the constituents detected in the monitoring wells this quarter (and a lowering of the water table) supports the speculation that the "source" is shallow (7-10 foot depth).

Based on the findings of the quarterly monitoring events, it is recommended that an additional site characterization investigation be performed to determine the source of the gasoline compounds. The proposed scope of work includes advancing 5-8 shallow soil borings around, and within, the area of the former underground gasoline storage tank and dispenser pump to determine the location of the remaining source of hydrocarbon products. Effective elimination and/or remediation of the remaining source of the hydrocarbon products and elimination of continued discharge to the ground water is recommended in-lieu of initiating long-term soil and ground water treatment systems.

The area of impacted water, although not completely defined at this time, appears to be limited in extent and it is our opinion that the ground water quality would improve upon removal/remediation of the remaining source material. It is further recommended that the additional ground water monitoring well requested by the Alameda County Department of Environmental Health be deferred until further site characterization/source reduction is performed.

It has been a pleasure to be of service to you on this project. The next quarterly sampling event is scheduled to be performed in September, 1993. Questions or comments regarding the attached report should be addressed to the undersigned.


Copies of this report should be forwarded to:

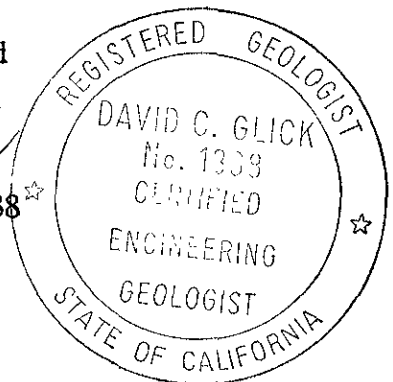
Ms. Juliet Shin  
Alameda County Health Care Services  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, CA 94621

Mr. Richard Hiatt  
Regional Water Quality Control Board  
San Francisco Bay Region  
2101 Webster Street, Room 500  
Oakland, CA 94612

Respectfully submitted,

Geo Plexus, Incorporated

  
David C. Glick, CEG 1338  
Director, Geological and  
Environmental Services



JULY, 1993 QUARTERLY  
GROUND WATER MONITORING REPORT  
for  
GOOD CHEVROLET  
1630 PARK STREET  
ALAMEDA, CALIFORNIA

July 20, 1993

Project C92020

JULY, 1993 QUARTERLY  
GROUND WATER MONITORING REPORT  
for  
GOOD CHEVROLET  
1630 PARK STREET  
ALAMEDA, CALIFORNIA

INTRODUCTION

The project site is located at 1630 Park Street in the City of Alameda, in Alameda County, California as indicated on Figure 1. The site is the location of an automobile dealership and service center.

A 300 gallon waste oil storage tank and a 500 gallon underground gasoline storage tank were reportedly removed from the property by Petroleum Engineering, Inc. in October, 1986. A subsurface investigation including installation of three ground water monitoring wells (see Figure 2) was performed by Groundwater Technology, Inc. in January, 1987 (Groundwater Technology, Inc. Report Dated April 29, 1987).

The ground water monitoring wells were reportedly sampled by Groundwater Technology, Inc. in January, 1989 (Groundwater Technology, Inc. letter report dated March 29, 1989) and again in July, 1989 (Groundwater Technology, Inc. letter report dated August 22, 1989). The wells were also reportedly sampled by Environmental Science Engineering, Inc. in April, 1991 (Environmental Science Engineering, Inc. report dated May 8, 1991).

Quarterly ground water monitoring was initiated by Geo Plexus in July, 1992. This report presents the ground water elevations recorded along with the ground water sampling protocol and the results of the analytical testing performed on ground water samples collected on July 8, 1993. The report also provides a summary of the last year of monitoring.

GRADIENT SURVEY

The elevation of the top of the casing of the monitoring wells at the site were established during previous investigations (Environmental Science & Engineering, Inc.) with reported vertical control of 0.01 foot.

Ground water elevations were measured in each well to the nearest 0.01 foot with an electronic water level meter on a monthly basis to monitor the variations in the direction and gradient of ground water flow beneath the site. Prior to purging the monitoring wells for sampling, the depth to ground water in each well was measured to the nearest 0.01 foot with an electronic water level meter.

Ground water elevations recorded suggest that the ground water flow is to the northeast as indicated on Figure 2. The flow gradient was determined to be 0.187 ft/ft (also see Figure 2). The direction of ground water flow places Monitoring Well MW-2 in the "down-gradient" direction from the former tanks.

### MONITORING WELL SAMPLING

Free product measurements were obtained for each monitoring well at the time of sample acquisition utilizing a teflon bailer lowered into the well to obtain a water sample. The bailer was used to collect a water sample to observe the presence of hydrocarbon odors, visible sheen, or free product. Free product or visible sheens were not observed in the initial bailer water samples or following purging of the wells; however, the water samples obtained from the three wells exhibited gasoline odors.

Prior to sampling the monitoring wells, four to six well volumes were purged from each well through the use of a teflon bailer. Electrical conductivity, temperature, and pH of the ground water were recorded throughout the purging process. The purging activities continued until the electrical conductivity, temperature, and pH of the discharged water stabilized and the water appeared free of suspended solids.

Water samples for analytical testing were obtained through the use of a teflon bailer and were collected in sterilized glass vials with Teflon lined screw caps. The samples were immediately sealed in the vials and properly labeled including: the date, time, sample location, project number, and indication of any preservatives (HCl) added to the sample. A travel blank (identified as MW-A) was obtained from the analytical testing laboratory, transported to the field with the sample vials, and was submitted along with other samples for analysis. The samples were placed on ice immediately for transport to the laboratory under chain-of-custody documentation.

The water obtained from the monitoring wells during the purging and sampling activities was contained on-site pending receipt of the laboratory test results.

### ANALYTICAL TESTING

The ground water samples were submitted to and tested by McCampbell Analytical, Inc., a State of California certified laboratory. Analytical testing was scheduled and performed in accordance with the State of California, Regional Water Quality Control Board and Alameda County Department of Environmental Health Guidelines.

The samples were tested for Total Petroleum Hydrocarbons as gasoline by Method GCFID 5030/8015 and Volatile Aromatics by EPA Method 8020/5030. The travel blank was submitted for analysis for Volatile Aromatics by EPA Method 8020. The analytical test data, along with the Chain-of-Custody Form are presented in Appendix A.

### SUMMARY OF FINDINGS

Ground water elevations recorded during the sampling suggest that ground water is at a depth of 8-9 feet below the ground surface and flows in a northeast direction at a gradient of 0.187 ft/ft. This flow direction is consistent with the variable northwest to northeast directions recorded for the site throughout the last year. The flow directions establishes that Monitoring Well MW-2 is located in the "down-gradient" direction from the location of the former underground storage tanks.

The analytical test results for the ground water samples obtained for this sampling event detected reportable quantities of Total Petroleum Hydrocarbons as gasoline and Volatile Aromatics (BTXE) for the samples from Monitoring Wells MW-1, MW-2, and MW-3. Total Petroleum Hydrocarbons as gasoline concentrations ranged from 3,200 to 6,400 parts per billion (ppb), significantly lower than the concentrations detected during the previous monitoring event. Benzene concentrations ranged from 1,200 to 2,500 ppb. Table 1 summarizes the current analytical test results along with the results of the previous analytical testing.

Based on the findings of the quarterly monitoring throughout the last year, it is concluded that a shallow (less than 10 feet deep) and localized area "source" of petroleum hydrocarbon exists in the immediate vicinity of the former underground gasoline storage tanks and/or dispenser pump and that this "source" is responsible for the continued leaching of hydrocarbon products into the ground water. The actual location and extent of the "source" has not been defined at this time; however, it is speculated that the source is located between Monitoring Wells MW-1 and MW-2 and the existing building or is isolated beneath the building (located beneath where the former dispenser pump was located).

Correlation of ground water elevations with detectable concentrations of Total Petroleum Hydrocarbons as gasoline (see Figure 3), combined with the non-detectable results of the "up-gradient" ground water samples, supports the findings of a shallow and localized "on-site" source. The significant increase in concentrations detected during the previous quarter (following a period of high ground water) combined with the rapid reduction of the constituents this quarter (and a lowering of the water table) supports the speculation that the "source" is shallow (7-10 foot depth).

TABLE 1

SUMMARY OF GROUND WATER ANALYTICAL TEST DATA

<u>Date Sampled</u>	<u>Total Petroleum Hydrocarbons</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-Benzene</u>	<u>Total Xylenes</u>
<u>Monitoring Well MW-1</u>					
1-21-87 (1)	21,020	1,148	8,627	1,792	6,012
1-11-89 (1)	1,400	74	10	13	5
7-12-89 (1)	1,200	470	49	45	33
4-09-91 (2)	850	260	10	15	12
7-14-92 (3)	13,000	2,300	1,200	1,200	1,200
10-7-92 (3)	3,600	1,600	80	120	120
1-11-93 (3)	1,200	410	16	23	19
4-23-93 (3)	2,200	720	180	82	150
7-08-93 (3)	3,200	1,200	110	97	100
<u>Monitoring Well MW-2</u>					
1-21-87 (1)	5,018	386	1,981	285	1,432
1-11-89 (1)	10,000	3,000	410	240	190
7-12-89 (1)	7,600	2,700	540	250	320
4-09-91 (2)	4,900	910	210	130	200
7-14-92 (3)	13,000	4,400	1,500	610	1,100
10-7-92 (3)	11,000	5,200	1,500	500	1,200
1-11-93 (3)	17,000	940	1,100	480	930
4-23-93 (3)	52,000	13,000	8,400	1,700	5,300
7-08-93 (3)	6,400	2,500	470	280	530
<u>Monitoring Well MW-3</u>					
1-21-87 (1)	10,287	1,428	3,281	610	2,761
1-11-89 (1)	5,300	1,800	340	150	160
7-12-89 (1)	7,800	3,100	900	300	480
4-09-91 (2)	9,400	1,400	730	200	510
7-14-92 (3)	17,000	3,500	390	390	260
10-7-92 (3)	9,200	4,300	470	390	610
1-11-93 (3)	2,000	740	29	58	28
4-23-93 (3)	6,500	2,600	280	260	190
7-08-93 (3)	5,200	2,100	260	250	180

Note: (1) Concentrations reported by Groundwater Technology, Inc.  
 (2) Concentrations reported by Environmental Science & Engineering, Inc.  
 (3) Samples obtained and reported by Geo Plexus, Inc.

### RECOMMENDATIONS

It is recommended that the existing ground water monitoring wells located at the project site continue to be monitored and sampled quarterly in accordance with the established/approved quarterly monitoring program. The next sampling event is scheduled for September, 1993.

Based on the findings of the quarterly monitoring events, it is recommended that an additional site characterization investigation be performed to determine the source of the gasoline compounds. The proposed scope of work includes advancing 5-8 shallow soil borings around, and within, the area of the former underground gasoline storage tank and dispenser pump to determine the location of the remaining source of hydrocarbon products.

↗  
why?  
The area of impacted water, although not completely defined at this time, appears to be limited in extent and based on the significant reduction observed with a decrease in water level, it is our opinion that the ground water quality at the site would improve rapidly upon removal/remediation of the remaining source material. Based on the rapid dissipation of the high concentrations detected in Monitoring Well MW-2 in April, 1993 and the fact that the increase in concentrations in Monitoring Well MW-2 did not significantly influence the concentrations in Monitoring Wells MW-1 and MW-3, the area of impact by the hydrocarbon products appears to be very localized (subject property and immediate area of the adjacent property). Effective elimination and/or remediation of the remaining source of the hydrocarbon products and elimination of continued discharge to the ground water is recommended in-lieu of initiating long-term soil and ground water treatment systems and is considered to have an immediate benefit on the local water quality. As such, implementation of a ground water extraction treatment system and or installation of additional ground water monitoring wells are not recommended at this time.

← still need to determine how far it has migrated.



### LIMITATIONS

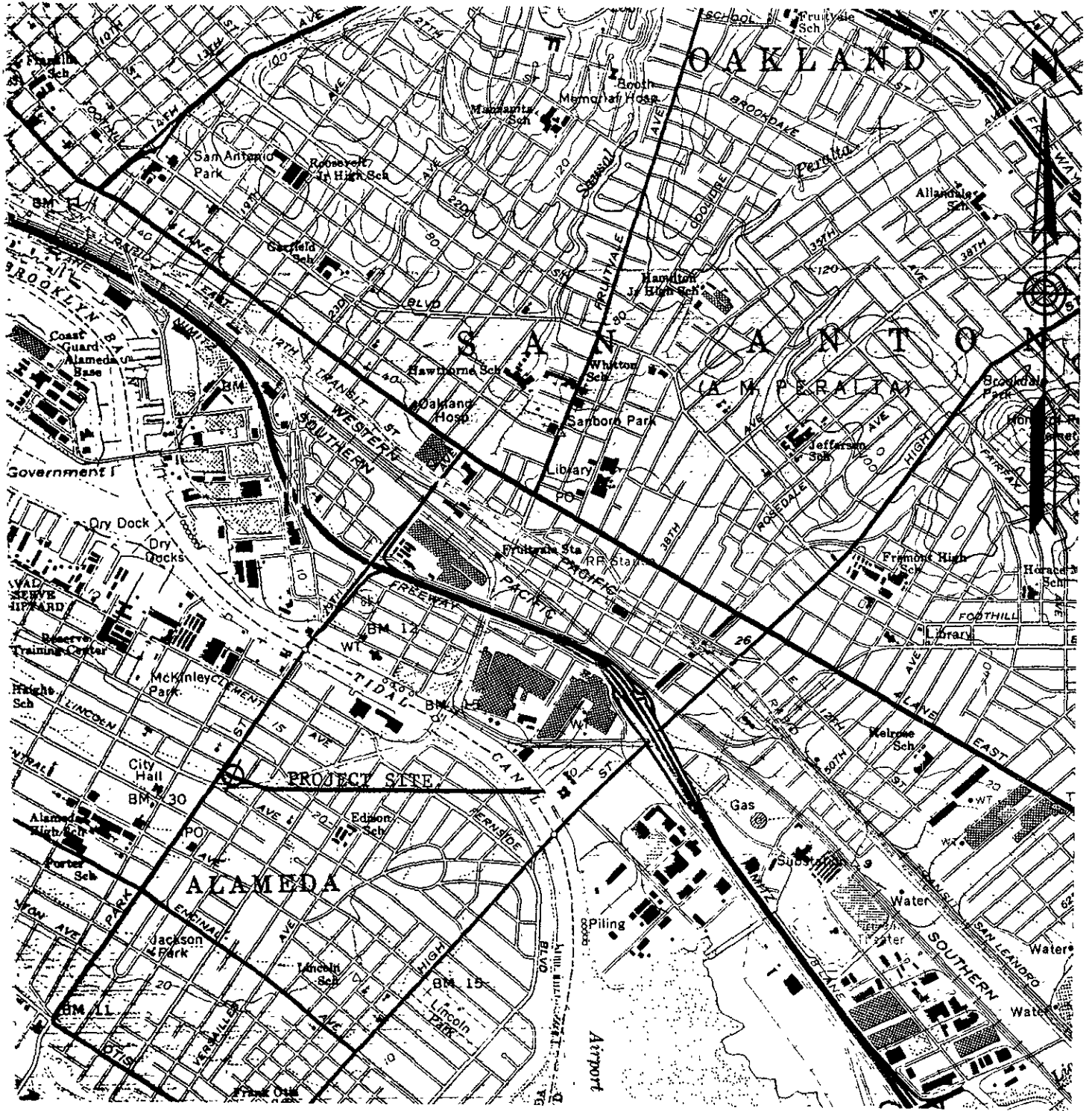
We have only observed a small portion of the pertinent subsurface and ground water conditions present at the site. The conclusions and recommendations made herein are based on the assumption that subsurface and ground water conditions do not deviate appreciably from those described in the reports and observed during the field investigation.

Geo Plexus, Incorporated provides consulting services in the fields of Geology and Engineering Geology performed in accordance with presently accepted professional practices. Professional judgments presented herein are based partly on information obtained from review of published documents, partly on evaluations of the technical information gathered, and partly on general experience in the fields of geology and engineering geology.

No attempt was made to verify the accuracy of the published information prepared by others used in preparation of this assessment report.

If you have questions regarding the findings, conclusions, or recommendations contained in this report, please contact us. We appreciate the opportunity to serve you.

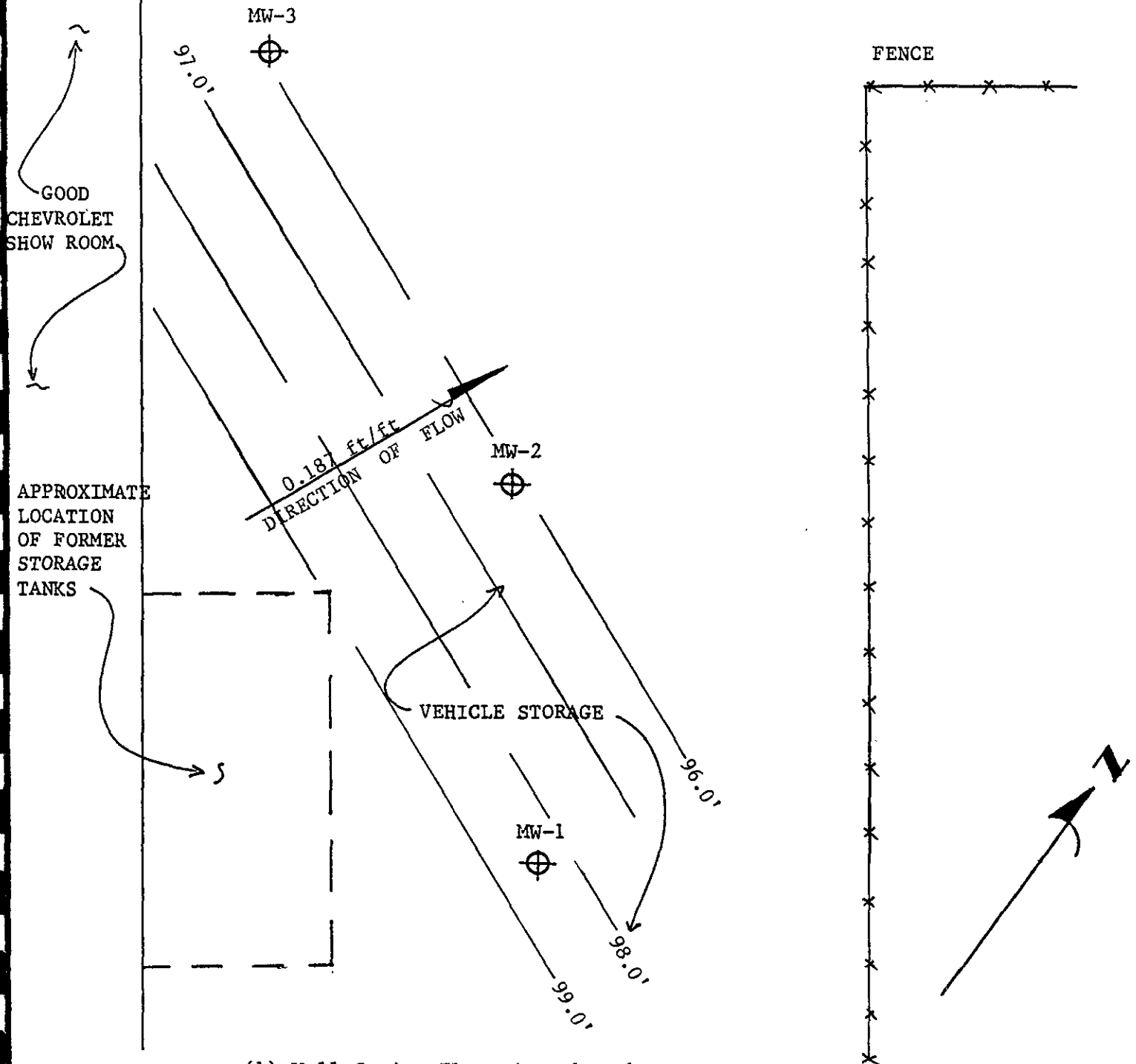
Geo Plexus, Incorporated



GOOD CHEVROLET		
DATE	SCALE	DRAWN BY
10-9-92	1"=2000'	deg
LOCATION MAP		
Figure 1		

PARK STREET

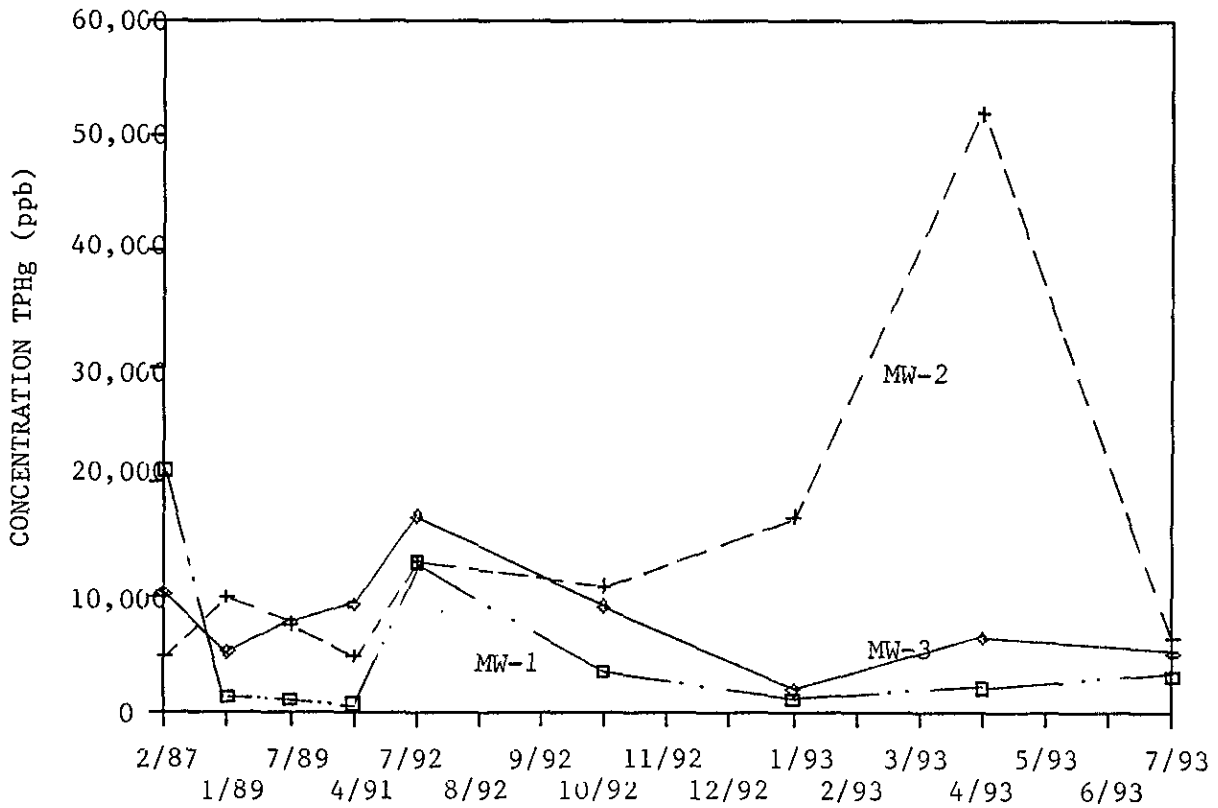
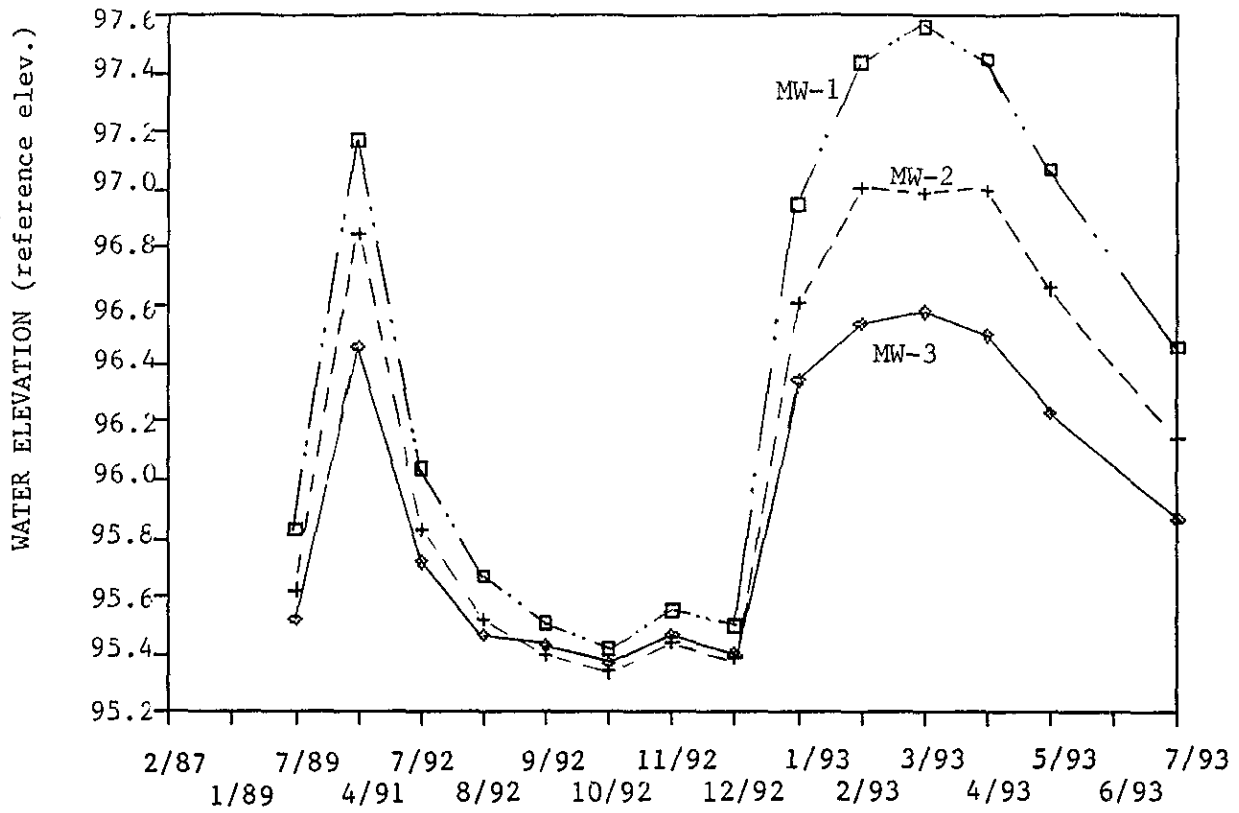
SIDEWALK



(1) Well Casing Elevations based on Environmental Science & Engineering, Inc. Report dated 5/8/91 (referenced to temporary bench mark)

	Casing Elev.	Depth to water.	Water Elev.
MW-1	104.76'	-8.30	98.46'
MW-2	104.86'	-8.72	96.14'
MW-3	104.52'	-8.65	95.87'

GOOD CHEVROLET		
DATE 7-8-93	SCALE 1" = 10'	DRAWN BY twf
GRADIENT PLAN		
		Figure 2



GOOD CHEVROLET		
DATE 7-20-93	SCALE n/a	DRAWN BY dcg
WATER LEVEL/CONCENTRATION DATA		
		Figure 3

Quarterly Ground Water Sampling Report  
Good Chevrolet  
Alameda, California

July 20, 1993

APPENDIX A  
CHAIN-OF-CUSTODY FORM  
AND  
ANALYTICAL TEST DATA

**Geo Plexus, Incorporated**

1900 Wyatt Drive, Suite 1, Santa Clara, California 95054 Phone 408/987-0210 Fax 408/988-0815

PROJECT NUMBER C92020		PROJECT NAME GOOD CHEVROLET				Type of Analysis						Condition of Samples	Initial	
Send Report Attention of: DAVID GLICK			Report Due 1 1		Verbal Due 1 1		Number of Cntrrs 2CA	Type of Containers ACIDIFIED 40 ml vva	TPHG	TPHD	BTEX			Oil & Grease
Sample Number	Date	Time	Comp	Grab	Station Location									
MWA-WS1A/B	7/8/93	1100		1	MON WELL A			✓		✓			Good	JK
MW3-WS1A/B		1240		1	MON WELL 3			✓		✓			↓	↓
MW1-WS1A/B		1315		1	MON WELL 1			✓		✓				
MW2-WS1A/B		1340		1	MON WELL 2			✓		✓				
ICE/T° ✓ GOOD CONDITION ✓ READ SPACE APPROP		PRESERVATIVE ✓ APPROPRIATE ✓ CONTAINERS ✓										31260		
												31261		
												31262		
												31263		
Relinquished by: (Signature) [Signature]	Date/Time 7/9/93 15:05	Received by: (Signature) [Signature]			Date/Time 7/9/93 15:05	Remarks: Purchase Order No.: 93-3039  STANDARD TURNAROUND								
Relinquished by: (Signature) [Signature]	Date/Time 7/9/93 15:05	Received by: (Signature) [Signature]			Date/Time 7-9-93 15:05									
Relinquished by: (Signature) [Signature]	Date/Time 7/9/93 15:05	Received by: (Signature) [Signature]			Date/Time 7-9-93 15:05	COMPANY: Geo Plexus, Inc. ADDRESS: 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054 PHONE : (408)987-0210 FAX : (408)988-0815								

TOTAL P.03

GEO Plexus, Inc. 1900 Wyatt Drive, # 1 Santa Clara, CA 95054	Client Project ID: # C92020; Good	Date Sampled: 07/08/93
	Chevrolet	Date Received: 07/10/93
	Client Contact: David Glick	Date Extracted: 07/14-07/17/93
	Client P.O.: 93-3039	Date Analyzed: 07/14-07/17/93

**Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline\*, with BTEX\***

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g) <sup>+</sup>	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
31260	MWA- WS1 A	W	ND	ND	ND	ND	ND	120 <sup>#</sup>
31261	MW3- WS1 A	W	5200,a	2100	260	250	180	100
31262	MW1- WS1 A	W	3200,a	1200	110	97	100	100
31263	MW2- WS1 A	W	6400,a	2500	470	280	530	96
Detection Limit unless otherwise stated; ND means Not Detected	W	50 ug/L	0.5	0.5	0.5	0.5		
	S	1.0 mg/kg	0.005	0.005	0.005	0.005		

\*water samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

# cluttered chromatogram; sample peak co-elutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds are significant; no recognizable pattern; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible phase is present.