Geo Plexus, Inc.

Health & Safety Training • Geo/Environmental Personnel • Engineering Geology Consultants • Environmental Management Consultants

93 NOV -5 PM 12: 38

October 28, 1993

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

Subject: Supplemental Site Characterization
Good Chevrolet, 1630 Park Street, Alameda, CA.

Dear Ms. Stewart:

As requested and authorized, the attached Supplemental Site Characterization Investigation Report has been prepared to document the field investigation efforts performed at the subject site. The report presents the findings of the investigation and the results of the analytical testing performed on the soil and ground water samples obtained during the investigation along with conclusions and recommendations based on these findings.

In summary, the findings of the investigation indicate that gasoline contaminated soil remains in-place at the project site and is confined to depths ranging from 8 - 13 feet below the ground surface. The investigation also suggest that these hydrocarbon products have been, and continue to be, transmitted across the property as a result of ground water migration through a sand unit located at a depth of 8 to 12 feet below the ground surface. Noting the aerial extent of the soil contamination, and particularly since the contamination appears to extends off-site, excavation of the contaminated soil does not appear to be a practical or cost effective means of remediation.

Copies of this Report should be forwarded to:

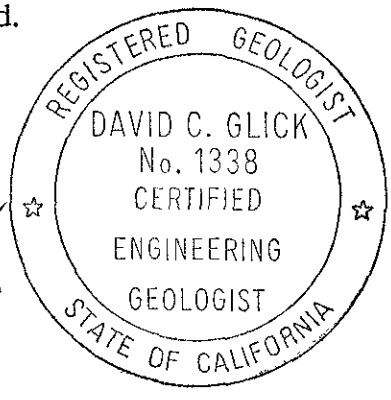
Ms. Juliet Shin
Alameda County Health Care Services
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

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

It has been a pleasure to be of service to you on this project. Questions or comments regarding the attached report should be addressed to the undersigned.

Respectfully submitted,
Geo Plexus, Incorporated

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



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

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SUPPLEMENTAL SITE CHARACTERIZATION INVESTIGATION

for

GOOD CHEVROLET

1630 PARK STREET

ALAMEDA, CALIFORNIA

Project C93013

October 28, 1993

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

SUPPLEMENTAL SITE CHARACTERIZATION INVESTIGATION
for
GOOD CHEVROLET
1630 PARK STREET
ALAMEDA, CALIFORNIA

INTRODUCTION

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

BACKGROUND

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). Soil samples obtained from the soil borings contained low to moderate concentrations of Total Petroleum Hydrocarbons as gasoline and Volatile Aromatic Compounds (Benzene, Toluene, Ethyl Benzene, and Xylene).

The three existing ground water monitoring wells located at the project site have been monitored on a quarterly basis from to evaluate the ground water conditions and to establish the directions of ground water flow at the project site. The quarterly monitoring has determined that direction of flow beneath the site has varied from a northwesterly direction to a northeasterly direction as indicated on Figure 3. The quarterly sampling has also detected Total Petroleum Hydrocarbons as gasoline and Volatile Aromatic Compounds at various concentrations in the ground water samples obtained from the three wells at the project site. Table 1 presents a summary of the analytical test data to date.

The ground water test data indicates that there was an increase in the concentrations in the gasoline constituents detected in Monitoring Wells MW-1, MW-2, and MW-3 between January and March, 1993. This increase in concentrations also correlated with an increase in ground water elevations at the project site which suggested that the source of the contaminants was shallow and subject to ground water fluctuations.

The Alameda County Department of Environmental Health requested that Good Chevrolet initiate a ground water migration containment/ground water remediation program to abate the hydrocarbon products detected in the ground water at the project site and to perform additional investigations as required to determine the extent of the ground water impact (both on-site and off-site).

TABLE 1

SUMMARY OF GROUND WATER ANALYTICAL TEST DATA

(Concentrations reported as Parts Per Billion)

Date Sampled	Total Petroleum Hydrocarbons	Benzene	Toluene	Ethyl-Benzene	Total Xylenes
Monitoring Well MW-1					
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
10-15-93 (3)	3,700	1,400	43	94	36
Monitoring Well MW-2					
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
10-15-93 (3)	17,000	3,900	870	500	940
Monitoring Well MW-3					
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
10-15-93 (3)	11,000	3,500	580	430	370

Notes:

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

To evaluate the consideration that the hydrocarbon products detected in the monitoring wells at the project site could be the result of migration of contaminated ground water originating "up-gradient" of the project site, two subsurface exploratory/hydropunch borings were advanced at locations "up-gradient" from the former underground gasoline storage tanks. Ground water "grab" samples were obtained from these borings for analytical testing to establish the "background" water quality. The analytical testing did not detect reportable quantities of Total Petroleum Hydrocarbons as gasoline or Volatile Aromatic Compounds (BTXE) in the ground water samples obtained from these up-gradient borings.

The intent of the current investigation was to determine the location and extent of the source of the hydrocarbon contaminated soils and to evaluate the potential for "source removal" as an effective remediation process in lieu of long term treatment technologies.

SCOPE OF WORK

The scope of work for this investigative effort included advancing seven (7) subsurface exploratory borings at locations which were immediately "up-gradient" and "down-gradient" from the former underground gasoline storage tanks. Grab ground water samples were also obtained from an "up-gradient" and "down-gradient" borings for analytical testing.

Subsurface Investigation

Seven subsurface exploration borings were advanced in the immediate vicinity of the former underground storage tanks at the locations indicated on Figure 4. The borings were drilled by Precision Drilling, a State of California Licensed Drilling Contractor, and were logged under the supervision of a State of California Certified Engineering Geologist.

The soil borings were advanced to a depth of 9-13 feet below ground surface using a portable pneumatic drive assembly which advances a double casing system with a split barrel sampler (standard penetration sampler) as the inside casing. The casings are driven into the soil in three-foot intervals. The inner casing (standard penetration sampler) is removed following each drive and replaced with a new sampler prior to advancing the boring. This drilling method achieves a "continuous core" sample of the soil materials which allows discrete sampling of any sample interval and is not restricted to the typical 5-foot sample intervals.

Soil samples were retained in pre-cleaned stainless steel liners. The individual liners were observed upon removal from the sampler and screened in the field with a photo-ionization detector for evidence of volatile hydrocarbon compounds and sample liners which were identified as representative of the subsurface conditions were retained for analytical testing. The samples were immediately sealed in the tubes and properly labeled including: the date, time, sample location, and project number. The samples were placed immediately into a chilled cooler and maintained at 4^{o} C for transport to the laboratory under chain-of-custody documentation.

The drilling and sampling equipment used was thoroughly steam cleaned before drilling began to prevent the introduction of off-site contamination and steam cleaned again between the borings to prevent cross contamination.

The borings were backfilled to the ground surface with a cement/bentonite slurry upon completion of the investigation.

Subsurface Soil Profile

The soil borings revealed near uniform subsurface soil conditions consisting of 2-3 feet of intermixed medium brown and dark-gray, loose, medium- to coarse-grained sand (interpreted to be fill soils). The fill soils were underlain by natural sediments composed of orange-brown to yellow-brown, loose to dense, fine- to medium-grained sand (Merritt Sand Formation) interbedded with coarse-grained sand lenses to a depth of 13 feet (limit of soil borings).

No gasoline vapors were detected within the first 8 feet of the borings; however, moderate to strong gasoline vapors were encountered at depths ranging from 8.5 - 12 feet below the ground surface. The gas vapors appeared to be confined to a medium- to coarse-grained sand lens.

Ground water was encountered in the exploration borings at a depths ranging from 11-13 feet below the ground surface at the time of drilling.

Grab Water Samples

Ground water samples were obtained from Boring EB-3 (up-gradient boring) and Boring EB-5 (down-gradient boring) by installing a pre-cleaned 1-inch diameter slotted PVC well casing into the boring and removing the outer drill casing. Ground water was purged from each boring by lowering a stainless steel bailer through the well casing and removing approximately 5 well volumes.

Following purging of the well casing, the water retained in the bailer was decanted into 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 added to the sample. The samples were placed immediately into a chilled cooler and maintained at 4^{o} C for transport to the laboratory under chain-of-custody documentation.

The PVC well casing was removed from the borings and all of the borings were backfilled to the ground surface with a cement/bentonite slurry upon completion of the investigation.

ANALYTICAL TESTING

The soil and ground water grab 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 Aromatic Compounds by EPA Method 8020/5030. The Chain-of-Custody Form and analytical test data are attached in Appendix A.

SUMMARY OF FINDINGS

The data obtained by the previous up-gradient hydropunch borings indicate that the background water quality is below the detectable threshold limits for Total Petroleum Hydrocarbons as gasoline and Volatile Aromatic Compounds. This information does not support evidence of a significant "off-site" and "up-gradient" source for the hydrocarbon compounds detected in the ground water at the project site.

The monitoring wells located adjacent to the former underground storage tanks continue to exhibit low to moderate concentrations of Total Petroleum Hydrocarbons as gasoline and Volatile Aromatic Compounds (Benzene, Toluene, Ethyl Benzene, and Xylene) suggesting that the source of these compounds is related to the former underground storage tanks.

No gasoline vapors were detected within the first 8 feet of the borings advanced across the project area; however, moderate to strong gasoline vapors were encountered in the soil borings at depths ranging from 8.5 - 12 feet below the ground surface and appeared to be confined to a medium- to coarse-grained sand lens. The analytical test data indicates that low to moderate concentrations of Total Petroleum Hydrocarbons as gasoline and Volatile Aromatic Compounds exist in the soil samples obtained from the borings as summarized on Table 2 below:

TABLE 2

SUMMARY OF SOIL BORING ANALYTICAL TEST DATA

Sample	Total Petroleum Hydrocarbons	Benzene	Toluene	Ethyl-Benzene	Total Xylenes
EB1-S2, 8.5-9'	510	0.89	10	5.8	41
EB1-S3, 11-11.5'	2,300	22	190	57	280
EB2-S2, 10-10.5'	15,000	84	710	260	1400
EB2-S3, 11.5-12'	200	4.3	15	3.9	20
EB3-S2, 10-10.5'	2,200	9.4	71	42	200
EB3-S3, 12.5-13'	610	1.2	3.2	4.5	2.9
EB4-S2, 8-8.5'	4,900	32	230	84	440
EB4-S3, 10.5-11'	7,600	60	390	130	630
EB5-S2, 9-9.5'	1,800	N.D.	22	27	140
EB5-S3, 11.5-12'	14	0.021	1.5	0.49	2.5
EB6-S2, 8.5-9'	6,800	20	230	100	590
EB7-S2, 6.5-7'	N.D.	N.D.	N.D.	N.D.	N.D.
EB7-S3, 8.5-9'	1,000	3.8	45	21	110

Notes: Concentrations reported as Parts Per Million (mg/kg).
N.D. indicates that concentrations below detection limit.

The highest concentrations of gasoline were obtained at a depth of 10-10.5 feet in Boring EB-2 located between the former tank and the former dispenser pump (see Figure 4). The remaining samples indicate that the soil contamination extends in a radial pattern (cross- and down-gradient) from the former tank area with concentrations of 1,000 parts per million in the soil in Boring EB-5 (located adjacent to the down-gradient property boundary). The large extent of the contamination appears to be a direct result of dispersion of the gasoline products with fluctuations in ground water levels of the project area. The analytical test data suggests that the soil contamination extends off-site to the adjacent property (Winner Ford) and beneath Park Street.

The "grab" water samples collected from Borings EB-3 and EB-5 both contained high concentrations of Total Petroleum Hydrocarbons as gasoline and Volatile Aromatic Compounds (Benzene, Toluene, Ethyl Benzene, and Xylene). Table 3 summarizes the results of the analytical test data for the water samples along with the results from the three on-site monitoring wells:

TABLE 3

SUMMARY OF GROUND WATER SAMPLE ANALYTICAL TEST DATA

Sample	Total Petroleum Hydrocarbons	Benzene	Toluene	Ethyl-Benzene	Total Xylenes
Soil Borings					
EB3-WS1	120,000	9,600	20,000	3,400	14,000
EB5-WS1	83,000	3,900	15,000	3,100	13,000
Monitoring Wells					
MW-1	3,700	1,400	43	94	36
MW-2	17,000	3,900	870	500	940
MW-3	11,000	3,500	580	430	370

Note: Concentrations in Parts per Billion (ug/l).

The analytical test data indicates high concentrations of Petroleum Compounds in the ground water in the water sample located between the former tank and dispensing pump (sample EB3-WS1). High concentrations of Petroleum Compounds were also detected in sample EB5-WS1 obtained from the down-gradient soil boring. The concentrations detected are higher than the concentrations detected in the on-site monitoring wells, in-part by the method of sampling which results in high suspended particles in the water samples. The analytical test data suggests that the ground water contamination also extends off-site to the adjacent property (Winner Ford) and beneath Park Street.

The investigations performed at the project site to-date suggest that the source of the hydrocarbon compounds detected in the ground water have originated, at least in-part, from the former underground gasoline storage tank, from the former dispenser pump, from leaks in the former piping systems, or by combinations of these.

The findings of the investigation indicate that gasoline contaminated soil remains in-place at the project site and is confined to depths ranging from 8 - 13 feet below the ground surface. The investigation also suggest that these hydrocarbon products have been, and continue to be, transmitted across the property as a result of ground water migration through a porous, medium- to coarse-grained sand unit located at a depth of 8 to 12 feet below the ground surface. Noting the aerial extent of the soil contamination, and particularly since the contamination appears to extends off-site, excavation of the contaminated soil does not appear to be a practical or cost effective means of remediation.

Furthermore, since the fluctuations in ground water elevations have resulted in isolation of fuel contaminated soil above the current water level (soil contaminated during periods of high water table), use of conventional ground water pump and treat systems would not be effective in short term source removal. The ground water extraction system would be required to operate through several ground water fluctuation cycles to affect removal of the hydrocarbon compounds by leaching from the soil. This treatment technology could be considered cost effective based on a life-cycle cost analysis and would not significantly impact the use of the available vehicle parking/display lot.

The uniformity and porous nature of the soil appears suitable for a combined vapor-extraction, air sparging, and ground water extraction system. The vapor extraction process (drawing air through the soil above the water table to volatilize the hydrocarbon compounds) would assist in remediation of the unsaturated soil contamination and the air sparging (introduction of air into the ground water) would promote volatilization and bacterial degradation of the hydrocarbon compounds in the ground water and saturated sediments. This treatment system would result in expedient remediation of the residual contaminated soil and promote remediation of the impacted ground water. Installation of a vapor extraction/air sparging system results in higher installation charges; however the treatment system should not last as long as ground water extraction alone. This treatment system would also not significantly impact the use of the available vehicle parking/display lot.

We will be pleased to discuss the installation and operation charges of the various treatment technologies available for the project site with you to establish the most cost-effective and efficient treatment technology.

Additional site characterization investigation, including installation of additional ground water monitoring wells, would be required to determine the lateral extent of soil and ground water contamination in accordance with previous requests from Alameda County Department of Environmental Health. A vapor extraction performance test/air sparging test would be required to validate the proposed treatment technology.

It is recommended that Good Chevrolet pursue application for the State of California Underground Storage Tank Fund program for partial reimbursement the anticipated charges for the remedial and monitoring programs.

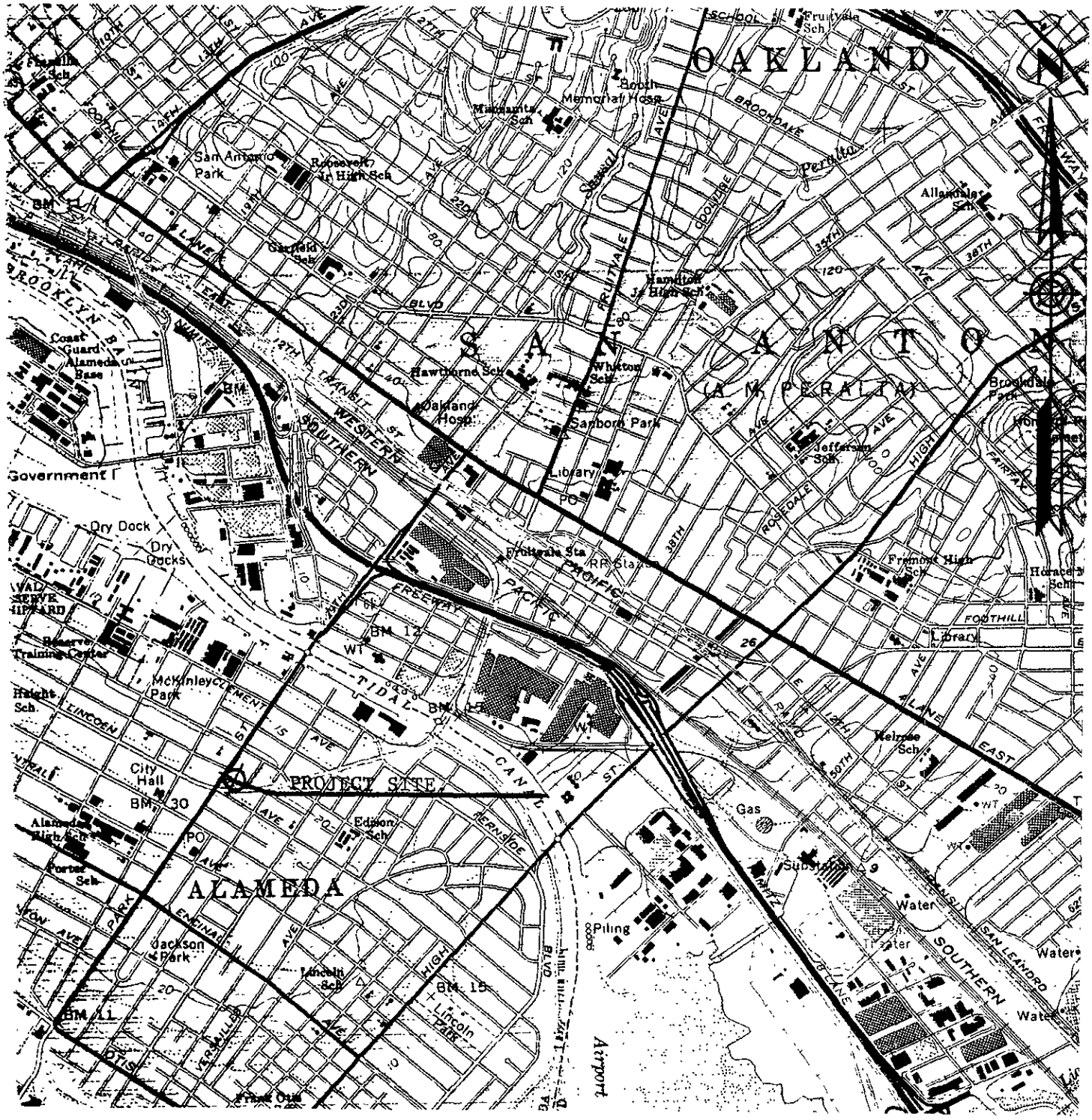
LIMITATIONS

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.



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

GeoPlexus, Inc.

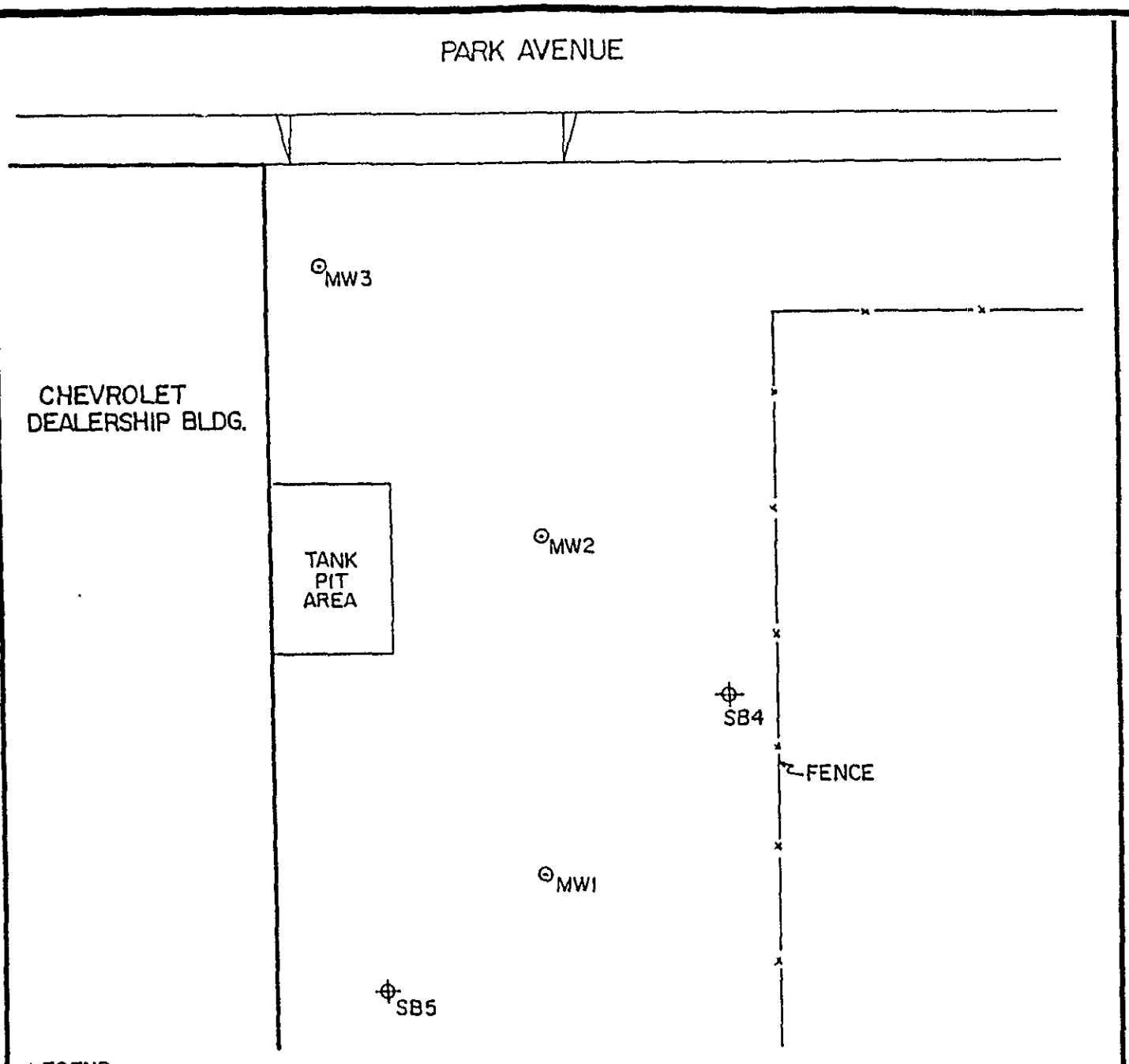


FIGURE 2
SITE PLAN

NO SCALE

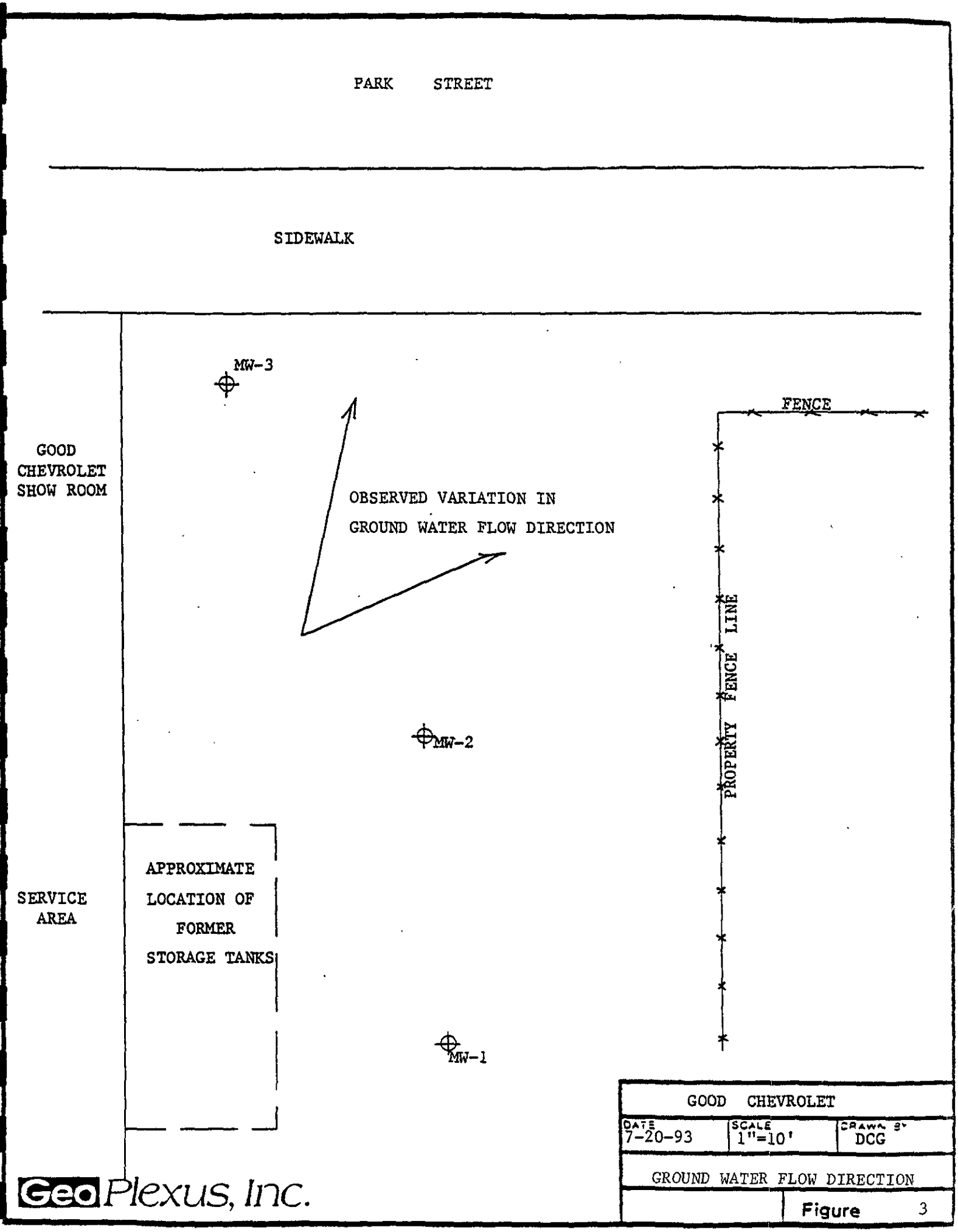
GOOD CHEVROLET
ALAMEDA, CALIFORNIA

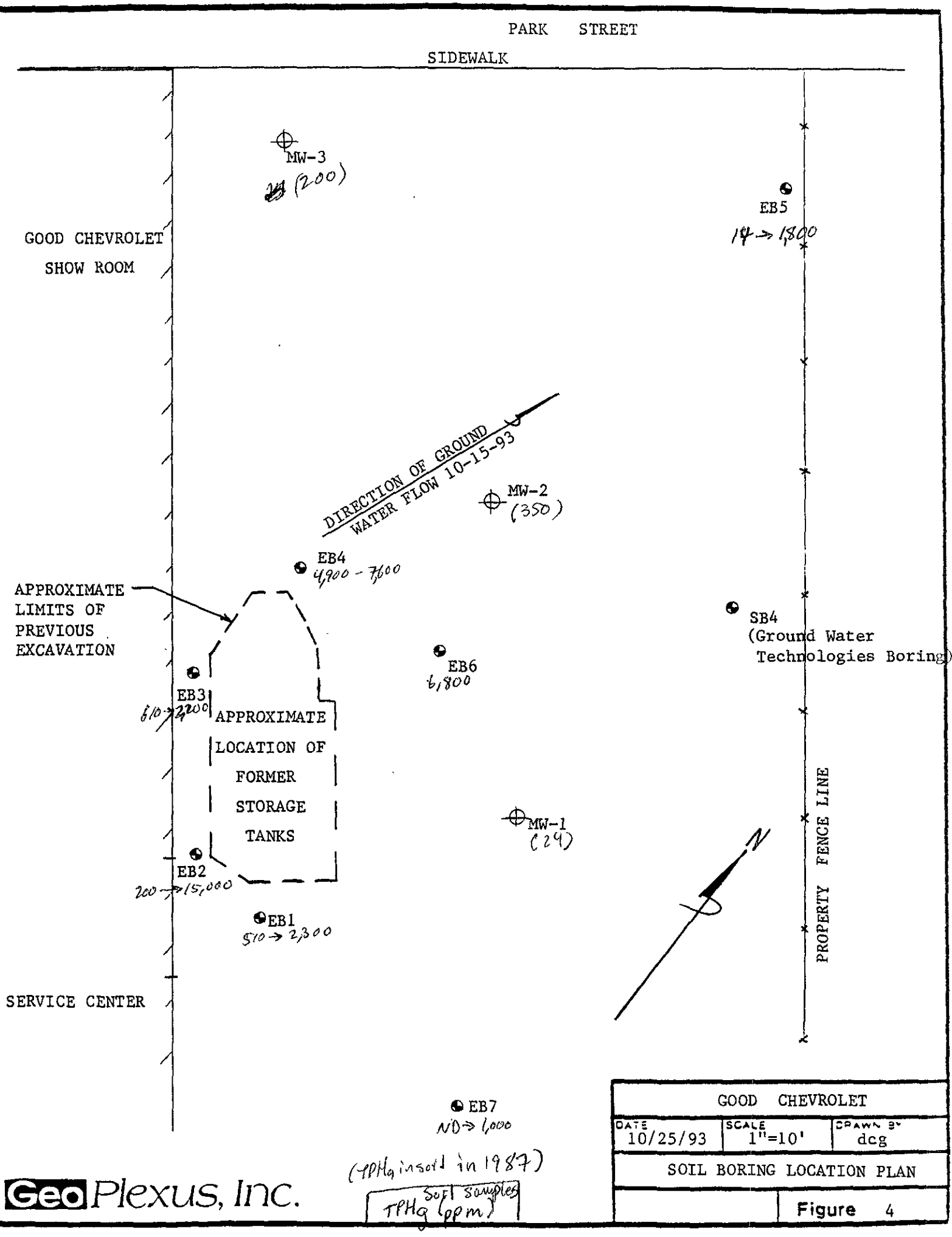
GROUNDWATER TECHNOLOGY

Source: Ground Water Technologies

GeoPlexus, Inc.

GOOD CHEVROLET		
DATE 7/26/93	SCALE n/a	DRAWN BY dcg
BORING/WELL LOCATION PLAN		
	Figure 2	


PARK STREET
SIDEWALK
MW-3
GOOD CHEVROLET SHOW ROOM
OBSERVED VARIATION IN GROUND WATER FLOW DIRECTION
FENCE
PROPERTY FENCE LINE
MW-2
APPROXIMATE LOCATION OF FORMER STORAGE TANKS
SERVICE AREA
MW-1
GOOD CHEVROLET
DATE 7-20-93
SCALE 1"=10'
DRAWN BY DCG
GROUND WATER FLOW DIRECTION
Figure 3
GeoPlexus, Inc.



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GOOD CHEVROLET		
DATE 10/25/93	SCALE 1"=10'	DRAWN BY dcg
SOIL BORING LOCATION PLAN		
	Figure 4	

SUBSURFACE DATA LOG

LOG No. EB-1 DATE: 10/15/93
LOCATION: GOOD CHEVROLET
EQUIPMENT:
PROJECT No.

DRY DENSITY (lbs cu. ft.)	MOISTURE (% of dry wt.)	"N" VALUE (blows/ft.)	OVM READING (ppm)	SAMPLE TYPE	DEPTH (ft.)	LOG	U.S.C.	
								2" A/C and 5" Aggregate Base
								SAND, coarse-grained, red, damp (FILL)
								SAND, medium-grained, medium brown (FILL)
								SAND, medium- to coarse-grained, medium gray-brown, damp, loose
					5			SAND, medium- to coarse-grained, yellow-brown moist, loose
								SAND, fine-grained, green, moist, dense
					10			SAND, medium- to coarse-grained, orange-brown, moist to wet, dense
								gasoline vapors detected between 9 to 11.5 feet
					15			Bottom of Boring 11.5 feet

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FIGURE 5

SUBSURFACE DATA LOG

DRY DENSITY (lbs cu. ft.)	MOISTURE (% of dry wt.)	"N" VALUE (blows/ft.)	OVM READING (ppm)	SAMPLE TYPE	DEPTH (ft)	LOG	U.S.C.

LOG No. EB-2 DATE: 10/15/93

LOCATION: GOOD CHEVROLET

EQUIPMENT:

PROJECT No.

3" A/C and 6" Aggregate Base

SAND, medium- to coarse-grained, dark gray, damp, loose, contains brick fragments (FILL)

SAND, medium- to coarse-grained, yellow-brown, moist, loose

5

SAND, medium- to coarse-grained, orange-brown moist, dense

gasoline vapors detected between 9-12 feet

10

Bottom of Boring 12 feet

15

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FIGURE 6

SUBSURFACE DATA LOG

DRY DENSITY (lbs cu. ft.) | MOISTURE (% of dry wt.) | "N" VALUE (blows/ft.) | OVM READING (ppm) | SAMPLE TYPE | DEPTH (ft) | LOG | U.S.C.

LOG No. EB-3 DATE: 10/15/93
LOCATION: GOOD CHEVROLET
EQUIPMENT:
PROJECT No.

Depth (ft)	
	2" A/C and 6" Aggregate Base
	SAND, medium- to coarse-grained, dark gray, damp contains brick fragments (FILL)
5	SAND, medium- to coarse-grained, yellow-brown, moist, dense
	SAND, medium- to coarse-grained, orange-brown, moist, dense
10	SAND, medium-grained, green, moist
	SAND, fine- to medium-grained, blue-gray, moist gasoline vapors between 9-12 feet
	SAND, medium- to coarse-grained, blue-gray, wet dense
15	Bottom of Boring 13 feet

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FIGURE 7

SUBSURFACE DATA LOG

DRY DENSITY (lbs cu. ft.) | MOISTURE (% of dry wt.) | "N" VALUE (blows/ft.) | OVM READING (ppm) | SAMPLE TYPE | DEPTH (ft) | LOG | U.S.C.

LOG No. EB-4 DATE: 10/15/93
LOCATION: GOOD CHEVROLET
EQUIPMENT:
PROJECT No.

2" A/C and 6" Aggregate Base

SAND, fine- to coarse-grained, dark gray, damp loose, contains brick fragments (FILL)

SAND, medium-grained, orange-brown, moist, dense

5

SAND, medium- to coarse-grained, greenish-brown, moist, dense

10

gasoline vapors detected between 8-11.5'

Bottom of Boring 11.5 feet

15

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FIGURE 8

SUBSURFACE DATA LOG

DRY DENSITY (lbs cu. ft.) | MOISTURE (% of dry wt.) | "N" VALUE (blows/ft.) | OVM READING (ppm) | SAMPLE TYPE | DEPTH (ft) | LOG | U.S.C.

LOG No. EB-5 DATE: 10/15/93
LOCATION: GOOD CHEVROLET
EQUIPMENT:
PROJECT No.

2" A/C and 5" Aggregate Base

SAND, medium-grained, dark gray, brick fragments (FILL)

SAND, medium-grained, yellow-brown, damp, loose

5

SAND, medium- to coarse-grained, orange-brown, damp, dense

greenish staining at 8 to 9 feet, gasoline vapors at 8.5 to 12 feet

10

SAND, coarse-grained, orange-brown, wet, dense

Bottom of Boring 12.5 feet

15

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FIGURE 9

SUBSURFACE DATA LOG

LOG No. EB-6 DATE: 10/15/93

LOCATION: GOOD CHEVROLET

EQUIPMENT:

PROJECT No.

DRY DENSITY (lbs cu. ft.)	MOISTURE (% of dry wt.)	"N" VALUE (blows/ft.)	OVM READING (ppm)	SAMPLE TYPE	DEPTH (ft)	LOG	U.S.C.	
								3" A/C and 6" Aggregate Base
								SAND, medium- to coarse-granied, gray-brown, damp, loose, contains brick fragments (FILL)
								SAND, medium- to coarse-grained, yellow-brown, moist, dense
					5			SAND, medium- to coarse-grained, orange-brown, damp to moist, dense
								gasoline vapors at 9 feet
					10			Bottom of Boring 9 feet
					15			

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FIGURE 10

SUBSURFACE DATA LOG

DRY DENSITY (lbs cu. ft.)	MOISTURE (% of dry wt.)	"N" VALUE (blows/ft.)	OVM READING (ppm)	SAMPLE TYPE	DEPTH (ft)	LOG	U.S.C.

LOG No. EB-7 DATE: 10/15/93

LOCATION: GOOD CHEVROLET

EQUIPMENT:

PROJECT No.

2" A/C and 6" Aggregate Base

SAND, medium-grained, dark gray, damp, brick fragments (FILL)

SAND, medium- to coarse-grained, yellow-brown, moist, dense

5

SAND, medium- to coarse-grained, orange-brown, moist, dense

gasoline vapors at 9 to 9.5 feet

10

Boring terminated at 9.5 feet

15

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FIGURE 11

APPENDIX A

CHAIN-OF-CUSTODY FORM
AND
ANALYTICAL TEST DATA

GeoPlexus, Inc.

Inv.#1711 AGP44

1900 Wyatt Drive, Ste. 1, Santa Clara, California 95054
Phone: (408) 987-0210 Fax: (408) 988-0815

CHAIN-OF-CUSTODY

PROJECT NUMBER: C93013

PROJECT NAME: Good Chevrolet 192

Send Report Attention of: David Glick

Report Due: / /

Verbal Due: / /

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers	Type of Analysis: TPHG	TPHD	BTEX	Oil&Grease	Condition of Samples	Initial
EB1-S2	10/15/93	0910		/	8.5-9'	1EA	4" BRASS	✓		✓		32647	
EB1-S3		0930		/	11-11.5'			✓		✓		32648	
EB2-S2		1015		/	10-10.5'			✓		✓		32649	
EB2-S3		1020		/	11.5-12'			✓		✓		32650	
EB3-S2		1120		/	10-10.5'			✓		✓		32651	
EB3-S3		1145		/	12.5-13'			✓		✓		32652	
EB4-S2		1240		/	8-8.5'			✓		✓		32653	
EB4-S3		1300		/	10.5-11'			✓		✓		32654	
EB5-S2		1407		/	9-9.5'			✓		✓		32655	
EB5-S3		1425		/	11.5-12'			✓		✓		32656	
EB6-S2		1510		/	8.5-9'			✓		✓		32657	

VOAs D&G

ICE/T ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT —

PRESERVATIVE ✓
APPROPRIATE
CONTAINERS ✓

Remarks: Purchase Order No.:

STANDARD TURNAROUND

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	10/18/93 1125	R Hamilton	10-18-93 11:25
R Hamilton	10/18/93 1310	[signature]	10/18/93 13:10
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

COMPANY: Geo Plexus, Inc.
ADDRESS: 1900 Wyatt Drive, Suite 1 Santa Clara, CA 95054
PHONE: (408) 987-0210 FAX: (408) 988-0815

2066

GeoPlexus, Inc.

Inv. #1712

AGP43

CHAIN-OF-CUSTODY

1900 Wyatt Drive, Ste. 1, Santa Clara, California 95054
Phone: (408) 987-0210 Fax: (408) 988-0815

PROJECT NUMBER	PROJECT NAME	2 of 2
C93013	Good Chevrolet	

Send Report Attention of:	Report Due	Verbal Due
David Glick	/ /	/ /

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers	Type of Analysis: TPHG	TPHD	BTEX	Oil&Grease	Condition of Samples	Initial
EB7-S2	10/15/93	1540		/	6.5-7'	1 EA	4" Brass Tube	✓		✓		32658	
EB7-S3	↓	1550		/	8.5-9'	1 EA	↓	✓		✓		32659	
EB3-WS1A/B		1320		/	Boring EB3	2 EA	Acidified 40 ml VOA	✓		✓		32660	
EB5-WS1A/B	↓	1520		/	Boring EB5	2 EA	↓	✓		✓		32661	

ICE/T° ✓ GOOD CONDITION ✓ HEAD SPACE ABSENT ✓

PRESERVATIVE ✓ APPROPRIATE CONTAINERS ✓

VOAs 10 & G/E

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	10/18/93 1125	[signature] Hamilton	10-18-93 11:25
[signature] Hamilton	10/18/93 13:10	[signature]	10/18/93 13:10
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Remarks: Purchase Order No.:

STANDARD TURNAROUND

COMPANY: Geo Plexus, Inc.
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McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

GEO Plexus, Inc. 1900 Wyatt Drive, # 1 Santa Clara, CA 95054	Client Project ID: # C93013; Good Chevrolet	Date Sampled: 10/15/93
		Date Received: 10/18/93
	Client Contact: David Glick	Date Extracted: 10/18-10/20/93
	Client P.O:	Date Analyzed: 10/18-10/20/93

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)+	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
32647	EB1-S2	S	510,b	0.89	10	5.8	41	89
32648	EB1-S3	S	2300,b	22	190	57	280	103
32649	EB2-S2	S	15,000,a	84	710	260	1400	84
32650	EB2-S3	S	200,a	4.3	15	3.9	20	93
32651	EB3-S2	S	2200,a	9.4	71	42	200	88
32652	EB3-S3	S	610,b,c	1.2	3.2	4.5	2.9	90
32653	EB4-S2	S	4900,a	32	230	84	440	95
32654	EB4-S3	S	7600,a	60	390	130	630	100
32655	EB5-S2	S	1800,b	ND< 2.5	22	27	140	87
32656	EB5-S3	S	14,b	0.021	1.5	0.49	2.5	90
32657	EB6-S2	S	6800,a	20	230	100	590	88
32658	EB7-S2	S	ND	ND	ND	ND	ND	98
32659	EB7-S3	S	1000,b	3.8	45	21	110	88
32660	EB3-WS1A	W	120,000,a	9600	20,000	3400	14,000	85
32661	EB5-WS1A	W	83,000,a	3900	15,000	3100	13,000	88
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.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/20/93 Matrix: Soil

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
TPH (gas)	0.000	2.327	2.035	2.03	115	100	13.4
Benzene	0.000	0.184	0.178	0.2	92	89	3.3
Toluene	0.000	0.216	0.190	0.2	108	95	12.8
Ethylbenzene	0.000	0.188	0.182	0.2	94	91	3.2
Xylenes	0.000	0.606	0.588	0.6	101	98	3.0
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	0.0	22.4	22.2	20.8	108	107	0.9

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

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QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/20-10/21/93 Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
TPH (gas)	0.0	113.5	116.9	100	113.5	116.9	3.0
Benzene	0	9.6	10.2	10	96.0	102.0	6.1
Toluene	0	9.7	10.4	10	97.0	104.0	7.0
Ethyl Benzene	0	8.8	10	10	88.0	100.0	12.8
Xylenes	0	29.7	31.7	30	99.0	105.7	6.5
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100