GeoPlexus, Inc.

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

Jee 9/27

August 19, 1993

93 SEP 24 PM 1:4

KTW & ASSOCIATES
43289 Osgood Road
Fremont, CA 94539
Attn: Mr. Mark Borch-Jensen

Subject: Preliminary Site Characterization Investigation Report
Val Strough Chevrolet, 327 34th Street, Oakland, CA 94609

Dear Mark:

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

In summary, the analytical testing did not detect Total Petroleum Hydrocarbons as gasoline, Total Petroleum Hydrocarbons as diesel, Volatile Aromatic Compounds (Benzene, Toluene, Ethyl Benzene, or Total Xylenes) or Oil & Grease in the soil or ground water samples from Monitoring Well MW-1 (located "down-gradient of the former waste oil tank).

The analytical testing detected moderate to high concentrations of Total Petroleum Hydrocarbons as gasoline and Volatile Aromatic Compounds (Benzene, Toluene, Ethyl Benzene, or Total Xylenes) in the soil and ground water samples obtained from Monitoring Wells MW-2 and MW-3 (located "down-gradient of the former gasoline tank) and one-quarter inch of "free product" was observed/measured in Monitoring Well MW-3 prior to purging and sampling.

It is recommended that an additional site characterization be performed to determine the vertical and lateral extent of the existing gasoline plume. It is also recommended that a product recovery program and plume migration control program be initiated to reduce the potential for further migration of the hydrocarbon products.

The ground water monitoring wells at the site should be sampled on a quarterly basis to monitor the increase/degradation of the hydrocarbon products in the ground water to support site closure.

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

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. Copies of this report should be forwarded to:

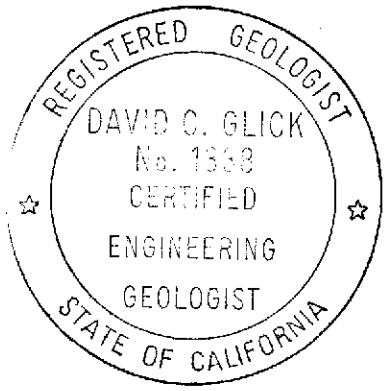
Ms. Eva Chew
Alameda County Health Care Services
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

Mr. Richard Hiett
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



PRELIMINARY SITE CHARACTERIZATION INVESTIGATION
for
VAL STROUGH CHEVROLET
327 34th STREET
OAKLAND, CA

INTRODUCTION

The project site is located at 327 34th Street, in the city of Oakland, Alameda County, California as indicated on Figure 1. The site is the location of an automobile dealership and service center (currently occupied by Hendrick Automotive).

It is understood that two (2) underground storage tanks were removed from the site in March, 1992 by Subsurface Environmental Corporation. The tanks reportedly included: (1) 1,000 gallon gasoline tank and (1) 550 gallon waste oil tank and were located as indicated on Figure 2.

Soil samples were reportedly obtained during the tank removal activities and submitted for analytical testing. The soil samples obtained from the gasoline tank excavation contained Total Petroleum Hydrocarbons as gasoline at concentrations of 5-130 parts per million and Volatile Aromatic Compounds (Toluene, Ethylbenzene, and Xylenes). Benzene was not detected in the soil samples. The soil samples obtained from the waste oil tank excavation did not contain detectable concentrations of Total Petroleum Hydrocarbons as gasoline at concentrations, Benzene, or Toluene; however, low concentrations of Ethylbenzene and Xylenes were detected. The soil sample also contained Total Petroleum Hydrocarbons as diesel at concentrations ranging from 7-96 parts per million. Oil & Grease or Total Petroleum Hydrocarbons as Kerosene were not detected in the soil samples.

SCOPE OF WORK

To assess the potential impact to the ground water resources present at the site, KTW & Associates, in conjunction with Geo Plexus, Incorporated, performed an investigation as described below:

(1) advancing three exploration borings to a maximum depth of 34 feet in the reported "down-gradient" area of the former underground storage tanks and completing the borings as ground water monitoring wells;

(2) development of the monitoring wells and collection of ground water samples for analytical testing;

(3) performing analytical testing on the soil and ground water samples;

(4) establishing "site-specific" ground water flow data; and

(5) preparation of this report documenting the findings of the investigation and presenting the results of the analytical testing.

Specifics of the individual investigative phases are described in the following sections of this report.

PRELIMINARY GROUND WATER GRADIENT DATA REVIEW

Prior to initiating the field activities, ground water data, specifically direction of ground water flow, was based on topographic and ground water flow in the vicinity of the project site. Based on this information, it was determined that ground water would be encountered at a depth of 25-29 feet below the ground surface and should flow beneath the subject site in a southwesterly direction (subparallel to Broadway) as indicated on Figure 3.

These initial conclusions were verified during the investigation and the site specific ground water flow data based on the well survey is described later in this report.

SUBSURFACE INVESTIGATION

Monitoring Well Permits were obtained from the Alameda County Flood Control and Water Conservation District (Zone 7) prior to drilling the borings (attached as Figure 4). Three exploration borings were advanced in the "down-gradient" direction of the former underground storage tanks (see Figure 5) to characterize the underlying soils conditions and for construction of the monitoring wells. The borings were drilled by Exploration Geoservices, a State of California Licensed Drilling Contractor, C57 License No. 554979 and were logged under the supervision of a State of California Certified Engineering Geologist. The Boring Logs are presented as Figures 6, 7, and 8.

The borings were advanced using an eight (8) inch, nominal diameter, continuous flight hollow stem auger. Soil samples were obtained from the borings at five foot intervals through the use of a 2-inch I.D. split-barrel sampler. The sampler was advanced into the undisturbed soil ahead of the auger to obtain a core sample. Pre-cleaned brass liners were placed in the sampler to retain the soil. The drill cuttings and soil samples obtained from the borings were monitored during drilling to observe moisture changes in the soils and to determine the depth of the first saturated zone.

The sampling equipment was cleaned between each sample event by washing in a hot water bath with a phosphate-free detergent and then rinsed in a hot water bath to prevent cross contamination. The soil cuttings derived from the soil boring were contained in 55-gallon containers for disposal pending receipt of the analytical test data. The rinsate water derived from the cleaning was contained in 55-gallon containers for disposal pending receipt of the analytical test data.

SUBSURFACE CONDITIONS

The soil borings revealed variable near-surface soil conditions (to depths of 10 feet) consisting of orange-brown to redish-brown silty sand, silty clay, clayey silt, clayey sand, and gravelly sandy clay. These soil units were underlain by clayey sand, silty clay, and clayey silt to depths of 18 to 20 feet and were underlain by a porous, orange-brown to olive-brown sand and silty sand unit.

The soil samples obtained from the borings were observed in the field for evidence of contamination (i.e., discoloration, odor, visible product, etc.). The soil samples from Boring MW-1 did not exhibit any indication of contamination. The soil samples from Boring MW-2 exhibited strong gasoline vapors from depths of 6 feet to the bottom of the boring (33 feet). The soil samples from Boring MW-3 exhibited strong gasoline vapors from depths of 15 feet to the bottom of the boring (34 feet).

Ground water was encountered in the exploration borings at a depth of 22-24 feet below the ground surface at the time of drilling. Water stabilized in the monitoring well at depths of 20-22 feet following development of the monitoring wells.

MONITORING WELL INSTALLATION

Following completion of the drilling, the borings were completed as monitoring wells constructed in accordance with Alameda County Monitoring Well Construction Guidelines by installing 2-inch diameter polyvinyl chloride (PVC) flush-threaded casing and slotted pipe directly through the hollow stem auger. The slotted section of the PVC pipe installed through the saturated zone had 0.020 inch factory perforations. The PVC materials used in the well construction were thoroughly cleaned prior to introduction into the boring.

The monitoring wells were filter-packed with clean #2/12 silica sand throughout the screened interval. The filter-pack material was installed in the annular spacing between the monitoring well pipe and the auger as the auger was removed. The filter-pack was extended two feet above the top of the screened interval. To assure continuity and integrity of the filter material, and to prevent the bore hole from caving, no more than five feet of auger was removed at a time during placement of the filter-pack.

A one foot thick layer of bentonite pellets was placed above the filter material to provide an annular seal. The bentonite was hydrated with water prior to placement of the grout seal. The remainder of the borings were filled with an 11-sack cement-sand slurry to within one foot of grade. A locking cap was placed on the PVC well casing and a water tight aluminum traffic box was installed in concrete flush with the ground surface over the well casing. Figures 9, 10, and 11 illustrate the construction of Monitoring Wells MW-1, MW-2 and MW-3, respectively.

MONITORING WELL DEVELOPMENT

The monitoring wells were allowed to stabilize for a minimum of 72 hours between construction and development activities. Free product measurements were obtained prior to development utilizing an acrylic 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, visible sheen, or odors were not observed for Monitoring Well MW-1. Free product or visible sheen were not observed for Monitoring Well MW-2; however the water did exhibit a gasoline odor. One-quarter inch of free product was observed in Monitoring Well MW-3 and the water exhibited a strong gasoline odor.

The initial well development was through the use of a Brainard Kilman 1.7-inch hand pump (to remove sediment) and was followed by purging with a teflon bailer. The well was developed until a minimum of four well volumes had been purged and the discharged water appeared clear of sediment. Electrical conductivity, temperature, and pH of the ground water was recorded throughout the development process. The well development continued until the electrical conductivity, temperature, and pH of the discharged water stabilized (twelve volumes actually evacuated). Depth to water measurements were recorded prior to and following the well development activities. Ground water stabilized at a depth of 20-22 feet below the ground surface.

MONITORING WELL SAMPLING

The monitoring wells were allowed to stabilize for a minimum of 72 hours between development and sampling activities. Free product measurements were obtained at the time of sample acquisition utilizing an acrylic bailer lowered into the wells to obtain a surface 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, visible sheen, or odors were not observed for Monitoring Well MW-1. Free product or visible sheen were not observed for Monitoring Well MW-2; however the water did exhibit a gasoline odor. One-quarter inch of free product was observed in Monitoring Well MW-3 and the water exhibited a strong gasoline odor.

Prior to sampling, a minimum of four well volumes were purged from the 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. Water samples for analytical testing were obtained through the use of the teflon bailer. The water developed from the monitoring wells was contained on-site pending receipt of the laboratory test results.

The water samples were collected in sterilized glass vials with Teflon lined screw caps. The water samples collected for Total Petroleum Hydrocarbons as gasoline and Volatile Organics were collected in 40 mil. vials acidified with HCL by the analytical laboratory. The water samples collected for Total Petroleum Hydrocarbons as diesel and Oil & Grease were collected in sterilized 1-liter amber jars 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 on ice immediately for transport to the laboratory under chain-of-custody documentation.

GRADIENT SURVEY

The elevation of the top of each monitoring well casing was established with vertical control to 0.01 feet. The depth to ground water (measured to the nearest 0.01 foot) was measured with an electronic water level meter in each monitoring well. Ground water elevations recorded during the investigation suggest that the ground water is at a depth of 20-22 feet below the ground surface and flows across the site is in a south-southwest direction at a gradient of 0.0069 ft/ft (see Figure 12).

ANALYTICAL TESTING

The soil and ground water samples were submitted to and tested by McCampbell Analytical, Inc., a State of California, Department of Health Services certified testing laboratory. Analytical testing was scheduled and performed in accordance with the State of California, Regional Water Quality Control Board and Alameda County Guidelines. The analytical test data, along with the Chain-of-Custody Forms are presented in Appendix A.

The soil and water samples obtained from Monitoring Well MW-1 (waste oil tank site) were tested for Total Petroleum Hydrocarbons as gasoline by Method GCFID 5030/8015, Total Petroleum Hydrocarbons as diesel by Method GCFID 3550/8015, Volatile Aromatics by EPA Method 8020/602, and Oil & Grease by EPA Method 5520 as indicated on the Chain-of-Custody Form. The analytical data is included in Appendix A of this report.

The soil and water samples obtained from Monitoring Wells MW-2 and MW-3 (gasoline tank site) were tested for Total Petroleum Hydrocarbons as gasoline by Method GCFID 5030/8015 and Volatile Aromatics by EPA Method 8020/602 as indicated on the Chain-of-Custody Form. The analytical data is included in Appendix A of this report.

CONCLUSIONS

The soil borings revealed variable near-surface soil conditions to depths of 10 feet consisting of orange-brown to redish-brown silty sand, silty clay, clayey silt, clayey sand, and gravelly sandy clay. These soil units were underlain by clayey sand, silty clay, and clayey silt to depths of 18 to 20 feet and were underlain by a porous, orange-brown to olive-brown sand and silty sand unit.

The soil samples from Boring MW-1 did not exhibit any indication of contamination. The soil samples from Boring MW-2 exhibited strong gasoline vapors from depths of 6 feet to the bottom of the boring (33 feet). The soil samples from Boring MW-3 exhibited strong gasoline vapors from depths of 15 feet to the bottom of the boring (34 feet).

Ground water was encountered in the exploration borings at a depth of 22-24 feet below the ground surface at the time of drilling and stabilized at depths of 20-22 feet following development of the monitoring wells. Ground water flows across the site in a south-southwest direction at a gradient of 0.0069 ft/ft. The locations of the monitoring wells are "down-gradient" from the former tank locations.

The analytical testing did not detect Total Petroleum Hydrocarbons as gasoline, Total Petroleum Hydrocarbons as diesel, Volatile Aromatic Compounds (Benzene, Toluene, Ethyl Benzene, or Total Xylenes) or Oil & Grease in the soil or ground water samples from Monitoring Well MW-1 (located "down-gradient of the former waste oil tank).

The analytical testing detected moderate to high concentrations of Total Petroleum Hydrocarbons as gasoline and Volatile Aromatic Compounds (Benzene, Toluene, Ethyl Benzene, or Total Xylenes) in the soil and ground water samples obtained from Monitoring Wells MW-2 and MW-3 (located "down-gradient of the former gasoline tank). Concentrations of Total Petroleum Hydrocarbons as gasoline ranged from non-detectable to 10,000 ppm for boring MW-2 and from non-detectable to 1,400 ppm for boring MW-3. One-quarter inch of "free product" was observed/measured in Monitoring Well MW-3 prior to sampling. Tables 1 and 2 summarize the analtyical test data for the ground water samples.

TABLE 1

SUMMARY OF GROUND WATER ANALYTICAL TEST DATA

Date Sampled	Total Petroleum Hydrocarbons	Benzene	Toluene	Ethyl-Benzene	Total Xylenes
MW-1 7-27-93	ND	N.D.	N.D.	N.D.	N.D.
MW-2 7-27-93	120,000	10,000	27,000	2,900	20,000
MW-3 7-27-93	330,000	9,100	24,000	5,300	33,000

Note: Total Petroleum Hydrocarbons reported as gasoline
N.D. indicates non-detectable concentrations
Concentrations reported as **parts per billion**

TABLE 2

SUMMARY OF GROUND WATER ANALYTICAL TEST DATA

Date Sampled	Total Petroleum Hydrocarbons	Oil & Grease
MW-1 7-27-93	ND	ND

Note: Total Petroleum Hydrocarbons reported as diesel
N.D. indicates non-detectable concentrations

RECOMMENDATIONS

It is recommended that an additional site characterization be performed to determine the vertical and lateral extent of the existing gasoline plume. The investigation should include advancing three to five soil borings to determine the extent of soil contamination and installation of two to three additional ground water monitoring wells to define the extent of the ground water contamination.

It is also recommended that a free product recovery program and plume migration control program be initiated to reduce the potential for further migration of the hydrocarbon products.

The ground water monitoring wells at the site should be sampled on a quarterly basis to monitor the increase/degradation of the hydrocarbon products in the ground water.

LIMITATIONS

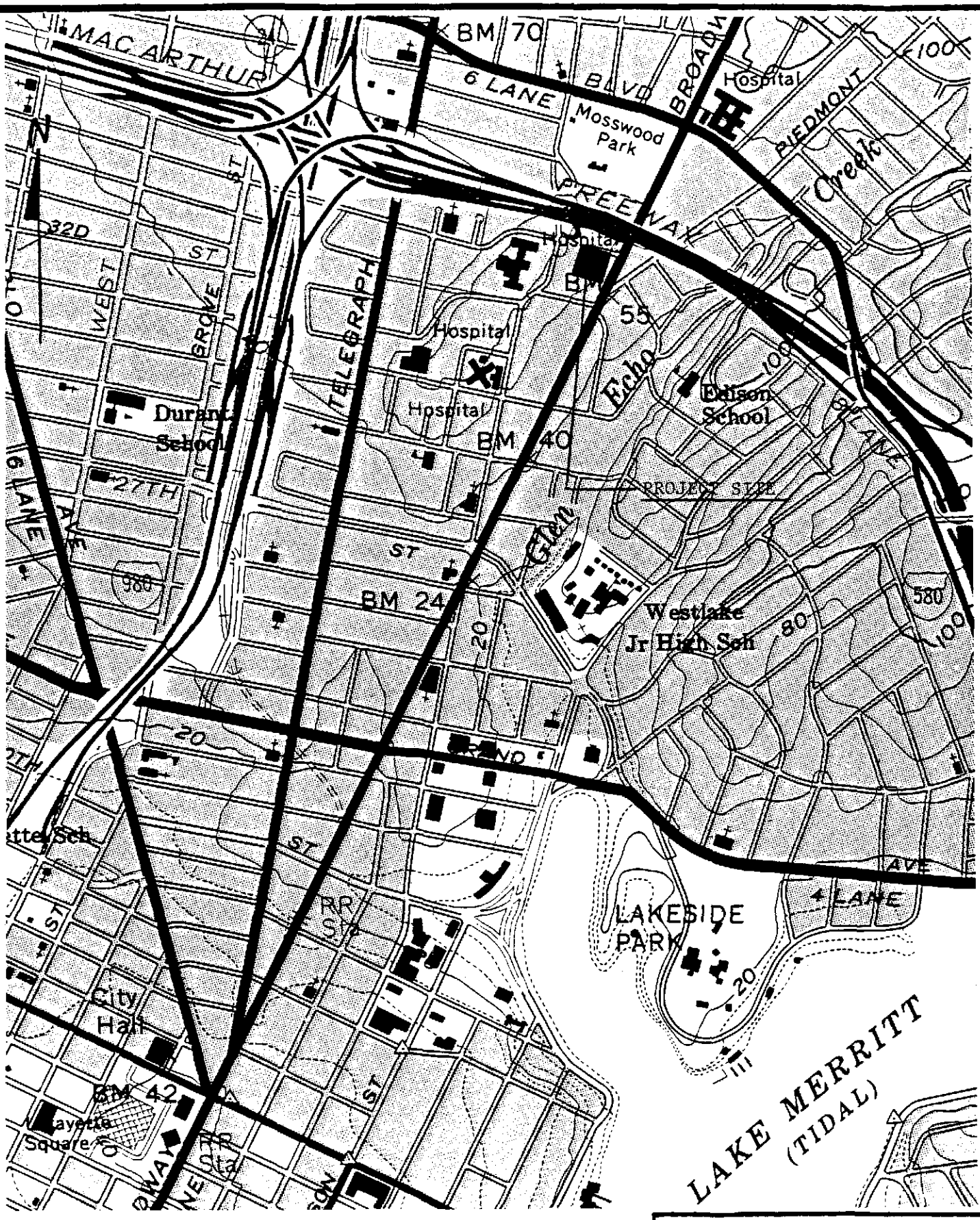
We have only observed a small portion of the pertinent soil and ground water conditions present at the site. Subsurface conditions across the site have been extrapolated from information obtained from review of existing documents and from the field investigation. The conclusions made herein are based on the assumption that soil 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.

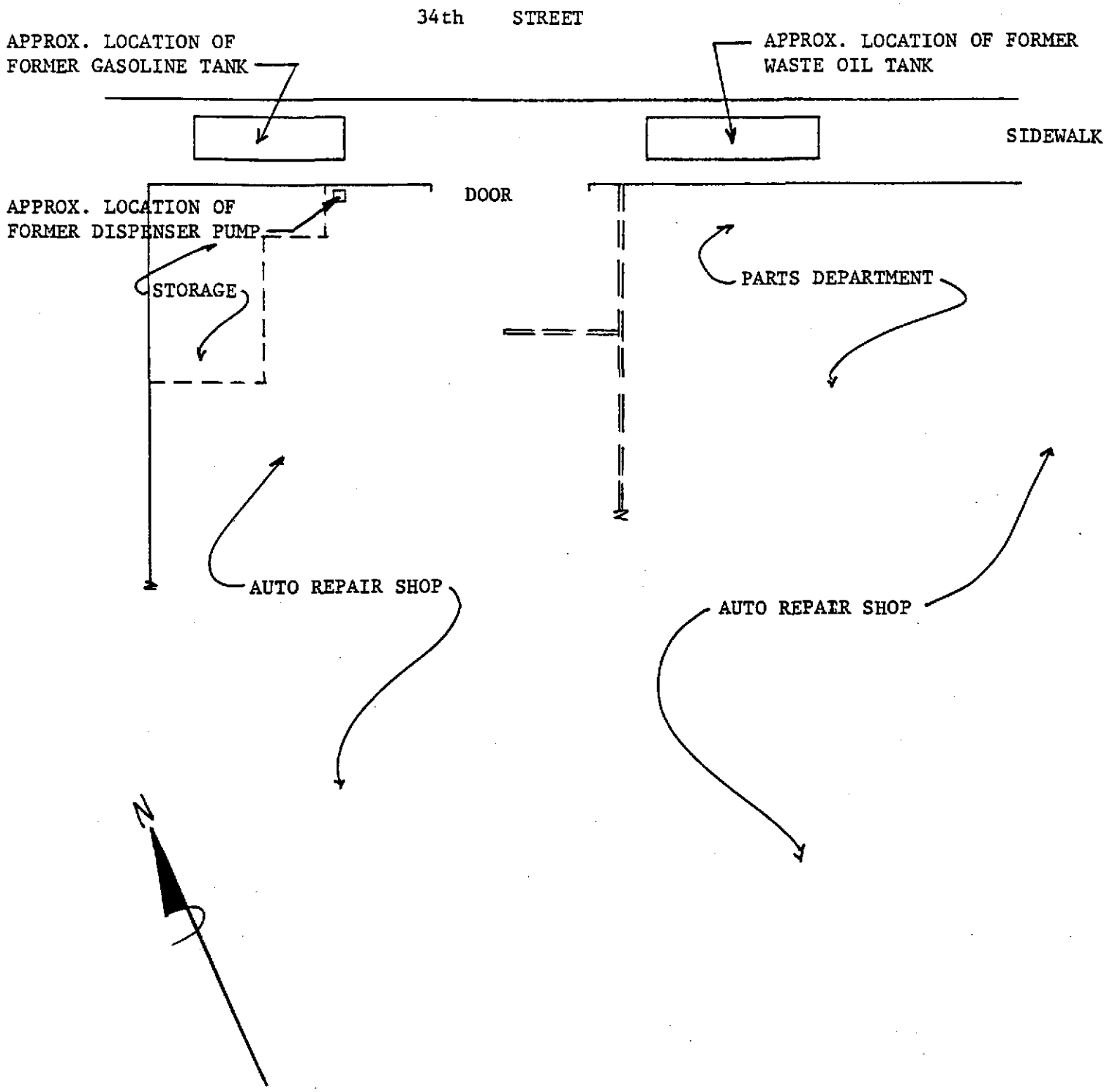
If you have questions regarding the findings, conclusions, or recommendations contained in this report, please contact us. We appreciate the opportunity to serve you.

Geo Plexus, Incorporated



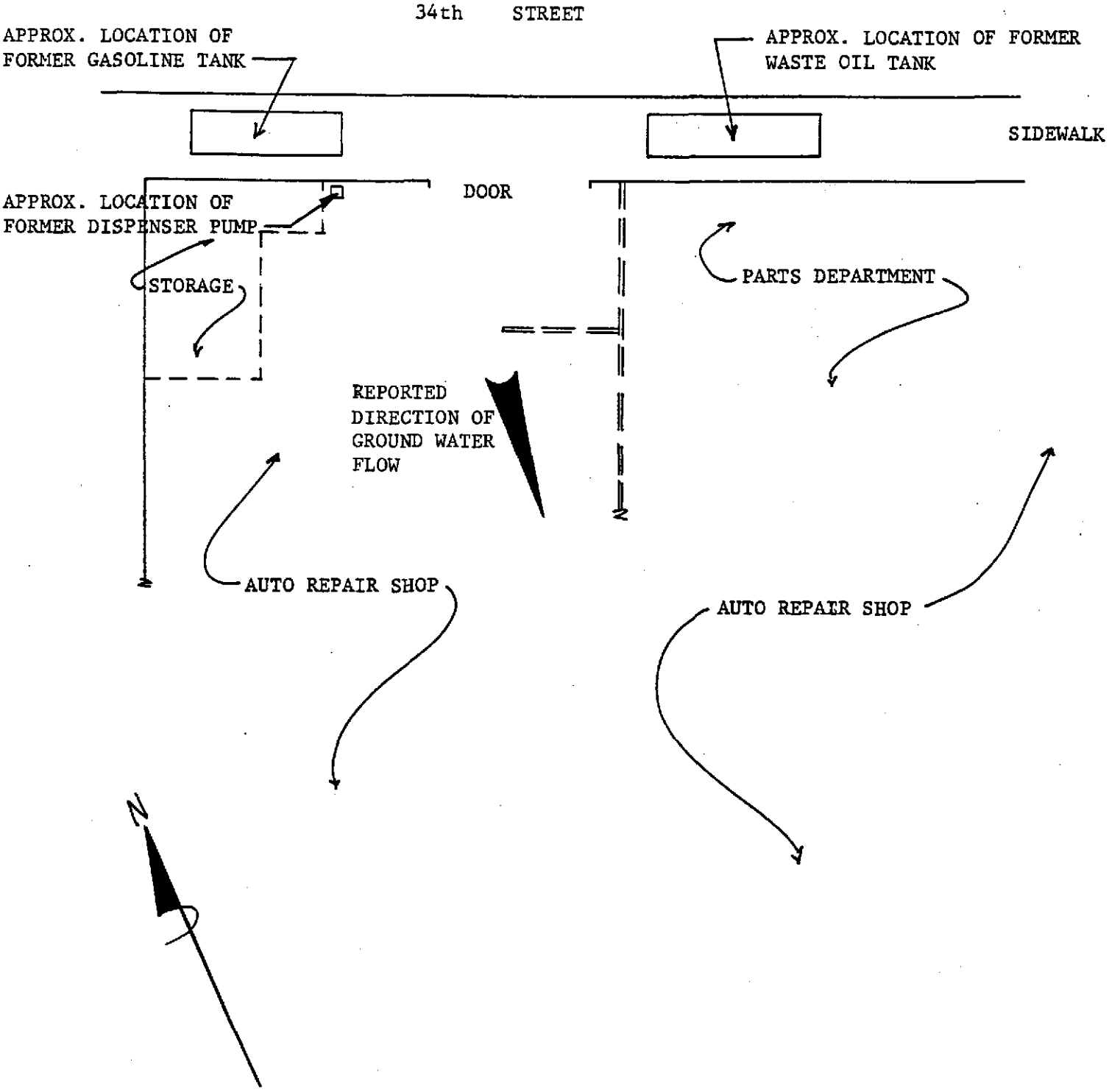
VAL STROUGH CHEVROLET		
DATE 6-1-93	SCALE 1"=1000'	DRAWN BY dcg
VICININTY MAP		
	Figure 1	

GeoPlexus, Inc.



VAL STROUGH CHEVROLET		
DATE 7/1/93	SCALE 1"=10'	DRAWN BY dcg
SITE PLAN		
	Figure 2	

GeoPlexus, Inc.



VAL STROUGH CHEVROLET		
DATE 7/1/93	SCALE 1"=10'	DRAWN BY dcg
REGIONAL GROUND WATER FLOW		
	Figure 3	

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RECEIVED
JUN 28 1993
ZONE 7, ACFC&WCD

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588
VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Val Strough Chevrolet
327 34th Street, Oakland

CLIENT
Name KTW & Associates
Address 43289 Osgood Road Voice 510-623-0480
City Fremont, CA Zip 94539

APPLICANT
Name Geo Plexus, Inc. - David C. Glick
Fax (408) 988-0815
Address 1900 Wyatt Drive #1 Voice (408) 987-0210
City Santa Clara, CA Zip 95054

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X 8" Hollow-Stem
Cable ___ Other ___

DRILLER'S LICENSE NO. C57 489288
Exploration Geoservices

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum Depth 45 ft.
Casing Diameter 2 in.
Surface Seal Depth 10 ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE July 1, 1993
ESTIMATED COMPLETION DATE July 2, 1993

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] Date 6/24/93
David C. Glick, CEG 1338

FOR OFFICE USE

PERMIT NUMBER 93347
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

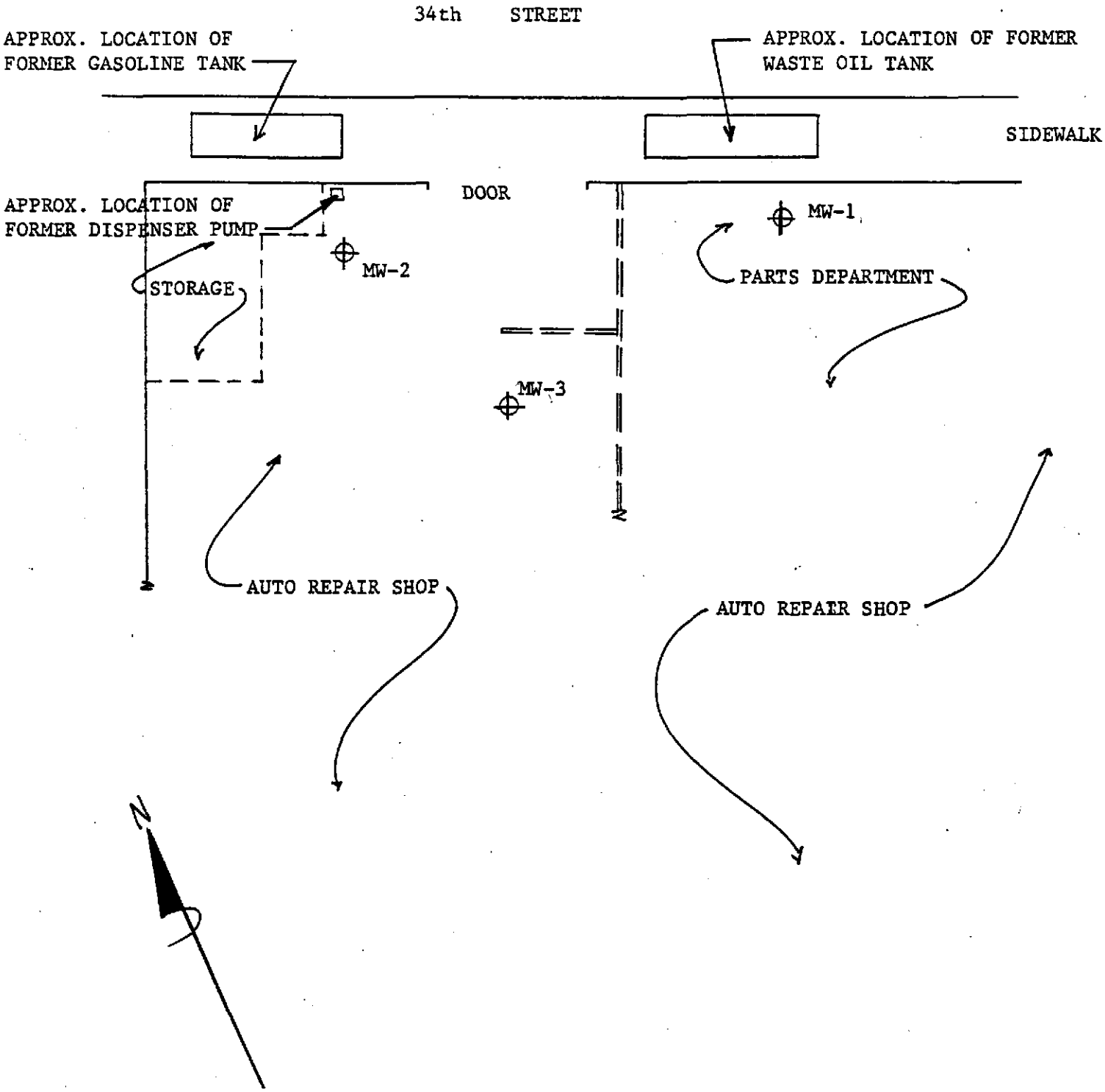
D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved [signature] Date 28 Jun 93
Wyman Hong

91992

FIGURE 4



VAL STROUGH CHEVROLET		
DATE 7/1/93	SCALE 1"=10'	DRAWN BY dcg
BORING/WELL LOCATION PLAN		
	Figure 5	

GeoPlexus, Inc.

SUBSURFACE DATA LOG

LOG No. MW-1 DATE: 7-19-93
LOCATION: Val Strough Chevrolet
EQUIPMENT: Exploration Geoservices
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.	
							GP	3" PCC Floor Slab GRAVELLY SAND (Fill), redish brown, moist, dense
							ML	SILT, brown, moist, dense
		core	--	S1	5		CL/ML	CLAYEY SILT, orange-brown-gray (mottled), moist, stiff, contains minor gravel fraction
		core	--	S2	10			
							CL	GRAVELLY CLAY, gray-orange (mottled), moist, stiff
		core	--	S3	15		SC	CLAYEY SAND, red-brown, moist, dense contains chert fragments in medium to coarse grained sand matrix
							ML	CLAYEY SILT, olive-gray, moist, stiff contains medium to coarse sand stringers
		core	---	S4	20			
							SM	SILTY SAND, yellow-brown, moist, dense
		core	--	S5	▼ 25			wet at 25 feet
					30			
								BOTTOM OF BORING 32 feet

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FIGURE 6

SUBSURFACE DATA LOG

LOG No. MW-2 DATE: 7-19-92
LOCATION: Val Strough Chevrolet
EQUIPMENT: Exploration Geoservices
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.	
							GM	3" PCC Floor Slab GRAVELLY SAND, green, wet, loose
			soil				CL	SILTY CLAY, redish-brown, moist, stiff very strong gasoline vapors
		core	2500/12	S1	5			
							SC	CLAYEY SAND, yellow-brown, moist, dense strong gasoline vapors
		core	1700/5.7	S2	10		SC	CLAYEY SAND, redish-brown-gray (mottled), moist, dense, green staining and strong gasoline vapors
		core	410/1.6	S3	15		SC	CLAYEY SAND, medium gray-brown, moist, dense very low vapor emissions
		core	10000/100	S4	20		SM	SILTY SAND, gray-brown, moist, medium dense **strong gasoline vapors** wet at 22 feet
		core	—	S5	25			
			ppm TPHG/benzene		30		SC	CLAYEY SAND, redish-brown, wet, dense, fine to medium grained sand, strong gasoline vapors
								BOTTOM OF BORING 33 feet

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FIGURE 7

SUBSURFACE DATA LOG

LOG No. MW-3 DATE: 7-20-93
LOCATION: Val Strough Chevrolet
EQUIPMENT: Exploration Geoservices
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.	
							SP	3" PCC Floor Slab GRAVELLY SAND, red, moist, dense (Fill)
							ML	SILTY SAND, red-brown, moist, dense
		core	ND/NT	S1	5			
							CL	GRAVELLY, SANDY CLAY, mottled orange-yellow-brown, moist, firm, contains chert fragments
		core	ND/ND	S2	10		SC	SANDY CLAY, yellow-brown, moist, firm, medium to coarse grained sand fraction, no odors
							SC	SANDY CLAY, orange-brown, moist, stiff
		core	ND/.07	S3	15		ML	SILTY CLAY, mottled olive-brown-gray, moist, stiff, strong gasoline vapors
		core	140/64	S4	20		SP	SAND, orange-brown, moist, dense, coarse-grained strong gasoline vapors wet at 23 feet
		core	--	S5	25			color change to greenish-brown (staining) grain size change to medium to coarse grained visable sheen on sample S5
					30			BOTTOM OF BORING 34 feet

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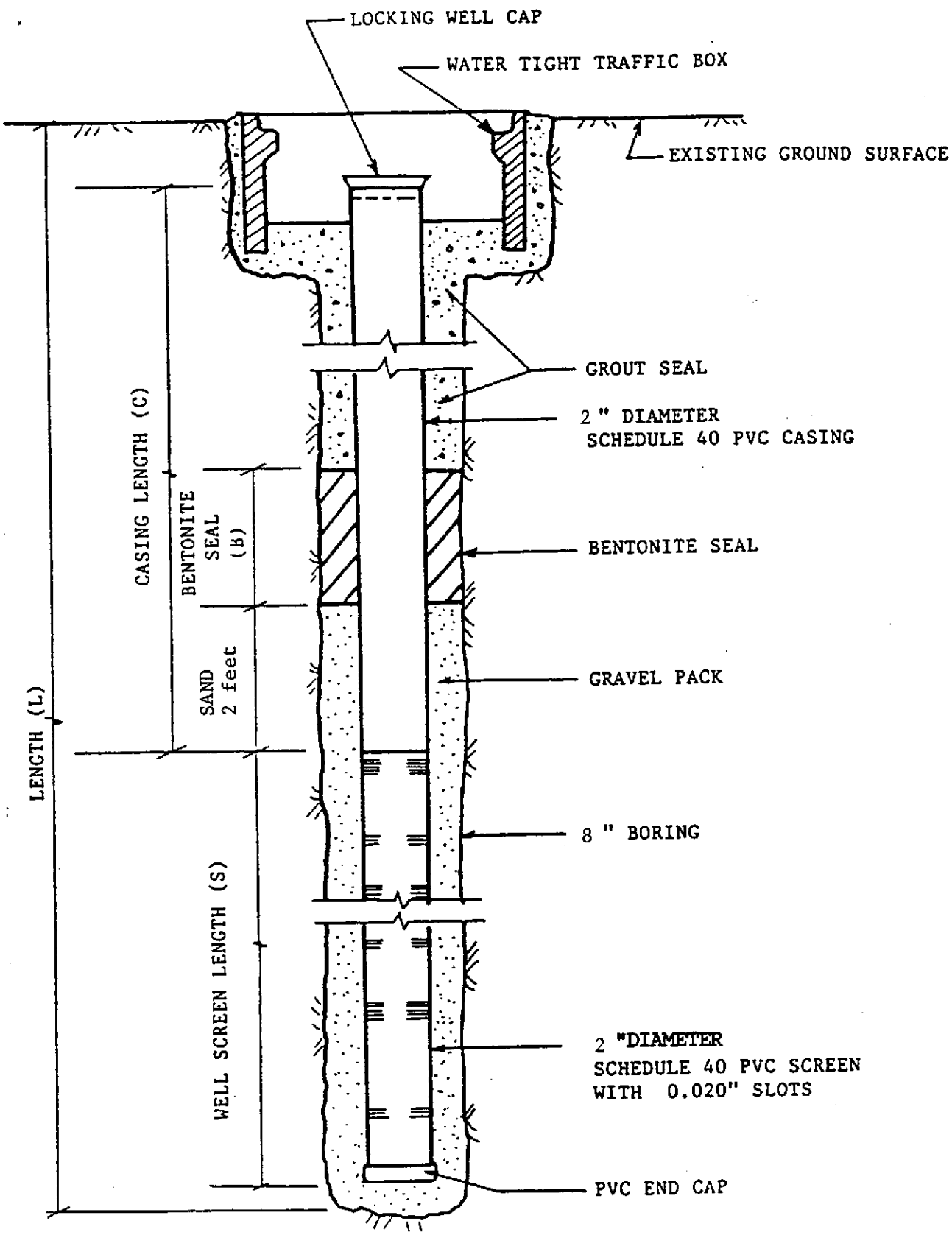
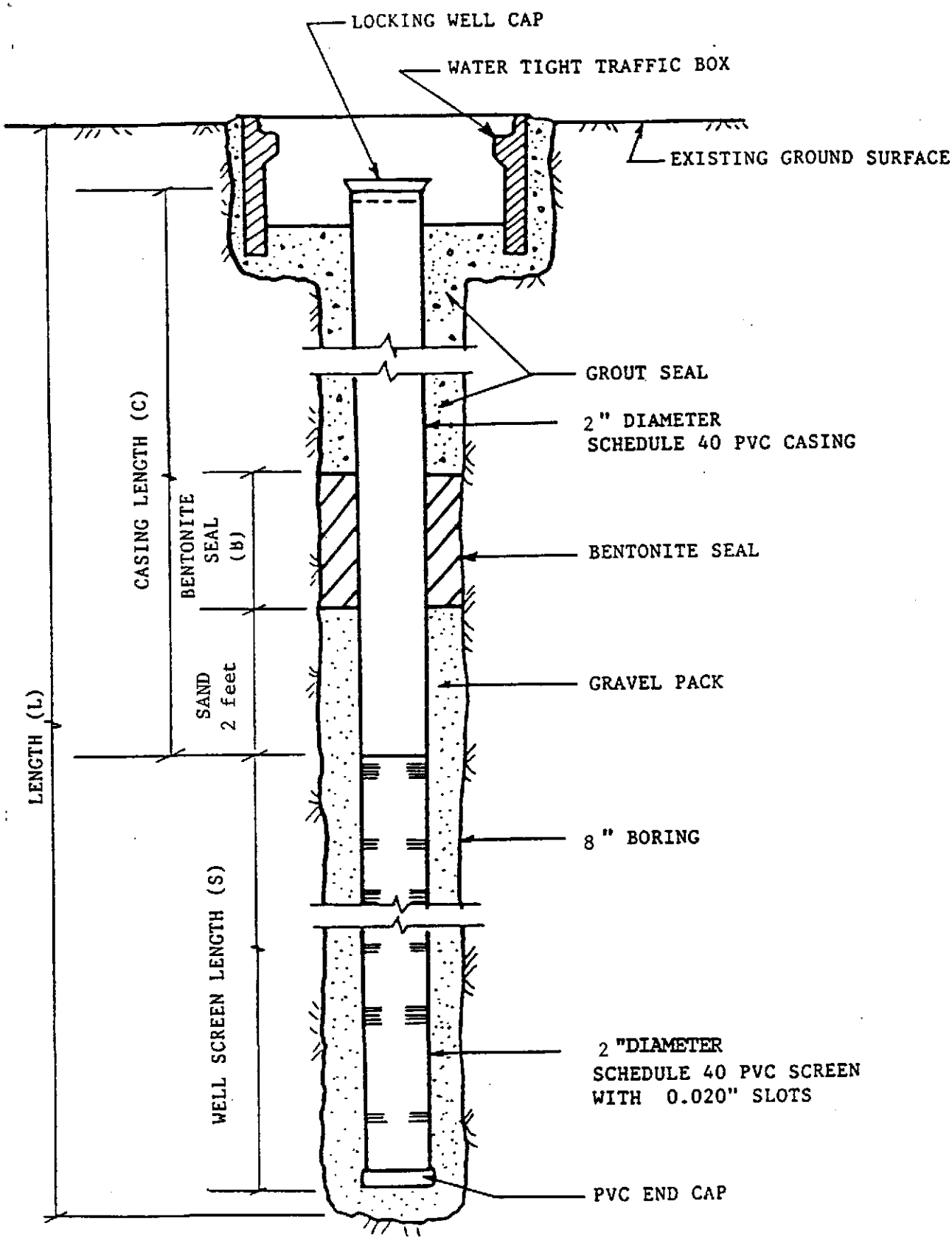
FIGURE 8



L= 32 feet
S= 15 feet
C= 17 feet
B= 1 foot

VAL STROUGH CHEVROLET		
DATE 7-19-93	SCALE n/a	DRAWN BY dcg
MONITORING WELL MW-1		
	Figure 9	

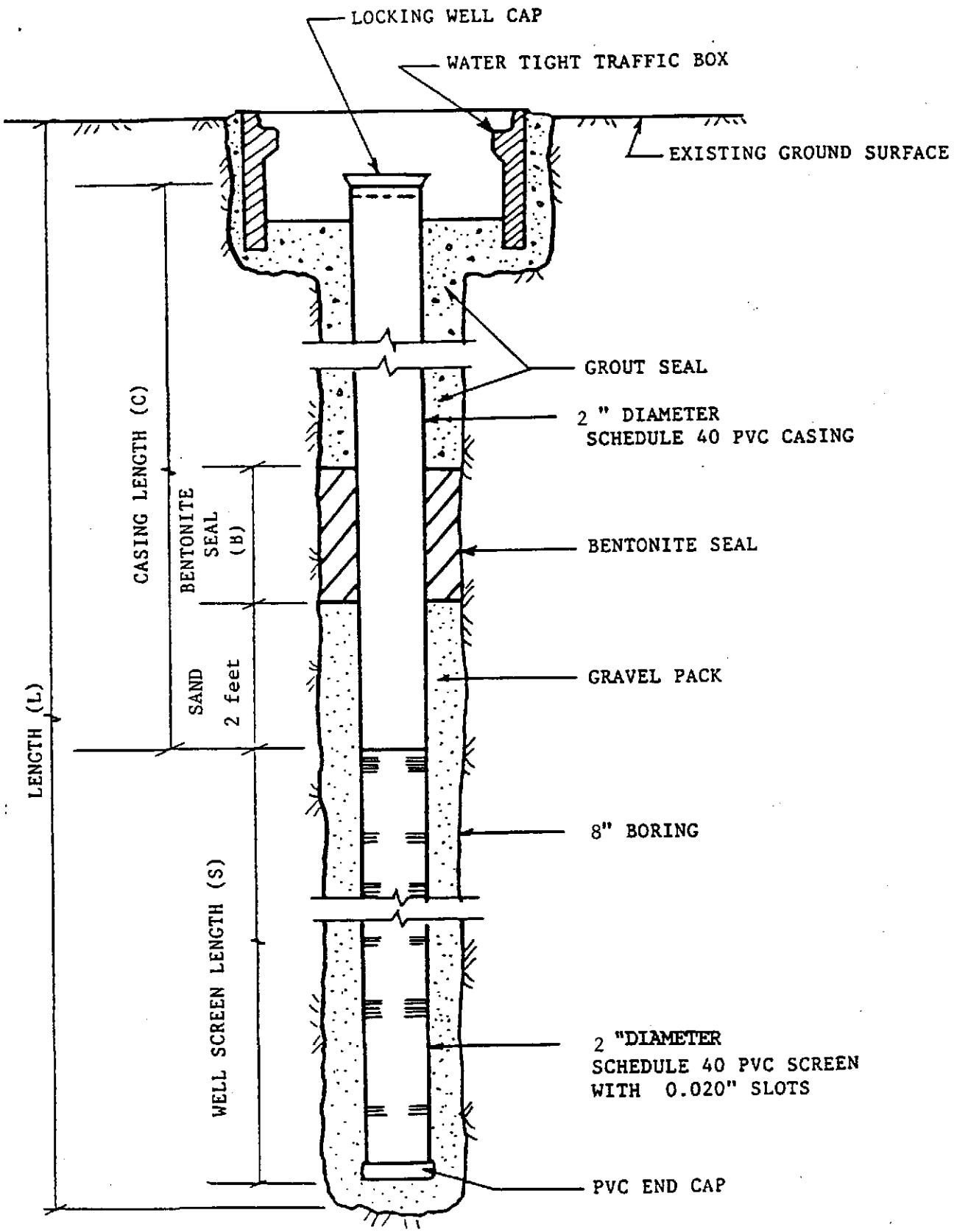
GeoPlexus, Inc.



L= 33 feet
S= 15 feet
C= 18 feet
B= 1 foot

VAL STROUGH CHEVROLET		
DATE 7-20-93	SCALE n/a	DRAWN BY dcg
MONITORING WELL MW-2		
	Figure 10	

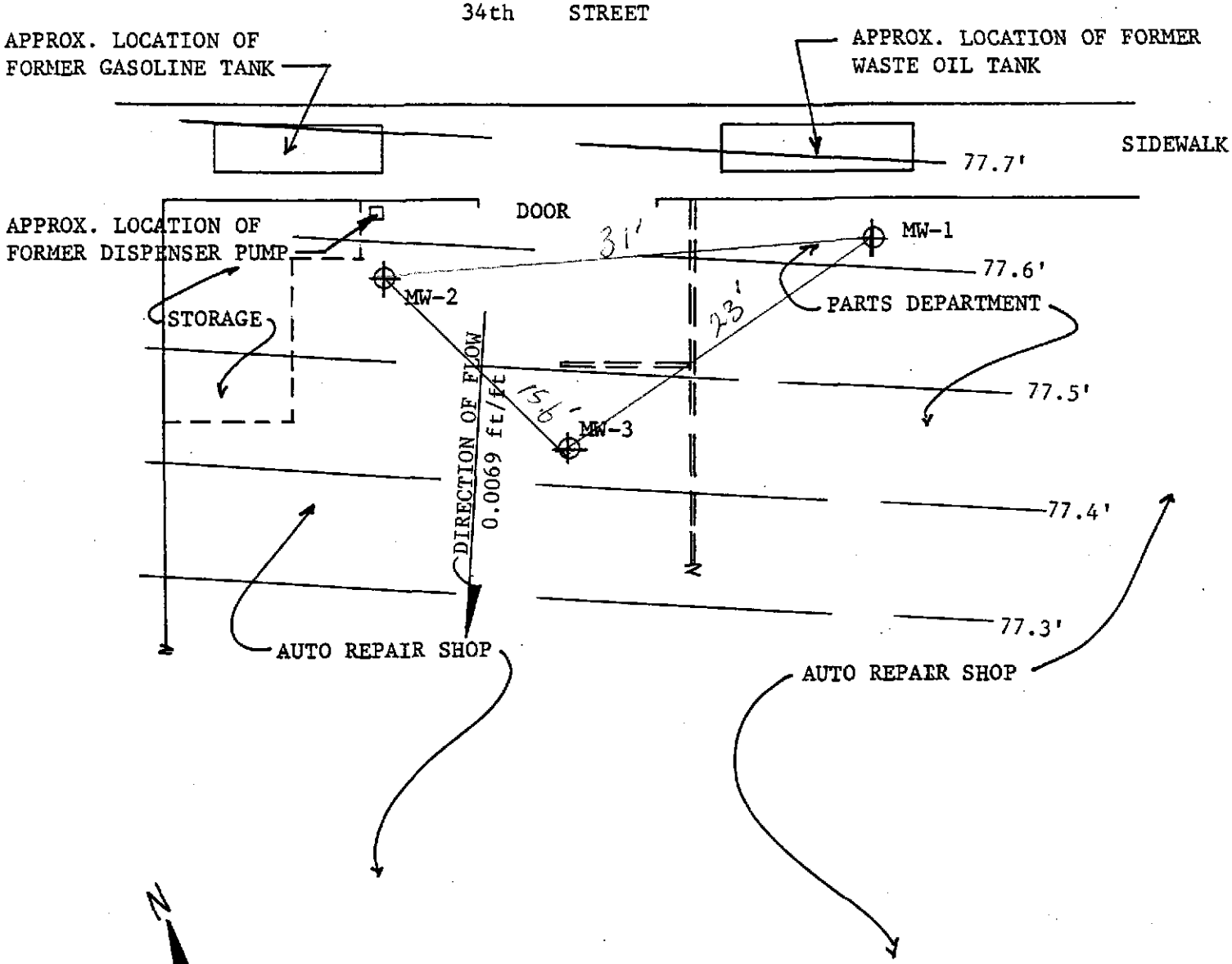
GeoPlexus, Inc.



L= 34 feet
S= 16 feet
C= 18 feet
B= 1 foot

VAL STROUGH CHEVROLET		
DATE 7-20-93	SCALE n/a	DRAWN BY dcg
MONITORING WELL MW-3		
	Figure 11	

GeoPlexus, Inc.



	MW-1	MW-2	MW-3
Casing Elev.*	98.43	99.68	99.72
Depth to Water	20.79	22.10	22.28
Water Elev.	77.64	77.58	77.44

*Elevation based on Temporary Bench Mark with an assumed elevation of 100.00 feet MSL

VAL STROUGH CHEVROLET		
DATE 7/1/93	SCALE 1"=10'	DRAWN BY dcg
GROUND WATER GRADIENT		
	Figure 12	

GeoPlexus, Inc.

APPENDIX A

CHAIN-OF-CUSTODY FORMS
AND
ANALYTICAL TEST DATA

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

CHAIN-OF-CUSTODY

PROJECT NUMBER | PROJECT NAME: KTW & Associates / VAL STROUGH

Send Report Attention of: MARK BOWCE-JENSEN | Report Due: / / | Verbal Due: / /

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers	TPHg	TPHd	BTEX	EPA 602	EPA 8020	EPA 624	EPA 8240	Oil & Grease 5520	Total Organic Lead	Condition of Samples	Initial
MW1-S1	7/19/93	1015		/	MON WELL 1 4.5-6'	1 ea	6" BRASS TUBE	✓	✓	✓					✓		31393	
MW1-S2		1025		/	MON WELL 1 9.5-11'			✓	✓	✓					✓		31394	
MW1-S3		1050		/	MON WELL 1 14.5-16'			✓	✓	✓					✓		31395	
MW1-S4		1110		/	MON WELL 1 19.5-21'			✓	✓	✓					✓		31396	
MW1-S5		1145		/	MON WELL 1 24.5-26'			✓	✓	✓					✓		31397	
MW2-S1		1540		/	MON WELL 2 4.5-6'			✓		✓							31398	
MW2-S2		1550		/	MON WELL 2 9.5-11'			✓		✓							31399	
MW2-S3		1615		/	MON WELL 2 14.5-16'			✓		✓							31400	
MW2-S4	↓	1625		/	MON WELL 2 19.5-21'	↓	↓	✓		✓							31401	

Type of Analysis

ICE? ✓
GOOD CONDITION ✓
APPROPRIATE CONTAINERS ✓
PRESERVATIVE ✓

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	7/21/93 1235	[signature]	7/21/93 13:35
[signature]	7/21/93 2:00 pm	[signature]	7/21/93
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Remarks: Send Original Reports and Invoices to: KTW & Assoc. 44434-45
Pg 1 of 2 STANDARD TURNAROUND

COMPANY: KTW & Associates
ADDRESS: 43289 Osgood Road, Fremont, CA 94539

GeoPlexus, Inc.

CHAIN-OF-CUSTODY

1900 Wyatt Drive, Ste. 1, Santa Clara, California 95054
Phone: (408) 987-0200 Fax: (408) 988-0815

PROJECT NUMBER

PROJECT NAME: KTW & Associates — VAL STROUGH

Send Report Attention of: MARK BORCH-JENSEN

Report Due: / /

Verbal Due: / /

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers	TPHg	TPHd	BTEX	EPA 602	EPA 8020	EPA 624	EPA 8240	Oil & Grease	Total Organic Lead	Condition of Samples	Initial
MW2-S5	7/20/93	0815		/	MON. WELL 2 24.5-26'	ICE	6" BRASS TUBE	✓		✓							31402	
MW3-S1		1120		/	MON. WELL 3 9.5-6'			✓		✓							31403	
MW3-S2		1135		/	MON. WELL 3 9.5-11'			✓		✓							31404	
MW3-S3		1150		/	MON WELL 3 14.5-16'			✓		✓							31405	
MW3-S4		1210		/	MON. WELL 3 19.5-21'			✓		✓							31406	
MW3-S5		1225		/	MON WELL 3 24.5-26'			✓		✓							31407	

Type of Analysis

ICE/T° ___
GOOD CONDITION ___
HEAD SPACE ABSENT ___
APPROPRIATE CONTAINERS ___

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	7/21/93 1235		7/21/93 1235
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	7/21/93 2:00 PM		7/21/93 2:00 PM
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Remarks: Send Original Reports and Invoices to: KTW & Assoc.

pg 2 of 2 STANDARD TURNAROUND

COMPANY: KTW & Associates
ADDRESS: 43289 Osgood Road, Fremont, CA 94539

TOTAL P.07

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

KTW & Associates	Client Project ID: Val Strough	Date Sampled: 07/19/93
43289 Osgood Road		Date Received: 07/21/93
Fremont, CA 94539	Client Contact: Mark Borsch-Jensen	Date Extracted: 07/21/93
	Client P.O: A4134-VS	Date Analyzed: 07/21-07/22/93

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
31393	MW1-S1	S	ND	ND	ND	ND	ND	106
31394	MW1-S2	S	ND	ND	ND	ND	ND	109
31395	MW1-S3	S	ND	ND	ND	ND	ND	110
31396	MW1-S4	S	ND	ND	ND	ND	ND	108
31397	MW1-S5	S	ND	ND	ND	ND	ND	106
31398	MW2-S1	S	2000,b	7.2	71	31	260	94
31399	MW2-S2	S	1700,b	5.7	54	24	210	97
31400	MW2-S3	S	410,b	1.8	14	5.1	51	93
31401	MW2-S4	S	10,000,b,d	100	780	260	1700	99
31402	MW2-S5	S	19,a	1.9	5.2	0.56	3.4	103
31403	MW3-S1	S	ND,b	ND	0.009	ND	0.014	99
31404	MW3-S2	S	ND,b	ND	ND	ND	0.009	105
31405	MW3-S3	S	ND,a	0.079	0.009	0.010	0.023	105
31406	MW3-S4	S	1400,b,d	6.4	46	14	150	100
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

KTW & Associates 43289 Osgood Road Fremont, CA 94539	Client Project ID: Val Strough	Date Sampled: 07/19/93
		Date Received: 07/21/93
	Client Contact: Mark Borsch-Jensen	Date Extracted: 07/21/93
	Client P.O: A4134-VS	Date Analyzed: 07/21-07/22/93

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
31407	MW3-S5	S	19,a	1.4	2.6	0.38	2.1	100
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

KTW & Associates 43289 Osgood Road Fremont, CA 94539	Client Project ID: Val Strough	Date Sampled: 07/19/93
		Date Received: 07/21/93
	Client Contact: Mark Borsch-Jensen	Date Extracted: 07/21/93
	Client P.O: A4134-VS	Date Analyzed: 07/21/93

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
31393	MW1-S1	S	ND	98
31394	MW1-S2	S	ND	98
31395	MW1-S3	S	ND	99
31396	MW1-S4	S	ND	98
31397	MW1-S5	S	ND	98
Detection Limit unless otherwise stated; ND means Not Detected		W	50 ug/L	
		S	10 mg/kg	

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

cluttered chromatogram; surrogate and sample peaks co-elute or surrogate peak is on elevated baseline

+ 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 diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) modified diesel?; light(C_L) or heavy(C_H) diesel compounds are significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel(?); f) one to a few isolated peaks present; g) oil 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

KTW & Associates 43289 Osgood Road Fremont, CA 94539	Client Project ID: Val Strough	Date Sampled: 07/19/93 Date Received: 07/21/93
	Client Contact: Mark Borsch-Jensen	Date Extracted: 07/21/93
	Client P.O: A4134-VS	Date Analyzed: 07/21/93

Petroleum Oil & Grease (with Silica Gel Clean-up) *

EPA methods 413.1, 9070 or 9071; Standard Methods 5520 B/E&F or 503 D&E for solids and 5520 B&F or 503 A&E for liquids

Lab ID	Client ID	Matrix	Oil & Grease
31393	MW1-S1	S	ND
31394	MW1-S2	S	ND
31395	MW1-S3	S	ND
31396	MW1-S4	S	ND
31397	MW1-S5	S	ND
Detection Limit unless otherwise stated; ND means Not Detected		W	5 mg/L
		S	50 mg/kg

*water samples are reported in mg/L and soils in mg/kg

DHS Certification No. 1644

Edward Hamilton, Lab Director

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

CHAIN-OF-CUSTODY

PROJECT NUMBER

PROJECT NAME KTW & Associates
VAL STROUGH

Send Report Attention of: MARK BORCH-JENSEN

Report Due / /

Verbal Due / /

Sample Number	Date	Time	Comp	Grab	Station Location	Number of Cntnrs	Type of Containers	TPHg	TPHd	BTEX	EPA 602	EPA 8020	EPA 624	EPA 8240	Oil & Grease 5520	Total Organic Lead	Condition of Samples	Initial
MW2-WS1 A,B	7/27/93	1230		/	MON WELL 2	2 ea	ACIDIFIED 40 ml VOA	✓		✓							31509	
MW3-WS1 A,B		1300		/	MON WELL 3			✓		✓							31510	
MW1-WS1 A,B		1325		/	MON WELL 1			✓		✓							31511	
MW1-WS2 A,B,C		1325		/	MON WELL 1	3 ea	1 LTR AMBER		✓						✓		- 31512 -	

ICE/T° ✓
GOOD CONDITION ✓
NO SPACE ABSENT ✓
PRESERVATIVE APPROPRIATE ✓
CONTAINERS ✓
VOAS O & G METALS

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	7/20/93 1250	[signature]	7/28/93 13:56
[signature]	7/28/93	Cary Lasard	7/28/93 2:35
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

Remarks: Send Original Reports and Invoices to: KTW & Assoc.
STANDARD TURNAROUND

COMPANY: KTW & Associates
ADDRESS: 43289 Osgood Road, Fremont, CA 94539
PHONE : (510) 623-0480 FAX : (510) 623-0482

2nd

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

KTW & Associates 43289 Osgood Road Fremont, CA 94539	Client Project ID: Val Strough	Date Sampled: 07/27/93
		Date Received: 07/28/93
	Client Contact: Mark Borch-Jensen	Date Extracted: 08/03-08/04/93
	Client P.O: A4159VS	Date Analyzed: 08/03-08/04/93

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	Ethylben-zene	Xylenes	% Rec. Surrogate
31509	MW2-WS1A	W	120,000,a	10,000	27,000	2900	20,000	110
31510	MW3-WS1A	W	330,000,a,h	9100	24,000	5300	33,000	85
31511	MW1-WS1A	W	ND	ND	ND	ND	ND	89
Detection Limit unless other-wise 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 sheen is present.

DHS Certification No. 1644

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

KTW & Associates 43289 Osgood Road Fremont, CA 94539	Client Project ID: Val Strough	Date Sampled: 07/27/93
		Date Received: 07/28/93
	Client Contact: Mark Borch-Jensen	Date Extracted: 07/29/93
	Client P.O: A4159VS	Date Analyzed: 07/29/93

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
31512	MW1-WS2A	W	ND	86
Detection Limit unless otherwise stated; ND means Not Detected		W	50 ug/L	
		S	10 mg/kg	

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

cluttered chromatogram; surrogate and sample peaks co-elute or surrogate peak is on elevated baseline

+ 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 diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) modified diesel?; light(C_L) or heavy(C_H) diesel compounds are significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel(?); f) one to a few isolated peaks present; g) oil 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

KTW & Associates 43289 Osgood Road Fremont, CA 94539	Client Project ID: Val Strough	Date Sampled: 07/27/93
		Date Received: 07/28/93
	Client Contact: Mark Borch-Jensen	Date Extracted: 08/02/93
	Client P.O: A4159VS	Date Analyzed: 08/02/93

Petroleum Oil & Grease (with Silica Gel Clean-up) *

EPA methods 413.1, 9070 or 9071; Standard Methods 5520 B/E&F or 503 D&E for solids and 5520 B&F or 503 A&E for liquids

Lab ID	Client ID	Matrix	Oil & Grease
31512	MW1-WS2A	W	ND
Detection Limit unless otherwise stated; ND means Not Detected		W	5 mg/L
		S	50 mg/kg

*water samples are reported in mg/L and soils in mg/kg

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: 07/28-30/93 Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
TPH (gas)	0.0	93.6	93.9	101	93	93	0.3
Benzene	0.0	9.2	9.3	10	92	93	1.1
Toluene	0.0	9.4	10.0	10	94	100	6.2
Ethyl Benzene	0.0	9.1	9.3	10	91	93	2.2
Xylenes	0.0	27.9	28.5	30	93	95	2.1
TPH (diesel)	0	133	139	150	89	93	4.5
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

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: 08/02-03/93 Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
TPH (gas)	0.0	93.7	88.7	101	93	88	5.5
Benzene	0.0	8.6	8.3	10	86	83	3.6
Toluene	0.0	8.7	8.5	10	87	85	2.3
Ethyl Benzene	0.0	8.7	8.5	10	87	85	2.3
Xylenes	0.0	26.8	26.5	30	89	88	1.1
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	0	25	25	23.7	104	107	3.2

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

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

Give [redacted] call

Ask so what now

David Glick (408) 987-0210

Ask Eva if she is the person to talk to.

? 3 more wells to get zero points.

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: 08/03/93 Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
TPH (gas)	0.0	93.7	88.7	101	93	88	5.5
Benzene	0.0	8.6	8.3	10	86	83	3.6
Toluene	0.0	8.7	8.5	10	87	85	2.3
Ethyl Benzene	0.0	8.7	8.5	10	87	85	2.3
Xylenes	0.0	26.8	26.5	30	89	88	1.1
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