EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

MEMORANDUM

September 18, 1986
Project 800-75.01

Gettler-Ryan Inc.
1992 National Avenue
Hayward, California 94545

Attention: Mr. Jeffrey M. Ryan

Re: Former Chevron Service Station, Fernside Blvd. and Gibbons Drive, Alameda, California Station # 1153

Gentlemen:

This memorandum documents the installation of three monitoring wells (C-1 through C-3) on August 18, 1986 by EMCON Associates at the former Chevron service station located at Fernside Boulevard and Gibbons Drive in Alameda, California. The locations of the monitoring wells are shown on the attached Figure 1.

The borings for Wells C-1, C-2, and C-3 were drilled using continuous-flight hollow-stem auger drilling equipment, and were logged by an EMCON geologist. Soil samples for logging were obtained from auger return materials and by advancing a California modified split-spoon sampler into undisturbed soil beyond the tip of the auger. Upon completion, all borings were converted to 3-inch monitoring wells. Well details accompany the attached Exploratory Boring Logs.

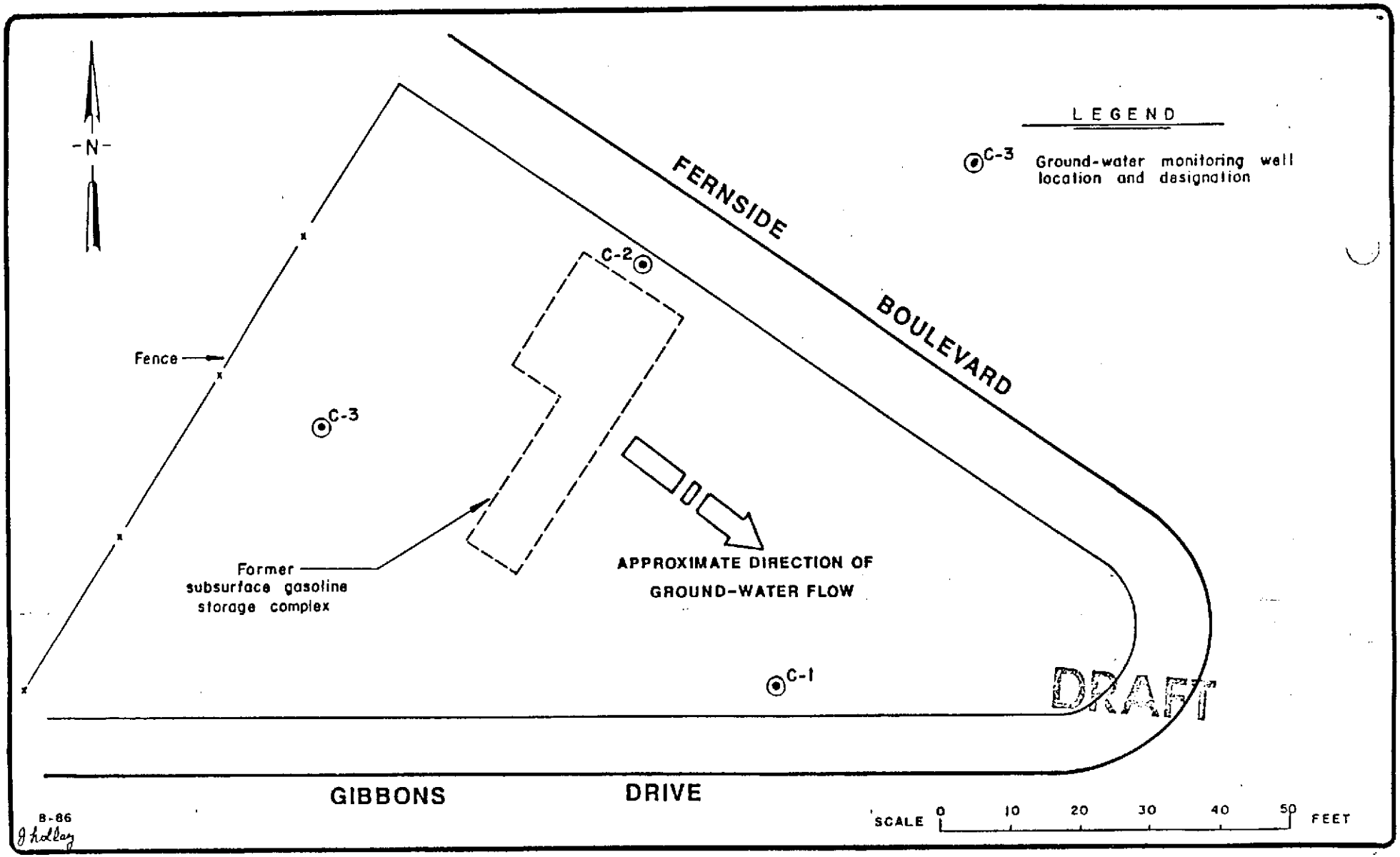
The borings encountered interbedded sand, silty sand, and clayey sand to the total depth explored of 22-1/2 feet. Ground water was encountered at a depth of approximately 4 feet. Strong product odor was noted in soils from Borings C-1 and C-2 from depths ranging between 1-1/2 and 5-1/2 feet. Faint product odor was noted in sand fill from Boring C-3 at a depth of 1 foot, and in soils from Boring C-1 at 9 feet.

The monitoring wells were field-checked for water level and presence of floating product by EMCON on September 4, 1986. No floating product was found in any of the wells. Therefore, ground water samples were collected from each of the wells. Prior to sampling, four casing volumes of water

were purged from the wells using a suction pump. The ground-water samples were then colleted using a teflon bailer. The samples were placed on ice and delivered directly to a certified analytical laboratory. The samples were analyzed for the presence of gasoline and BTX (benzene, toluene, xylene) compounds. Gasoline was detected in ground-water samples from C-1, C-2 and C-3 at 15,000 parts per billion (ppb), 1,000 ppb and 50 ppb, respectively. Certified analytical reports and methods of analysis are attached.

If you have any questions regarding the contents of this memorandum, please do not hesitate to call.

Susan M. Willhite



EMCON Associates

GETTLER-RYAN INC.
SUBSURFACE HYDROGEOLOGIC INVESTIGATION
FORMER CHEVRON SERVICE STATION, FERNSIDE BLVD. & GIBBONS DR.
ALAMEDA, CALIFORNIA

MONITORING WELL LOCATION MAP

FIGURE 1

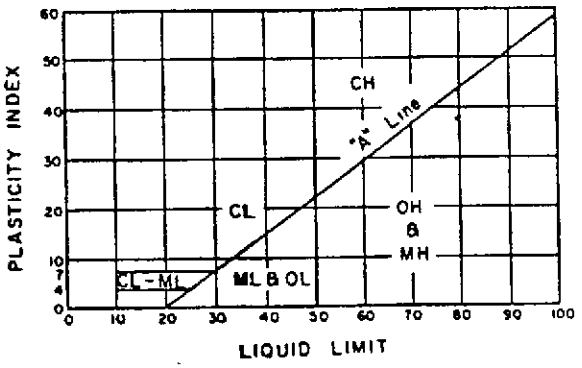
PROJECT NO. 800-75.01

MAJOR DIVISIONS		SYMBOLS	TYPICAL SOIL DESCRIPTIONS
COARSE GRAINED SOILS (More than 1/2 of soil > no. 200 sieve size)	GRAVELS (More than 1/2 of coarse fraction > no. 4 sieve size)	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction < no. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS (More than 1/2 of soil < no. 200 sieve size)	SILTS & CLAYS LL < 50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL > 50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

CLASSIFICATION CHART
(Unified Soil Classification System)

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL	3" to No. 4	76.2 to 4.76
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No. 4	19.1 to 4.76
SAND	No. 4 to No. 200	4.76 to 0.074
coarse	No. 4 to No. 10	4.76 to 2.00
medium	No. 10 to No. 40	2.00 to 0.420
fine	No. 40 to No. 200	0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

GRAIN SIZE CHART



PLASTICITY CHART

METHOD OF SOIL CLASSIFICATION

EMCC ASSOCIA

PLATE

11 219-711

NOTES:

Logs of Exploratory Borings

2.5 YR, 6/2 — Denotes color as field checked to Munsell Soil Color Charts (1975 Edition)

 Denotes undisturbed sample taken in 2-inch split-spoon sampler.

 Denotes disturbed sample (bag sample).

▽ Denotes first observation of groundwater.

▼ Denotes static ground-water level.

NR No recovery

Penetration — Sample drive hammer weight = 140 pounds, drop = 30 inches. Blows required to drive sampler 1 foot are indicated on logs.

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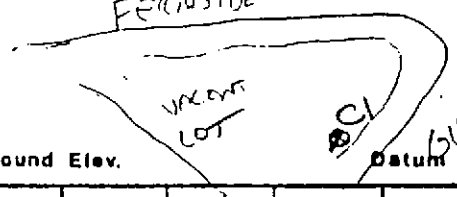
LOG EXPLORATORY BORING

PROJECT No. 700-15.01 DATE 8-18-86
CLIENT GR UNKNOWN
LOCATION ALAMEDA
LOGGED BY ERL DRILLER BAYLAND

BORING No. G1
Sheet 1 of 1

Field location of boring:



Ground Elev. Datum

Drilling method H-S AUGER
Hole dia. 8"

Casing installation data 3" PVC SLOTTED CASING INSTALLED FR 22 TO 2 FEET; SOLID TO SURFACE; SAND PACK TO 16"; BENTON TO 14"; CONCRETE TO SURFACE.

Water level	48'	41'		
Time	13.05	16.06		
Date	8-18-86	8-18-86		

Pocket Torr vane TSF	Pocket Penetrometer TSF	Blows/ft. or Pressure PSI	Type of Sample	Sample Number	Depth	Sample	Soil Group Symbol (U.S.C.S.)	DESCRIPTION
							SW	SAND FILL; BROWN (10YR, 5/3); 10-20% FINES; 70-80% FINE SAND; 10-20% MED SAND TO FINE GRAVEL; LOOSE; DRY; NPO.
					2		SP	
		4/4/4	DR-L	(1)	4			@ 1½ FEET, STRONG GAS ODOR.
	25		100%		6		SC	SAND; DARK GRAY (2.5Y, N4); 15-10% FINES; FINE SAND; LOOSE; WET; STRONG GAS ODOR.
					8			
	3.0	4/8/16	DR-L	(2)	10			CLAYEY SAND; DARK GRAY (2.5Y, N4); 30-40% FINES; FINE SAND; VERY STIFF; WET; STRONG GAS ODOR.
			100%					@ 9-10½ FT; DARK GRAYISH BROWN (2.5Y 4/2); FAINT GAS ODOR
					12			
					14		SP	SAND; OLIVE BROWN; (2.5Y, 4/4); 5-10% FINES; 80-90% FINE SAND; 5-10% MEDIUM SAND; MEDIUM DENSE; WET; NO GAS ODOR
		7/12/18	DR-L	(3)				
			100%		16			
					18			
		12/24/30	DR-L	(4)	20			@ 19-20½ FEET; 5% COARSE SAND TO FINE GRAVEL; VERY DENSE; NPO.
			100%					
		14/12/17	DR-L	(5)	22		SC	CLAYEY SAND; GRAYISH BROWN (2.5Y, 5/2); 25-35% FINES; 70-80% FINE SAND; VERY STIFF WET; NPO.
	3.0		100%					
								BOTTOM OF BORING AT 22½ FEET.

PRELIMINARY

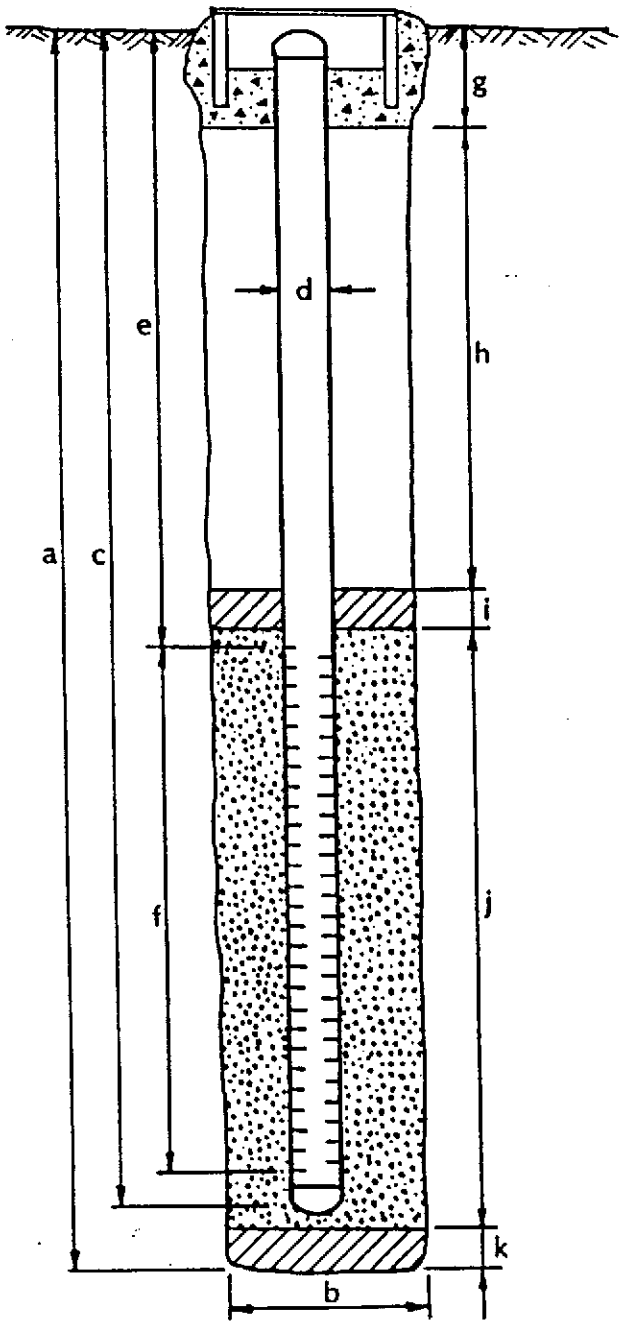
WELL DETA .S

PROJECT NUMBER 600-75.01
PROJECT NAME G-R (CHEVRON)
COUNTY ALAMEDA
WELL PERMIT NO.

BORING / WELL NO. C-1
TOP OF CASING ELEV.
GROUND SURFACE ELEV. 7'± MSL
DATUM USGS

DRAFT

G-5 vault box (Std.)



EXPLORATORY BORING

a. Total depth 22½ ft.
b. Diameter 8" in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION

c. Casing length 22 ft.
Material SCHEDULE 40 PVC
d. Diameter 3 in.
e. Depth to top perforations 2 ft.
f. Perforated length 20 ft.
Perforated interval from 22 to 2 ft.
Perforation type MACHINED SLOT
Perforation size .020 INCH
g. Surface seal 1.2 ft.
Seal material CEMENT GROUT
h. Backfill ~~0~~ ft.
Backfill material
i. Seal 0.3 ft.
Seal material BENTONITE
j. Gravel pack (22 to 1.5 FEET) 20.5 ft.
Pack material CONCO FILTER SAND
k. Bottom seal 1.5 ft.
Seal material BENTONITE

PLATE

LOG OF EXPLORATORY BORING

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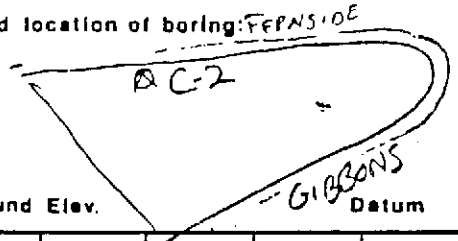
PROJECT No. 800-15.01 DATE 8-16-88
CLIENT GR EXXON
LOCATION ALAMEDA
LOGGED BY EBL DRILLER BAYLAND

BORING NO. G-2
Sheet 1 of 1

Field location of boring: FERNSIDE



Ground Elev. Datum

Drilling method HS AUGER
Hole dia 8"

Casing installation data 3" PVC SLOTTED CASING INSTALLED FR 22 TO 2 FEET; SOLID CASING FROM 2 FEET TO SURFACE. SAN PACK TO 16"; BENTONITE TO 14"; CONCRETE TO SURFACE.

Water level	4.1'			
Time	16:04			
Date	8-18-88			

Pocket Torr vane TSF	Pocket Penetrometer TSF	Blows/ft. or Pressure PSI	Type of Sample	Sample Number	Depth	Sample	Soil Group Symbol (U.S.C.S.)	DESCRIPTION
					2		SW	SAND-FILL; OLIVE GRAY; (5Y, 4/2); 10-20% FINES; 55-65% FINE SAND; 10-20% MED TO COARSE SAND; 10-20% FINE TO COARSE GRA LOOSE; MOIST; NO PRODUCT ODOR.
		1/1/1	DR-L 33%	(1)	4		SM	SILTY SAND; VERY DARK GRAY (2.5Y, N2); 15-25% FI 70-80% FINE SAND; LOOSE; WET; STRONG GAS OD
					6			
					8		SC	
	1.0	3/6/5	DR-L 100%	(2)	10			CLAYEY SAND; OLIVE GRAY (5Y 4/2); 30-40% FINE FINE SAND; STIFF; WET; NO PRODUCT ODOR
					12			
		7/18/14	DR-L 100%	(3)	14		SP	SAND; OLIVE BROWN (2.5Y, 4/4); 5-10% FINES; 80-90% FINE SAND; 5-10% MEDIUM SAND DENSE; WET; NO PRODUCT ODOR.
					16			
					18			
					20			@ 20½-22 FEET; 10-15% FINES; MEDIUM DENS TO DENSE; NO PRODUCT ODOR.
		15/15/15	DR-L 100%	(4)	22			BOTTOM OF BORING AT 22 FEET
					24			
					26			
					28			
					30			

PRELIMINARY

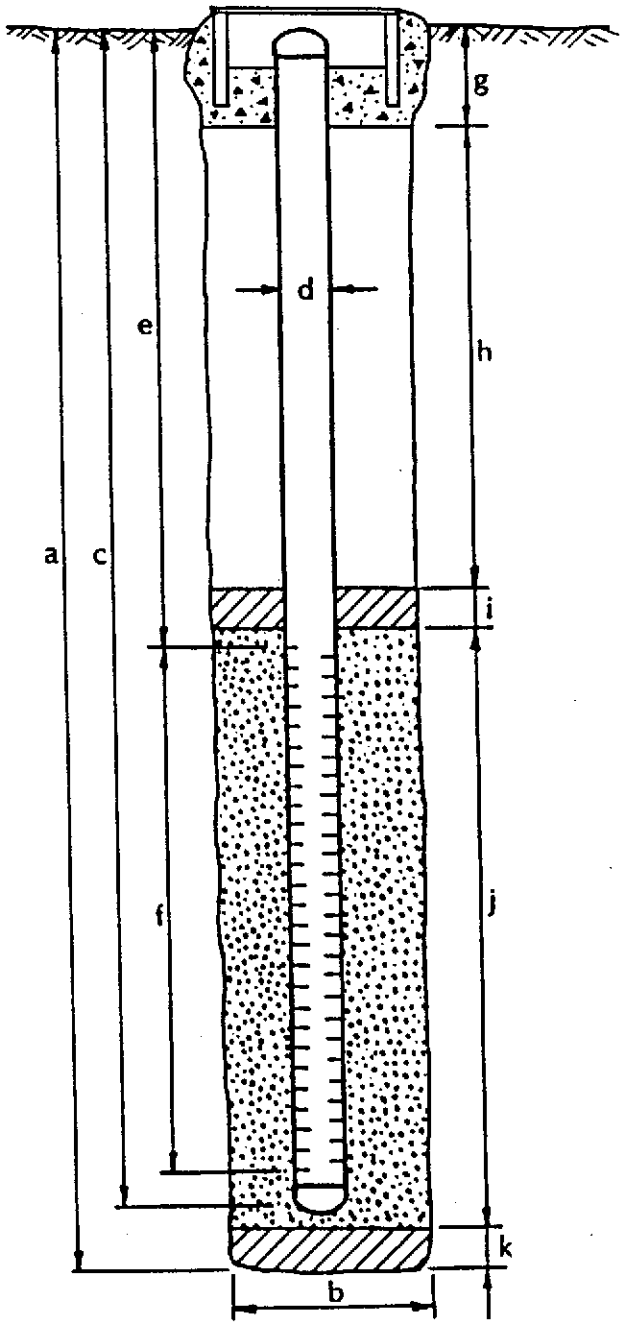
WELL DETA LS

PROJECT NUMBER 800-75.01
PROJECT NAME GIL CHEVRON
COUNTY ALAMEDA
WELL PERMIT NO.

BORING / WELL NO. C-2
TOP OF CASING ELEV.
GROUND SURFACE ELEV. 7± MSL
DATUM USGS

G-5 vault box (Std.)

DRAFT



EXPLORATORY BORING

a. Total depth 22 ft.
b. Diameter 8 in.
Drilling method Hollow Stem Auger

WELL CONSTRUCTION

c. Casing length 22 ft.
Material Schedule 40 PVC
d. Diameter 3 in.
e. Depth to top perforations 2 ft.
f. Perforated length 20 ft.
Perforated interval from 22 to 2 ft.
Perforation type Machine Slot
Perforation size .020 inch
g. Surface seal 1.2 ft.
Seal material Cement Grout
h. Backfill -0- ft.
Backfill material
i. Seal 0.3 ft.
Seal material Bentonite
j. Gravel pack (22 to 1.5 Feet) 20.5 ft.
Pack material Coarse Aquarium Sand
k. Bottom seal -0- ft.
Seal material

PLATE

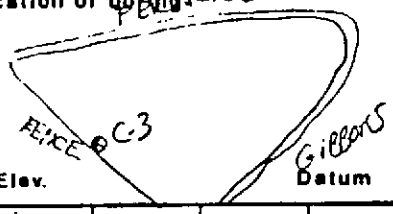
LOG OF EXPLORATORY BORING

EMCON ASSOCIATES

PROJECT No. 800-75.01 DATE 8-18-86
CLIENT GRL & YRON
LOCATION ALAMEDA
LOGGED BY EBL DRILLER BAYLAND

BORING No. G-3
Sheet 1 of 1

Field location of boring: SIDE



Ground Elev. Datum

Drilling method H-S AUGER
Hole dia. 8"

Casing installation data 3" PVC SLOTTED CASING INSTALLED FROM 22 TO 2 FEET; SOLID PVC FROM 2 FEET TO SURFACE; SAND PACK FROM 22' TO 16"; BENTONITE FROM 16" TO 14"; CONCRETE FROM 14" TO SURFACE.

Water level	4.0'			
Time	1676			
Date	8-18-86			

Pocket Torvane TSF	Pocket Penetrometer TSF	Blows/ft. or Pressure PSI	Type of Sample	Sample Number	Depth	Sample	Soil Group Symbol (U.S.C.S.)	DESCRIPTION
					2		SM	SAND-FILL; OLIVE GRAY (5Y, 4/2); 10-20% FINES - 60-70% FINE SAND; 10-20% MEDIUM TO COARSE SAND; 10-20% FINE TO COARSE GRAVEL; CONCRETE FRAGMENTS; LOOSE; DRY TO MOIST; FAINT GAS ODOR.
		2/5/7	IR-L 20%	(1)	4		SP	SAND; VERY DARK GRAYISH BROWN (10YR, 3/2); 5-10% FINES; FINE SAND; 10-20% MEDIUM TO COARSE SAND; LOOSE; MOIST; NO PRODUCT ODOR
					6			
					8		SC	
	2.0	5/8/11	IR-L 100%	(2)	10			CLAYEY SAND; GRAYISH BROWN (10YR, 5/2); 40-50% FINES; FINE SAND; STIFF; WET; NO PRODUCT ODOR; ROOT FRAGMENTS AND HOLES.
					12			
		9/25/35	IR-L 100%	(3)	14		SP	SAND; BROWN (10YR, 4/3); 5-10% FINES. FINE SAND; 5-10% MEDIUM SAND; DENSE; WET; NO PRODUCT ODOR.
	3.0				16		SC	CLAYEY SAND; BROWN (10YR, 5/3); 25-35% FINES; FINE SAND; VERY STIFF; WET; NO PRODUCT ODOR.
					18		SP	
					20			
		12/14/12	DRL 100%	(4)	22		SC	SAND; BROWN (10YR, 4/3); > 10% FINES; 80-90% FINE SAND; MEDIUM DENSE; WET; NPD
	1.5				24			CLAYEY SAND; DARK GRAY (2.5Y, N4); 35-45% FINES; FINE SAND; STIFF; WET; NPD
					26			BOTTOM OF BORING AT 22 FEET
					28			
					30			

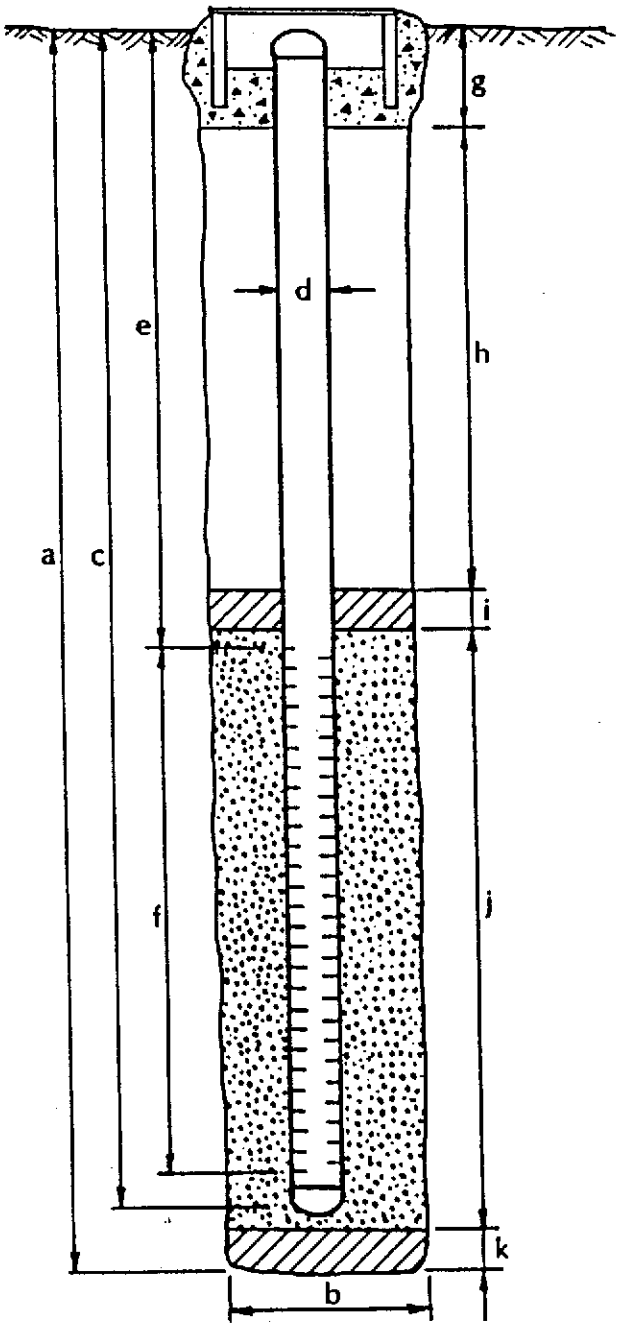
PRELIMINARY

WELL DETA .S

PROJECT NUMBER 800-75.01
PROJECT NAME GR CHEVRON
COUNTY ALAMEDA
WELL PERMIT NO.

BORING / WELL NO. C-3
TOP OF CASING ELEV.
GROUND SURFACE ELEV. 7'± MSL
DATUM USGS

G-5 vault box (Std.)



EXPLORATORY BORING

a. Total depth 22 ft.
b. Diameter 8 in.
Drilling method HOLLOW STEM AUGER

WELL CONSTRUCTION

c. Casing length 22 ft.
Material SCHEDULE 40 PVC
d. Diameter 3 in.
e. Depth to top perforations 2 ft.
f. Perforated length 20 ft.
Perforated interval from 22 to 2 ft.
Perforation type MACHINED SLOT
Perforation size .010 INCH
g. Surface seal 1.2 ft.
Seal material CEMENT GROUT
h. Backfill ~ ft.
Backfill material
i. Seal 0.3 ft.
Seal material BENTONITE
j. Gravel pack (22 TO 1.5 FEET) 20.5 ft.
Pack material COARSE MONTEREY SAND
k. Bottom seal 0 ft.
Seal material

PLATE

LABORATORY METHODS

The method of analysis is taken from EPA methods 5030, 8015, 8020 and 602. Five milliliters of water sample or 50 microliters of methanol extract of a solid soil sample mixed in 5 milliliters of reagent are purged using an inert gas to transfer the analyze compounds from the liquid phase to the vapor phase. The vapor is passed through a sorbent tube in which the compounds of interest are trapped. When the purging of the liquid sample is complete, the sorbent trap is heated and back-flushed with the inert gas, and the compounds are transferred in this gas to a gas chromatograph. The compounds enter a chromatographic column that is temperature programmed to separate the compounds. The compounds are eluted off the column in the gas phase and enter a photo-ionization detector followed in series by a flame-ionization detector. The latter combination allows for discrimination between aliphatic and aromatic compounds. Quantitation is performed by integration under all peaks obtained. Benzene, toluene, xylene, and ethylbenzene are quantitated by comparison to fresh or evaporated gasoline standards.

EMCON ASSOCIATES • CHEMICAL LABORATORIES
Analysis • Consultation • Research • Environmental Studies
State Approved Water Laboratory

CERTIFIED ANALYTICAL REPORT

Project Number: 800-75.0

Report to: Gettler-Ryan
1992 National Ave.
Hayward, CA 94545

Location: Chevron, Alameda

Sample Type: WATER
Units: ug/l

Sample Designation:	C01	C02	C03
Field Date:	09/04/86	09/04/86	09/04/86
Laboratory Number:	E86-0809	E86-0809	E86-0809
Benzene	760	49	3.2
Toluene	820	18	5.4
Xylenes and Ethylbenzene	1500	84	5.8
Volatile Hydrocarbons due to Gasoline	15000	1100	50

Reported by: Rhuby Murphy Date: 9-15-86

1921 RINGWOOD AVENUE, SAN JOSE, CALIFORNIA 95131 TELEPHONE (408) 275-1444