

Chevron U.S.A. Inc.

2 Annabel Lane, Suite 200, San Ramon, CA 94583 • Phone (415) 838-5000

Marketing Operations D. Moller Division Manager, Operations S. L. Patterson Area Manager, Operations C. G. Trimbach Manager, Engineering

5 August 1987

CC COPY T.M. Gerow Original Public Health Engineer

RWQCB County Department of Environmental Health

470 27th Street, Room 324 Oakland, California 94612

Chevron Service Station 9-1153

Fernside and Gibbons, Alameda, CA

Dear Mr. Gerow:

Chevron U.S.A. Inc. is in the process of conducting an investigation of the above-referenced site.

Attached is a copy of our most recent consultant's report and a summary of chemical analysis done at the site to date. Additionally, Chevron has contracted with EA Engineering, Science, and Technology, Inc. (EA) for further investigations at this site. Investigations will include:

- Conducting a Soil Vapor Contaminant Assessment to determine extent of contamination
- A review of existing data provided by Chevron and readily available literature.
- Conducting an inventory of existing wells within a onehalf mile radius including when available, location, depth, construction, yield, and usage (both pumping rates and use).
- Development of a conceptual hydrogeological model and inputs for a numerical simulation.
- A model using a worst plausible case approach assessing potential impacts, if any, on existing water supplies.
- Development of a brief risk assessment report outlined 6. below.
 - Summary of Investigations to Date Α.
 - Summary of data in a table
 - Maps
 - Regional
 - Site, includes all sampling points

- Well inventory
- Geological x-sections
 - . Generalized from literature
 - . Local if applicable
- Determination of local gradient and ground-water flow velocity
- B. Analysis of Contaminant Fate
 - Fate of ground water
 - Ground water model flow to nearest well show concentration vs. time
 - Evaluate biodegradation potential
- C. Determination of Risk
 - Recommendations for further actions

Should you have questions or require additional information please do not hesitate to contact Robert Stolz at 415-838-5302.

Very truly yours,

D. Moller

R.S. Stolz Engineer

Sampleb	Depth/Date	Benzene	Toluene	Xylenes	Ethyl- benzene	Total Petroleum <u>Hydrocarbons</u> (8)	EDB
MW C1 ⁽¹⁾							
Soil		- .	-	_	, ,-	- , ,	_
Groundwater	09/04/86	.76	.82	1.	5(2)	15.(3)	_
(4)							
W C2 ⁽⁴⁾							
Soil Groundwater	09/04/86	.049	.018		84 ⁽²⁾	- 1.1 ⁽³⁾	
	09/04/60	.049	.010	• (704	1 • 1	_
W C3 ⁽⁵⁾							
Soil		_	_	_	. - .	- ,	_
Groundwater	09/04/86	.0032	.0054	• C	058 (2)	.050(3)	_
· _							
oil Samples							
#1	11'	_	_	_	_	<1	_
#2ª	12'	-	_	_	_	<1	_
#3 ^a #4 ^a	10'		-	-	_	* <1	_
#4 ^d	10.5'	-	_	-	-	<1 (7)	-
#6a(6) #7a #8a #9a	81,_,	_	_	_	_	<11(7)	_
‡ 7ª	18"(9)	_	-	_	-	1400	-
#8ª	204(10/	_	_	_	_	530	_
iga.	12"(11)	_	_	_	_	150	_
#10 ^a	10'				_	<1 <1	
#11 ^a	12'	_	_	_	_		_
#11 7		-	-	_	_	<1	-
#12 ^a	10'	-	-	-	-	<11	-
#13 ^a #1 ^C	12-18" (12)	-	_	_	_	33, 44	-
#1 ^C		-	-	-	_	<1(14)	_
#2 ^C		-	-	-	-	<1(14)	-
ater Sample ^a							
ater,Sample ^a	06/04/86	<u>-</u>	-	_		130(8)	

Footnotes:

- 1. Designated on report as "CO1".
- 2. Combined figure for xylenes and etheylbenzene.
- 3. Combined as "Volatile Hydrocarbons due to Gasoline".
- 4. Designated on report as "CO2".
- 5. Designated on report as "CO3".
- 6. Sample #5 was a water sample.
- 7. Waste oil by extraction.
- a. See Data Source List.
- b. See Data Source List.
- c. See Data Source List.

- 8. Reported as gasoline unless otherwise noted.
- 9. Soil from stockpile 18" below surface.
- 10. Soil from stockpile 20" below surface.
- 11. Soil from stockpile 12" below surface.
- 12. Soil from stockpile 12-18" below surface.
- 13. Subsurface water sample.
- 14. Designated as total hydrocarbon-responsegasoline.

Data Source List

- a. Flay, R. Report rom Thermo Analytical, Inc. to Chevron U.S.A. No. date.
- b. Murphy, P. 1986. Report from Emcon Associates to Gettler-Ryan, Inc., 15 September 1986.
- C. Flay, R. 1986. Letter from Thermo Analytical Inc. to Vicki Hobbs, Chevron U.S.A., 8 July 1986.



NECENTEL

MEMORANDUM

Environmental Control

STREET CALLING

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, and clayey sand to the total depth explored of 22-1/2 Growwater was encountered at a depth of approximately 4 feet. In any product odor was noted in soils from Borings C-1 and C-2 from depths and between 1-1/2 and 5-1/2 feet. Faint product odor was noted in sand ill from Boring C-3 at a depth of 1 foot, and in soils from Boring C-1 at 9 feet.

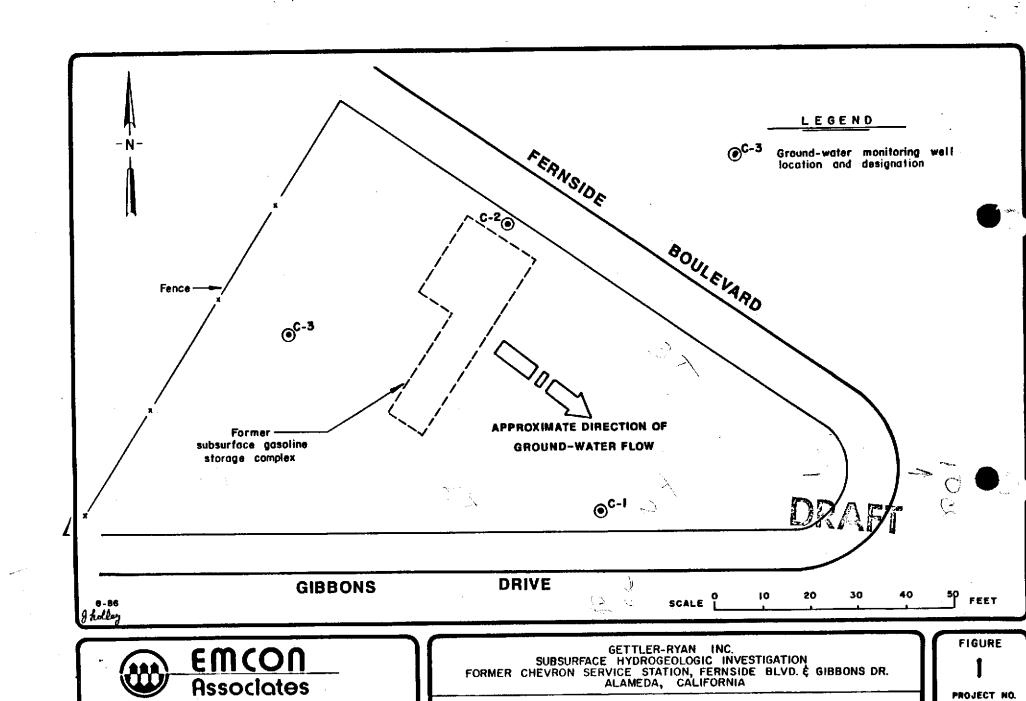
The monitoring wells were field-checked for water level and presence of floating product by EMCON on September 4, 1986. No floating product was found in any of the wells. Therefore, ground water samples were collected from each of the wells. Prior to sampling, four casing volumes of water

Gettler-Ryan Inc. September 15, 198

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



MONITORING WELL LOCATION MAP

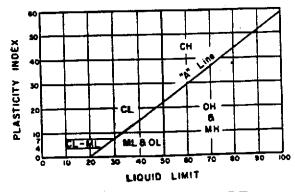
PROJECT NO.

800-75.01

M	AJOR DE IONS	SYMBOLS	TYPICAL SEL DESCRIPTIONS
		GW	Well graded gravels or gravel-sand mixtures, little or no fines
ve size	GRAVELS	GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
GRAINED SOILS of soil) no. 200 sieve size)	(More than 1/2 of coarse fraction) no. 4 sieve size)	GM 0	Sitty gravets, gravel-sand-sitt mixtures
GRAINED f soil) no. 2		GC 👸	Clayey gravels, gravel-sand-clay mixtures
GRA of soi		sw	Well graded sands or gravelly sands, little or no fines
COARSE than 1/2 c	SANDS	SP	Poorly graded sands or gravelly sands, little or no fines
C. (More 1	(More than 1/2 of coarse fraction (SM	Silty sonds, sand-silt mixtures
=		sc	Clayey sands, sand-clay mixtures
size)	SILTS & CLAYS	ML	Inorganic sitts and very fine sands, rack flour, sitty or clayey fine sands or clayey sitts with slight planticity
SOILS 200 sieve	LL (50	CL	Inorganic clays of law to medium plasticity, gravelly clays, sondy clays, silty clays, lean clays
AINED SC	<u> </u>	OL	Organic sitts and organic sitty clays of low plasticity
등등	SILTS & CLAYS	мн	Inorganic silts, micaceous or diatamaceous fine sandy or silty soils, elastic silts
FINE (LL > 50	СН	Inorganic clays of high plasticity, fat clays
(More 1	11730	он	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 GE	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL coarse fine	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
SAND coarse medium fine	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.76 to 2.00 2.00 to 0.420
SILT & CLAY	Below No. 200	Below 0.074



PLASTICITY CHART

GRAIN SIZE CHART

METHOD OF SOIL CLASSIFICATION



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.

# SECOND 13.05 16.06 13.05 16.06 13.05 16.06 13.05 16.06 13.05 16.06 13.05 16.06 13.05 16.06 13.05 16.06 13.05 16.06 13.05 16.06 13.05 10.06 13.05 10.06 13.05 10.06 13.05 10.06 13.05 10.06 10.06 13.05 10.06 10.	EXPLORATORY BORING Field location of boring: Ground Elev. LOG GEXPLORATORY BORING Exploration of boring: Colonial State of the									PROJECT NO. 100-15.01 E 8-18-82 BORING N CLIENT GR OF IDN LOCATION ALAMEDY LOCATION ALAMEDY LOCATION ALAMEDY Sheet I Sheet I Of I Of I Of I Of I OF IT I I I I I I I I I I I I I I I I I I				
STOPPHISONN (COVES PS): 10-20% FIRTS; 70-50? PINE SAMO: 10-20% MED gavo TO 50? PINE SAMO: 10-20% MED gavo TO 50? PINE SAMO: COSE; NED; NED; NED; NED; TO 50? PINE SAMO: COSE; NED; STEAM: CAS COME. SAMO: SAMO: COSE; NED; STEAM: CAS COME. SAMO: SAMO: COSE; NED; STEAM: CAS COME. CAYE! SAMO: CHEEK SAMO: USBY STIPT; NET; STEAM: CAS COSE. PINES FOR SAMO: USBY STIPT; NET; STEAM: CAS COSE. PINES FOR SAMO: USBY STIPT; NET; STEAM: CAS COSE. TICKS: 50-40 / PINE SAMO: SAMO: SAMO: CLIPE SEMON (2.57, U/V); STIPT; NOTE: SAMO: COMMISSION MEDIUM DENIES: NET; NO CAS COOK! CAS COOK! SAMO: CLIPE SEMON (2.57, U/V); STIPT; NOTE: SAMO: COMMISSION MEDIUM DENIES: NET; NO CAS COOK! CAS COOK! SAMO: CLIPE SEMON (2.57, U/V); STIPT; NOTE: SAMO: COMMISSION DENIES SAMO: COM	Pocket Torr vane TSF	Penetrometer	t [1		1 _~ 1	Soll Group	Symbol (U.S.C.S.)	Time 13.45 16.06 Date 8-18-86 8-18-86				
	3	jo j	<i>१८</i> //८ गाटाह	100% 100% 100% 100% 100% 100%	(3) (3) (3)	8-12-14-16-18-20-2		\$ \$\ \$\ \$\ \$\		TO FINE GRAVELY COOSE; DRY, NOP. TO FINE GRAVELY COOSE; DRY, NOP. (C. IYL. FEET; STREAMS GAS OFF.) FINE SAMO: LOOSE; WET, STREAM GAS OFF.; THE GAS OFF. CLAYEV GARD, DRY GRAY (254, NY); 25-40%. FINES, FINE SAMO, UERY STIFF; WET; STRUME GAS OFF. (ANS. OFF.) (C. 9:10 & FT.: DACK (MAYISA BROWN (25) Y/Z); FAINT GAS (2002. SAND; OLITE BROWN; (2:54, Y/Y); 5-10%. FINES: 80-90 & FINE SAMO; 5-10%. NEDWAY SAND; MEDIUM DENISE: WET; NO CAS OFFIC. CLAYEY SAND: GRAYISH BROWN (254, 5/2); 25- 357 FINES: 10-80% FINE SAND; VERY STIFF WET; NPO. BOTTOM OF BORING AT 22 'N FEET.				



WELL DETAIL

PROJECT	NUMBER	80	800.75.01					
PROJECT	NAME _	G-P-	(HEVPIN)					
COLUMN	_							

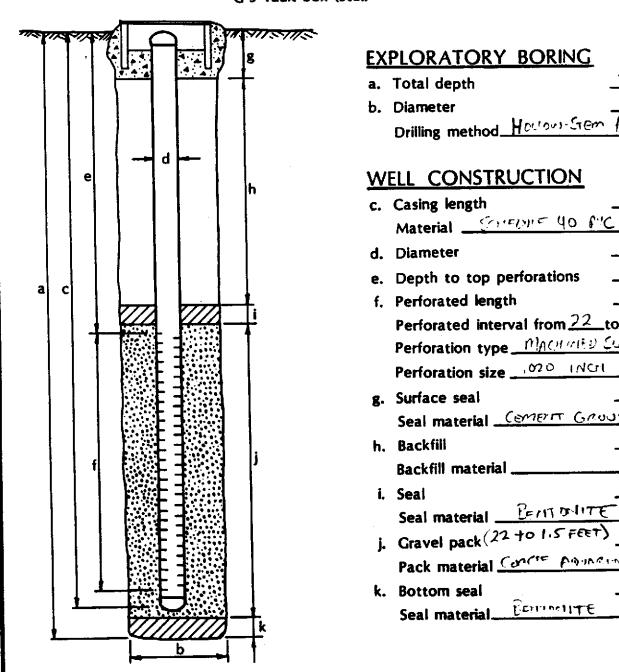
WELL PERMIT NO.____

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

DATUM ___ USGS

G-5 vault box (Std.)

DRAFT



EXPLORATORY BORING

221/2 ft. Drilling method Horrows-Stem AUGER

WELL CONSTRUCTION

- Material Surpress 40 PC
- 2_ft. e. Depth to top perforations 20 ft.
 - Perforated interval from 22 to 2 ft. Perforation type MACHIMED CLOT
 - Perforation size 1020 INCIL
- - Seal material COMPTT GROUT
- - j. Gravel pack (22 to 1.5 FEET) 205ft.
 - Pack material Concre Agundum AUD

EXPLORATOR BORING								CLIENT GR C LOCATION ACAM LOGGED BY EBL	N RON	Bayun	MD	G-Z Sheet of
Field locatio	DC-2	GIBOD	NS etum				Casing Installation of 22 To 2 PECT; Soc Rea to 15; BENTER	lata 3" PIC 10 CASING	SUTTED (FROM 2	FPET 70 S	STALLED FROM LOFACE. SANO	
Pocket Torr vane TSF Pocket	Blows/ft. Or Pressure PSI	Type of Sample	Semple	Depth	Sample	Solf Group	(U.S.C.S.)	Water level Time Date	4.1 16.04 8-18-86 Descr	IPTION "	-	
	V(/)	100%	(D) (3)	2 4 6 8 0 12 14 16 8 20 22 21 26 26 20 21	£,			FINES; SS- TO COARSE SA LOOSE; MOIST; SILTY SAND; VOC TO-80 & FINE CLAMEV SAND; O FINE SAND; STITE FINES: 80-90 DENSE; WET	No PRODUCT NO PRODUCT SAND: LOO LIVE BRAY (FF; WFT; REGINE SE; NO PRODUCT SAND	NO PERM DI FINE POORCE NO PERM WOODE 15% FINE	10-2 10 (3 NZ); 15 STEINI 30-4 7 0002 1, MEDI 2, MEDI 2, MEDI 2, MEDI	-258 FINTS; G GAS GOOR O & FAUFS; UM SAND; OLUM DOUE

.

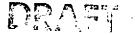
WELL DETAL'S

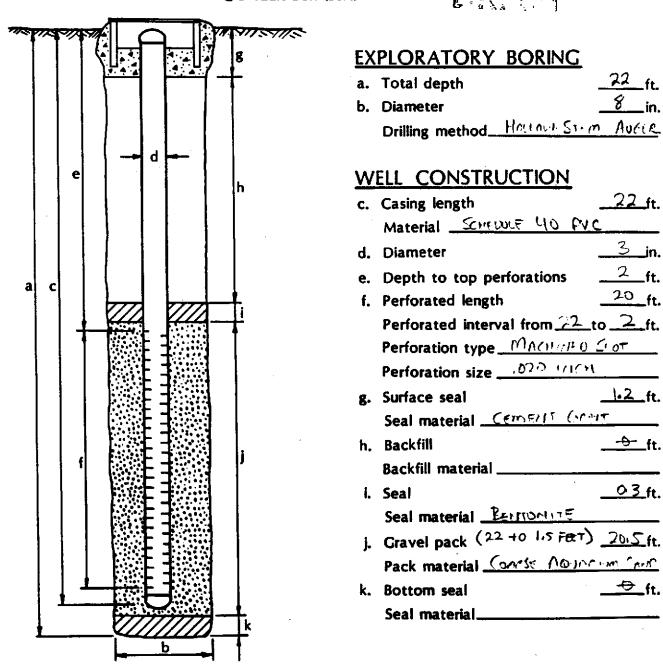


PROJECT NUMBER 800-75.01 PROJECT NAME GR CHEVRON COUNTY ALMEDA GROUND SURFACE ELEV. 7 1/2 MSL WELL PERMIT NO._____

BORING / WELL NO. C-2 TOP OF CASING ELEV.____ DATUM USGS

G-5 vault box (Std.)





EMCON Field local			RATO	ORY Satur)RI	n	G	PROJECT NO. 800-15-01 CLIENT GR. CHE DN LOCATION ALAMED LOGGED BY BL. DRILLER BMLHND Of Drilling method H-S AVGER Casing Installation data 3" PVC SLOTTED CASAGE INSTALLED FROM 22 TO 2 FRET; SOLIDS PVC FIRST 2 FRET TO			
Ground Ele	v.	Blows/ft. Or Pressure PSI	Type of Sample	atum eiden red reden reden reden reden reden reden reden reden reden reden red reden reden reden reden reden reden reden reden reden reden red reden red reden red reden reden red red red red red red red red red red	Depth	Semple	Soll Group	Symbol (U.S.C.S.)	Suffice: Samp Pack From 22'TO K" BENTONITE FAM 16"+014" CONCRETE FROM 14" TO SUMPACE. Water level 4.0' Time (6.76 Date 8-18-86 DESCRIPTION			
3	2.0	2/5/7 5/8/11 9/25/35	20% !V-L 100 %	(y)	246802468224382		3 3 5 S		SAND-FILL; DLIVE GRAY (5Y, 1/2); 10-70? FINS-60-70? FINE SAND; 10-20?, MEDIUM TO COMRSE SAND; 10-20?, FINE TO COARSE GRAVE; GENCRITE FROM MITTINGE; BY MITTING GOOD. SAND; UTCH JACK GRAYS! BROWN! (10 YR; 3/2); 5-10/0 FINES; FINE SAND; 10-20? INDIUM TO COARSE SAND; LUOSE; MAIST; NO REDOUT ODUR. GAVEN SAND; GROWISH LROWN (10 YR, 5/2); UD 50? FINES FINE SAND; STIFF; WET, NO REDUCT ODOR; ROOT FROM MISS JIND HOLES. SAND! BROWN (10 YR; 4/3); SHOT FINES; SHOTOM OF BOZING NO PROJECT DOOR. SAND; BROWN (10 YR, 4/3); > 10-7 FINES; FINE SHOTOM OF BOZING AT 22 FRET			
							<u> </u>	,				

WELL DETAILS



PROJECT NUME	ER_ 80	00-75.01	
PROJECT NAMI			
COUNTY	LAME	.09	
WELL PERMIT N	Ю		

BORING / WELL NO. <u>C-3</u>

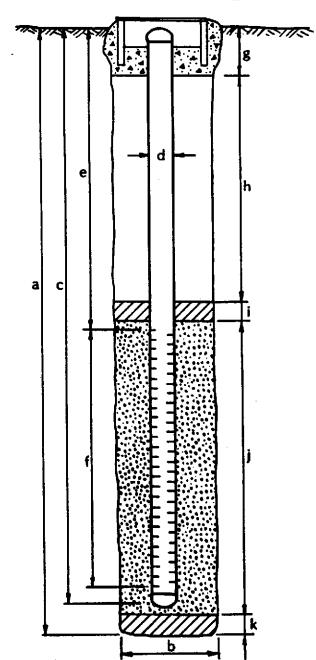
TOP OF CASING ELEV.

GROUND SURFACE ELEV. 7'± MSL

DATUM US GS

G-5 vault box (Std.)





EXPLORATORY BORING

a. Total depth

b. Diameter

Drilling method How Stem Auge

WELL CONSTRUCTION

- c. Casing length ________ft.

 Material ______SCHEDULE '40 PVC_______
- d. Diameter ____3_in.
- e. Depth to top perforations $\frac{2}{2}$ ft.
- f. Perforated length

 Perforated interval from 20 to 2 ft.

 Perforation type MACHINED SLOT

 Perforation size 6000 INCH
- g. Surface seal 1/2 ft.
 Seal material CENTERIT GROUT
- h. Backfill _____ft.

 Backfill material _____
- i. Seal Seal material $\frac{OS}{\mathcal{L}^{(1)}}$ ft.
- j. Gravel pack (22+0 1.5 FEET) 20.5 ft.
- Pack material Coalse Albunguin Shurp
- k. Bottom seal _____ft.
 Seal material_____

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 ASC CIATES . CHEMICAL LARC ATORIES

Analysis • Consultation • Research • Environmental Studies
State Approved Water Laboratory



Project Number: 800-75.01

CERTIFIED ANALYTICAL REPORT

Report to:

Gettler-Ryan

1992 National Ave. Hayward, CA 94545

Location: Chevron, Alameda

Sample Type: WATER

Units: ug/1

Sample Designation: Field Date:	C01 09/04/86	C02 09/04/86	C03	
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	

Page 1

Reported by Mungan

Date: 9-15-84



TMA/ERG

1400 West 53rd Street

Suite 460

Emeryville, CA 94608-2946

(415) 652-2300

Chevron USA 2 Annabel Lane, Suite #200 San Ramon, CA 94583

Release #23

Procedure: The samples are analyzed for gasoline by following the method described in Attachment 2, Analytical Procedures for Fuel Leak Investigations. The samples are concentrated on a Tekmar LSC-2 automatic sample concentrator prior to injection into a gas chromatograph fitted with a flame ionization detector. Quantitation is performed, as total hydrocarbon response, against known concentrations of gasoline. The limit of detection for this method of analysis is one part per million (mg/kg), unless stated otherwise.

The samples are analyzed for waste oil by following a modified EPA Method 3510 extraction procedure. The samples are extracted three times with hexane. The solvent is removed from the combined extracts and carbon disulfide is added. The solution is injected into a gas chromatograph fitted with a flame ionization detector. Quantitation is performed, as total hydrocarbon response, against a solution made from a known concentration of light machine oil. The limit of detection for this method of analysis is eleven parts per million (mg/kg).

The results are summarized in Table I.

Submitted by:

Robert B. Flay

Manager, Organics Department

robut B. Fley

RBF:sml

cc: Rich Blaine
Blaine Tech Service
P.O. Box 5745
San Jose. CA 95150

TABLE I

ERG #	CLIENT ID	GASOLINE CONCENTRATION (mg/kg or mg/L)
7920-1	86155 F1 #1	ND(1)
7920-2	86155 F1 #2	ND(1)
7920-3	86155 F1 #3	ND(1)
7920-4	86155 F1 #4	ND(1)
7920-5	86155 F1 #5	130 ppm** ₩.C
7920-6	86155 F1 #6	ND(11)*
7920-7	86155 F1 #7	1400
7920-8	86155 F1 #8	530
7920-9	86155 F1 #9	150
7920-10	86155 F1 #10	ND(1)
7920-11	86155 F1 #11	ND(1)
7920-12	86155 F1 #12	ND(11)*
7920-13	86155 F1 #13	33

*waste oil, by extraction

9-19 that no floating . **water sample (mg/L)

ND = None detected. The limits of detection are in (). Product 'ground water

	3 mm							
dum good unt of old for								
(regari	bersex	760 ppb						
	~	620						
	Х	1500						
	ML	امع صدي 15						
		_						

FERNSIBLE CZ adj to ta 49 18 طحودا

told som Ough