2938 McClure Street, Oakland, CA 94609

415-465-1100

September 13, 1989

Gordon Davitt Chevron USA P.O. Box 5004 San Ramon, CA 94583-0804

> Re: Chevron Service Station #90076 4625 Foothill Boulevard Oakland, California WA Job #4-417-01

Dear Mr. Davitt:

Weiss Associates (WA) collected ground water samples from three monitoring wells on August 8, 1989 as part of the quarterly ground water monitoring program at Chevron Service Station #90076 in Oakland, California (Figure 1). Monitoring well C-2 (Figure 2) was not sampled because it contained approximately 1/8-inch feet of free-floating product. Ground water samples from monitoring wells C-1, C-3, and C-4 contained benzene above the California Department of Health Services (DHS) maximum contaminant level (MCL) for drinking water. Ground water samples from monitoring well C-4 also contained toluene above the DHS recommended action level for drinking water.

GROUND WATER SAMPLING

WA environmental technician Tim Wickens collected ground water samples from monitoring wells C-1, C-3 and C-4 on August 8, 1989. Monitoring well C-2 contained about 1/8-inch of free-floating product and was not sampled. Prior to sampling, monitoring well C-3 was purged of at least three well-casing volumes of ground water, approximately 11 gallons, using a steam-cleaned PVC bailer. Wells C-1 and C-4 were bailed dry after evacuating 7 to 16.5 gallons of water with steam-cleaned PVC bailers, and they were sampled after water levels recovered to about 80 percent of initial static water levels. Each ground water sample was collected in a steam-cleaned Teflon sampling bailer and decanted from the bailer into a 40 ml glass volatile organic analysis vial (VOA) with a Teflon septum, preserved with sodium bisulfate, sealed within a plastic guard bottle, and refrigerated for transport to Superior Analytical Laboratory, Inc. of San Francisco, California. The water sample collection records and chain of custody forms are included as Attachments A and B, respectively.

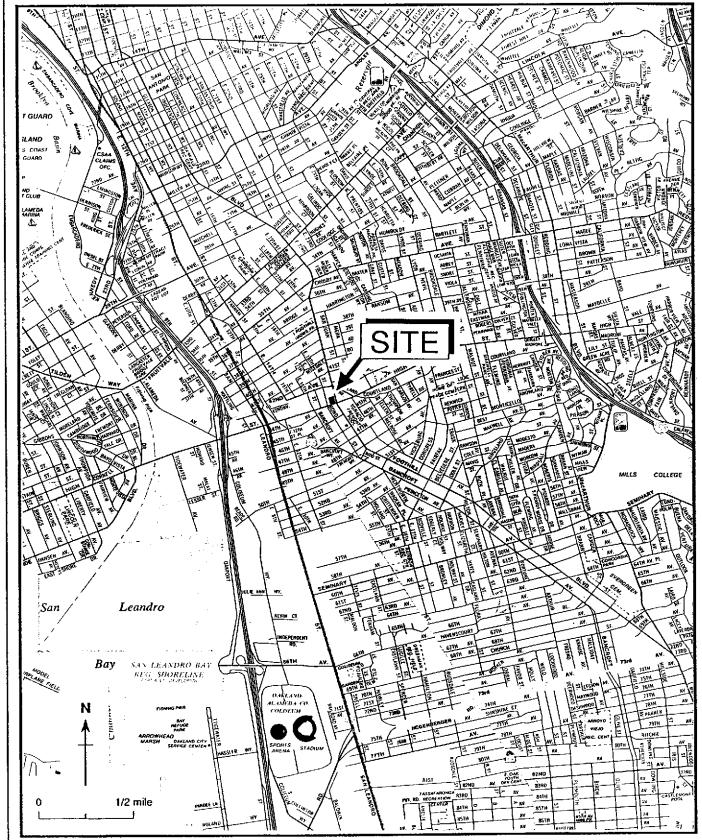


Figure 1. Site Location Map - Chevron Service Station #90076, Oakland, California

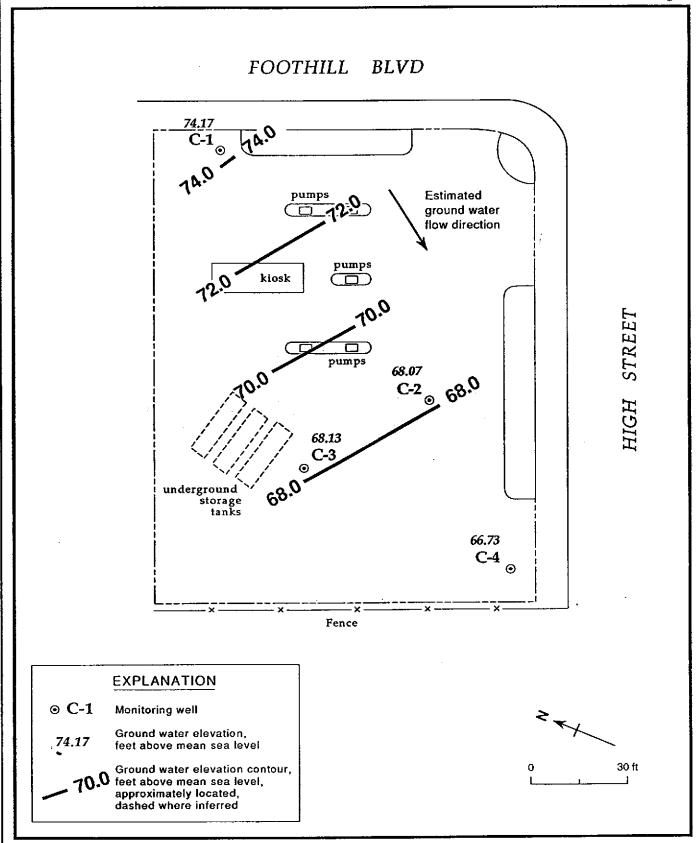


Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - August 8, 1989 - Chevron Service Station #90076, Oakland, California

A bailer blank and a travel blank were shipped with the ground water samples. The bailer blank was prepared by pouring distilled water into a clean Teflon bailer prior to sample collection. The water was then decanted from the bailer into a 40 ml VOA, preserved, refrigerated and transported to the laboratory with the ground water samples. A travel blank of certified organic-free distilled water, supplied by the laboratory, accompanied the samples to provide assurance that contamination was not introduced during sample bottle transport or sample storage.

GROUND WATER GRADIENT

Water levels for all monitoring wells were measured on August 8, 1989. Ground water elevations are presented in Table 1, and ground water elevation contours are plotted on Figure 2. The gradient appears unusually steep, with a ground water elevation difference of about 7.5 feet across the site. Ground water elevations appear to have fluctuated by as much as 4 feet historically. Such a steep gradient and large fluctuations in ground water levels could suggest intermittent discharge or pumping.

TABLE 1. Ground Water Elevation Data, Chevron Service Station #90076, Oakland, California

Well ID	Date	Top-of-Casing Elevation (project datum)	Depth to Water (ft)	Ground Water Elevation (project datum)
C-1	1-12-89	98.24	23.25	74.99
	4-12-89	,	20.05	78.19
	8-08-89		24.07	74.17
C-2	1-12-89	97.97		
	4-12-89		26.44	71.53*
	8-08-89		29.90	68.07*
C-3	1-12-89	98.13	29.48	68.65
' •	4-12-89	5 5 5 5	28.00	70.13
	8-08-89		30.00	68.13
C-4	1-12-89	96,28	29.49	66.79
	4-12-89		27.44	68.84
	8-08-89		29.55	66.73

^{*} Ground water elevation not adjusted for free-floating hydrocarbons due its insignificance in relation to the steep site gradient

Mr. Gordon Davitt September 13, 1989 5

CHEMICAL ANALYSES

The ground water samples were analyzed for total purgeable petroleum hydrocarbons (TPPH) by EPA Method 8015 and for benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8020. The results of the water analysis are presented in Table 2 and the analytic reports are included as Attachment C.

Analytic results for this quarter are generally similar to results from the previous sampling. However, TPPH, ethylbenzene, toluene, and xylene concentrations decreased in well C-4 while benzene concentrations increased somewhat during this period.

We appreciate the opportunity to provide hydrogeologic consulting services to Chevron and trust that this report meets your needs. If you have any questions, please call Jim Carmody.

No. EG 1112 OF CALIFORNIA

Sincerely,

Weiss Associates

Robert E. Kitay Staff Geologist

Richard B. Weiss Principal Hydrogeologist

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C:\WP50\CHEVRON\417L3AU9.WP

Attachments: A - Water Sample Collection Records

B - Chain of Custody

C - Analytic Reports

TABLE 2. Analytic Results for Ground Water, Chevron Service Station #90076, Oakland, California

Sample ID	Sample Date	Analytic Method	Analytic Lab	#PPH <	В	E parts per billion	T	×
C-1	4/28/89 8/08/89	8015/8020 8015/8020	SAL SAL	940 820	30 45	11 13	1.3	13 13
c-2	4/28/89* 8/08/89*	8015/8020	SAL	120,000	30,000	3,000	22,000	17,000
C-3	4/28/89 8/08/89	8015/8020 8015/8020	SAL SAL	<500 <500	1.7 1	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
C-4	4/28/89 8/08/89	8015/8020 8015/8020	SAL SAL	20,000 8,000	6,300 7,500	230 88	550 340	1,500 1,000
Bailer Blank	8/08/89	8015/8020	SAL	<500	<0.5	<0.5	<0.5	<0.5
Travel Blank	4/28/89 8/08/89	8015/8020 8015/8020	SAL SAL	<500 <500	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
DHS MCLs		•••	•••	NE	1	620	100 ^a	1,750

Abbreviations:

TPPH = Total Purgeable Petroleum Hydrocarbons

B = Benzene

E = Ethylbenzene

T = Toluene

X = Xylenes

* = Free-floating product in well

DHS MCLs = Department of Health Services maximum

contaminant levels for drinking water

NE = Not established

a = DHS recommended action level for drinking water

Analytic Laboratory:

SAL = Superior Analytical Laboratory, Inc., San Francisco, California

Analytic Method:

8015 = Modified EPA Method 8015, Total Purgeable Petroleum Hydrocarbons 8020 = EPA Method 8020, Aromatic Volatile Kydrocarbons



ATTACHMENT A WATER SAMPLE COLLECTION RECORDS

Bottles: P - Polyethylene; Pp - Polypropylene; C or B - Clear/Brown Glass; O - Other (describe)

Additional Cap Codes: Py - Polyseal; V - VOA/Teflon septa; M - Metal

NOT SAMPLED - PRODUCT IN WELL

(≥')6" brown	product /	
WEISS ASS	OCIATES 7	1

	WATER SAMPLING DATA Well Name C-2 Date 8/8/89	
		Time
	Job Name Number Cours Oakland II 4-417.00	Initials \(\frac{\frac{1}{\bigce}}{\bigce} \)
	Well V Spring Surface Other	
	Location SE and of site Near pumps	
	WELL DATA: Well type (Describe; I	M = monitoring well)
	Depth to Water 2990 ft (pump(stat) Maximum Drawdown Lin	mit (MDL) klå ft
توراد	Well depth 37,43 ft (sounded) Well depth 32,34	ft (spec)
A.	Well diameter 3 in TOC height above ground WA ft W	ater elev LIA ft
٠.	Volume Evacuated: Pumped Pumped Bailed	AVA_
	Time: Stop	
	Syart	r = weal radius in ft
	Total hrs/min	h = ht of water col in ft
	Total Evacuated/gal.	vol/in cyl, = Wr ² h
	/ - /	7.48 gal/ft ³
	Evacuation Rate gpm	V/" casing = 0.163 gal/ft V3" casing = 0.367 gal/ft
	Pump/# and type Bailer # and type	V ₄ " casing = 0.653/gal/ft
•	Pump/# and type Bailer # and type	V _{4.5} " casing = 0,626 gal/ft
: . - 4	nose # and type	V ₆ " casing = 1.47 gal/ft V ₈ " casing = 2.61 gal/ft
37		
7	Sampling Port: Raze gpm Volume gal.	and the second s
/.	Location/description	
	and the same of	
	Initial height of water in casing = ft; wolume =	gal.
:	Evacuation at drawdown limit = 3 x initial volume =	gal,
	Evacuation at sampling point = 1 x initial volume =	/gal. *
ri.	Total to be evacyated =	/ gal:
 Onioni	Water Color: Ogor	
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•	pH Calibration 4.0, 7.0, 10.0 Calibration	oxi Temp.
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	Sample /Cap (size, u) (specify)	
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	Bottles: P = Polyethylene; Pp = Polypropylene; C or B	- Clear/Brown Glass;
	0 - Other (describe)	/
	/ Additional Cap Codes: Py = Polyseal; V - VOA/Teflon septa	a; M - Metal /
,		
		/

WATER SAMPLING DATA	Well Name C-	3 Date	8/8/89	Time $1(:0)$	0
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Well V Spring	Surface Othe			-	
Locationmiddle	of lot near tonk	2			
WELL DATA: Well typ	e M		(Describe; M =	monitoring	well)
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	ft (sounded	i) Well dep	th 39.77	ft (spec)	
Well diameter 3	n. TOC height al			er elev. NA	ft
Volume Evacuated:			ailed	. 	- .
Time: Stop			10:47	Formulas/Conversion	ns i
Start _			0.53	r = well radius in	ft
Total hrs/min _				h = ht of water co. vol. in cyl. = #r ² 1	
Total Evacuated	gal.			7.48 gal/ft ³	4
Evacuation Rate _	<u>, 5</u> gpm			V_2 " casing = 0.163	gal/ft
		evac 5'		V_3'' casing = 0.367 V_4'' casing = 0.653	
Pump # and type —	Bailer #	and type (VC	pullet # PD	$V_{\rm e}$ casing = 0.8	26 gal/ft
Hose # and type		sample to the	on bailor #GG	V ₆ " casing = 1.47	gal/ft
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Evacuation at sample	ing point = 1 x i	nitial volum	e – dan in in in in in	gal.	
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WATER SAM	PLING DATA	Well Name	C-4	Date 8/8/	189	Time (4	7
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	van running nearby,	problems wi	th equipmen	nt or samp	ling, etc.,	pump on/	off
0.1974	times, etc. (over).	一。1014 500度在		a Lagran		alitalija ja k	
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WATER SAMPLING DATA	Well Name <u>B</u> NA	Date 8/8/89	Time NA
Job Name/Number	Cherron Calclard It	14-417-00	Initials W
WellSpring	Surface Other		
Location			
WELL DATA: Well type		(Describe; M	- monitoring well)
Depth to Water	ft (pump/stat)	Maximum Drawdown Limi	t (MDL) ft
Well depth	ft (sounded)		
Well Alameter in	TOC height above	ground ft Wat	er elev.
Volume Evacuated:	Pumped Pumped	Bailed	
Time: Stop			Formulas/Conversions
/ Start _			r = well radius in ft
Total hrs/min			h = ht of water col in ft
Total Evaguated	gal.		vol./in cyl. = 1 r h 7 / 8 gal/ft ³
Evacuation Rate	gpm		V2" casing = 0.163 gal/ft
_	 ;	. /	V3" casing = 0.367 gal/ft
Pump # and type	Bailer # and	type	V ₄ " casing = 0.653 gal/ft V _{4 5} " casing = 0.826 gal/ft
Hose # and type			V ₆ " casing = 1.47 gal/ft
			Va" casing = 2.61 gal/ft
Sampling Ports Rate	gom Volum	e gal:	
Location/description) John Volum		
Initial height of wa	ter in casing =	ft; volume -	gal.
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SAMPLES COLLECTED:			
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	ethylene; Pp - Polyp	ropylene; C or B $-$	Clear/Brown Glass;
	r (describe)		
0 - Othe	r (describe)	ropylene; C or B -	•

Shuttle Inventory Shipping Seel No.	A . A	INSTRUCTIONS		Personnel: Be sure to include copy of this form in the field sampling files 4-417-00 NOTES TO LAB: 1) Specify analytic method and detection limit in
Sampled by:	TW/EA	Laboratory Name	: Superior	report. 2) Notify us if there are any anomalous peaks on or other scams. 3) Duplicates listed in parentheses. 4) ANY QUESTIONS/CLARIFICATIONS: .CALL US.
Sample 10 089417 ~ 1	Sample/ Sampling Contains Date Type 8/8/89 W/V	Hold around	Anelyze For: Gos + BETX	Analytic Hethod/ Detection Limit Comments
C07711 6				
089417-4				
089417-21				
089 417-22	J	V	V	
		. <u> </u>		
				
				
		-		•
	•			· ·
	14/			
U/n/N	1661h 8/9/	8 9 ·	7-20 MM - X49	9

40, JEANSO JAHLESSON

^{1 -} Sample Type Codes: W = Water, S = Soil, O = Other (specify).

Container Type Codes: V = VOA Bottle, P = Plastic Bottle, G = Glass Bottle, T = Brass Tube, O = Other (specify).

^{2 -} Analyze/Hold: A = Analyze; HOLD (spell out) = DO NOT ANALYZE UNLESS NECESSARY OR REQUESTED.

^{3 -} N = Normal Turneround, F = 1-Meek Turneround, R = 24-Hour Turneround

SUPERIOR ANALYTICAL LABORATORY, INC.

1385 FAIRFAX St., Ste. D. · SAN FRANCISCO, CA 94124 · PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10091 CLIENT: Weiss Associates DATE RECEIVED: 08/09/89 DATE REPORTED: 08/17/89

CLIENT JOB NO.: 4-417-00

Page 1 of 2

Lab Number	Customer	Sample	Identificat	ion	Dat	te Sampled
10091- 1 10091- 2 10091- 3 10091- 4 10091- 5	089417-1 089417-3 089417-4 089417-2 089417-2	1			; (; (08/08/89 08/08/89 08/08/89 08/08/89
Laboratory Nur	mber:	10091	10091	10091 3	10091 4	10091
ANALYTE LIST		Amounts	/Quantitati	on Limits	(ug/L)	
OIL AND GREASE TPH/GASOLINE FOR TPH/DIESEL RANGENZENE: TOLUENE: ETHYL BENZENE: XYLENES:	RANGE: NGE:	NA 820 NA 45 2 13	NA ND<500 NA 1 ND<0.5 ND<0.5 ND<0.5	NA 8000 NA 7500 340 88 1000	NA ND<500 NA ND<0.5 ND<0.5 ND<0.5	NA ND<500 NA ND<0.5 ND<0.5 ND<0.5

SUPERIOR ANALYTICAL LABORATORY, INC.

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CERTIFICATE OF ANALYSIS

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
Diesel by Modified EPA SW-846 Method 8015
Gasoline by Purge and Trap: EPA MEthod 8015/5030
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

Page 2 of 2 QA/QC INFORMATION SET: 10091

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT

ug/L = part per billion (ppb)

OIL AND GREASE ANALYSIS By Standard Methods Method 503E:
Duplicate RPD NA
Minimum Detection Limit in Water: 5000ug/L

Modified EPA Method 8015 for Extractable Hydrocarbons:

Minimum Quantitation Limit for Diesel in Water: 1000ug/L
Daily Standard run at 200mg/L; RPD Diesel = NA
MS/MSD Average Recovery = NA: Duplicate RPD = NA

8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 500ug/L
Daily Standard run at 2mg/L; RPD Gasoline = 3%
MS/MSD Average Recovery = 97%: Duplicate RPD = 0%

8020/BTXE

Minimum Quantitation Limit in Water: 0.50ug/L Daily Standard run at 20ug/L; RPD = <15% MS/MSD Average Recovery =100%: Duplicate RPD = <1%

Richard Srna, Ph.D.

Laboratory Director