Chevron U.S.A. Inc.
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D. Moller
Manager, Operations
S. L. Patterson
Area Manager, Operations
C. G. Trimbach
Manager, Engineering

October 17, 1990

Mr. Rafat Shahid
Alameda County
Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Re: Former Chevron Service Station #9-0020
17th and Harrison
Oakland, CA

Dear Mr. Shahid:

Enclosed we are forwarding the Quarterly Groundwater Sampling Report dated September 28, 1990, conducted by our consultant, Western Geologic Resources, Inc., for the above referenced site. As indicated in the report, levels of hydrocarbon concentrations remain consistent with previous samplings.

As mentioned in the Off-site Subsurface Investigation Report submitted on September 10, 1990, Chevron has instructed Western Geologic Resources, Inc. to permit and install an additional offsite groundwater monitoring well to delineate the extent of the hydrocarbon contamination.

If you have any questions or comments please do not hesitate to call me at (415) 842 - 9581.

Very truly yours,
C. G. Trimbach

By Nancy Vukelich
Nancy Vukelich

NLV/jmr
Enclosure

cc: Mr. Lester Feldman
RWQCB-Bay Area
1800 Harrison Street
Suite # 700
Oakland, CA 94612

WESTERN GEOLOGIC RESOURCES INC.

2169 E. FRANCISCO BLVD., SUITE B / SAN RAFAEL
CALIFORNIA 94901 / FAX 415.457.8521
TELE 415.457.7595

28 September 1990

Ms. Nancy Vukelich
Chevron USA
2410 Camino Ramon
San Ramon, California 94583-0804

Re: Quarterly Groundwater Monitoring
Sampled 9 August 1990
Former Chevron Service Station #90020
17th and Harrison Streets
Oakland, California
WGR Project #1-012.03

Dear Ms. Vukelich:

This letter report presents the results of the quarterly groundwater monitoring performed on 9 August 1990 by Western Geologic Resources, Inc. (WGR) at the subject site (Figures 1 and 2).

GROUNDWATER SAMPLING

On 9 August 1990, WGR staff measured depth to water and purged monitor wells MW-1 through MW-8 with dedicated systems, and wells MW-9 through MW-12 with PVC bailers. Three well-casing volumes of groundwater were evacuated from monitor wells MW-1 through MW-4, MW-6, and MW-8 through MW-12 and the wells were sampled. Monitor wells MW-5 and MW-7 were purged dry before three well-casing volumes could be evacuated. These wells were sampled after recovering to 79% and 56% of their original static water levels, respectively. All groundwater samples were collected according to the WGR standard operating procedure for groundwater sampling included as Attachment A; field sampling and monitoring forms are included as Attachment B.

All purged groundwater was temporarily stored on-site in 55-gallon drums pending analytic results. The groundwater samples and a laboratory-supplied travel blank, consisting of deionized water, were shipped under chain-of-custody to GTEL Environmental Laboratories, Inc. (GTEL) of Concord, California.

GROUNDWATER FLOW

Figure 3 shows the potentiometric surface of shallow groundwater, based on depth-to-water measurements taken on 9 August 1990. Groundwater elevation data are presented in Table 1. Hydrographs showing groundwater elevations over time are included as Attachment C. The

estimated direction of groundwater flow on 9 August 1990 was to the northeast at an average gradient of about 0.6% with the gradient being steeper on the northeast end of the site at about 1.0% and less steep on the southwest end of the site at about 0.38%.

ANALYTIC RESULTS

Groundwater samples from monitor wells MW-1 through MW-12 were analyzed for total purgeable petroleum hydrocarbons (TPPH) and for benzene, toluene, ethylbenzene and total xylenes (BTEX) by EPA Methods 8015 and 8020, respectively. Analysis for selected halocarbons was conducted by EPA Method 601.

Analytic results for past sampling events and this round of sampling are presented in Table 2. The chain-of-custody form and laboratory reports with quality assurance/quality control documents are included as Attachments D and E, respectively. Distribution maps showing concentrations of TPPH, benzene, and tetrachloroethene (PCE), for the 9 August 1990 sampling of shallow groundwater are included as Figures 4, 5 and 6, respectively.

COMMENTS

Groundwater flow direction and gradient are similar to those reported during previous sampling events. Analytic results were generally similar to those reported in the last sampling round. However, lower concentrations of benzene were found this round in samples from monitor well MW-9. Halocarbon concentrations were found this round at levels just above the detection limit in the following groundwater samples, which were not detected in recent sampling events: tetrachloroethene (PCE) was detected in well MW-1, carbon tetrachloride (Carb Tet), was detected in well MW-7, trans-1,2-dichloroethene (t-1,2-DCE) was detected in wells MW-11 and MW-12.

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Western Geologic Resources, Inc. is pleased to provide geologic and environmental consulting services for Chevron and trust that this report meets your needs. Please call us at (415) 457-7595 if you have any questions.

Sincerely,
Western Geologic Resources, Inc.

Joel Coffman
Staff Geologist

Leonard P. Niles
Senior Staff Geologist

JC/LPN:vw

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FIGURES

TABLES

ATTACHMENTS

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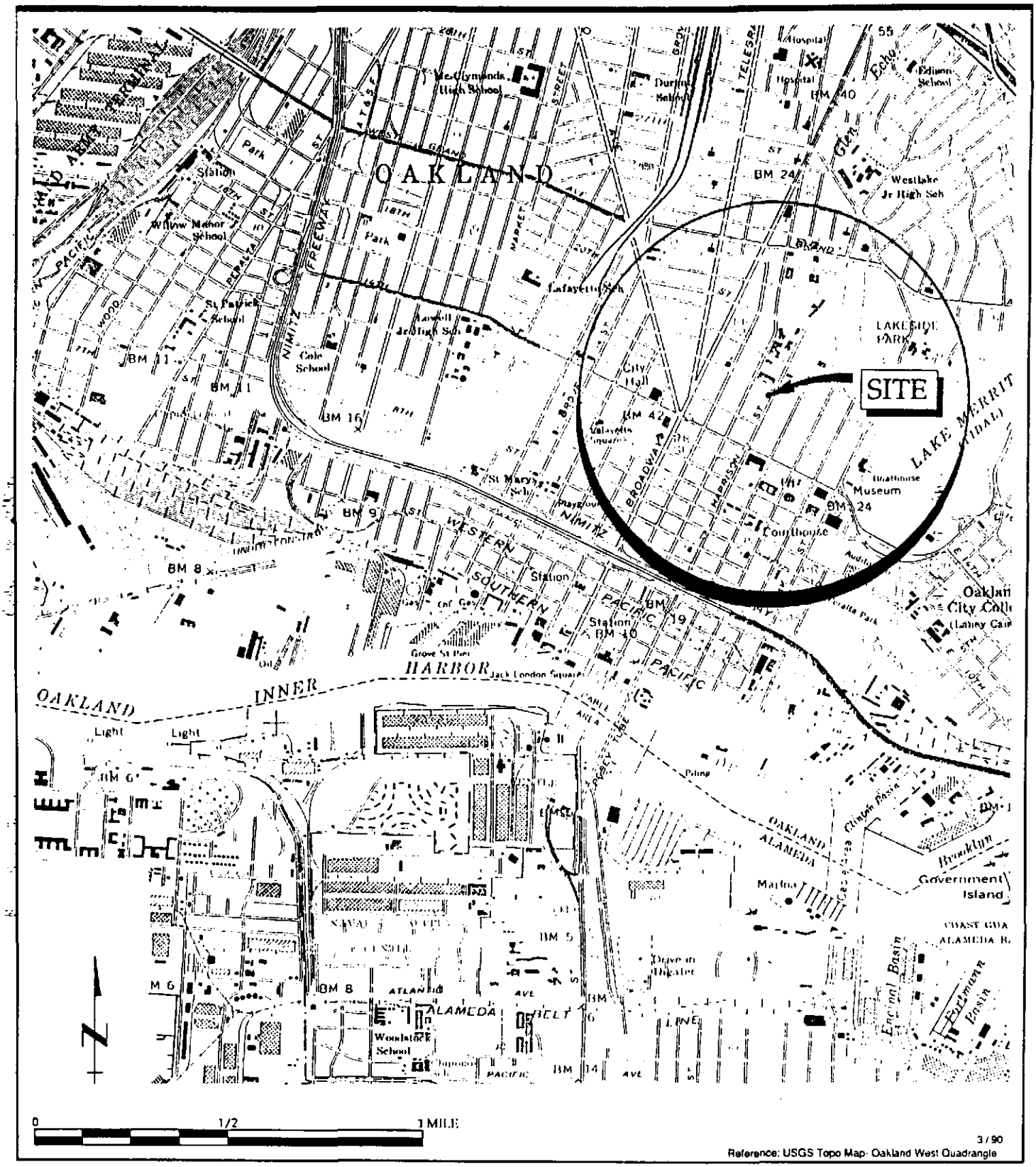
FIGURES



3/90

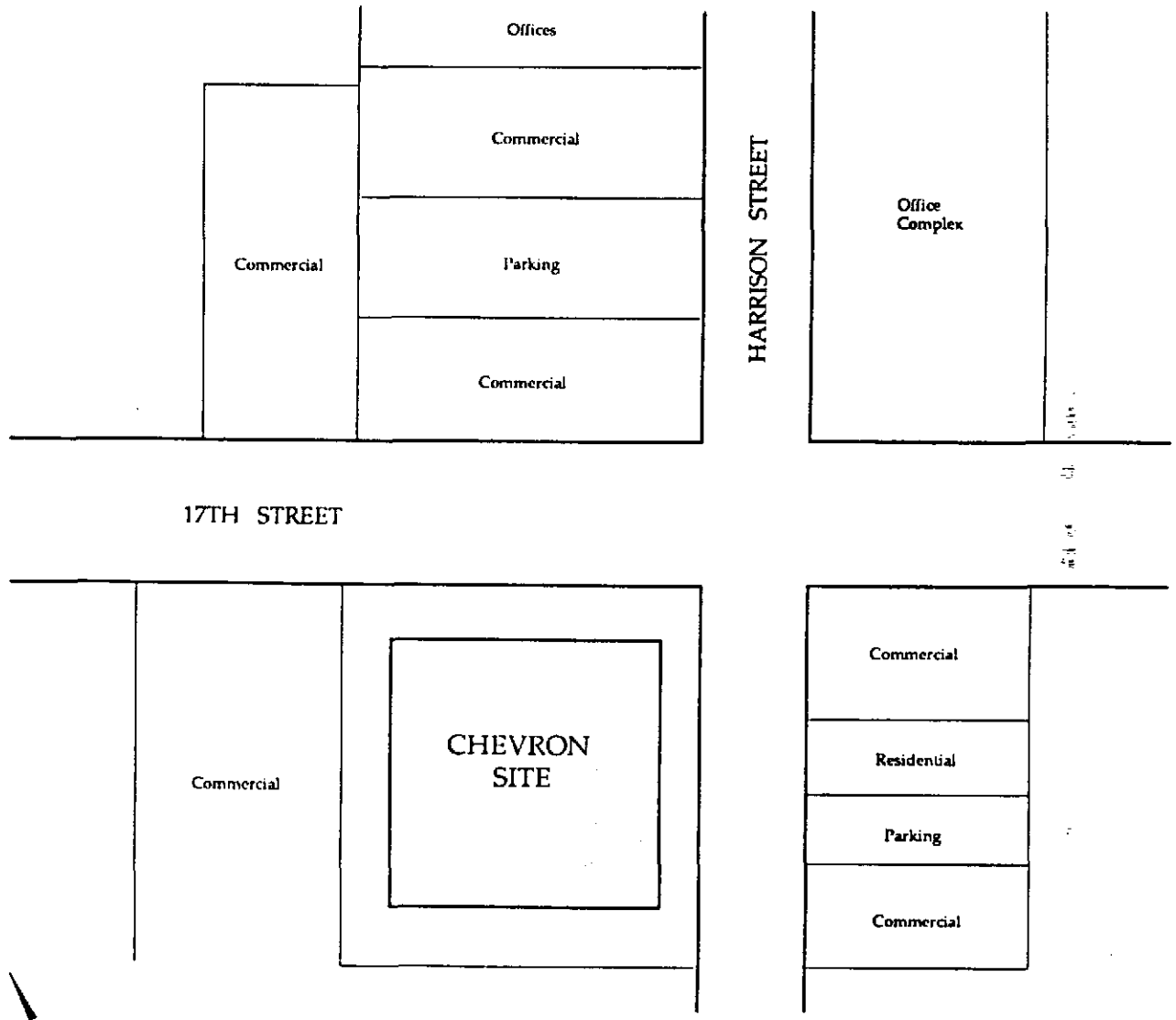
Reference: USGS Topo Map- Oakland West Quadrangle

Site Location Map
Chevron Service Station #90020
17th and Harrison Streets, Oakland, California

FIGURE
1

WESTERN GEOLOGIC RESOURCES, INC.

1-012.03



NOT TO SCALE

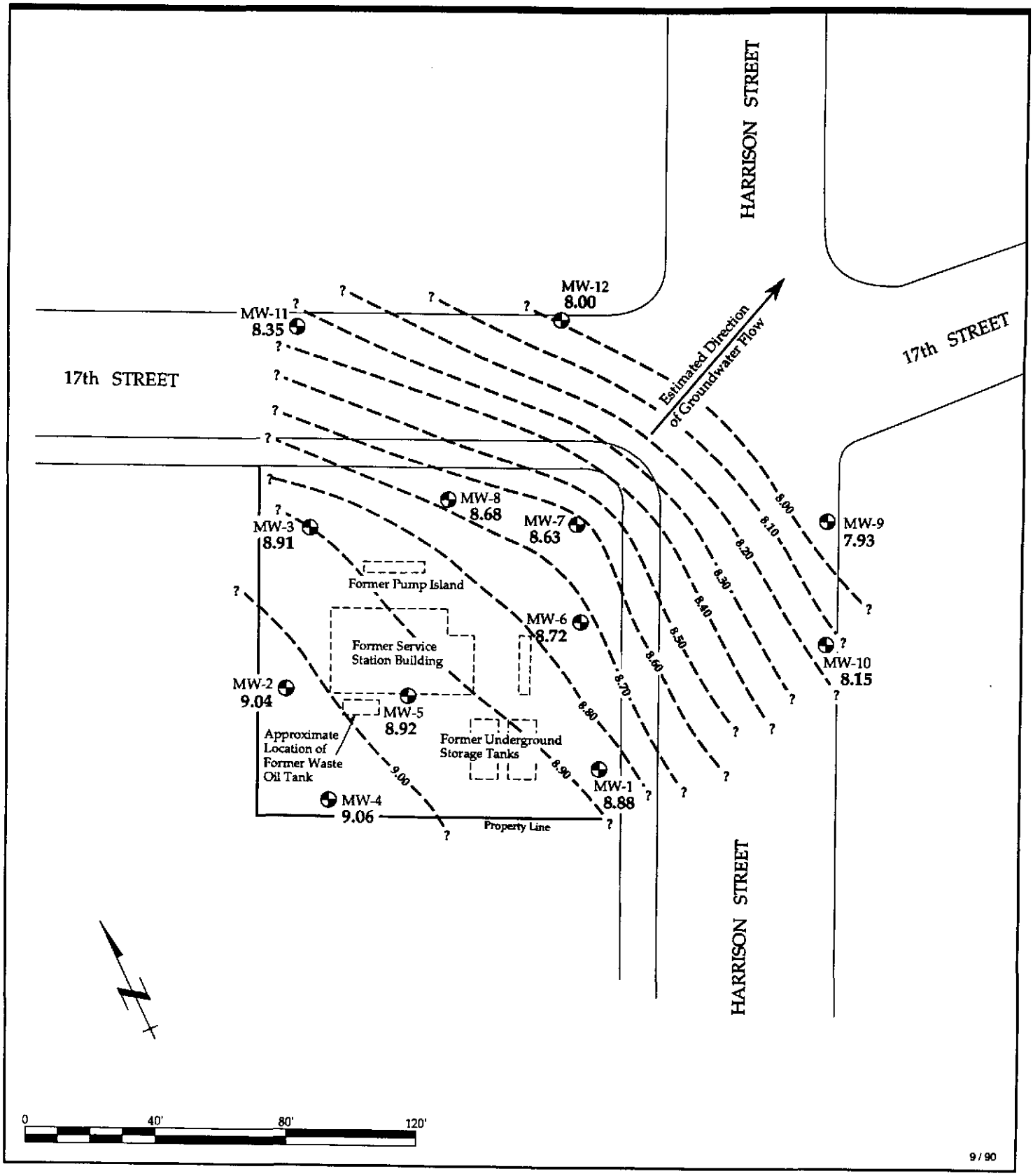
Source: EA Engineering SVCA 1988

Vicinity Map
Chevron Service Station #90020
17th and Harrison Streets, Oakland, California

FIGURE 2

WESTERN GEOLOGIC RESOURCES, INC.

1-012.03



EXPLANATION

MW-8 8.68	Monitor Well location and groundwater elevation, feet above mean sea level
8.40 — — -?	Groundwater elevation contour, feet above mean sea level, dashed where inferred, queried where uncertain

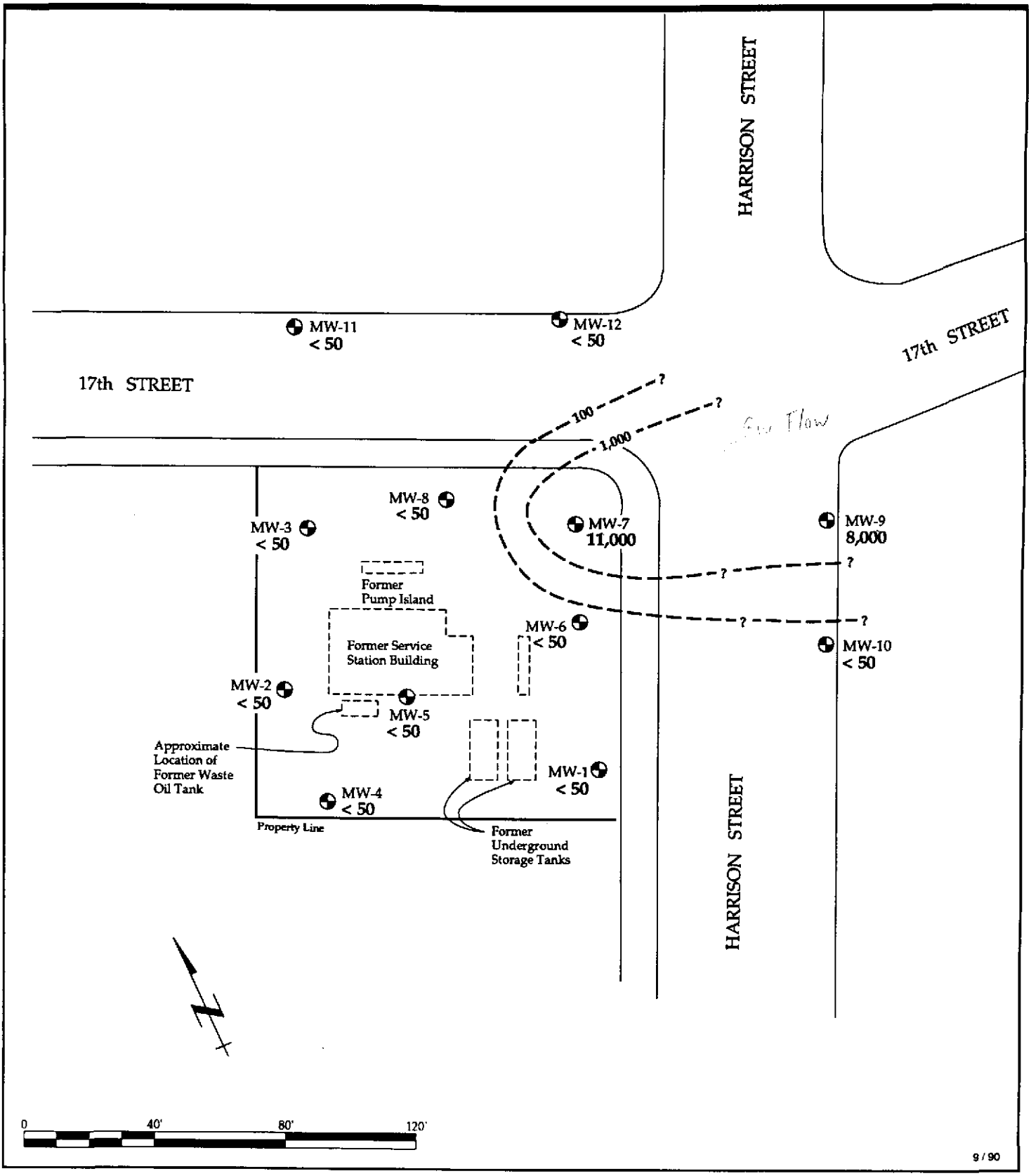
8

Potentiometric Surface of Shallow Groundwater
9 August 1990
Former Chevron Service Station #90020
1633 Harrison Street,
Oakland, California

FIGURE
3

WESTERN GEOLOGIC RESOURCES, INC.

1-012.04



EXPLANATION

MW-7 11,000 — Monitor Well location with TPPH concentration in parts-per-billion (ppb)

100 — — — ? — Isoconcentration contour for TPPH in ppb, dashed where inferred, queried where uncertain

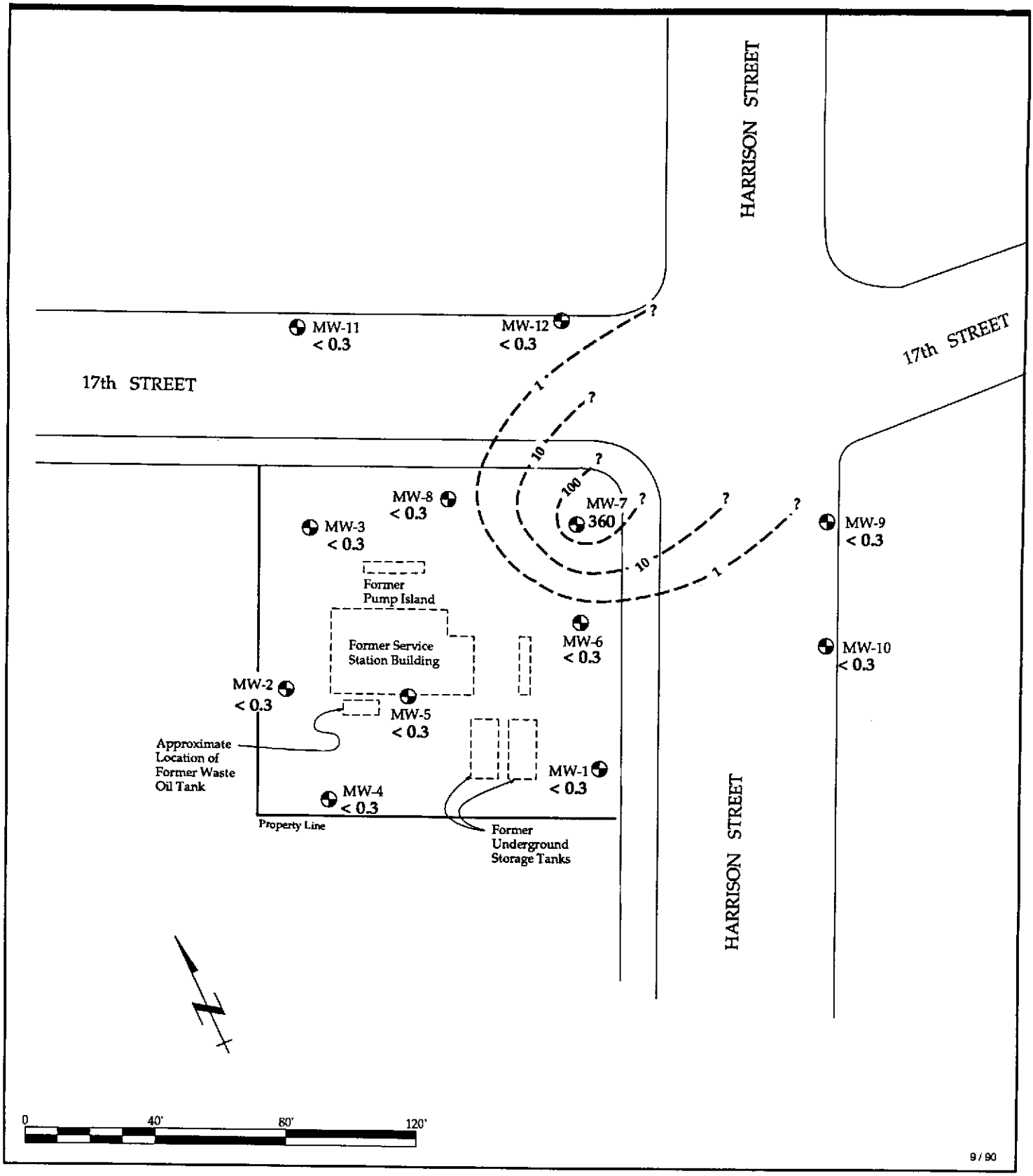
9

Total Purgeable Petroleum Hydrocarbons (TPPH) in Shallow Groundwater, 9 August 1990
Former Chevron Service Station #90020
1633 Harrison Street,
Oakland, California

FIGURE 4

WESTERN GEOLOGIC RESOURCES, INC.

1-012.03



EXPLANATION

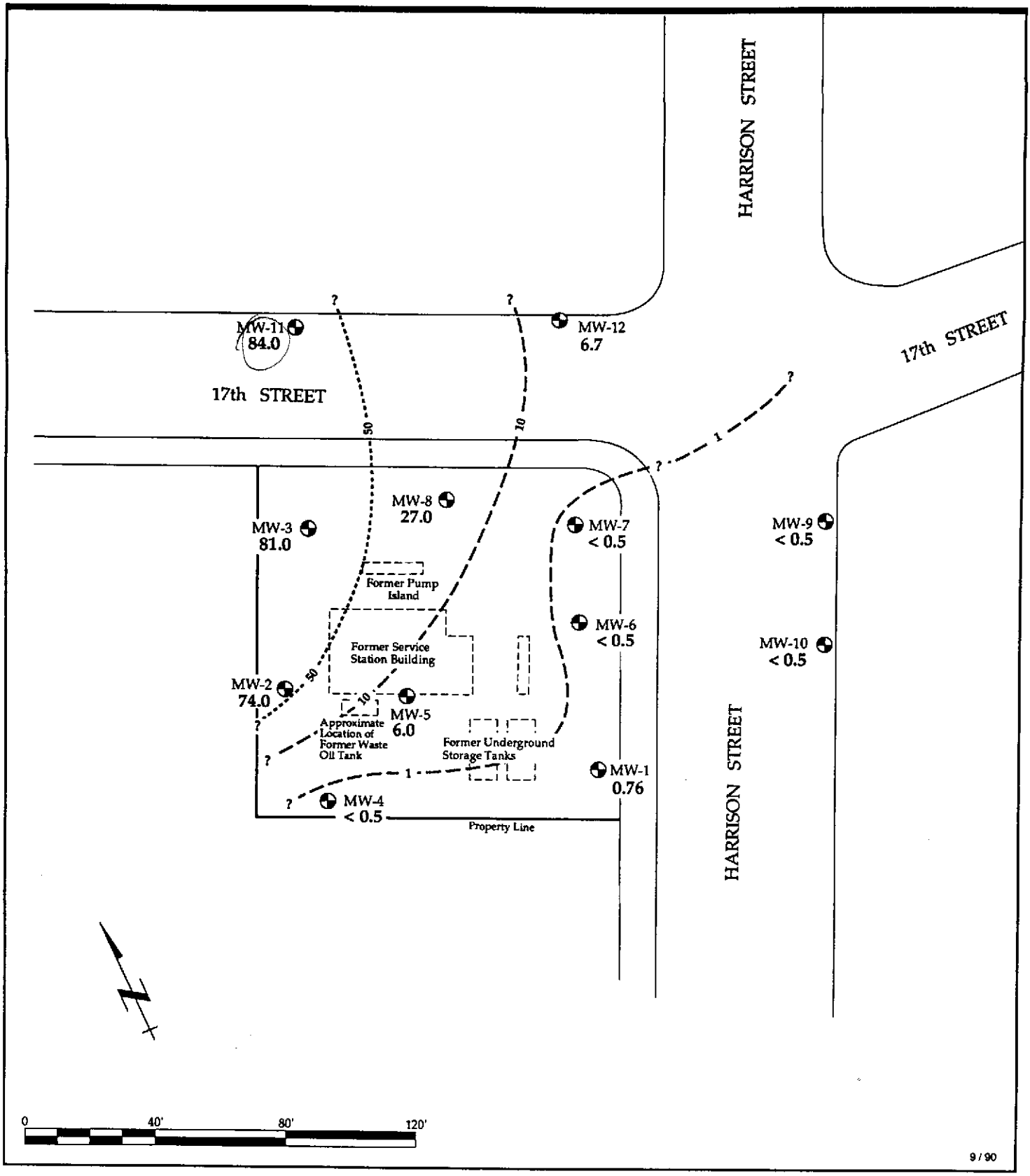
MW-7 360	Monitor Well location with Benzene concentration in parts-per-billion (ppb)
100 — — — ? 10	Isoconcentration contour for benzene in ppb, dashed where inferred, queried where uncertain

Concentration of Benzene in Shallow Groundwater
9 August 1990
Former Chevron Service Station #90020
1633 Harrison Street,
Oakland, California

FIGURE
5

WESTERN GEOLOGIC RESOURCES, INC.

1-012.03



EXPLANATION

MW-8 27	Monitor Well location and PCE concentration, in parts-per-billion (ppb)
10 — — —?	Isoconcentration contour for PCE in ppb, dashed where inferred, queried where uncertain
-------	Intermediate contour
10-A	

Distribution of Tetrachloroethene (PCE) in Shallow Groundwater, 9 August 1990
Former Chevron Service Station #90020
1633 Harrison Street,
Oakland, California

FIGURE 6

WESTERN GEOLOGIC RESOURCES, INC. 1-012.04

TABLES

Table 1. Groundwater Elevation Data
Former Chevron Service Station #90020
1633 Harrison Street
Oakland, California

Top of Casing Depth to water Elev. of water

Well ID #	Date	TOC	DTW	Elev.-W
		<----------ft---------->		
MW-1	3 Nov 88	29.82	20.40	9.42
MW-1	2 Feb 89	29.82	20.71	9.11
MW-1	23 Apr 89	29.82	20.34	9.48
MW-1	28 Jul 89	29.82	20.58	9.24
MW-1	30 Oct 89	29.82	20.52	9.30
MW-1	9 Jan 90	29.82	20.77	9.05
MW-1	18 Apr 90	29.82	20.95	8.87
MW-1	22 Jun 90	29.82	21.00	8.82
MW-1	9 Aug 90	29.82	20.94	8.88
MW-2	3 Nov 88	30.59	20.89	9.70
MW-2	2 Feb 89	30.59	21.21	9.38
MW-2	23 Apr 89	30.59	20.82	9.77
MW-2	28 Jul 89	30.59	21.02	9.57
MW-2	30 Oct 89	30.59	20.96	9.63
MW-2	9 Jan 90	30.59	21.25	9.34
MW-2	18 Apr 90	30.59	21.53	9.06
MW-2	22 Jun 90	30.59	21.57	9.02
MW-2	9 Aug 90	30.59	21.55	9.04
MW-3	3 Nov 89	30.09	20.54	9.55
MW-3	2 Feb 89	30.09	20.85	9.24
MW-3	23 Apr 89	30.09	20.43	9.66
MW-3	28 Jul 89	30.09	20.64	9.45
MW-3	30 Oct 89	30.09	20.61	9.48
MW-3	9 Jan 90	30.09	20.88	9.21
MW-3	18 Apr 90	30.09	21.15	8.94
MW-3	22 Jun 90	30.09	21.20	8.89
MW-3	9 Aug 90	30.09	21.18	8.91
MW-4	23 Apr 89	31.17	21.33	9.84
MW-4	28 Jul 89	31.17	21.58	9.59
MW-4	30 Oct 89	31.17	21.54	9.63
MW-4	9 Jan 90	31.17	21.82	9.35
MW-4	18 Apr 90	31.17	22.09	9.08
MW-4	22 Jun 90	31.17	22.12	9.05
MW-4	9 Aug 90	31.17	22.11	9.06

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Table 1. Groundwater Elevation Data (continued)
Former Chevron Service Station #90020
1633 Harrison Street
Oakland, California

Well ID #	Date	TOC	DTW	Elev.-W
		<----------ft---------->		
MW-5	23 Apr 89	30.28	20.62	9.66
MW-5	28 Jul 89	30.28	20.86	9.42
MW-5	30 Oct 89	30.28	20.82	9.46
MW-5	9 Jan 90	30.28	21.07	9.21
MW-5	18 Apr 90	30.28	21.35	8.93
MW-5	22 Jun 90	30.28	21.38	8.90
MW-5	9 Aug 90	30.28	21.36	8.92
MW-6	23 Apr 89	29.46	20.05	9.41
MW-6	28 Jul 89	29.46	20.30	9.16
MW-6	30 Oct 89	29.46	20.32	9.14
MW-6	9 Jan 90	29.46	20.51	8.95
MW-6	18 Apr 90	29.46	20.72	8.74
MW-6	22 Jun 90	29.46	20.77	8.69
MW-6	9 Aug 90	29.46	20.74	8.72
MW-7	23 Apr 89	29.01	18.99	10.02
MW-7	28 Jul 89	29.01	19.94	9.07
MW-7	30 Oct 89	29.01	19.97	9.04
MW-7	9 Jan 90	29.01	20.15	8.86
MW-7	18 Apr 90	29.01	20.37	8.64
MW-7	22 Jun 90	29.01	20.40	8.61
MW-7	9 Aug 90	29.01	20.38	8.63
MW-8	23 Apr 89	29.57	20.14	9.43
MW-8	28 Jul 89	29.57	20.37	9.20
MW-8	30 Oct 89	29.57	20.32	9.25
MW-8	9 Jan 90	29.57	20.60	8.97
MW-8	18 Apr 90	29.57	20.87	8.70
MW-8	22 Jun 90	29.57	20.34*	9.23*
MW-8	9 Aug 90	29.57	20.89	8.68
MW-9	22 Jun 90	28.67	20.80	7.87
MW-9	9 Aug 90	28.67	20.74	7.93
MW-10	22 Jun 90	28.60	20.48	8.12
MW-10	9 Aug 90	28.60	20.45	8.15

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Table 1. Groundwater Elevation Data (continued)
Former Chevron Service Station #90020
1633 Harrison Street
Oakland, California

Well ID #	Date	TOC	DTW	Elev.-W
		<----------ft---------->		
MW-11	22 Jun 90	29.37	21.03	8.34
MW-11	9 Aug 90	29.37	21.02	8.35
MW-12	22 Jun 90	28.43	20.45	7.98
MW-12	9 Aug 90	28.43	20.43	8.00

NOTES:

TOC = Top of Casing elevation, in feet above mean sea level
DTW = Depth to Water
Elev.-W = Elevation of Water, in feet above mean sea level
* = Anolmalous data
ft = feet

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TABLE 2. Analytic Results: Groundwater Samples - Petroleum Hydrocarbons
Former Chevron Service Station 90020
1633 Harrison Street
Oakland, California

Well ID #	Date	EPA Method	Lab	FC	TFH	TPH/TPPH	Benzene	Toluene	E-Benzene	Xylenes	O&G
					<----------ppb---------->						<-ppm->
MW-1	3 Nov 88	624/8015	BC	---	<1,000	---	<1.0	<1.0	<1.0	<1.0	---
MW-1	10 Feb 89	524.2/8240	CCAS	---	---	<100	<0.2	<0.2	<0.2	<0.4	---
MW-1	24 Apr 89	524.2/8260	CCAS	---	---	<50	<0.5	<1.0	<1.0	<1.0	<3
MW-1	28 Jul 89	8260	CCAS	---	---	<50	<0.1	<0.5	<0.2	<0.5	<3
MW-1	30 Oct 89	8015/8020	GTEL	---	---	<500	<0.3	<0.3	<0.3	<0.6	---
MW-1	9 Jan 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-1	18 Apr 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-1	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-2	3 Nov 88	624/8015	BC	---	<1,000	---	<1.0	<1.0	<1.0	<1.0	---
MW-2	10 Feb 89	524.2/8240	CCAS	---	---	<100	<0.2	<0.2	<0.2	<0.4	---
MW-2	24 Apr 89	524.2/8260	CCAS	---	---	<50	<0.5	<1.0	<1.0	<1.0	<3
MW-2	28 Jul 89	8260	CCAS	---	---	<100	<0.2	<1.0	<0.2	<0.4	<3
MW-2	30 Oct 89	8015/8020	GTEL	---	---	<500	<0.3	<0.3	<0.3	<0.6	---
MW-2	9 Jan 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-2	18 Apr 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-2	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-3	3 Nov 88	624/8015	BC	---	<1,000	---	<1.0	<1.0	<1.0	<1.0	---
MW-3	10 Feb 89	524.2/8240	CCAS	---	---	<100	<0.2	<0.2	<0.2	<0.4	---
MW-3	24 Apr 89	524.2/8260	CCAS	---	---	<50	<0.5	<1.0	<1.0	<1.0	<3
MW-3	28 Jul 89	8260	CCAS	---	---	<100	<0.2	<1.0	<0.2	<0.4	<3
MW-3	30 Oct 89	8015/8020	GTEL	---	---	<500	<0.3	<0.3	<0.3	<0.6	---
MW-3	9 Jan 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-3	18 Apr 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-3	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---

TABLE 2. Analytic Results: *Groundwater Samples* - Petroleum Hydrocarbons (continued)
Former Chevron Service Station 90020
1633 Harrison Street
Oakland, California

Well ID #	Date	EPA Method	Lab	FC	TFH	TPH/TPPH	Benzene	Toluene	E-Benzene	Xylenes	O&G
					<----------ppb---------->						<-ppm->
MW-4	24 Apr 89	524.2/8260	CCAS	---	---	<50	<0.5	<1.0	<1.0	<1.0	<3
MW-4	28 Jul 89	8260	CCAS	---	---	<50	<0.1	<0.5	<0.1	<0.2	<3
MW-4	30 Oct 89	8015/8020	GTEL	---	---	<500	<0.3	<0.3	<0.3	<0.6	---
MW-4	9 Jan 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-4	18 Apr 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-4	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-5	24 Apr 89	524.2/8260	CCAS	---	---	<50	<0.5	<1.0	<1.0	<1.0	<3
MW-5	28 Jul 89	8260	CCAS	---	---	<100	<0.2	<1.0	<0.2	<0.4	<3
MW-5	30 Oct 89	8015/8020	GTEL	---	---	<500	<0.3	<0.3	<0.3	<0.6	---
MW-5	9 Jan 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-5	18 Apr 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-5	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-6	24 Apr 89	524.2/8260	CCAS	---	---	<50	<0.5	<1.0	<1.0	<1.0	<3
MW-6	28 Jul 89	8260	CCAS	---	---	<100	<0.2	<1.0	<0.2	<0.4	<3
MW-6	30 Oct 89	8015/8020	GTEL	---	---	<500	<0.3	<0.3	<0.3	<0.6	---
MW-6	9 Jan 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-6	18 Apr 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-6	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---

TABLE 2. Analytic Results: Groundwater Samples - Petroleum Hydrocarbons (continued)
Former Chevron Service Station 90020
1633 Harrison Street
Oakland, California

Well ID #	Date	EPA Method	Lab	FC	TFH	TPH/TPPH	Benzene	Toluene	E-Benzene	Xylenes	O&G
					<------------	------------	------------	ppb	------------	------------>	<-ppm->
MW-7	24 Apr 89	524.2/8260	CCAS	Gas	---	8,400	100	260	160	1,300	3*
MW-7	28 Jul 89	8260	CCAS	Gas	---	7,000	230	90	70	440	<3
MW-7D	28 Jul 89	8260	CCAS	Gas	---	6,000	280	180	58	430	---
MW-7	30 Oct 89	8015/8020	GTEL	Gas	---	10,000	570	55	160	400	---
MW-7D	30 Oct 89	8015/8020	GTEL	Gas	---	9,900	520	82	180	410	---
MW-7	9 Jan 90	8015/8020	GTEL	Gas	---	3,400	290	72	9	200	---
MW-7	18 Apr 90	8015/8020	GTEL	Gas	---	6,800	350	140	110	400	---
MW-7	9 Aug 90	8015/8020	GTEL	Gas	---	11,000	360	130	14	660	---
MW-8	24 Apr 89	524.2/8260	CCAS	---	---	<50	<0.5	<1.0	<1.0	<1.0	3
MW-8D	24 Apr 89	524.2/8260	CCAS	---	---	<50	<0.5	<1.0	<1.0	<1.0	---
MW-8	28 Jul 89	8260	CCAS	---	---	<100	<0.2	<1.0	<0.2	<0.4	<3
MW-8	30 Oct 89	8015/8020	GTEL	---	---	<500	<0.3	<0.3	<0.3	<0.6	---
MW-8	9 Jan 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-8	18 Apr 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-8	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-9	22 Jun 90	8015/8020	PACE	Gas	---	5,700	47	31	280	530	<1
MW-9	9 Aug 90	8015/8020	GTEL	Gas	---	8,000	<0.3	17	210	480	---
MW-10	22 Jun 90	8015/8020	PACE	Gas	---	<50	<0.5	<0.5	<0.5	<0.5	<1
MW-10	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
MW-11	22 Jun 90	8015/8020	PACE	Gas	---	<50	<0.5	<0.5	<0.5	<0.5	<1
MW-11	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---

TABLE 2. Analytic Results: Groundwater Samples - Petroleum Hydrocarbons (continued)
Former Chevron Service Station 90020
1633 Harrison Street
Oakland, California

Well ID #	Date	EPA Method	Lab	FC	TFH	TPH/TPPH	Benzene	Toluene	E-Benzene	Xylenes	O&G
					<--------	--------	-------- ppb	--------	--------	-------->	<-ppm->
MW-12	22 Jun 90	8015/8020	PACE	Gas	---	<50	<0.5	<0.5	<0.5	<0.5	<1
MW-12	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
TB	3 Nov 88	624/8015	BC	---	---	---	<1.0	<1.0	<1.0	<1.0	---
TB	10 Feb 89	524.2/8240	CCAS	---	---	<50	<0.1	<0.1	<0.1	<0.2	---
TB	24 Apr 89	524.2/8260	CCAS	---	---	<50	<0.5	<1.0	<1.0	<1.0	---
TB	28 Jul 89	8260	CCAS	---	---	<50	<0.1	<0.5	<0.1	<0.2	---
TB	30 Oct 89	8015/8020	GTEL	---	---	<500	<0.3	<0.3	<0.3	<0.6	---
TB	9 Jan 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
TB	18 Apr 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---
TB	22 Jun 90	8015/8020	PACE	---	---	<50	<0.5	<0.5	<0.5	<0.5	---
TB	9 Aug 90	8015/8020	GTEL	---	---	<50	<0.3	<0.3	<0.3	<0.6	---

NOTES:

FC = Fuel Characterization
TFH = Total Fuel Hydrocarbons
TPH/TPPH = Total Petroleum Hydrocarbons/
Total Purgeable Petroleum Hydrocarbons
E-Benzene = Ethylbenzene
O&G = Oil and Grease by California Standard Method 503E
ppb = parts-per-billion
ppm = parts-per-million
D = Duplicate analysis

TB = Travel Blank
--- = Not analyzed or characterized
< = Less than listed detection limit
* = Acetone 50 ppb, 2-butanone 160 ppb
Gas = Gasoline
BC = Brown Caldwell Laboratories
CCAS = Central Coast Analytical Services
GTEL = Groundwater Technology Environmental Laboratories
PACE = Pace Laboratories, Inc.

1-012.04/C2SPO.WK1

TABLE 3. Analytic Results: Groundwater Samples - Selected Halocarbons
Former Chevron Service Station #90020
1633 Harrison Street
Oakland, California

Well ID #	Date	EPA Method	LAB	Carb Tet	Chlor	PCE	TCE	1,2-DCE*	t-1,2-DCE	c-1,2-DCE	TCA	1,2-DCA	1,2-DCP	M-C
				<----------ppb---------->										
MW-1	3 Nov 88	624/8015	BC	18.0	7.0	<1.0	<1.0	---	<1.0	---	<1.0	<1.0	---	---
MW-1	10 Feb 89	524.2/8240	CCAS	17.0	6.0	<0.2	<0.2	---	<0.2	<0.2	<0.2	<0.2	---	---
MW-1	24 Apr 89	524.2/8260	CCAS	16.0	6.0	<1.0	<1.0	<1.0	---	---	<1.0	<1.0	---	---
MW-1	28 Jul 89	8260	CCAS	20.0	6.4	<0.1	<0.1	---	<0.1	<0.1	0.3	<0.1	---	---
MW-1	30 Oct 89	601	GTEL	11.0	4.9	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	---	---
MW-1	9 Jan 90	601	GTEL	24.0	7.2	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	---	---
MW-1	18 Apr 90	601	GTEL	23.0	5.5	<0.5	<0.5	---	<0.5	---	1.4	<0.5	<0.5	<0.5
MW-1	9 Aug 90	601	GTEL	32.0	11.0	0.76	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5
MW-2	3 Nov 88	624/8015	BC	3.0	2.0	34.0	3.0	---	10.0	---	<1.0	<1.0	---	---
MW-2	10 Feb 89	524.2/8240	CCAS	1.4	1.0	17.2	<0.2	---	<0.2	6.3	<0.2	<0.2	---	---
MW-2	24 Apr 89	524.2/8260	CCAS	2.0	2.0	38.0	3.0	9.0	---	---	<1.0	<1.0	---	---
MW-2	28 Jul 89	8260	CCAS	3.7	2.0	46.0	2.6	---	<0.2	<0.2	<0.2	<0.2	---	---
MW-2	30 Oct 89	601	GTEL	1.4	2.6	53.0	1.1	---	14.0	---	<0.5	<0.5	---	---
MW-2	9 Jan 90	601	GTEL	3.6	3.9	78.0	5.3	---	16.0	---	<0.5	<0.5	---	---
MW-2	18 Apr 90	601	GTEL	1.5	2.7	130.0	3.9	---	19.0	---	<0.5	<0.5	<0.5	<0.5
MW-2	9 Aug 90	601	GTEL	2.1	2.1	74.0	6.1	---	15.0	---	<0.5	<0.5	<0.5	<0.5
MW-3	3 Nov 88	624/8015	BC	8.0	6.0	84.0	3.0	---	5.0	---	<1.0	<1.0	---	---
MW-3	10 Feb 89	524.2/8240	CCAS	5.8	4.0	53.0	1.9	---	<0.2	9.0	<0.2	<0.2	---	---
MW-3	24 Apr 89	524.2/8260	CCAS	7.0	6.0	110.0	3.0	11.0	---	---	<1.0	<1.0	---	---
MW-3	28 Jul 89	8260	CCAS	8.6	5.0	49.0	2.1	---	<0.2	11.0	<0.2	<0.1	---	---
MW-3	30 Oct 89	601	GTEL	5.6	5.3	62.0	0.77	---	8.2	---	<0.5	<0.5	---	---
MW-3	9 Jan 90	601	GTEL	8.6	6.1	81.0	3.8	---	8.7	---	<0.5	<0.5	---	---
MW-3	18 Apr 90	601	GTEL	7.6	5.8	120.0	2.4	---	11.0	---	<0.5	<0.5	<0.5	<0.5
MW-3	9 Aug 90	601	GTEL	11.0	6.7	81.0	5.1	---	11.0	---	<0.5	<0.5	<0.5	<0.5

TABLE 3. Analytic Results: Groundwater Samples - Selected Halocarbons (continued)
Former Chevron Service Station #90020
1633 Harrison Street
Oakland, California

Well ID #	Date	EPA Method	LAB	Carb Tet	Chlor	PCE	TCE	1,2-DCE*	t-1,2-DCE	c-1,2-DCE	TCA	1,2-DCA	1,2-DCP	M-C
				<----------ppb---------->										
MW-4	24 Apr 89	524.2/8260	CCAS	35.0	11.0	<1.0	<1.0	<1.0	---	---	<1.0	<1.0	---	---
MW-4	28 Jul 89	8260	CCAS	32.0	9.3	<0.1	<0.1	---	<0.1	<0.1	<0.1	<0.1	---	---
MW-4	30 Oct 89	601	GTEL	32.0	8.5	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	---	---
MW-4	9 Jan 90	601	GTEL	36.0	9.8	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	---	---
MW-4	18 Apr 90	601	GTEL	41.0	9.5	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5
MW-4	9 Aug 90	601	GTEL	38.0	11.0	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5
MW-5	24 Apr 89	524.2/8260	CCAS	4.0	5.0	4.0	<1.0	2.0	---	---	<1.0	<1.0	---	---
MW-5	28 Jul 89	8260	CCAS	5.6	4.0	5.3	0.3	---	0.2	2.3	0.5	<0.2	---	---
MW-5	30 Oct 89	601	GTEL	2.9	2.0	2.7	<0.5	---	0.86	---	<0.5	<0.5	---	---
MW-5	9 Jan 90	601	GTEL	8.2	4.6	7.8	0.6	---	3.1	---	<0.5	<0.5	---	---
MW-5	18 Apr 90	601	GTEL	6.3	2.8	2.6	<0.5	---	1.7	---	<0.5	<0.5	<0.5	<0.5
MW-5	9 Aug 90	601	GTEL	11.0	4.8	6.0	<0.5	---	2.3	---	<0.5	<0.5	<0.5	<0.5
MW-6	24 Apr 89	524.2/8260	CCAS	13.0	7.0	<1.0	<1.0	<1.0	---	---	<1.0	<1.0	---	---
MW-6	28 Jul 89	8260	CCAS	9.6	4.0	<0.2	<0.2	---	<0.2	<0.2	0.5	0.6	---	---
MW-6	30 Oct 89	601	GTEL	8.2	3.6	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	---	---
MW-6	9 Jan 90	601	GTEL	10.0	4.2	<0.5	<0.5	---	<0.5	---	<0.5	1.8	---	---
MW-6	18 Apr 90	601	GTEL	11.0	3.8	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5
MW-6	9 Aug 90	601	GTEL	20.0	6.6	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5

TABLE 3. Analytic Results: Groundwater Samples - Selected Halocarbons (continued)
Former Chevron Service Station #90020
1633 Harrison Street
Oakland, California

Well ID #	Date	EPA Method	LAB	Carb Tet	Chlor	PCE	TCE	1,2-DCE*	t-1,2-DCE	c-1,2-DCE	TCA	1,2-DCA	1,2-DCP	M-C
				<----------ppb---------->										
MW-7	24 Apr 89	524.2/8260	CCAS	3.0	9.0	<1.0	<1.0	<1.0	---	---	<1.0	<1.0	---	---
MW-7	28 Jul 89	8260	CCAS	<2.0	<10.0	<2.0	<2.0	---	<2.0	<2.0	<10.0	6.0	---	---
MW-7D	28 Jul 89	8260	CCAS	<5.0	<20.0	<5.0	<5.0	---	<5.0	<5.0	<5.0	<5.0	---	---
MW-7	30 Oct 89	601	GTEL	<1.0	3.9	<1.0	<1.0	---	<1.0	---	<1.0	6.4	---	---
MW-7D	30 Oct 89	601	GTEL	<1.0	3.1	<1.0	<1.0	---	<1.0	---	<1.0	6.2	---	---
MW-7	9 Jan 90	601	GTEL	<0.5	3.0	<0.5	<0.5	---	<0.5	---	<0.5	8.4	---	---
MW-7	18 Apr 90	601	GTEL	<0.5	3.2	<0.5	<0.5	---	<0.5	---	<0.5	7.7	0.6	0.6
MW-7	9 Aug 90	601	GTEL	3.3	7.7	<0.5	<0.5	---	<0.5	---	<0.5	8.4	<0.5	1.8
MW-8	24 Apr 89	524.2/8260	CCAS	2.0	3.0	6.0	<1.0	4.0	---	---	<1.0	<1.0	---	---
MW-8D	24 Apr 89	524.2/8260	CCAS	2.0	2.0	6.0	<1.0	3.0	---	---	<1.0	<1.0	---	---
MW-8	28 Jul 89	8260	CCAS	2.3	2.0	5.6	<0.2	---	<0.2	3.8	<0.2	<0.2	---	---
MW-8	30 Oct 89	601	GTEL	2.5	2.6	8.0	<0.5	---	5.5	---	<0.5	<0.5	---	---
MW-8	9 Jan 90	601	GTEL	4.9	3.9	19.0	0.9	---	6.6	---	<0.5	<0.5	---	---
MW-8	18 Apr 90	601	GTEL	3.8	2.8	17.0	0.6	---	5.7	---	<0.5	<0.5	<0.5	<0.5
MW-8	9 Aug 90	601	GTEL	5.3	4.4	27.0	1.2	---	9.2	---	<0.5	<0.5	<0.5	<0.5
MW-9	22 Jun 90	8010	PACE	<0.5	<0.5	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5
MW-9	9 Aug 90	601	GTEL	<0.5	<0.5	<0.5	<0.5	---	<0.5	---	<0.5	0.71	<0.5	<0.5
MW-10	22 Jun 90	8010	PACE	9.6	8.9	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5
MW-10	9 Aug 90	601	GTEL	11.0	7.8	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5
MW-11	22 Jun 90	8010	PACE	4.6	6.5	73	1.3	---	<0.5	8.9	<0.5	<0.5	<0.5	<0.5
MW-11	9 Aug 90	601	GTEL	8.1	6.8	84	2.0	---	4.6	---	<0.5	<0.5	<0.5	<0.5

TABLE 3. Analytic Results: Groundwater Samples - Selected Halocarbons (continued)
Former Chevron Service Station #90020
1633 Harrison Street
Oakland, California

Well ID #	Date	EPA Method	LAB	Carb Tet	Chlor	PCE	TCE	1,2-DCE*	t-1,2-DCE	c-1,2-DCE	TCA	1,2-DCA	1,2-DCP	M-C
				<--------				ppb						-------->
MW-12	22 Jun 90	8010	PACE	6.0	7.3	7.4	<0.5	---	<0.5	13	<0.5	<0.5	<0.5	<0.5
MW-12	9 Aug 90	601	GTEL	8.0	7.0	6.7	<0.5	---	5.8	---	<0.5	<0.5	<0.5	<0.5
TB	3 Nov 88	624/8015	BC	<1.0	<1.0	<1.0	<1.0	---	<1.0	---	<1.0	<1.0	---	---
TB	10 Feb 89	524.2/8240	CCAS	<0.1	<0.5	<0.1	<0.1	---	<0.1	<0.1	<0.1	<0.1	---	---
TB	24 Apr 89	524.2/8260	CCAS	<1.0	<1.0	<1.0	<1.0	<1.0	---	---	<1.0	<1.0	---	---
TB	28 Jul 89	8260	CCAS	<0.1	<0.5	<0.1	<0.1	---	<0.1	<0.1	<0.1	<0.1	---	---
TB	30 Oct 89	601	GTEL	<0.5	<0.5	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	---	---
TB	9 Jan 90	601	GTEL	<0.5	<0.5	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	---	---
TB	18 Apr 90	601	GTEL	<0.5	<0.5	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5
TB	22 Jun 90	8010	PACE	<0.5	<0.5	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5
TB	9 Aug 90	8010	GTEL	<0.5	<0.5	<0.5	<0.5	---	<0.5	---	<0.5	<0.5	<0.5	<0.5

NOTES:

Carb Tet = Carbon tetrachloride
Chlor = Chloroform
PCE = Tetrachloroethene
TCE = Trichloroethene
1,2-DCE = 1,2-Dichloroethene
* = cis and trans isomers
t-1,2-DCE = trans-1,2-Dichloroethene
c-1,2-DCE = cis-1,2-Dichloroethene
TCA = 1,1,1-Trichloroethane
1,2-DCA = 1,2-Dichloroethane
1,2-DCP = 1,2-Dichloropropane
M-C = Methylene Chloride
ppb = parts-per-billion
D = Duplicate analysis
TB = Travel blank
< = Less than listed detection limit
--- = Not analyzed or characterized
BC = Brown and Caldwell Laboratories
CCAS = Central Coast Analytical Services
GTEL = Groundwater Technology Environmental Laboratories
PACE = Pace Laboratory, Inc.

ATTACHMENT A

SOP-4: GROUNDWATER PURGING AND SAMPLING

STANDARD OPERATING PROCEDURES
RE: GROUNDWATER PURGING AND SAMPLING
SOP-4

Prior to water sampling, each well is purged by evacuating a minimum of three well-casing volumes of groundwater or until the discharge water temperature, conductivity, and pH stabilize. The groundwater sample should be taken when the water level in the well recovers to 80% of its static level.

The sampling equipment used consists of either a teflon bailer or a stainless steel bladder pump with a teflon bladder. If the sampling system is dedicated to the well, then the bailer is made of teflon, but the bladder pump is PVC with a polypropylene bladder. Forty milliliter (ml) glass volatile-organic-analysis (VOA) vials, with teflon septa, are used as sample containers.

The groundwater sample is decanted into each VOA vial in such a manner that there is a meniscus at the top of the vial. The cap is quickly placed over the top of the vial and securely tightened. The VOA vial is then inverted and tapped to see if air bubbles are present. If none are present, the sample is labeled and refrigerated for delivery under chain-of-custody to the laboratory. Label information should include a sample identification number, job identification number, date, time, type of analysis requested, and the sampler's name.

For quality control purposes, a duplicate water sample is collected from each well. This sample is put on hold at the laboratory. A trip blank is prepared at the laboratory and placed in the transport cooler. It remains with the cooler and is analyzed by the laboratory along with the groundwater samples. A field blank is prepared in the field when sampling equipment is not dedicated. The field blank is prepared after a pump or bailer has been steam-cleaned, prior to use in a second well, and is analyzed along with the other samples. The field blank demonstrates the quality of in-field cleaning procedures to prevent cross-contamination.

To minimize the potential for cross-contamination between wells, all the well-development and water-sampling equipment that is not dedicated to a well is steam-cleaned between each well. As a second precautionary measure, wells will be sampled in order of least to highest concentrations as established by previous analyses.

ATTACHMENT B

FIELD SAMPLING AND MONITORING FORMS

LIQUID-LEVEL DATA SHEET

Project No.	Project Name	Date	Initials
1-012.03	17TH/HARRISON -1.012.03	8/9/90	D.O./D.F

Well No.	HISTORIC DATA/DATE: DTLH	DTW	LHT	Sounded Depth	CURRENT DATA: DTLH	DTW	LHT	Sounded Depth	Method WLP / PB / (IP)*	Time	Comments
MW-1						20.94				7:52	
MW-2						21.55				7:42	
MW-3						21.18				7:40	
MW-4						22.11				7:44	
MW-5						21.36				7:45	
MW-6						20.74				7:46	
MW-7						20.38				7:48	
MW-8						20.89				7:50	
MW9						20.74				7:55	
MW10						20.45				7:32	
MW-11						21.02				7:39	
MW12						20.43				7:37	

* WLP = Water-Level Probe
PB = Product Bailer
(IP) = Interface Probe

#4

WGR

WATER SAMPLING DATA Well Name MW-1 Date 9/9/98 Time 10:10
Job Name 17TH/HARRISON Job Number 102.03 Initials D.O.
WELL DATA: Well type M (M=monitoring well; Describe _____)
Depth to Water 20.94 ft.
Well Depth 29 ft. (spec.) Sounded Depth / ft.
Well Diameter 4 in. Date _____ Time /

EVACUATION: Sampling Equipment:
PVC Bailer: _____ in. Dedicated: Bladder Pump ✓ ;Bailer _____
Sampling Port:Number _____ Rate _____ gpm. Volume _____ gal.
Other _____
Initial Height of Water in Casing 8.03 ft; Volume 5.24 gal.
Volume To Be Evacuated = 15.72 gal. (initial volume x3 ✓, x4 _____)

	Evacuated	Evacuated	Evacuated
Time: Stop	11:00		
Start	10:45		
Total minutes	15		
Amount Evacuated	16		
Total Evacuated	16 gal.		
Evacuation Rate	1.06 gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
¼" casing = 0.163 gal/ft
½" casing = 0.367 gal/ft
¾" casing = 0.653 gal/ft
(1)" casing = 0.826 gal/ft
1¼" casing = 1.47 gal/ft
1½" casing = 2.61 gal/ft

Depth to water during pumping 23.45 ft. 10:55 time
Pumped dry? NO After _____ gal. Recovery rate _____
Depth to water for 80% recovery _____ ft.

CHEMICAL DATA: Temp. Probe # ___ Ph Probe # ___ Cond. Probe # ___

Time		°C	umhos
1			
2			
3			
4			

SAMPLING: Point of collection: PE Hose ✓; End of bailer ___; Other _____
Samples taken 11:05 time Depth to water 20.46 ft. Refrigerated: ✓
Sample description: Water color Clear 21.90 Odor none
Sediment/Foreign matter none

Sample ID no.	Container VOA / other		Preservative NaHSO4/Azide/other	Analysis	Lab
090998/01A	40 ml		HCl	EPA 602/8015	CAEL
01B	ml		"	"	
01C	ml		None	EPA 601	
01D	ml		"	"	
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: _____

#0

WGR

WATER SAMPLING DATA Well Name MW-2 Date 9/7/00 Time 1052
Job Name Oakland Job Number 1-013.03 Initials EJF
WELL DATA: Well type M (M=monitoring well; Describe _____)
Depth to Water 21.55 ft.
Well Depth 28.5 ft. (spec.) Sounded Depth _____ ft.
Well Diameter 4 in. Date _____ Time _____

EVACUATION: Sampling Equipment:
PVC Bailer: _____ in. Dedicated: Bladder Pump ✓ ;Bailer _____
Sampling Port:Number _____ Rate _____ gpm. Volume _____ gal.
Other _____
Initial Height of Water in Casing 7.05 ft; Volume 46 gal.
Volume To Be Evacuated = 13.8 gal. (initial volume x3 X, x4 _____)

	Evacuated	Evacuated	Evacuated
Time: Stop	1109		
Start	1057		
Total minutes	12		
Amount Evacuated	13.8		
Total Evacuated	13.8 gal.		
Evacuation Rate	1.15 gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
V_4" casing = 0.163 gal/ft
V_3" casing = 0.367 gal/ft
V_2" casing = 0.653 gal/ft
$V_{1.5}$" casing = 0.826 gal/ft
V_1" casing = 1.47 gal/ft
$V_{0.75}$" casing = 2.61 gal/ft

Depth to water during pumping _____ ft. _____ time
Pumped dry? No After _____ gal. Recovery rate _____
Depth to water for 80% recovery _____ ft.

CHEMICAL DATA: Temp. Probe # _____ pH Probe # _____ Cond. Probe # _____

Time		°C		umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose ✓ ; End of bailer ___ ; Other _____
Samples taken 1113 time Depth to water 22.47 ft. Refrigerated: X
Sample description: Water color clear Odor none
Sediment/Foreign matter none

Sample ID no.			Container VOA / other	Preservative NaHSO4/Azide/other	Analysis	Lab
050900211	40	ml	VOA	HCl	EPA 602/8015	GTEL
B	✓	ml	✓	HCl	✓	
C	✓	ml	✓	none	EPA 601	
D		ml		none	✓	
		ml				
		ml				
		ml				
		ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: _____

#10

WGR

WATER SAMPLING DATA Well Name MW-3 Date 8/9/90 Time 11:20
Job Name 12TH / LAND FARM Job Number 1-012.03 Initials D.O.
WELL DATA: Well type M (M=monitoring well; Describe _____)
Depth to Water 21.18 ft.
Well Depth 32 ft. (spec.) Sounded Depth / ft.
Well Diameter 4 in. Date / Time /

EVACUATION: Sampling Equipment:
PVC Bailer: _____ in. Dedicated: Bladder Pump _____ ;Bailer _____
Sampling Port:Number _____ Rate _____ gpm. Volume _____ gal.
Other _____
Initial Height of Water in Casing 10.82 ft; Volume 7.065 gal.
Volume To Be Evacuated = 21.19 gal. (initial volume x3 ✓, x4 _____)

	Evacuated	Evacuated	Evacuated
Time: Stop	11:45		
Start	11:25		
Total minutes	20		
Amount Evacuated	21.5		
Total Evacuated	21.5 gal.		
Evacuation Rate	1.075 gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
V_{1}" casing = 0.163 gal/ft
V_{2}" casing = 0.367 gal/ft
V_{4}" casing = 0.653 gal/ft
V_{5}" casing = 0.826 gal/ft
V_{6}" casing = 1.47 gal/ft
V_{8}" casing = 2.61 gal/ft

Depth to water during pumping 22.05 ft. 11:40 time
Pumped dry? NO After _____ gal. Recovery rate _____
Depth to water for 80% recovery _____ ft.

CHEMICAL DATA: Temp. Probe # ___ Ph Probe # ___ Cond.Probe # ___

Time		°C		umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose ✓; End of bailer ___; Other _____
Samples taken 11:50 time Depth to water 21.80 ft. Refrigerated: ✓
Sample description: Water color clear Odor none
Sediment/Foreign matter none

Sample ID no.		Container VOA / other	Preservative NaHSO₄/Azide/other	Analysis	Lab
080990-03A	40 ml	✓	HCl	EPA 602/8015	CTEC
03B	✓ ml	✓	"	"	✓
-03C	✓ ml	✓	None	EPA 601	
-03D	✓ ml	✓	"		
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: _____

#6

WGR

WATER SAMPLING DATA Well Name MW-4 Date 6/7/90 Time 1000
Job Name Oakland Job Number 1-012.05 Initials DOF
WELL DATA: Well type M (M=monitoring well; Describe _____)
Depth to Water 22.11 ft.
Well Depth 33.5 ft. (spec.) Sounded Depth _____ ft.
Well Diameter 4 in. Date _____ Time _____

EVACUATION: Sampling Equipment:
PVC Bailer: _____ in. Dedicated: Bladder Pump Y ;Bailer _____
Sampling Port:Number _____ Rate _____ gpm. Volume _____ gal.
Other _____
Initial Height of Water in Casing 11.39 ft; Volume 7.4 gal.
Volume To Be Evacuated = 22.3 gal. (initial volume x3 ___, x4 ___)

	Evacuated	Evacuated	Evacuated
Time: Stop	1027		
Start	1006		
Total minutes	21		
Amount Evacuated			
Total Evacuated	23 gal.		
Evacuation Rate	1.0 gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
V_{1}" casing = 0.163 gal/ft
V_{2}" casing = 0.367 gal/ft
V_{4}" casing = 0.653 gal/ft
$V_{4.5}$" casing = 0.826 gal/ft
V_{6}" casing = 1.47 gal/ft
V_{8}" casing = 2.61 gal/ft

Depth to water during pumping 24.03 ft. 10:22 time
Pumped dry? NO After _____ gal. Recovery rate _____
Depth to water for 80% recovery _____ ft.

CHEMICAL DATA: Temp. Probe # ___ pH Probe # ___ Cond Probe # ___

Time		°C		umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose X; End of bailer ___; Other _____
Samples taken 1029 time Depth to water 23.81 ft. Refrigerated: Y
Sample description: Water color clear Odor none
Sediment/Foreign matter none

Sample ID no.		Container VOA / other	Preservative HCl/H2SO4/Azide/other	Analysis	Lab
060990.04A	40 ml	VOA	HCl	EPA 602/8015	CTEL
B	ml		↓	↓	
C	ml		none	EPA 601	
D	ml		↓	↓	
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: _____

#11

WGR

WATER SAMPLING DATA Well Name MW-5 Date 7/9/90 Time 9:24
Job Name Oakland Job Number 1-012 03 Initials PJ
WELL DATA: Well type M (M=monitoring well; Describe ________)
Depth to Water 21.36 ft.
Well Depth 32 ft. (spec.) Sounded Depth ______ ft.
Well Diameter 4 in. Date ______ Time ______

EVACUATION: Sampling Equipment:
PVC Bailer: ______ in. Dedicated: Bladder Pump X ;Bailer ______
Sampling Port:Number ______ Rate ______ gpm. Volume ______ gal.
Other ______
Initial Height of Water in Casing 10.64 ft; Volume 6.9 gal.
Volume To Be Evacuated = 20.8 gal. (initial volume x3 X , x4 ______)

	Evacuated	Evacuated	Evacuated
Time: Stop	956		
Start	936		
Total minutes	11		
Amount Evacuated	10		
Total Evacuated	gal.		
Evacuation Rate	.714 gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
V_2" casing = 0.163 gal/ft
V_3" casing = 0.367 gal/ft
V_4" casing = 0.653 gal/ft
$V_{4.5}$" casing = 0.826 gal/ft
V_6" casing = 1.47 gal/ft
V_8" casing = 2.61 gal/ft

Depth to water during pumping 29.92 ft. 945 time
Pumped dry? no After 10.2 gal. Recovery rate .06 gpm
Depth to water for 80% recovery 23.49 ft.

CHEMICAL DATA: Temp. Probe # ____ Ph Probe # ____ Cond.Probe # ____

Time		°C		umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose X; End of bailer ___; Other ______
Samples taken 1217 time Depth to water 23.54 ft. Refrigerated: X
Sample description: Water color cloudy white Odor slight
Sediment/Foreign matter none

Sample ID no.	ml	Container VOA / other	Preservative NaHSO₄/Azide/other	Analysis	Lab
080910054	40 ml	VOA	HCl	EPA 602/8015	GTEL
B	↓ ml	↓	↓	↓	↓
C	↓ ml	↓	none	EPA 601	↓
D	↓ ml	↓	↓	↓	↓
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: 31.32 @ 950
30.85 955 = .47 ft/5 min = .31 gal/5 min = .06 g/m
23.54 @ 1204 = 79% recovery

#5

WGR

WATER SAMPLING DATA Well Name MW-6 Date 8/9/90 Time 9:55
Job Name 17TH/HARRISON Job Number 1-012.05 Initials 9:55 DO
WELL DATA: Well type ____ (M=monitoring well; Describe ____)
Depth to Water 20.74 ft.
Well Depth 26 ft. (spec.) Sounded Depth / ft.
Well Diameter 4 in. Date / Time /

EVACUATION: Sampling Equipment:
PVC Bailer: ____ in. Dedicated: Bladder Pump ✓ ;Bailer ____
Sampling Port:Number ____ Rate ____ gpm. Volume ____ gal.
Other ____
Initial Height of Water in Casing 5.26 ft; Volume 3.43 gal.
Volume To Be Evacuated = 10.30 gal. (initial volume x3 ✓, x4 ____)

	Evacuated	Evacuated	Evacuated
Time: Stop	10:12		
Start	10:00		
Total minutes	12		
Amount Evacuated	10.5		
Total Evacuated	10.5 gal.		
Evacuation Rate	.875 gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
V_{1}" casing = 0.163 gal/ft
V_{2}" casing = 0.367 gal/ft
V_{3}" casing = 0.653 gal/ft
V_{4}" casing = 0.826 gal/ft
V_{6}" casing = 1.47 gal/ft
V_{8}" casing = 2.61 gal/ft

Depth to water during pumping 24.75 ft. 10:10 time
Pumped dry? NO After ____ gal. Recovery rate ____
Depth to water for 80% recovery ____ ft.

CHEMICAL DATA: Temp. Probe # ____ Ph Probe # ____ Cond. Probe # ____

Time		°C	umhos
	1		
	2		
	3		
	4		

SAMPLING: Point of collection: PE Hose ✓; End of bailer ___; Other ____
Samples taken 10:15 time Depth to water 23.60 ft. Refrigerated: ✓
Sample description: Water color Cloudy Odor none
Sediment/Foreign matter ____

Sample ID no.		Container VOA / other	Preservative NaHSO₄/Azide/other	Analysis	Lab
08090-06A	40 ml	✓	HCl	EPA 602/8015	ORE
-06B	ml		"	"	
-06C	ml		none	EPA 601	
-06D	ml		"	"	
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: ____

12

WGR

WATER SAMPLING DATA Well Name MW-7 Date 8/9/90 Time 930
Job Name DOT/HARRISON Job Number 1-012.03 Initials D.O.
WELL DATA: Well type M (M=monitoring well; Describe _____)
Depth to Water 20.38 ft.
Well Depth 27 ft. (spec.) Sounded Depth / ft.
Well Diameter 2 in. Date / Time /

EVACUATION: Sampling Equipment:
PVC Bailer: _____ in. Dedicated: Bladder Pump ✓ ;Bailer _____
Sampling Port:Number _____ Rate _____ gpm. Volume _____ gal.
Other _____
Initial Height of Water in Casing 6.62 ft; Volume 4.322 gal.
Volume To Be Evacuated = 12.97 gal. (initial volume x3 ✓, x4)

	Evacuated	Evacuated	Evacuated
Time: Stop	9:40		
Start	9:35		
Total minutes	5		
Amount Evacuated	5		
Total Evacuated	5 gal.		
Evacuation Rate	1.0 gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
2" casing = 0.163 gal/ft
3" casing = 0.367 gal/ft
4" casing = 0.653 gal/ft
5" casing = 0.826 gal/ft
6" casing = 1.47 gal/ft
8" casing = 2.61 gal/ft

Depth to water during pumping NA ft. — time
Pumped dry? DRY After 5 gal. Recovery rate .056
Depth to water for 80% recovery _____ ft. (21.704 for 80% Recovery)

DTW 25.57 @ 9:42
25.12 @ 9:47
23.29 @ 12:10

CHEMICAL DATA: Temp. Probe # ___ Ph Probe # ___ Cond. Probe # ___

Time		°C		umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose ✓; End of bailer ___; Other _____
Samples taken 12:20 time Depth to water 25.46 ft. Refrigerated: ✓
Sample description: Water color Cloudy Odor Moderate
Sediment/Foreign matter Small amounts of sand

Sample ID no.		Container VOA / other	Preservative HCl/H2SO4/Azide/other	Analysis	Lab
08090-01AA	ml		HCl	EPA 602/8015	GTEL
-01B	ml		"	"	
-01C	ml		none	EPA 601	
-01D ✓	ml	✓	"	"	✓
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: 50% Recovery / Over 2 Hours!

#9

WGR

WATER SAMPLING DATA Well Name MW-8 Date 8/1/90 Time 1124
Job Name Oakland Job Number 1012.03 Initials DJE
WELL DATA: Well type ____ (M=monitoring well; Describe ____)
Depth to Water 20.89 ft.
Well Depth 26.00 ft. (spec.) Sounded Depth ____ ft.
Well Diameter 4" in. Date ____ Time ____

EVACUATION: Sampling Equipment:
PVC Bailer: ____ in. Dedicated: Bladder Pump X ;Bailer ____
Sampling Port:Number ____ Rate ____ gpm. Volume ____ gal.
Other ____
Initial Height of Water in Casing 5.11 ft; Volume 2.33 gal.
Volume To Be Evacuated = 10 gal. (initial volume x3 ____, x4 ____)

	Evacuated	Evacuated	Evacuated
Time: Stop	1137		
Start	1129		
Total minutes	10		
Amount Evacuated	10		
Total Evacuated	10 gal.		
Evacuation Rate	1.0 gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
V_{2}" casing = 0.163 gal/ft
V_{3}" casing = 0.367 gal/ft
V_{4}" casing = 0.653 gal/ft
V_{5}" casing = 0.826 gal/ft
V_{6}" casing = 1.47 gal/ft
V_{8}" casing = 2.61 gal/ft

Depth to water during pumping ____ ft. ____ time
Pumped dry? no After ____ gal. Recovery rate ____
Depth to water for 80% recovery ____ ft.

CHEMICAL DATA: Temp. Probe # ____ Ph Probe # ____ Cond. Probe # ____

Time		°C		umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose ✓; End of bailer ___; Other ____
Samples taken 1142 time Depth to water 22.36 ft. Refrigerated: X
Sample description: Water color clear Odor none
Sediment/Foreign matter none

Sample ID no.		Container VOA / other	Preservative NaHSO₄/Azide/other	Analysis	Lab
090C.08A	40 ml	VOA	HCl	EPA 602/8015	G-TEL
B	ml	↓	↓	↓	↓
C	ml	↓	none	EPA 601	↓
D	ml	↓	↓	↓	↓
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: ____

#3

WGR

WATER SAMPLING DATA Well Name MW-9 Date 8/9/90 Time 845

Job Name Oakland (17th/Hol) Job Number 1-017.05 Initials DJ

WELL DATA: Well type M (M=monitoring well; Describe ______)

Depth to Water 20.74 ft.

Well Depth 24.11 ft. (spec.) Sounded Depth ______ ft.

Well Diameter 2 in. Date ______ Time ______

EVACUATION: Sampling Equipment:

PVC Bailer: 1.25 in. Dedicated: Bladder Pump ______ ;Bailer ______

Sampling Port:Number ______ Rate ______ gpm. Volume ______ gal.

Other ______

Initial Height of Water in Casing 3.37 ft; Volume .55 gal.

Volume To Be Evacuated = 1.6 gal. (initial volume x3 X , x4 ______)

	Evacuated	Evacuated	Evacuated
Time: Stop	853		
Start	849		
Total minutes	4		
Amount Evacuated	1.6		
Total Evacuated	1.6 gal.		
Evacuation Rate	.4 gpm.		

Formulas / Conversions

r = well radius in ft

h = ht of water col in ft

vol. of col. = $\pi r^2 h$

7.48 gal/ft³

V_2" casing = 0.163 gal/ft

V_3" casing = 0.367 gal/ft

V_4" casing = 0.653 gal/ft

$V_{4.5}$" casing = 0.826 gal/ft

V_6" casing = 1.47 gal/ft

V_8" casing = 2.61 gal/ft

Depth to water during pumping ______ ft. ______ time

Pumped dry? NO After ______ gal. Recovery rate ______

Depth to water for 80% recovery ______ ft.

CHEMICAL DATA: Temp. Probe # ______ Ph Probe # ______ Cond. Probe # ______

Time		°C		umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose ___; End of bailer X; Other ______

Samples taken 902 time Depth to water 21.02 ft. Refrigerated: Y

Sample description: Water color cloudy brown Odor none

Sediment/Foreign matter fine sediment

Sample ID no.		Container VOA / other	Preservative NaHSO₄/Azide/other	Analysis	Lab
0809009A	40 ml	VOA	HCl	EPA 602/8015	GTEL
B	↓ ml	↓	↓	↓	↓
C	↓ ml	↓	none	EPA 601	↓
D	↓ ml	↓	↓	↓	↓
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: ______

#1

WGR

WATER SAMPLING DATA Well Name MW-10 Date 8/9/90 Time 810
Job Name Oakland Job Number 1-012.0 Initials DJF
WELL DATA: Well type M (M=monitoring well; Describe _____)
Depth to Water 20.45 ft.
Well Depth 23.45 ft. (spec.) Sounded Depth _____ ft.
Well Diameter 2 in. Date _____ Time _____

EVACUATION: Sampling Equipment:
PVC Bailer: 1.25 in. Dedicated: Bladder Pump _____ ;Bailer _____
Sampling Port:Number _____ Rate _____ gpm. Volume _____ gal.
Other _____
Initial Height of Water in Casing 3.6 ft; Volume .49 gal.
Volume To Be Evacuated = 1.5 gal. (initial volume x3 X, x4 _____)

	Evacuated	Evacuated	Evacuated
Time: Stop	816		
Start	811		
Total minutes	5		
Amount Evacuated	1.5		

Total Evacuated 1.5 gal.
Evacuation Rate .3 gpm.

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
2" casing = 0.163 gal/ft
3" casing = 0.367 gal/ft
4" casing = 0.653 gal/ft
4.5" casing = 0.826 gal/ft
6" casing = 1.47 gal/ft
8" casing = 2.61 gal/ft

Depth to water during pumping _____ ft. _____ time
Pumped dry? NO After _____ gal. Recovery rate _____
Depth to water for 80% recovery _____ ft.

CHEMICAL DATA: Temp. Probe # _____ Ph Probe # _____ Cond. Probe # _____

Time		°C		umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose ___; End of bailer ___; Other _____
Samples taken 923 time Depth to water 20.42 ft. Refrigerated: X
Sample description: Water color cloudy yellow Odor none
Sediment/Foreign matter none

Sample ID no.		Container VOA / other	Preservative NaHSO₄/Azide/other	Analysis	Lab
080890 10A	40 ml	VOA	HCl	EPA 602/8015	CTL
B	ml		↓	↓	
C	ml		none	EPA 601	
D	ml		↓	↓	↓
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: _____

#1

WGR

WATER SAMPLING DATA Well Name MW-11 Date 2/9/90 Time 8:00
Job Name 19TH/HARRISON Job Number 1-052.03 Initials D.O.
WELL DATA: Well type M (M=monitoring well; Describe _____)
Depth to Water 21.02 ft.
Well Depth 26.35 ft. (spec.) Sounded Depth / ft.
Well Diameter 2 in. Date / Time /

EVACUATION: Sampling Equipment:
PVC Bailer: 1" in. Dedicated: Bladder Pump ____ ;Bailer ✓
Sampling Port:Number — Rate — gpm. Volume — gal.
Other —
Initial Height of Water in Casing 4.33 ft; Volume .70519 gal.
Volume To Be Evacuated = 2.11 gal. (initial volume x3 ✓, x4 ____)

	Evacuated	Evacuated	Evacuated
Time: Stop	9:02		
Start	8:46		
Total minutes	17		
Amount Evacuated	2.5		
Total Evacuated	2.5 gal.		
Evacuation Rate	.15 gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
(2") casing = 0.163 gal/ft
3" casing = 0.367 gal/ft
4" casing = 0.653 gal/ft
5" casing = 0.826 gal/ft
6" casing = 1.47 gal/ft
8" casing = 2.61 gal/ft

Depth to water during pumping 22.05 ft. 9:00 time
Pumped dry? NO After — gal. Recovery rate —
Depth to water for 80% recovery — ft.

CHEMICAL DATA: Temp. Probe # ____ Ph Probe # ____ Cond. Probe # ____

Time		°C		umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose ___; End of bailer ✓; Other ____
Samples taken 9:10 time Depth to water 21.60 ft. Refrigerated: ✓
Sample description: Water color CLOUDY Odor ____
Sediment/Foreign matter VERY SMALL AMOUNTS OF BROWNISH SILT

Sample ID no.		Container VOA / other	Preservative NaHSO4/Azide/other	Analysis	Lab
020890-11A	40 ml	✓	HCl	EPA 602/8015	GEL
11B	ml		"	"	
11C	ml		None	EPA 601	
11D	ml	✓	"	"	✓
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: _____

#2

WGR

WATER SAMPLING DATA Well Name MW-12 Date 8/9/90 Time 8:00
Job Name 4-012-03 17TH/1 Job Number 1-012-03 Initials DO
WELL DATA: Well type M (M=monitoring well; Describe ______)
Depth to Water 20.43 ft.
Well Depth 25.38 ft. (spec.) Sounded Depth / ft.
Well Diameter 4 in. Date / Time /

EVACUATION: Sampling Equipment:
PVC Bailer: 1 1/4 in. Dedicated: Bladder Pump ____ ;Bailer ____
Sampling Port:Number ____ Rate ____ gpm. Volume ____ gal.
Other ____
Initial Height of Water in Casing 4.95 ft; Volume .80685 gal.
Volume To Be Evacuated = 2.42 gal. (initial volume x3 ✓, x4 ____)

	Evacuated	Evacuated	Evacuated	
Time: Stop	8:25	/	/	
Start	8:20			
Total minutes	5			
Amount Evacuated	2.5			
Total Evacuated	2.5			gal.
Evacuation Rate	.50			gpm.

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
V_2" casing = 0.163 gal/ft
V_3" casing = 0.367 gal/ft
V_4" casing = 0.653 gal/ft
$V_{4.5}$" casing = 0.826 gal/ft
V_6" casing = 1.47 gal/ft
V_8" casing = 2.61 gal/ft

Depth to water during pumping 20.94 ft. 8:23 time
Pumped dry? NO After ____ gal. Recovery rate ____
Depth to water for 80% recovery ____ ft.

CHEMICAL DATA: Temp. Probe # ____ Eh Probe # ____ Cond.Probe # ____

Time		°C		umhos
/	1 /		/	/
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose ____; End of bailer ✓; Other ____
Samples taken 8:30 time Depth to water 20.85 ft. Refrigerated: ✓
Sample description: Water color Cloudy Odor None
Sediment/Foreign matter Small amount of Fine Brown Silt

Sample ID no.		Container VOA / other	Preservative NaHSO₄/Azide/other	Analysis	Lab
080990-12A	40 ml	VOA	HCl	EPA 602/8015	GTEL
12B	ml	↓	"	"	↓
12C	ml		None	EPA 601	
12D	↓ ml	↓	↑	"	↓
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

COMMENTS: ____

WGK

WATER SAMPLING DATA Well Name Trenor Blank Date 8/9/90 Time ——
Job Name 17th Harrison Job Number 1-012.03 Initials D.O.

WELL DATA: Well type ____ (M=monitoring well; Describe ____)
Depth to Water ____ ft.
Well Depth ____ ft. (spec.) Sounded Depth ____ ft.
Well Diameter ____ in. Date ____ Time ____

EVACUATION: Sampling Equipment:
PVC Bailer: ____ in. Dedicated: Bladder Pump ____ ; Bailer ____
Sampling Port: Number ____ Rate ____ gpm. Volume ____ gal.
Other ____
Initial Height of Water in Casing ____ ft; Volume ____ gal.
Volume To Be Evacuated = ____ gal. (initial volume x3 ____, x4 ____)

	Evacuated	Evacuated	Evacuated
Time: Stop			
Start			
Total minutes			
Amount Evacuated			
Total Evacuated	gal.		
Evacuation Rate	gpm.		

Formulas / Conversions
r = well radius in ft
h = ht of water col in ft
vol. of col. = $\pi r^2 h$
7.48 gal/ft³
V_2" casing = 0.163 gal/ft
V_3" casing = 0.367 gal/ft
V_4" casing = 0.653 gal/ft
$V_{4.5}$" casing = 0.826 gal/ft
V_6" casing = 1.47 gal/ft
V_8" casing = 2.61 gal/ft

Depth to water during pumping ____ ft. ____ time
Pumped dry? ____ After ____ gal. Recovery rate ____
Depth to water for 80% recovery ____ ft.

CHEMICAL DATA: Temp. Probe # ____ Ph Probe # ____ Cond. Probe # ____

Time		Temp. °C	Ph	Cond. umhos
	1			
	2			
	3			
	4			

SAMPLING: Point of collection: PE Hose ___; End of bailer ___; Other ____
Samples taken ____ time Depth to water ____ ft. Refrigerated: ____
Sample description: Water color ____ Odor ____
Sediment/Foreign matter ____

Sample ID no.		Container VOA / other	Preservative NaHSO₄/Azide/other	Analysis	Lab
08090-13A	40 ml	↓	None	EPA 602/8015 & TPH	GTEL
13B	↓ ml		↓	↓	↓
[illegible]	ml				
[illegible]	ml				
	ml				
	ml				
	ml				
	ml				

Container codes: P = plastic bottle; C or B = clear/brown glass; Describe

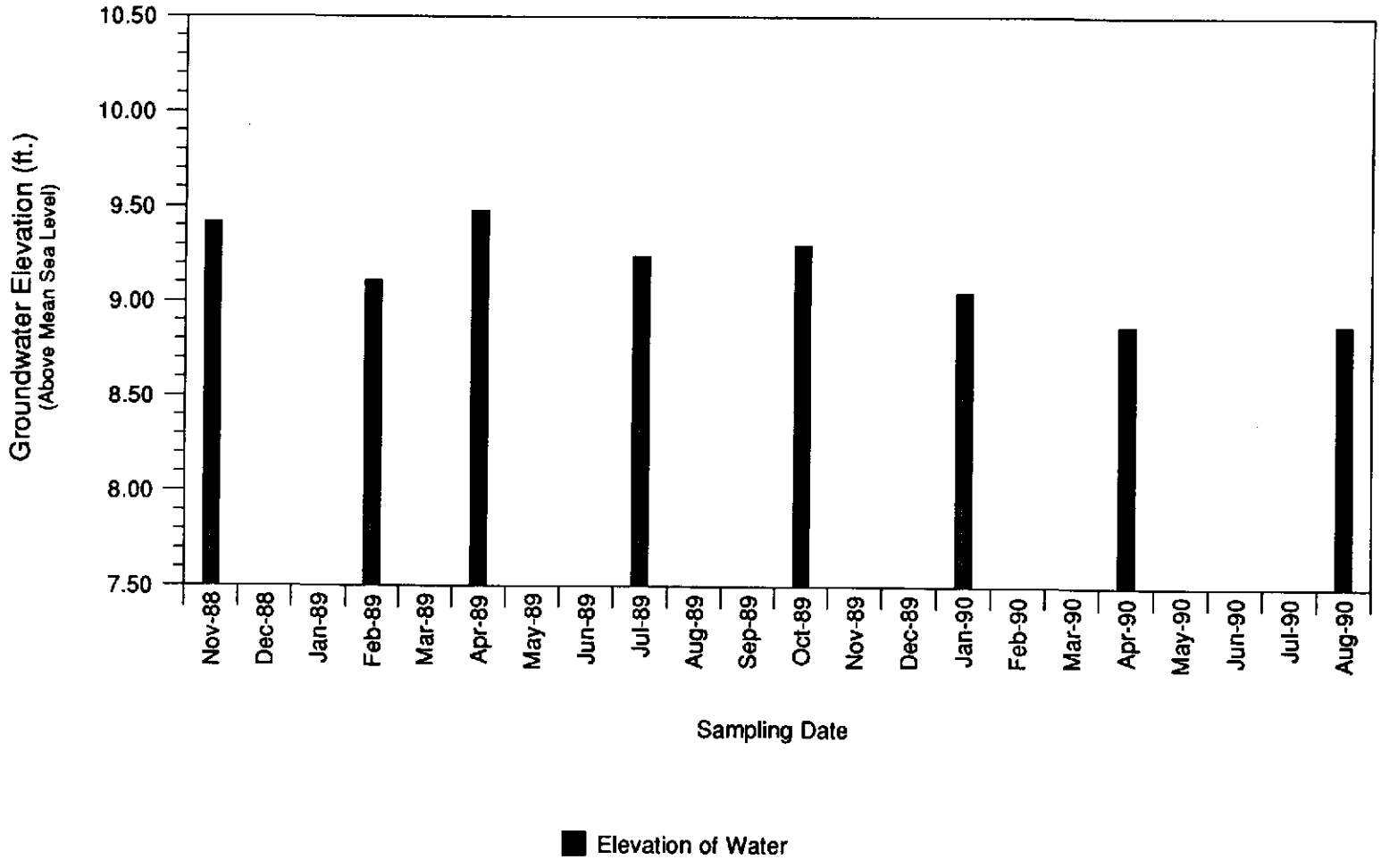
COMMENTS: ____

ATTACHMENT C

HYDROGRAPHS

GROUNDWATER MONITOR WELL MW-1

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

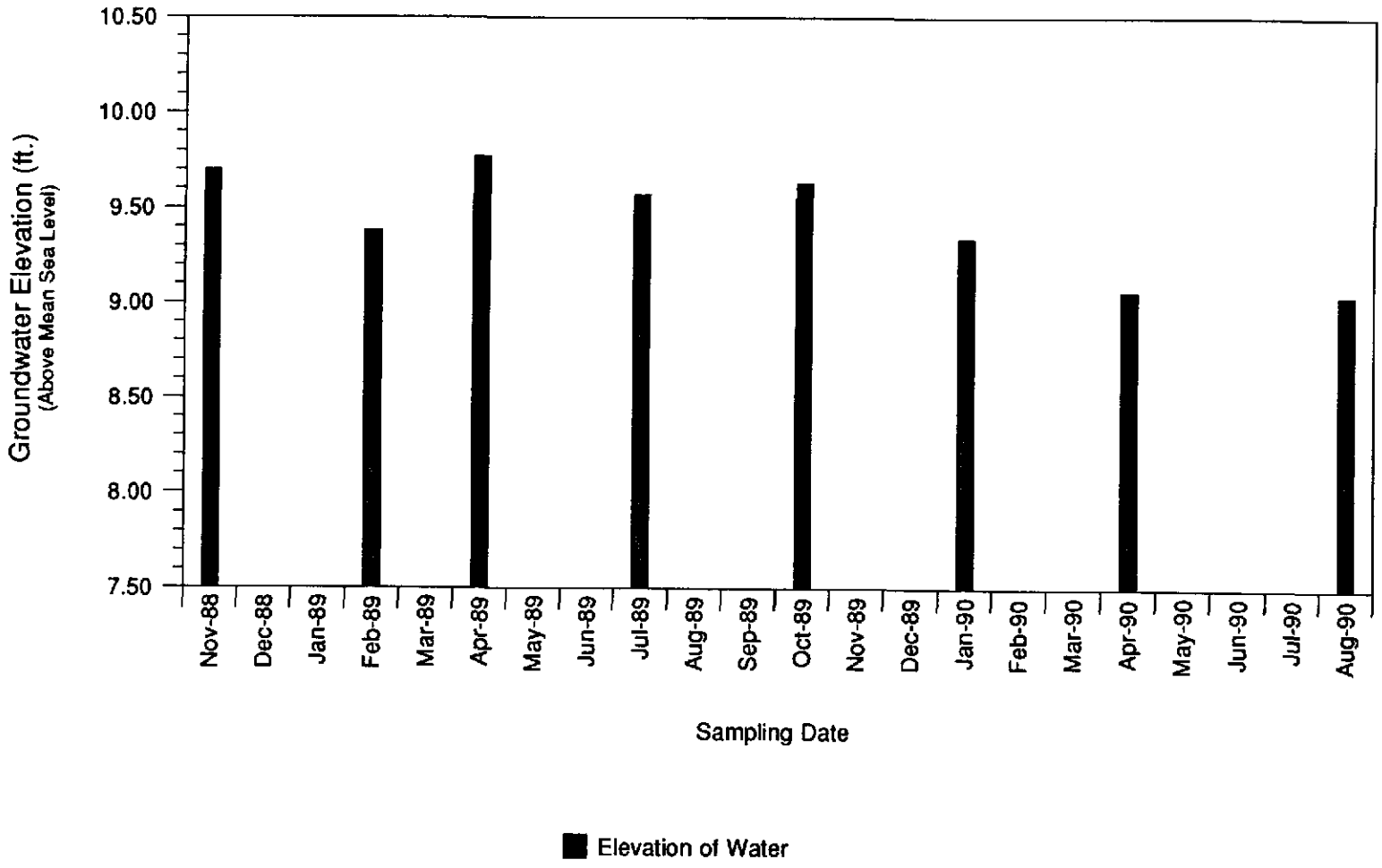


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-2

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

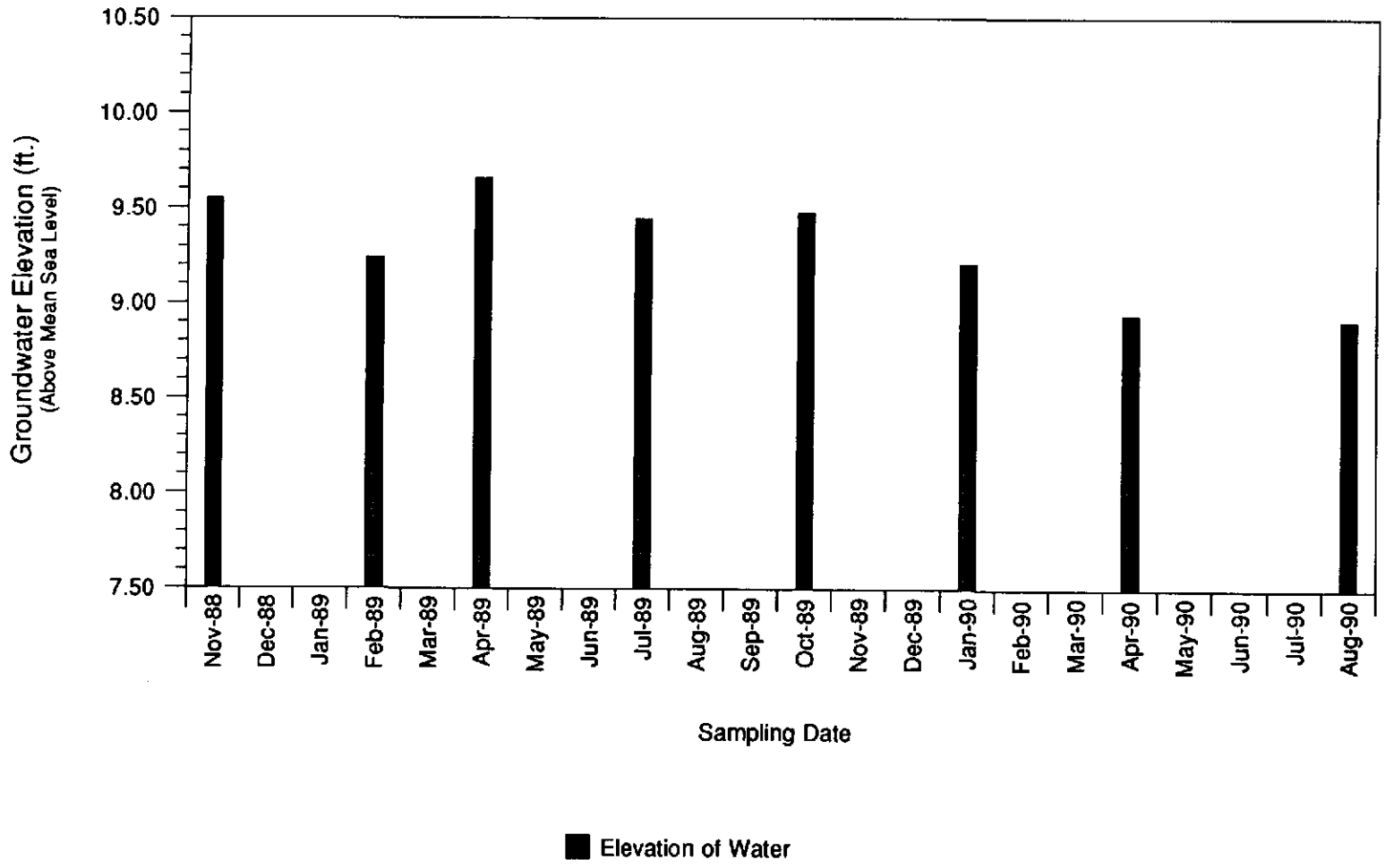


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-3

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

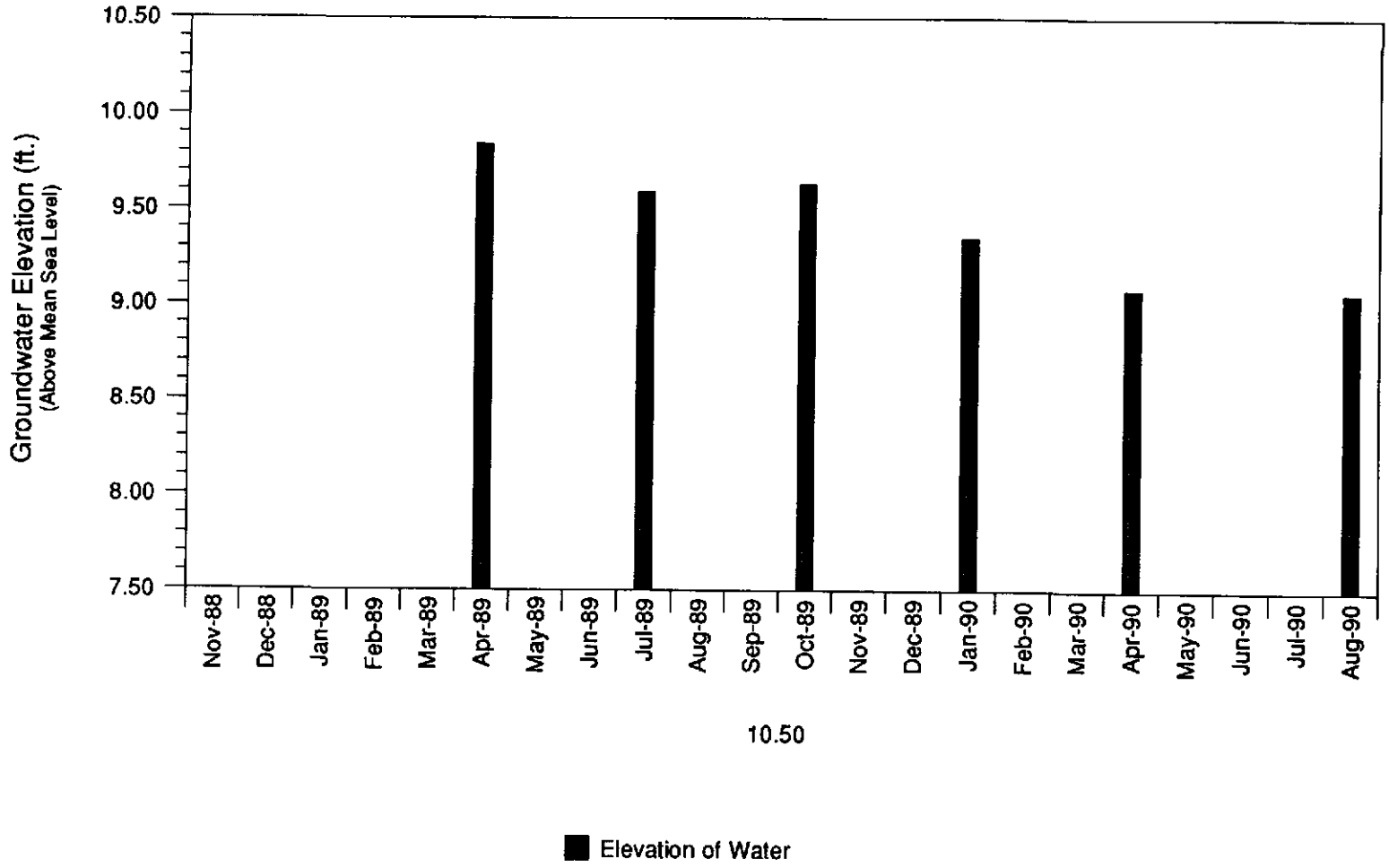


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-4

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

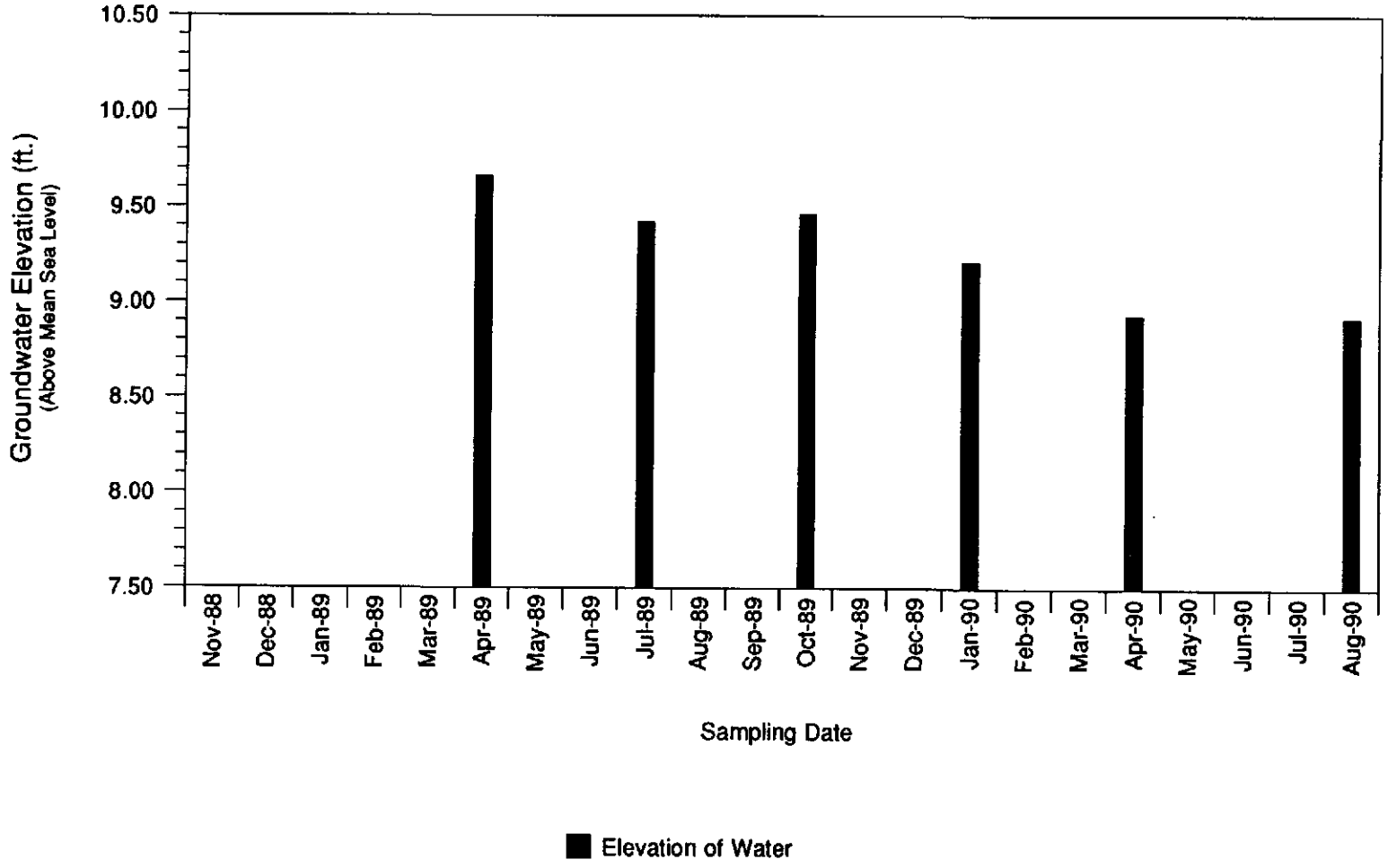


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-5

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

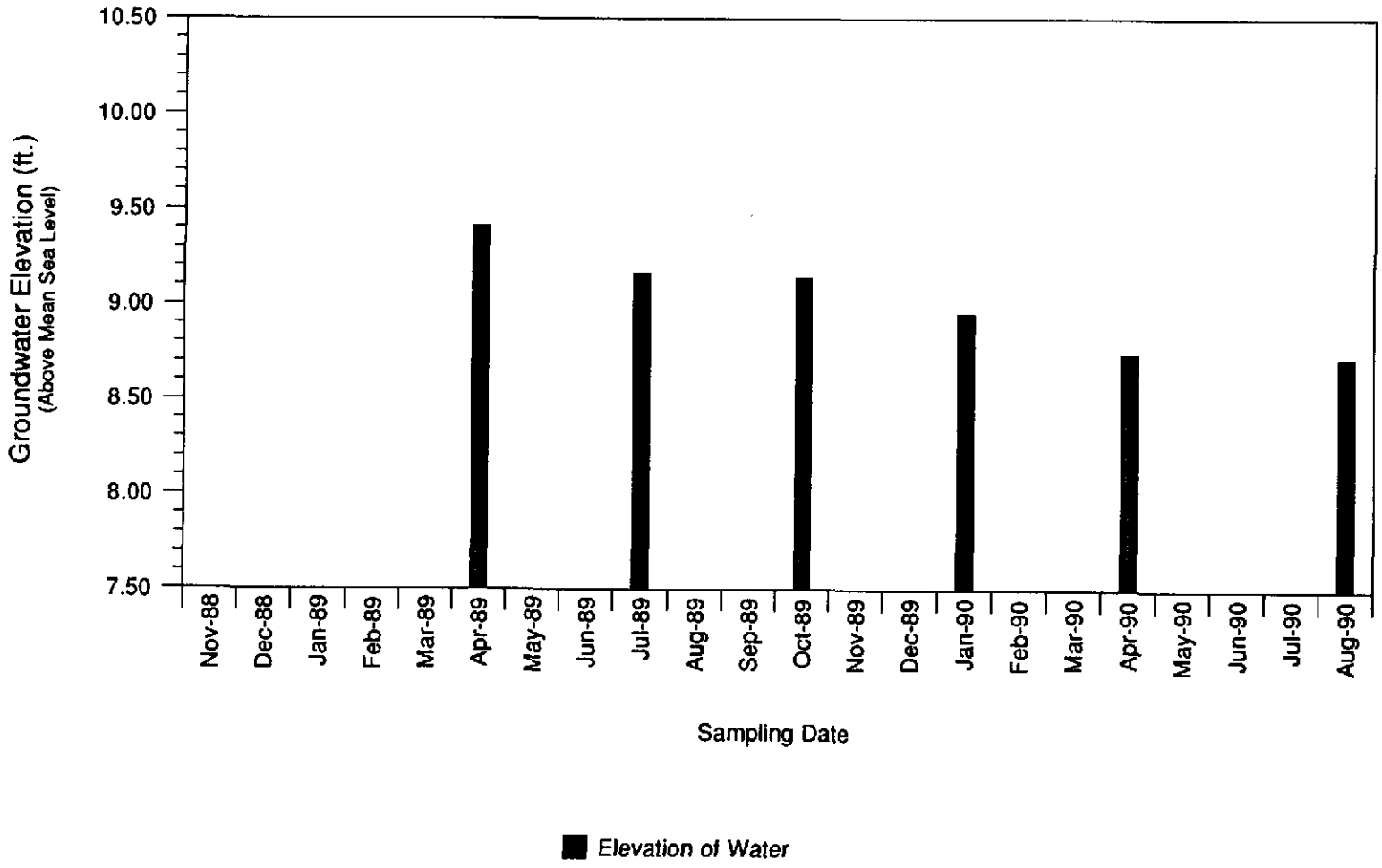


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-6

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

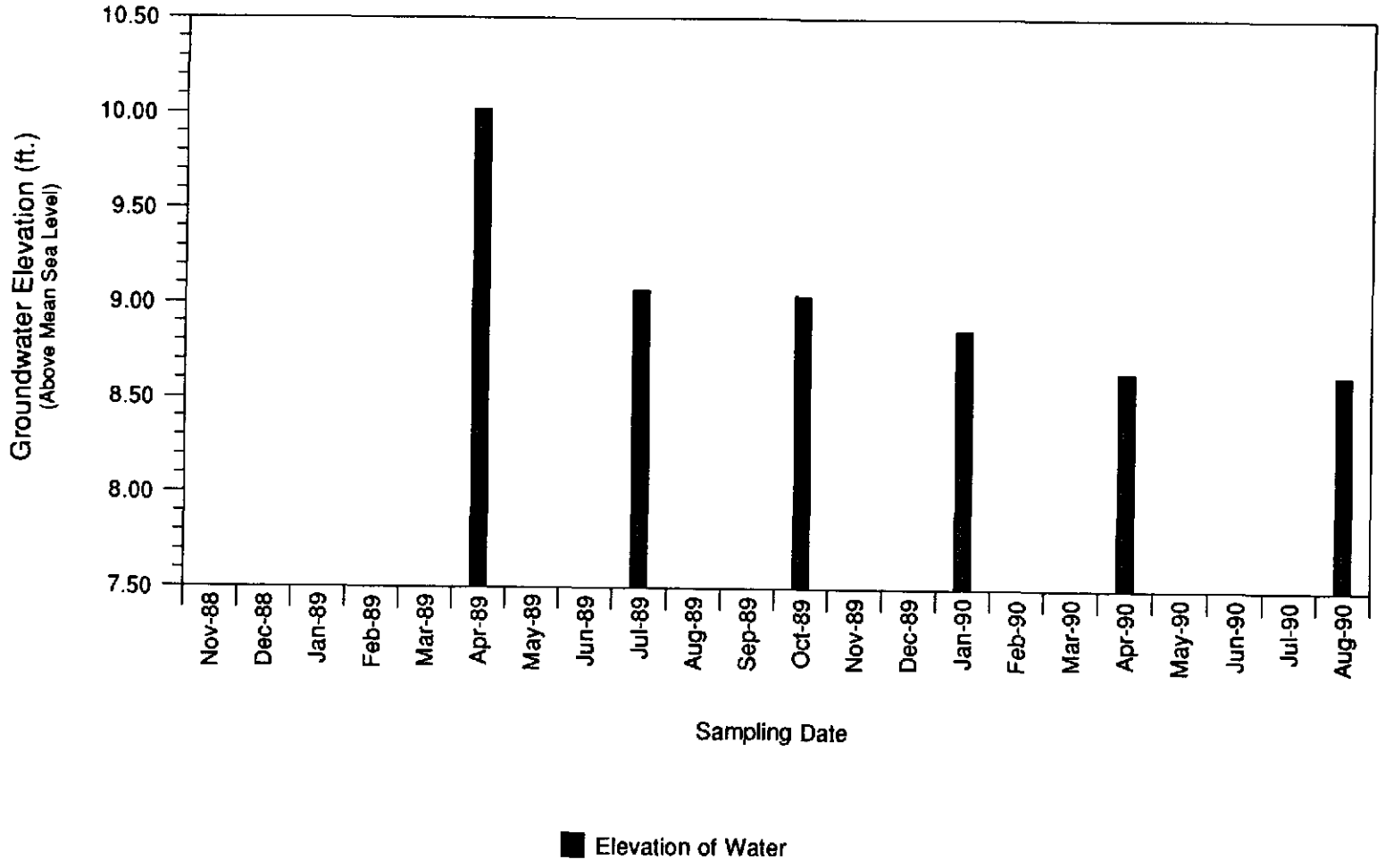


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-7

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

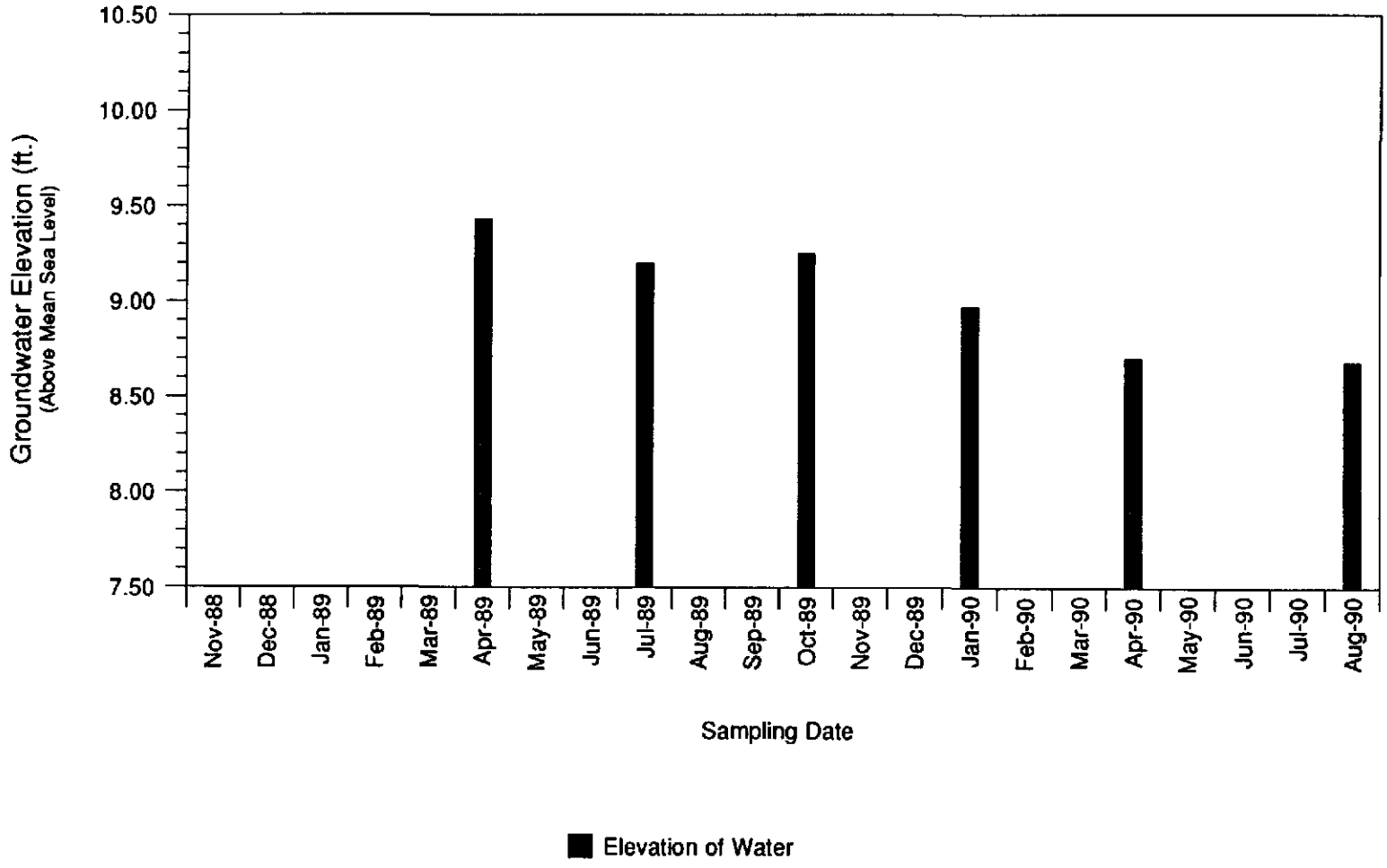


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-8

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

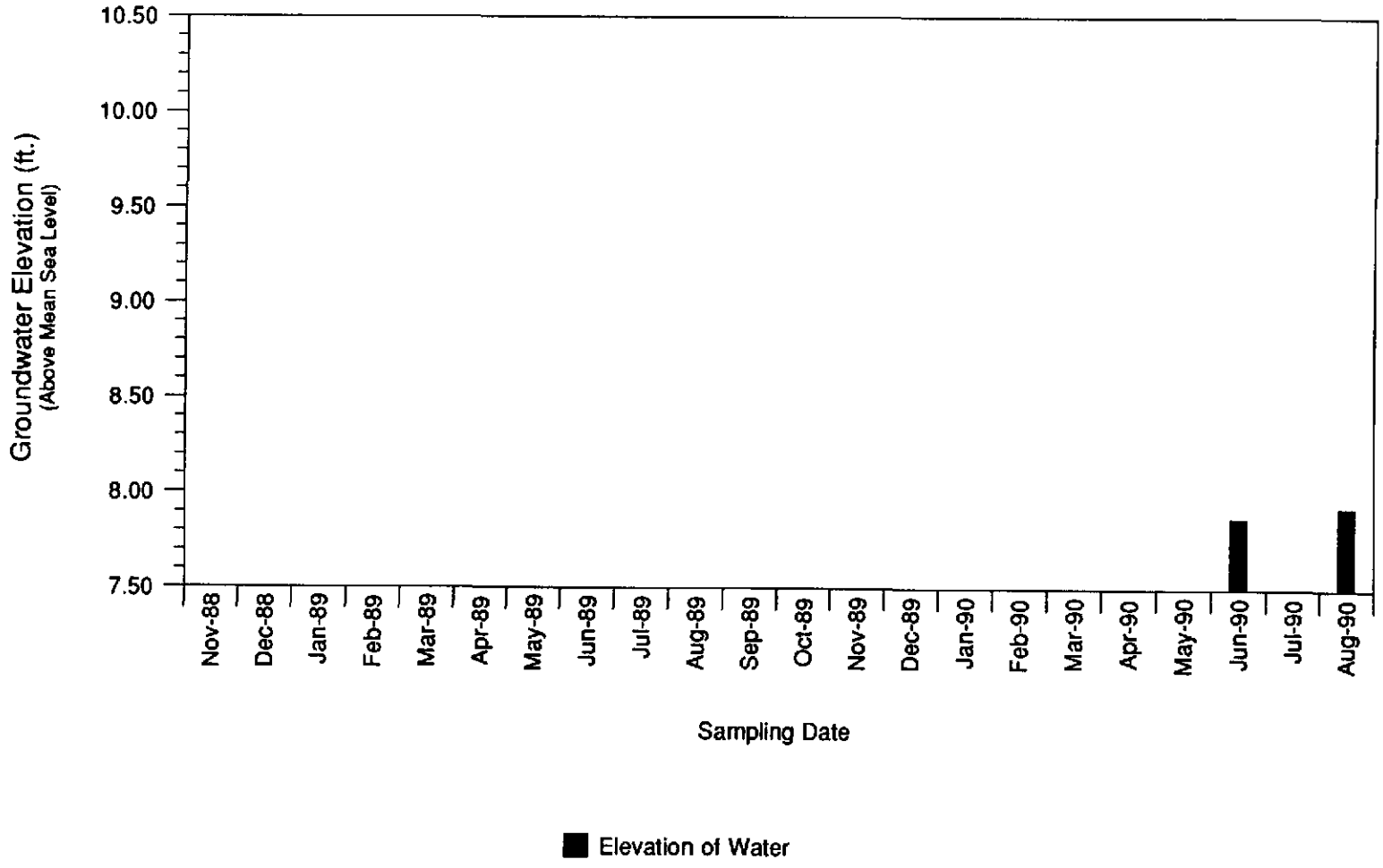


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-9

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

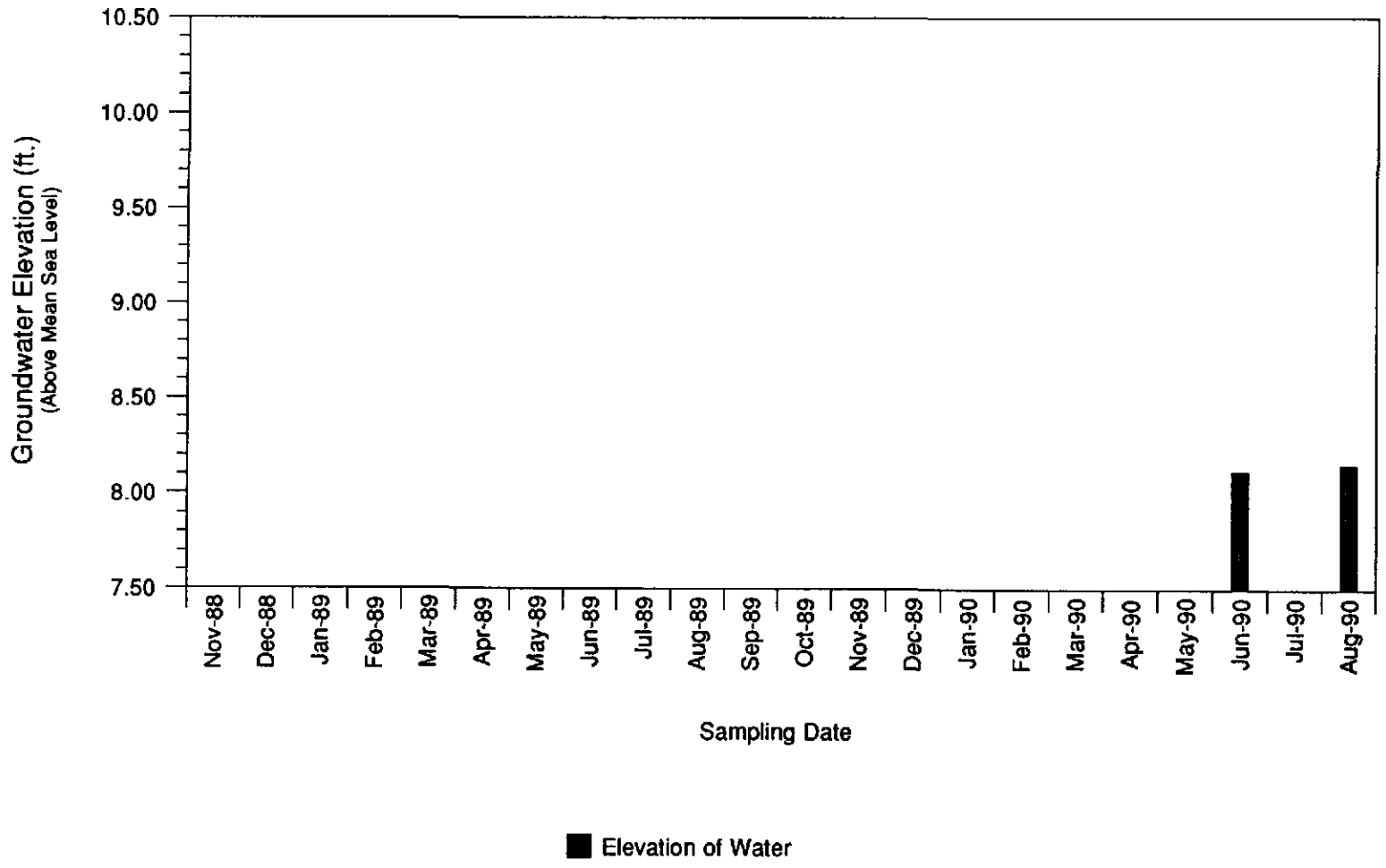


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-10

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

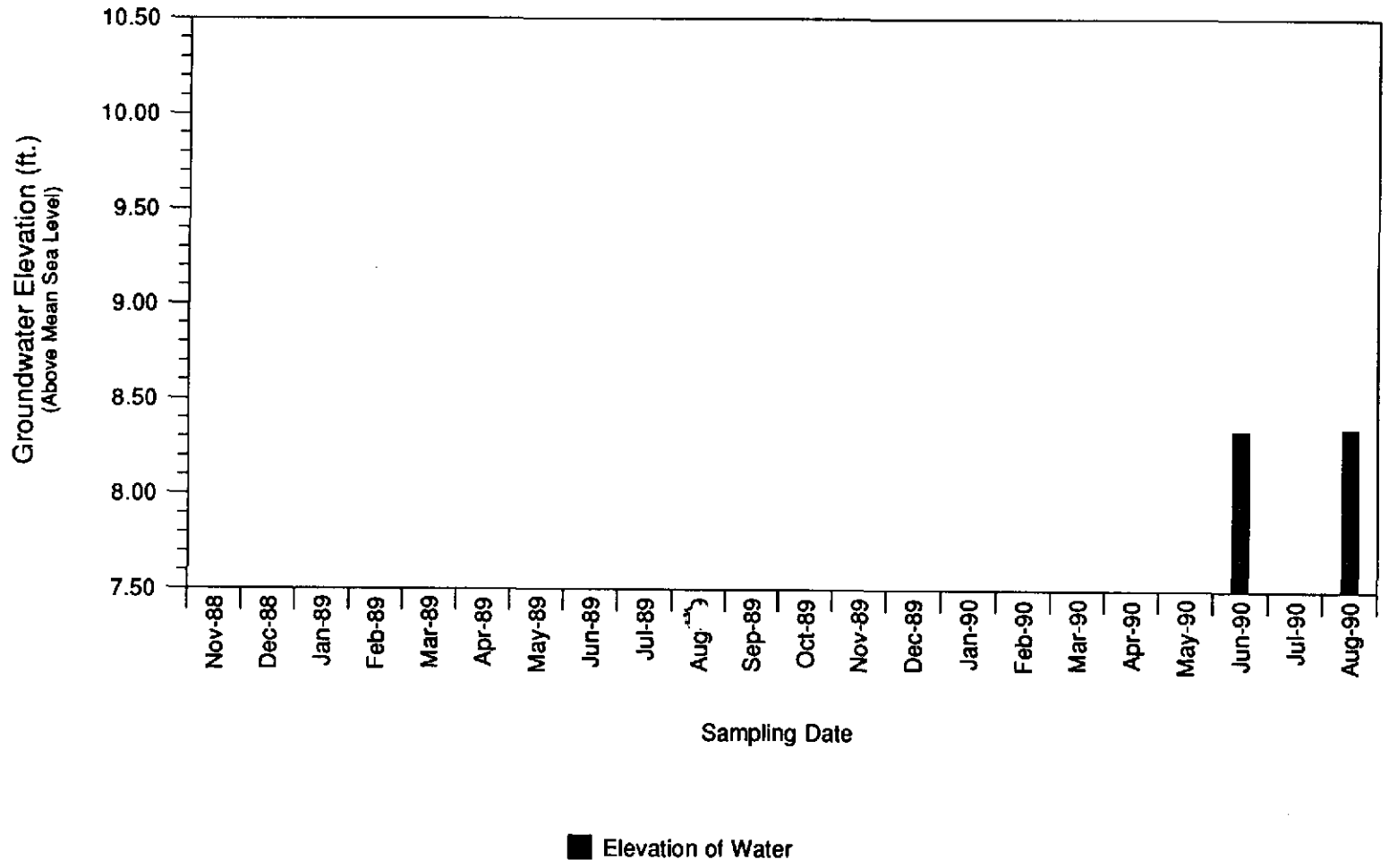


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-11

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California

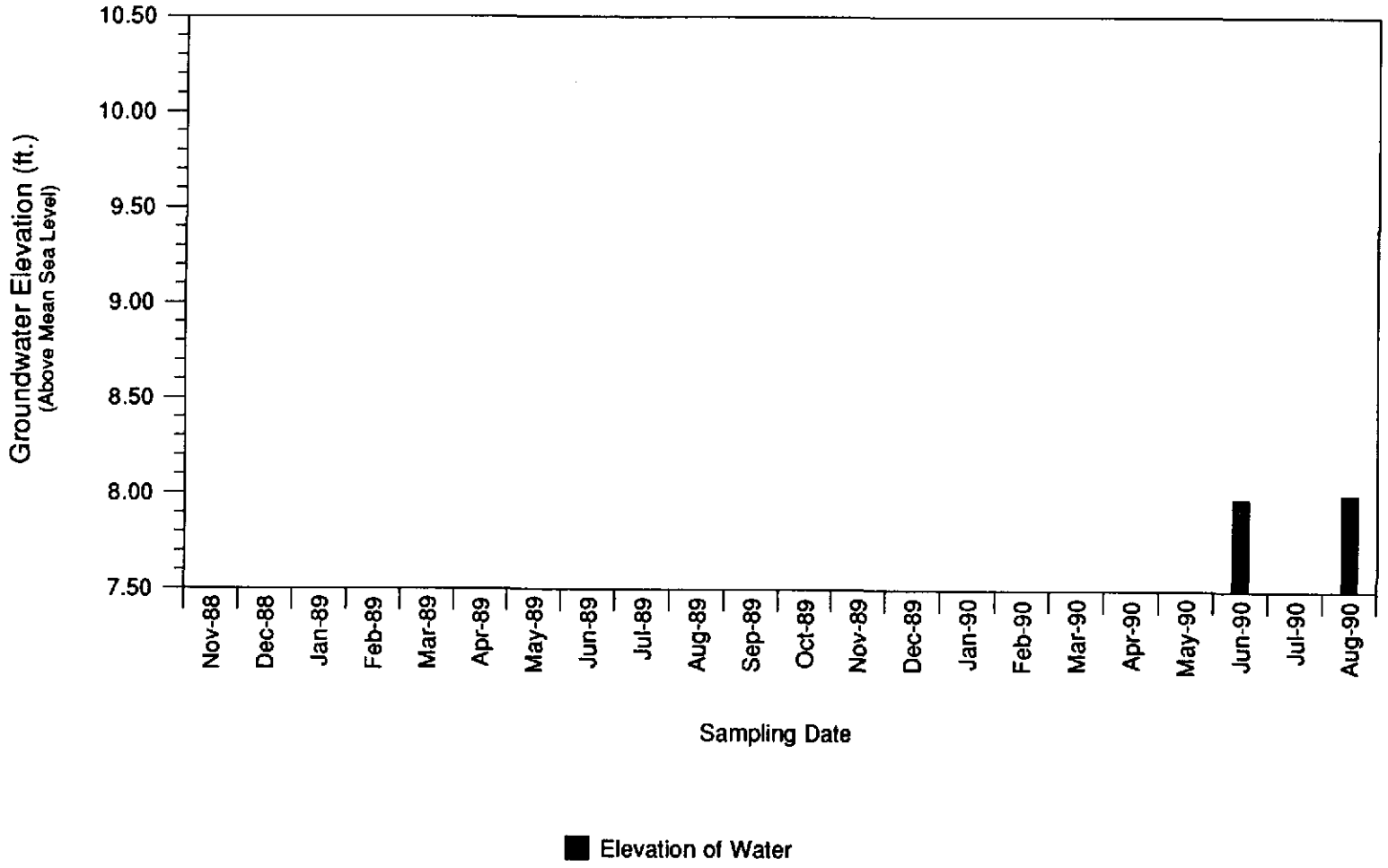


WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

GROUNDWATER MONITOR WELL MW-12

Chevron Service Station #90020 17th & Harrison Sts., Oakland, California



WGR #1-012.04

WESTERN GEOLOGIC RESOURCES, INC.

ATTACHMENT D

CHAIN-OF-CUSTODY FORM

CHAIN-OF-CUSTODY RECORD

CHEVRON USA Inc.
P.O. BOX 2833
LA HABRA, CA 90632-2833

PROJECT NAME 17TH/HARRISON
PROJECT I.D. No. 1-012.03
CONSULTANT NAME WGR
ADDRESS 2169 E FRANCISCO BLVD SUITE B
PROJECT CONTACT (NAME) LEN NILES
(PHONE) 415-457-7595
CHEVRON FACILITY No. [redacted] D.C. 90020
CHEVRON CONTACT (NAME) NANCY VOKELICH
(PHONE) 842-9625

LABORATORY NAME GTEL
CONTRACT NUMBER [redacted] D.O. 2584790
COLLECTED BY (NAME) D. OSKI / D FEGEY
(SIGNATURE) [signature]
COLLECTION DATE 8/9/90

SAMPLE No.	LAB No.	NUMBER OF CONTAINERS	MATRIX: SOIL	MATRIX: WATER	GRAB	COMPOSITE	DATE	TIME	ACIDIFIED	ICED	ANALYSES TO BE PERFORMED: MODIFIED EPA 8015 TOTAL PETRO. HYDROCARB.	EPA 418.1 TOTAL RECOVERABLE PETROLEUM HYDROCARB.	EPA 8020 AROMATIC VOLATILES - BTXE	EPA 602 AROMATIC VOLATILES - BTXE	METALS ( )	OTHER EDA GC!			DETECTION LIMIT	REMARKS
080990	-C1A,B,C,D	4		X				11:05	S	X	X			X		X				A,B Samples for EPA 602/8015 HCl PRES.
	-02A,B,C,D							11:13	E											
	-03A,B,C,D							11:50	E											
	-04A,B,C,D							10:29	R											
	-05A,B,C,D							12:12	E											
	-06A,B,C,D							10:15	M											C,D Samples for EPA 601 NO PRESERV.
	-07A,B,C,D							12:20	A											
	-08A,B,C,D							11:42	R											
	-09A,B,C,D							9:02	K											
	-10A,B,C,D							8:23												
	-11A,B,C,D							9:10												
	-12A,B,C,D							8:56												
	-13A,B	2						—												

RELINQUISHED BY (Signature)	ORGANIZATION	DATE/TIME	RECEIVED BY (Signature)	ORGANIZATION	DATE/TIME
[signature]	WGR	8/9/90 16:00			
RELINQUISHED BY (Signature)	ORGANIZATION	DATE/TIME	RECEIVED BY (Signature)	ORGANIZATION	DATE/TIME
RELINQUISHED BY (Signature)	ORGANIZATION	DATE/TIME	RECEIVED FOR LABORATORY BY (Signature)		DATE/TIME

TURN AROUND TIME (CIRCLE CHOICE)
24 HRS
48 HRS
~~10~~ DAYS

SW FORM E 1-89

ATTACHMENT E

LABORATORY REPORTS WITH QUALITY ASSURANCE/
QUALITY CONTROL DOCUMENTATION

Project Number: SFB-175-0204.72
Consultant Project Number: 1-012.03
Contract Number: N46CWC0244-9-X
Facility Number: 90020
Work Order Number: C008406
Report Issue Date: August 28, 1990

Table 1

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015[1]

GTEL Sample Number		01	02	03	04
Client Identification		08090-01 ABCD	08090-02 ABCD	08090-03 ABCD	08090-04 ABCD
Date Sampled		08/09/90	08/09/90	08/09/90	08/09/90
Date Analyzed		08/20/90	08/20/90	08/20/90	08/20/90
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	<0.3	<0.3
Toluene	0.3	<0.3	<0.3	<0.3	<0.3
Ethylbenzene	0.3	<0.3	<0.3	<0.3	<0.3
Xylene (total)	0.6	<0.6	<0.6	<0.6	<0.6
TPH as Gasoline	50	<50	<50	<50	<50

GTEL Sample Number		05	06	07	08
Client Identification		08090-05 ABCD	08090-06 ABCD	08090-07 ABCD	08090-08 ABCD
Date Sampled		08/09/90	08/09/90	08/09/90	08/09/90
Date Analyzed		08/22/90	08/22/90	08/22/90	08/22/90
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	360	<0.3
Toluene	0.3	<0.3	<0.3	130	<0.3
Ethylbenzene	0.3	<0.3	<0.3	14	<0.3
Xylene (total)	0.6	<0.6	<0.6	660	<0.6
TPH as Gasoline	50	<50	<50	11000	<50

1 = Extraction by EPA Method 5030

Project Number: SFB-175-0204.72
Consultant Project Number: 1-012.03
Contract Number: N46CWC0244-9-X
Facility Number: 90020
Work Order Number: C008406
Report Issue Date: August 28, 1990

Table 1 (continued)

ANALYTICAL RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015[1]

GTEL Sample Number		09	10	11	12
Client Identification		08090-09 ABCD	08090-10 ABCD	08090-11 ABCD	08090-12 ABCD
Date Sampled		08/09/90	08/09/90	08/09/90	08/09/90
Date Analyzed		08/20/90	08/20/90	08/20/90	08/20/90
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3	<0.3	<0.3	<0.3
Toluene	0.3	17	<0.3	<0.3	<0.3
Ethylbenzene	0.3	210	<0.3	<0.3	<0.3
Xylene (total)	0.6	480	<0.6	<0.6	<0.6
TPH as Gasoline	50	8000	<50	<50	<50

GTEL Sample Number		13			
Client Identification		08090-13 AB			
Date Sampled		08/09/90			
Date Analyzed		08/22/90			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Benzene	0.3	<0.3			
Toluene	0.3	<0.3			
Ethylbenzene	0.3	<0.3			
Xylene (total)	0.6	<0.6			
TPH as Gasoline	50	<50			

1 = Extraction by EPA Method 5030

QA Conformance Summary

Purgeable Aromatics and Total Petroleum Hydrocarbons as Gasoline in Water EPA Method 8020/8015

1.0 Blanks

Five of 5 target compounds were below detection limits in the reagent blank as shown in Table 2.

2.0 Independent QC Check Sample

The control limits were met for 4 out of 4 QC check compounds as shown in Table 3.

3.0 Surrogate Compound Recoveries

Percent recovery limits were met for the surrogate compound (naphthalene) for all samples as shown in Table 4.

4.0 Matrix Spike (MS) Accuracy

Percent recovery limits were met for 4 of 4 compounds in the MS as shown in Table 5.

5.0 Reagent Water Spike (WS) and Reagent Water Spike (WSD) Duplicate Precision

Relative percent difference (RPD) criteria was met for 4 of 4 analytes in the WS and WSD as shown in Table 6.

6.0 Sample Handling

6.1 Sample handling and holding time criteria were met for all samples.

6.2 There were no exceptional conditions requiring dilution of samples.

Table 2

REAGENT BLANK DATA

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Date of Analysis: 08/20/90

Analyte	Concentration, ug/L
Benzene	<0.3
Toluene	<0.3
Ethylbenzene	<0.3
Xylene (total)	<0.6
Gasoline	<50

<# = Not detected at the indicated detection limit.

Project Number: SFB-175-0204.72
Consultant Project Number: 1-012.03
Contract Number: N46CWC0244-9-X
Facility Number: 90020
Work Order Number: C008406
Report Issue Date: August 27, 1990

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Date of Analysis: 08/20/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Benzene	50	52	104	85 - 115
Toluene	50	46	92	85 - 115
Ethylbenzene	50	49	98	85 - 115
Xylene (total)	150	151	100	85 - 115

Table 3a

INDEPENDENT QC CHECK SAMPLE SOURCE

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Analyte	Lot Number	Source
Benzene	LA18042	Supelco
Toluene	LA18042	Supelco
Ethylbenzene	LA18042	Supelco
Xylene (total)	LA18042	Supelco

Table 4

SURROGATE COMPOUND RECOVERY

Naphthalene

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Acceptability Limits[1]: 70 - 130 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Blank	200	237	119
01	200	248	124
02	200	226	113
03	200	219	110
04	200	225	113
05	200	225	113
06	200	220	110
07	200	204	102
08	200	219	110
09	200	317	159*
10	200	215	108
11	200	215	108
12	200	219	110
13	200	219	110
MS	200	251	125
WS	200	184	92
WSD	200	214	107

MS = Matrix Spike
WS = Reagent Water Spike
WSD = *Reagent Water Spike Duplicate*
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.
*High recovery due to the matrix effect.

Table 5

MATRIX SPIKE (MS) RECOVERY REPORT

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Date of Analysis: 08/20/90
Sample Spiked: C008314-07
Client ID: 080904-07ABCD
Units: ug/L

Analyte	Sample Result	Concentration Added	Concentration Recovered	MS Result	MS, % Recovery	Acceptability Limits[1], %
Benzene	<0.3	25	26.3	26.3	105	71 - 123
Toluene	<0.3	25	25.9	25.9	104	69 - 120
Ethylbenzene	<0.3	25	26.9	26.9	108	72 - 121
Xylene (total)	<0.6	75	86.8	86.8	116	75 - 123

<# = Not detected at the indicated detection limit.
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Project Number: SFB-175-0204.72
Consultant Project Number: 1-012.03
Contract Number: N46CWC0244-9-X
Facility Number: 90020
Work Order Number: C008406
Report Issue Date: August 27, 1990

Table 6

REAGENT WATER SPIKE (WS) AND REAGENT WATER SPIKE DUPLICATE (WSD)
RECOVERY AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Purgeable Aromatics and Total Petroleum Hydrocarbons
as Gasoline in Water
EPA Method 8020/8015

Date of Analysis: 08/20/90 Units: ug/L

Analyte	Concentration Added	WS Result	WS, % Recovery	WSD Result	WSD, % Recovery
Benzene	25	20.4	84	22.1	88
Toluene	25	20.3	81	21	84
Ethylbenzene	25	20.8	83	22.1	88
Xylene (total)	75	68.1	91	72.5	97

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits[1] % Recovery
Benzene	5	30	76 - 120
Toluene	4	30	72 - 117
Ethylbenzene	6	30	73 - 123
Xylene (total)	6	30	81 - 125

1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Project Number: SFB-175-0204.72
Consultant Project Number 1-012.03
Contract Number: N46CWC0244-9-X
Facility Number: 90020
Work Order Number: C008407
Report Issue Date: September 4, 1990

Table 1

ANALYTICAL RESULTS

Purgeable Halocarbons in Water
EPA Method 601

Date Sampled		08/09/90	08/09/90	08/09/90	08/09/90
Date Analyzed		08/18/90	08/18/90	08/18/90	08/18/90
Client Identification		08090-01 ABCD	08090-02 ABCD	08090-03 ABCD	08090-04 ABCD
GTEL Sample Number		01	02	03	04
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	1	<1	<1	<1	<1
Chloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	0.5	<0.5	15	11	<0.5
Chloroform	0.5	11	2.1	6.7	11
1,2-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5	32	2.1	11	38
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5	<0.5	6.1	5.1	<0.5
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1	<1	<1	<1	<1
Bromoform	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5	0.76	74	81	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5

1 = Extraction by EPA Method 5030

Table 1(continued)

ANALYTICAL RESULTS

Purgeable Halocarbons in Water
EPA Method 601

Date Sampled		08/09/90	08/09/90	08/09/90	08/09/90
Date Analyzed		08/18/90	08/18/90	08/21/90	08/21/90
Client Identification		08090-05 ABCD	08090-06 ABCD	08090-07 ABCD	08090-08 ABCD
GTEL Sample Number		05	06	07	08
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	1	<1	<1	<1	<1
Chloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5	<0.5	<0.5	1.8	<0.5
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	0.5	2.3	<0.5	<0.5	9.2
Chloroform	0.5	4.8	6.6	7.7	4.4
1,2-Dichloroethane	0.5	<0.5	<0.5	8.4	<0.5
1,1,1-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5	11	20	3.3	5.3
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5	<0.5	<0.5	<0.5	1.2
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1	<1	<1	<1	<1
Bromoform	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5	6.0	<0.5	<0.5	27
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5

1 = Extraction by EPA Method 5030

Table 1(continued)

ANALYTICAL RESULTS

Purgeable Halocarbons in Water
EPA Method 601

Date Sampled		08/09/90	08/09/90	08/09/90	08/09/90
Date Analyzed		08/21/90	08/21/90	08/21/90	08/21/90
Client Identification		08090-09 ABCD	08090-10 ABCD	08090-11 ABCD	08090-12 ABCD
GTEL Sample Number		09	10	11	12
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	1	<1	<1	<1	<1
Chloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	0.2	<0.2	<0.2	<0.2	<0.2
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	0.5	<0.5	<0.5	4.6	5.8
Chloroform	0.5	<0.5	7.8	6.8	7.0
1,2-Dichloroethane	0.5	0.71	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5	<0.5	11	8.1	8.0
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	0.5	<0.5	<0.5	2.0	<0.5
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1	<1	<1	<1	<1
Bromoform	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5	<0.5	<0.5	84	6.7
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5

1 = Extraction by EPA Method 5030

Table 1 (continued)

ANALYTICAL RESULTS

Purgeable Halocarbons in Water
EPA Method 601

Date Sampled		08/09/90			
Date Analyzed		08/18/90			
Client Identification		08090-13 AB			
GTEL Sample Number		13			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5			
Bromomethane	0.5	<0.5			
Dichlorodifluoromethane	0.5	<0.5			
Vinyl chloride	1	<1			
Chloroethane	0.5	<0.5			
Methylene chloride	0.5	<0.5			
Trichlorofluoromethane	0.5	<0.5			
1,1-Dichloroethene	0.2	<0.2			
1,1-Dichloroethane	0.5	<0.5			
trans-1,2-Dichloroethene	0.5	<0.5			
Chloroform	0.5	<0.5			
1,2-Dichloroethane	0.5	<0.5			
1,1,1-Trichloroethane	0.5	<0.5			
Carbon tetrachloride	0.5	<0.5			
Bromodichloromethane	0.5	<0.5			
1,2-Dichloropropane	0.5	<0.5			
trans-1,3-Dichloropropene	0.5	<0.5			
Trichloroethene	0.5	<0.5			
Dibromochloromethane	0.5	<0.5			
1,1,2-Trichloroethane	0.5	<0.5			
cis-1,3-Dichloropropene	0.5	<0.5			
2-Chloroethyivinyl ether	1	<1			
Bromoform	0.5	<0.5			
1,1,2,2-Tetrachloroethane	0.5	<0.5			
Tetrachloroethene	0.5	<0.5			
Chlorobenzene	0.5	<0.5			
1,3-Dichlorobenzene	0.5	<0.5			
1,2-Dichlorobenzene	0.5	<0.5			
1,4-Dichlorobenzene	0.5	<0.5			

1 = Extraction by EPA Method 5030

QA Conformance Summary

Purgeable Halocarbons in Water
EPA Method 601

1.0 Blanks

Zero of 29 target compounds found in Reagent blank as shown in Table 2.

2.0 Independent QC Check Sample

The control limits were met for 8 out of 8 QC check compounds as shown in Table 3.

3.0 Surrogate Compound Recoveries

Percent recovery limits were met for the surrogate compound (Bromofluorobenzene) for all samples as shown in Table 4.

4.0 Matrix Spike (MS) Accuracy

Percent recovery limits were met for 3 of 3 compounds in the MS as shown in Table 5.

5.0 Reagent Water Spike (WS) and Reagent Water Spike Duplicate (WSD) Precision

Relative percent difference (RPD) criteria was met for 3 of 3 compounds in the WS and WSD as shown in Table 6.

6.0 Sample Handling

6.1 Sample handling and holding time criteria were met for all samples.

6.2 There were no exceptional conditions requiring dilution of samples.

Table 2

REAGENT BLANK DATA

Purgeable Halocarbons in Water
EPA Method 601

Date of Analysis: 08/18/90

Analyte	Observed Result, ug/L
Chloromethane	<0.5
Bromomethane	<0.5
Dichlorodifluoromethane	<0.5
Vinyl chloride	<1
Chloroethane	<0.5
Methylene chloride	<0.5
Trichlorofluoromethane	<0.5
1,1-Dichloroethene	<0.2
1,1-Dichloroethane	<0.5
trans-1,2-Dichloroethene	<0.5
Chloroform	<0.5
1,2-Dichloroethane	<0.5
1,1,1-Trichloroethane	<0.5
Carbon tetrachloride	<0.5
Bromodichloromethane	<0.5
1,2-Dichloropropane	<0.5
trans-1,3-Dichloropropene	<0.5
Trichloroethene	<0.5
Dibromochloromethane	<0.5
1,1,2-Trichloroethane	<0.5
cis-1,3-Dichloropropene	<0.5
2-Chloroethylvinyl ether	<1
Bromoform	<0.5
1,1,2,2-Tetrachloroethane	<0.5
Tetrachloroethene	<0.5
Chlorobenzene	<0.5
1,3-Dichlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5

Table 3

INDEPENDENT QC CHECK SAMPLE RESULTS

Purgeable Halocarbons in Water
EPA Method 601

Date of Analysis: 08/21/90

Analyte	Expected Result, ug/L	Observed Result, ug/L	Recovery, %	Acceptability Limits, %
Vinyl Chloride	50	54.9	110	85 - 115
Bromomethane	50	56.7	113	85 - 115
1,1-Dichloroethene	50	54.8	110	85 - 115
t-1,2-Dichloroethene	50	47.2	94	85 - 115
1,1-Trichloroethane	50	45.3	91	85 - 115
Trichloroethene	50	44.3	89	85 - 115
T-1,3 Dichloropropene	50	55.9	112	85 - 115
Tetrachloroethene	50	43.7	87	85 - 115

Table 3a

INDEPENDENT QC CHECK SAMPLE SOURCE

Purgeable Halocarbons in Water
EPA Method 601

Analyte	Lot Number	Source
Vinyl Chloride	LA21062	Purgeable C Supelco
Bromomethane	LA21062	Purgeable C Supelco
1,1-Dichloroethene	LA21173	Purgeable A Supelco
t-1,2-Dichloroethene	LA20674	Purgeable B Supelco
1,1,1-Trichloroethane	LA20674	Purgeable B Supelco
Trichloroethene	LA21173	Purgeable A Supelco
T-1,3-Dichloropropene	LA20674	Purgeable B Supelco
Tetrachlorethene	LA21173	Purgeable A Supelco

Table 4

SURROGATE COMPOUND RECOVERY

Bromofluorobenzene

Purgeable Halocarbons in Water
EPA Method 601

Acceptability Limits[1]: 63 - 131 %

GTEL No.	Expected Result, ug/L	Surrogate Result, ug/L	Surrogate Recovery, %
Blank	50	44.8	90
01	50	47.3	95
02	50	47.6	95
03	50	47.3	95
04	50	46.5	93
05	50	46.3	93
06	50	52.9	106
07	50	51.1	102
08	50	54.0	108
09	50	54.4	108
10	50	50.0	100
11	50	44.3	87
12	50	48.6	97
13	50	~~49.4~~ 44.4	89
MS	50	45	90
WS	50	47.5	95
WSD	50	49.5	99

MS = Matrix Spike
WS = Reagent Water Spike
WSD = Reagent Water Spike Duplicate
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Table 5

MATRIX SPIKE (MS) RECOVERY REPORT

Purgeable Halocarbons in Water
EPA Method 601

Date of Analysis: 08/18/90
Sample Spiked: C008265-10
Client ID: THP
Units: ug/L

Analyte	Sample Result	MS Result	Concentration Added	MS, % Recovery	Acceptability Limits, %[1]
1,1-Dichloroethene	<0.2	53.1	50	106	64 - 114
Chlorobenzene	<0.5	48.7	50	97	58 - 123
Trichloroethene	<0.5	54.5	50	109	66 - 120

<# = Not detected at the indicated detection limit.
1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.

Table 6

REAGENT WATER SPIKE (WS) AND REAGENT WATER SPIKE DUPLICATE (WSD) RESULTS
AND RELATIVE PERCENT DIFFERENCE (RPD) REPORT

Purgeable Halocarbons in Water
EPA Method 601

Date of Analysis: 08/18/90 Units: ug/L

Analyte	Concentration Added	WS Result	WSD Result	WS, % Recovery	WSD, % Recovery
1,1 Dichloroethene	50	51.2	54.1	102	108
Chlorobenzene	50	49.3	50.6	99	101
Trichloroethene	50	57.0	57.8	114	116

Analyte	RPD, %	Maximum RPD, %	Acceptability Limits % Recovery[1]
1,1 Dichloroethene	6	30	72 - 116
Chlorobenzene	2	30	58 - 126
Trichloroethene	2	30	79 - 119

1 = Acceptability limits are derived from the 99% confidence interval of all samples during the previous quarter.