Chevron

Chevron U.S.A. Products Company
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P.O. Box 5004
San Ramon, CA 94583-0804

Site Assessment & Remediation Group
Phone (510) 842-9500

December 9, 1994 STID 467

Ms. Susan Hugo
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Former Chevron Service Station #9-1026
3701 Broadway, Oakland, CA

Dear Ms. Hugo:

Enclosed is the quarterly Groundwater Monitoring and Sampling Activities report dated October 21, 1994, prepared by our consultant Groundwater Technology, Inc. for the above referenced site. As indicated in the report, ground water samples collected were analyzed for total petroleum hydrocarbons as gasoline (TPH-G) and BTEX. The levels of dissolved hydrocarbon constituents in the ground water samples analyzed were consistent with previous observations at the site. Depth to ground water was measured at approximately 12.3 feet to 17.6 feet below grade and the direction of flow is to the south-southwest.

Separate phase hydrocarbons (SPH) were observed in monitor wells B and B-3 at measured thicknesses of 0.02 and 0.02 feet, respectively. SPH was removed from these wells by hand bailing. Future reports will include a table documenting the quantity of SPH bailed during each quarter.

At this time we do not feel that ground water remediation is an appropriate corrective action to implement based on known upgradient sources of hydrocarbons in the ground water. Implementing remedial measures to address the contamination present in the ground water beneath the referenced site will not address the impacts from the upgradient sources as it is undetermined what extent has migrated beneath the Chevron site.

Based on discussions in our meeting of November 9, 1993, we are currently evaluating appropriate remedial measures for the site. We have asked our consultant to review all historical data gathered and develop a comprehensive site management plan to guide future activities at this site. We currently anticipate completing this plan during the 4th quarter of 1994. Chevron will continue to monitor and sample all wells at this site on a quarterly basis.

If you have any questions or comments, please do not hesitate to contact me at (510) 842-8134.

Sincerely,
CHEVRON U.S.A. PRODUCTS COMPANY

Mark A. Miller
Site Assessment and Remediation Engineer

Enclosure

cc: Ms. Alison Watts, Weiss Associates
Ms. B.C. Owen

Mr. W. Bruce Bercovich
Kay & Merkel
100 The Embarcadero, 3rd Floor
San Francisco, CA 94105

File: 9-1026 QM7

SIERRA
Environmental Services

October 21, 1994

Mark Miller
Chevron USA Products Company
P.O. Box 5004
San Ramon, CA 94583

Re: Former Chevron Service Station #9-1026
3701 Broadway
Oakland, California
SES Project #1-384-04

Dear Mr. Miller:

This report presents the results of the quarterly ground water sampling at Former Chevron Service Station #9-1026, located at 3701 Broadway in Oakland, California. Six wells, B-1, B-4, E, F, EA-1 and EA-2, were sampled (Figure 1).

On September 21, 1994, SES personnel visited the site. Water level measurements were collected in all site wells and all wells were checked for the presence of free-phase hydrocarbons. Free-phase hydrocarbons were present in two of the site wells, B and B-3. Water level data are shown in Table 1 and ground water elevation contours are included on Figure 1.

The ground water samples were collected on September 21, 1994 in accordance with SES Standard Operating Procedure - Ground Water Sampling (attached). The field water sampling forms for this event are included. All analyses were performed by Superior Precision Analytical, Inc. of Martinez, California. Analytic results for ground water are presented in Table 1. The chain of custody document and laboratory analytic reports are attached. SES is not responsible for laboratory omissions or errors.

Thank you for allowing us to provide services to Chevron. Please call if you have any questions.

REGISTERED PROFESSIONAL ENGINEER
CHRIS J. BRAMER
C 048846
CIVIL
STATE OF CALIFORNIA

Sincerely,
Sierra Environmental Services

L. Chernyak

Luda Chernyak
Staff Technician

Chris J. Bramer
Professional Engineer #C48846

LAC/CJB/lmo
38404QM.OC4

Attachments
Figure
Table
SES Standard Operating Procedure
Field Water Sampling Forms
Chain of Custody Document and Laboratory Analytic Reports

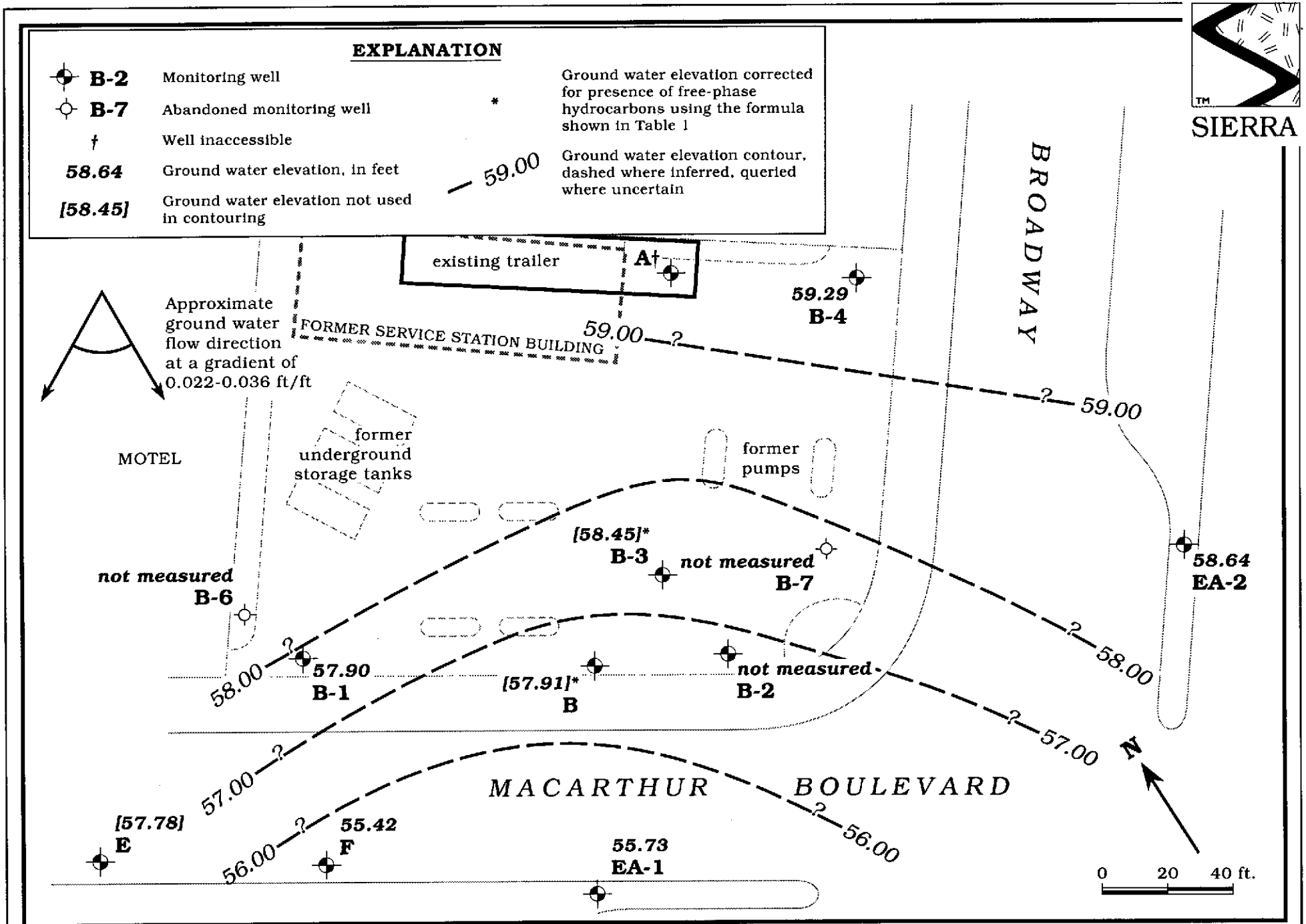

Figure 1. Monitoring Well Locations and Ground Water Elevation Contour Map - September 21, 1994 - Former Chevron Service Station #9-1026, 3701 Broadway, Oakland, California

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Table 1. Water Level Data and Ground Water Analytic Results - Former Chevron Service Station #9-1026, 3701 Broadway, Oakland, California

Well ID/ TOC (ft)	Date	DTW (ft)	GWE (msl)	Product Thickness* (ft)	Analytic Method	TPPH(G)	B	T	E	X
						<----------ppb---------->				
A	5/9/89	13.92	61.36	0	8015/8020	11,000	260	<2	94	230
	8/9/89	15.62	59.66	0	8015/8020	12,000	370	<1.5	100	240
75.28	11/9/89	15.95	59.33	0	8015/8020	16,000	690	10	180	350
	2/8/90	14.73	60.55	0	8015/8020	14,000	600	7	120	270
	5/10/90	15.48	59.80	0	8015/8020	16,000	840	4.8	140	340
	8/9/90	15.66	59.62	0	8015/8020	17,000	510	40	170	280
	11/13/90	16.48	58.80	0	8015/8020	9,000	570	3.1	86	170
	3/27/91	---	---	---	8015/8020	8,000	660	<5	110	250
	4/5/91	13.22	62.06	0	---	---	---	---	---	---
	6/19/91	15.37	59.91	0	8015/8020	8,900	740	<3	120	280
	8/21/91	15.99	59.29	0	8015/8020	6,800	620	23	85	200
	11/8/91	16.15	59.13	0	8015/8020	4,000	640	<5	77	160
	2/13/92	14.58	60.70	0	8015/8020	8,000	860	<5	120	390
	5/1/92	14.26	61.02	0	8015/8020	13,000	870	19	220	780
75.29	11/18/92	16.38	58.91	0	8015/8020	12,000	1,500	83	360	530
	3/19/93	12.16	63.13	0	8015/8020	14,000	820	6.1	180	420
	6/10/93	14.25	61.04	0	8015/8020	9,000	700	13	170	310
	9/8/93	---	---	---	---	---	---	---	---	---
	12/21/93	---	---	---	---	---	---	---	---	---
	3/9/94	13.34	61.95	0	8015/8020	9,600	860	21	200	390
	9/21/94[2]	---	---	---	---	---	---	---	---	---
B	5/9/89	13.97	59.58	0.20	---	---	---	---	---	---
	8/9/89	15.69	57.86	0.20	---	---	---	---	---	---
73.39	11/9/89	15.29	58.16	0.08	---	---	---	---	---	---
	2/8/90	14.46	58.93	0	---	---	---	---	---	---
	5/10/90	14.07	58.32	0	---	---	---	---	---	---
	8/9/90	15.12	58.27	0	---	---	---	---	---	---
	11/13/90	15.76	57.63	0	---	---	---	---	---	---
	4/5/91	13.38	60.01	0	---	---	---	---	---	---
	6/19/91	15.14	58.25	0	8015/8020	26,000	7,100	370	430	1,000
	8/21/91	15.58	57.81	0	8015/8020	16,000	4,900	270	390	640
	11/8/91	15.71	57.68	0	8015/8020	11,000	2,400	48	280	160
	2/13/92	14.66	58.73	0	8015/8020	6,800	2,400	60	220	140
	5/1/92	14.50	58.89	Sheen	8015/8020	16,000	6,000	180	370	460
	11/18/92	15.60	57.79	0	8015/8020	28,000	2,200	150	920	4,300
	3/19/93	13.29	60.12	0.03	---	---	---	---	---	---
	6/10/93	14.30	59.11	0.03	---	---	---	---	---	---

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Table 1. Water Level Data and Ground Water Analytic Results - Former Chevron Service Station #9-1026, 3701 Broadway, Oakland, California (continued)

Well ID/ TOC (ft)	Date	DTW (ft)	GWE (msl)	Product Thickness* (ft)	Analytic Method	TPPH(G)	B	T	E	X
						<----------ppb---------->				
B	9/8/93	15.33	58.25	0.24	---	---	---	---	---	---
(cont)	12/21/93	14.73	58.76	0.12	---	---	---	---	---	---
	3/9/94	14.07	59.35	0.04	---	---	---	---	---	---
	9/21/94	**15.50**	**57.91[3]**	**0.02[4]**	---	---	---	---	---	
B-1	5/9/89	12.58	59.19	0	8015/8020	16,000	2,300	260	81	740
	8/9/89	14.09	57.68	0	8015/8020	12,000	2,600	340	100	870
71.77	11/9/89	14.06	57.71	0	8015/8020	17,000	340	140	110	760
	2/8/90	12.65	59.12	0	8015/8020	5,500	70	19	17	150
	5/10/90	13.62	58.15	0	8015/8020	18,000	770	110	73	600
	8/9/90	13.87	57.90	0	8015/8020	82,000	750	66	95	980
	11/13/90	14.38	57.39	0	8015/8020	43,000	1,300	120	74	760
	3/27/91	---	---	---	8015/8020	18,000	580	92	94	770
	4/5/91	11.73	60.04	0	---	---	---	---	---	---
	6/19/91	13.56	58.21	0	8015/8020	21,000	910	56	96	810
	8/21/91	13.90	57.87	0	8015/8020	50,000	2,400	610	300	1,800
	11/8/91	14.05	57.72	0	8015/8020	540,000	3,600	1,500	1,900	5,900
	2/13/92	12.68	59.09	0	8015/8020	20,000	500	100	150	920
	5/1/92	12.92	58.85	Sheen	8015/8020	27,000	2,800	200	310	1,900
72.30	11/18/92	14.30	58.00	0	8015/8020	300	9.7	3.4	2.3	21
	3/19/93	12.28	60.02	0	8015/8020	130	23	.9	<0.5	5.6
	6/10/93	13.04	59.26	0	8015/8020	170	21	1.1	.8	6.6
	9/8/93	13.88	58.46	0.05	---	---	---	---	---	---
	12/21/93	13.53	58.77	0	8015/8020	<50	6.7	.5	<0.5	1.2
	3/9/94	12.65	59.65	0	8015/8020	1,300	520	8.8	2.4	53
	9/21/94	**14.40**	**57.90**	**0**	**8015/8020**	**390**	**130**	**2.7**	**2.4**	**7.7**
B-2	5/9/89	14.58	59.93	0	8015/8020	170,000	30,000	8,400	2,300	12,000
	8/9/89	16.06	58.45	0	8015/8020	60,000	29,000	8,700	2,400	12,000
74.51	11/9/89	16.95	57.56	0	8015/8020	110,000	32,000	5,500	2,800	12,000
	2/8/90	15.56	58.95	0	8015/8020	67,000	28,000	5,900	2,300	11,000
	5/10/90	15.94	58.57	0	8015/8020	69,000	24,000	4,800	2,000	11,000
	8/9/90	15.97	58.54	0	8015/8020	100,000	33,000	4,000	2,100	12,000
	11/13/90	16.70	57.81	0	8015/8020	110,000	33,000	4,300	2,900	13,000
	3/27/91	---	---	---	8015/8020	160,000	26,000	3,200	2,600	15,000
	4/5/91	14.20	60.31	0	---	---	---	---	---	---
	6/19/91	15.83	58.68	0	8015/8020	100,000	22,000	2,500	2,000	11,000
	8/21/91	16.31	58.20	0	8015/8020	80,000	28,000	2,800	2,400	12,000

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Table 1. Water Level Data and Ground Water Analytic Results - Former Chevron Service Station #9-1026, 3701 Broadway, Oakland, California (continued)

Well ID/ TOC (ft)	Date	DTW (ft)	GWE (msl)	Product Thickness* (ft)	Analytic Method	TPPH(G)	B	T	E	X
						<----------ppb---------->				
B-2	11/8/91	16.60	57.91	0	8015/8020	94,000	29,000	1,900	2,200	11,000
(cont)	2/13/92	15.93	58.58	0	8015/8020	280,000	34,000	2,500	4,600	23,000
	5/1/92	14.94	59.57	Sheen	8015/8020	29,000	1,700	300	1,100	4,300
74.52	11/18/92	16.71	57.81	0	8015/8020	26,000	11,000	170	870	950
	3/19/93	14.06	60.46	0	8015/8020	110,000	28,000	1,200	2,200	12,000
	6/10/93	14.88	59.64	0	8015/8020	140,000	15,000	930	1,900	8,800
	9/8/93	16.03	58.52	0.04	---	---	---	---	---	---
	12/21/93	15.61	58.91	0	8015/8020	980,000	21,000	30,000	9,100	71,000
	3/9/94	14.53	59.99	Sheen	8015/8020	110,000	23,000	920	1,300	7,800
	9/21/94[5]	---	---	---	---	---	---	---	---	---
B-3	5/9/89	14.02	60.01	0	8015/8020	70,000	12,000	9,500	400	8,900
	8/9/89	15.38	58.74	0	---	---	---	---	---	---
74.12	11/9/89	15.55	58.61	0.05	---	---	---	---	---	---
	2/8/90	14.68	59.44	<0.01	---	---	---	---	---	---
	5/10/90	15.15	58.99	0.02	---	---	---	---	---	---
	8/9/90	15.27	58.85	<0.01	---	---	---	---	---	---
	11/13/90	16.04	58.13	0.06	---	---	---	---	---	---
	4/5/91	13.30	60.82	<0.01	---	---	---	---	---	---
	6/19/91	15.16	58.96	0	8015/8020	260,000	20,000	9,000	2,200	16,000
	8/21/91	15.61	58.51	0	8015/8020	70,000	28,000	11,000	1,800	11,000
	11/8/91	15.77	58.35	0	8015/8020	150,000	29,000	9,700	2,200	13,000
	2/13/92	14.88	59.24	0	8015/8020	100,000	27,000	9,906	2,000	11,000
	5/1/92	14.20	59.93	0.01	---	---	---	---	---	---
74.13	11/18/92	15.68	58.47	0.03	---	---	---	---	---	---
	3/19/93	13.75	61.24	1.08	---	---	---	---	---	---
	6/10/93	14.79	60.04	0.87	---	---	---	---	---	---
	9/8/93	15.38	58.81	0.08	---	---	---	---	---	---
	12/21/93	14.74	59.39	0	8015/8020	1,100,000	18,000	29,000	8,900	59,000
	3/9/94	13.53	60.60	0	8015/8020	130,000	11,000	20,000	1,700	15,000
	9/21/94	**15.70**	**58.45[3]**	**0.02[4]**	---	---	---	---	---	---
B-4	5/9/89	14.93	61.50	0	8015/8020	3,600	840	34	120	200
	8/9/89	16.65	59.78	0	8015/8020	<500	4,200	130	370	260
76.43	11/9/89	---	---	---	8015/8020	5,000	4,200	83	400	250
	2/8/90	16.99	59.44	0	8015/8020	14,000	6,000	70	530	300
	5/10/90	16.05	60.38	0	8015/8020	12,000	5,400	130	460	320
	8/9/90	16.49	59.94	0	8015/8020	16,000	7,400	120	530	350

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Table 1. Water Level Data and Ground Water Analytic Results - Former Chevron Service Station #9-1026, 3701 Broadway, Oakland, California (continued)

Well ID/ TOC (ft)	Date	DTW (ft)	GWE (msl)	Product Thickness* (ft)	Analytic Method	TPPH(G)	B	T	E	X
						<----------ppb---------->				
B-4	11/13/90	16.64	59.79	0	8015/8020	21,000	7,000	100	550	320
(cont)	3/27/91	17.42	59.01	0	8015/8020	17,000	8,500	120	500	300
	4/5/91	14.66	61.77	0	8015/8020	14,000	7,700	75	610	210
	6/19/91	16.48	59.95	0	8015/8020	16,000	7,800	110	550	340
	8/21/91	17.00	59.43	0	8015/8020	18,000	11,000	110	450	340
	11/8/91	17.38	59.05	0	8015/8020	18,000	6,800	98	500	620
	2/13/92	16.42	60.01	0	8015/8020	15,000	9,100	86	570	350
	5/1/92	15.50	60.93	0	8015/8020	36,000	16,000	180	990	690
	3/19/93	14.11	62.32	0	8015/8020	26,000	15,000	150	900	790
	6/10/93	15.44	60.99	0	8015/8020	35,000	14,000	180	940	590
	9/8/93	16.65	59.78	0	8015/8020	34,000	15,000	170	1,100	870
	12/21/93	16.45	59.98	0	8015/8020	30,000	12,000	74	610	340
	3/9/94	14.88	61.55	0	8015/8020	37,000	15,000	140	1,000	580
	9/21/94	**17.14**	**59.29**	**0**	**8015/8020**	**32,000**	**14,000**	**110**	**660**	**190**
B-6	5/9/89	12.11	60.55	0	8015/8020	26,000	120	110	250	1,300
	8/9/89	14.72	57.94	0	8015/8020	19,000	470	150	440	1,400
72.66	11/9/89	13.85	58.81	0	8015/8020	13,000	70	36	36	440
	2/8/90	7.73	64.93	0	8015/8020	2,900	16	5	10	58
	5/10/90	---	---	---	---	---	---	---	---	---
	8/9/90	14.51	58.15	0	8015/8020	14,000	55	3	130	500
	11/13/90	14.86	57.80	0	---	---	---	---	---	---
	4/5/91	10.43	62.23	0	---	---	---	---	---	---
	6/19/91[1]	---	---	---	---	---	---	---	---	---
B-7	5/9/89	14.73	60.67	0	8015/8020	210,000	13,000	19,000	2,000	20,000
	8/9/89	16.36	59.04	0	8015/8020	672,000	8,7000	17,000	2,700	30,000
75.40	11/9/89	16.64	58.76	0	8015/8020	150,000	7,000	12,000	1,800	16,000
	2/8/90	15.69	59.71	0	8015/8020	41,000	2,500	6,900	1,100	11,000
	5/10/90	---	---	---	---	---	---	---	---	---
	8/9/90	16.31	59.09	0	8015/8020	50,000	1,100	3,900	640	7,200
	11/13/90	17.09	58.31	0	---	---	---	---	---	---
	4/5/91	14.36	61.04	0	---	---	---	---	---	---
	6/19/91[1]	---	---	---	---	---	---	---	---	---
E	11/18/92	12.20	57.87	0	8015/8020	280	2.7	2.4	3	12
70.07	3/19/93	9.97	60.10	0	8015/8020	<50	<0.5	<0.5	<0.5	<1.5
	6/10/93	10.98	59.09	0	8015/8020	<50	<0.5	<0.5	<0.5	<1.5

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Table 1. Water Level Data and Ground Water Analytic Results - Former Chevron Service Station #9-1026, 3701 Broadway, Oakland, California (continued)

Well ID/ TOC (ft)	Date	DTW (ft)	GWE (msl)	Product Thickness* (ft)	Analytic Method	TPPH(G)	B	T	E	X
						<--------		ppb		-------->
E	9/8/93	11.80	58.29	0.03	---	---	---	---	---	---
(cont)	12/21/93	11.25	58.82	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	3/9/94	10.67	59.40	0	8015/8020	<50	<0.5	0.7	<0.5	0.7
	9/21/94	**12.29**	**57.78**	**0**	**8015/8020**	**<50**	**2.5**	**<0.5**	**1.0**	**<0.5**
F	5/9/89	18.70	53.31	0	8015/8020	<500	<0.5	<0.5	0.6	1
	8/9/89	19.03	52.98	0	---	---	---	---	---	---
72.01	11/9/89	19.02	52.99	0	---	---	---	---	---	---
	2/8/90	18.70	53.31	0	8015/8020	<50	0.4	<0.3	0.3	<0.6
	5/10/90	18.98	53.03	0	---	---	---	---	---	---
	8/9/90	18.95	53.06	0	---	---	---	---	---	---
	11/13/90	19.10	52.91	0	---	---	---	---	---	---
	3/27/91	---	---	---	8015/8020	64	<0.5	<0.5	<0.5	1
	6/19/91	18.95	53.06	0	---	---	---	---	---	---
	8/21/91	>19.94	<52.07	0	---	---	---	---	---	---
	11/8/91	>19.94	<52.07	0	---	---	---	---	---	---
	2/13/92	18.60	53.41	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	5/1/92	Dry	---	---	---	---	---	---	---	
71.72	11/18/92	14.85	56.87	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	3/19/93	14.25	57.47	0	8015/8020	<50	<0.5	<0.5	<0.5	<1.5
	6/10/93	13.92	57.80	0	8015/8020	<50	<0.5	<0.5	<0.5	<1.5
	9/8/93	14.80	56.95	0.04	---	---	---	---	---	---
	12/21/93	13.31	58.41	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	3/9/94	12.99	58.73	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	9/21/94	**16.30**	**55.42**	**0**	**8015/8020**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
EA-1	5/9/89	14.56	59.38	0	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
	8/9/89	16.09	57.85	0	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
73.94	11/9/89	15.84	58.10	0	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
	2/8/90	15.05	58.89	0	8015/8020	<50	<0.3	<0.3	<0.3	<0.6
	5/10/90	15.65	58.29	0	8015/8020	<50	1	0.3	<0.3	<0.6
	8/9/90	15.67	58.27	0	8015/8020	<50	<0.3	<0.3	<0.3	<0.6
	11/13/90	16.32	57.62	0	8015/8020	<50	<0.4	<0.3	<0.3	<0.4
	3/27/91	---	---	---	8015/8020	<50	0.7	0.5	<0.5	<0.5
	4/5/91	14.03	59.91	0	---	---	---	---	---	---
	6/19/91	15.56	58.38	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	8/21/91	15.99	57.95	0	8015/8020	<50	<0.4	<0.3	<0.3	<0.4
	11/08/91	16.13	57.81	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5

SIERRA

Table 1. Water Level Data and Ground Water Analytic Results - Former Chevron Service Station #9-1026, 3701 Broadway, Oakland, California (continued)

Well ID/ TOC (ft)	Date	DTW (ft)	GWE (msl)	Product Thickness* (ft)	Analytic Method	TPPH(G)	B	T	E	X
						<----------ppb---------->				
EA-1	2/13/92	15.10	58.84	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
(cont)	5/1/92	18.80	55.14	0	8015/8020	<50	2.7	<0.5	<0.5	<0.5
71.85	11/18/92	15.97	55.88	0	8015/8020	<10	<0.3	<0.3	<0.3	<0.5
	3/19/93	13.66	58.19	0	8015/8020	<50	<0.5	<0.5	<0.5	<1.5
	6/10/93	14.71	57.14	0	8015/8020	<50	<0.5	<0.5	<0.5	<1.5
	9/8/93	15.58	56.33	0.08	---	---	---	---	---	---
	12/21/93	15.02	56.83	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	3/9/94	14.38	57.47	0	8015/8020	<50	<0.5	1.0	<0.5	<0.5
	9/21/94	**16.12**	**55.73**	**0**	**8015/8020**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
EA-2	5/9/89	15.95	59.29	0	8015/8020	760	<0.5	<0.5	1.1	<0.5
	8/9/89	17.45	57.79	0	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
75.24	11/9/89	17.41	57.83	0	8015/8020	<500	<0.5	1	<0.5	<0.5
	2/8/90	16.57	58.67	0	8015/8020	190	<0.3	<0.3	<0.3	<0.6
	5/10/90	17.12	58.12	0	8015/8020	<50	<0.3	<0.3	<0.3	<0.6
	8/9/90	17.20	58.04	0	8015/8020	120	<0.3	<0.3	<0.3	<0.6
	11/13/90	17.88	57.36	0	8015/8020	160	<0.4	1	<0.3	<0.4
	3/27/91	---	---	---	8015/8020	110	<0.5	<0.5	<0.5	<0.5
	4/5/91	15.54	59.70	0	---	---	---	---	---	---
	6/19/91	17.07	58.17	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	8/21/91	17.46	57.78	0	8015/8020	70	0.8	1.4	<0.3	<0.4
	11/8/91	17.58	57.66	0	8015/8020	<50	<0.5	0.7	<0.5	<0.5
	2/13/92	16.69	58.55	0	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	5/1/92	16.16	59.08	0	8015/8020	340	<0.5	2.6	0.7	<0.5
76.24	11/18/92	17.61	58.63	0	8015/8020	450	<0.5	3.3	<0.5	0.8
	3/19/93	15.00	61.24	0	8015/8020	450	<0.5	2.3	0.6	<1.5
	6/10/93	16.08	60.16	0	8015/8020	250	<0.5	1.3	<0.5	<1.5
	9/8/93	17.07	59.17	0	8015/8020	<50	<0.5	<0.5	<0.5	<1.5
	12/21/93	16.60	59.64	0	8015/8020	170	<0.5	1.3	<0.5	<0.5
	3/9/94	15.83	60.41	0	8015/8020	200	1.8	1.4	<0.5	<0.5
	9/21/94	**17.60**	**58.64**	**0**	**8015/8020**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Trip Blank	5/9/89	---	---	---	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
TBLB	8/9/89	---	---	---	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
	11/9/89	---	---	---	8015/8020	<500	<0.5	<0.5	<0.5	<0.5
	2/8/90	---	---	---	8015/8020	<50	<0.3	<0.3	<0.3	<0.6
	5/10/90	---	---	---	8015/8020	<50	<0.3	<0.3	<0.3	<0.6
	8/9/90	---	---	---	8015/8020	<50	<0.3	<0.3	<0.3	<0.6

SIERRA

Table 1. Water Level Data and Ground Water Analytic Results - Former Chevron Service Station #9-1026, 3701 Broadway, Oakland, California (continued)

Well ID/ TOC (ft)	Date	DTW (ft)	GWE (msl)	Product Thickness* (ft)	Analytic Method	TPPH(G)	B	T	E	X
						<----------ppb---------->				
TBLB (cont)	11/13/90	---	---	---	8015/8020	<50	<0.4	<0.3	<0.3	<0.4
	3/27/91	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	6/19/91	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	8/21/91	---	---	---	8015/8020	<50	<0.4	<0.3	<0.3	<0.4
	11/8/91	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	2/13/92	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	5/1/92	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	11/18/92	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	3/19/93	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<1.5
	6/10/93	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<1.5
	9/8/93	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<1.5
	12/21/93	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	3/9/94	---	---	---	8015/8020	<50	<0.5	<0.5	<0.5	<0.5
	9/21/94	**---**	**---**	**---**	**8015/8020**	**<50**	**<0.5**	**<0.5**	**<0.5**	**<0.5**

EXPLANATION:

DTW = Depth to water
TOC = Top of casing elevation
GWE = Ground water elevation
msl = Mean sea level
TPPH(G) = Total Purgeable Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
ppb = Parts per billion
--- = Not analyzed/not applicable

ANALYTIC METHODS

8015 = EPA Method 8015/5030 for TPPH(G)
8020 = EPA Method 8020 for BTEX

NOTES:

Analytic results and ground water data prior to September 21, 1994 compiled from the Quarterly Monitoring Report prepared for Chevron by Groundwater Technology, Inc., July 15, 1994.

Analytic methods prior to September 21, 1994 are assumed to be 8015/8020.

* Product thickness measurements on and after September 21, 1994 were measured using an MMC flexi-dip interface probe.

[1] Well abandoned. Exact date unknown.
[2] Well inaccessible on this date.
[3] GWE corrected for the presence of free-phase hydrocarbons using: GWE = [(TOC-DTW)+(0.8)(Product Thickness)]. 0.8 is the assumed specific gravity.
[4] Approximate thickness; equipment not functioning properly.
[5] Well not located this event.

SIERRA

SES STANDARD OPERATING PROCEDURE
GROUND WATER SAMPLING

The following describes sampling procedures used by SES field personnel to collect and handle ground water samples. Before samples are collected, careful consideration is given to the type of analysis to be performed so that precautions are taken to prevent loss of volatile components or contamination of the sample, and to preserve the sample for subsequent analysis. Wells will be sampled no less than 24 hours after well development. Collection methods specific to ground water sampling are presented below.

Prior to sampling, each well is checked for the presence of free-phase hydrocarbons using an MMC flexi-dip interface probe. Product thickness (measured to the nearest 0.01 foot) is noted on the sampling form. Water level measurements are also made using either a water level meter or the interface probe. The water level measurements are also noted on the sampling form.

Prior to sampling, each well is purged of a minimum of three well casing volumes of water using a steam-cleaned PVC bailer, or a pre-cleaned pump. Temperature, pH and electrical conductivity are measured at least three times during purging. Purging is continued until these parameters have stabilized (i.e., changes in temperature, pH or conductivity do not exceed ±0.5°F, 0.1 or 5%, respectively).

The purge water is taken to Chevron's Richmond Refinery for disposal.

Ground water samples are collected from the wells with Chevron designated disposable bailers. The water samples are decanted into the appropriate container for the analysis to be performed. Pre-preserved sample containers may be used or the analytic laboratory may add preservative to the sample upon arrival. Duplicate samples are collected from each well as a back-up sample and/or to provide quality control. The samples are labeled to include the project number, sample ID, date, preservative, and the field person's initials. The samples are placed in polyethylene bags and in an ice chest (maintained at 4°C) for transport under chain of custody to the laboratory.

The chain of custody form includes the project number, analysis requested, sample ID, date analysis and the SES field person's name. The form is signed and dated (with the transfer time) by each person who yields or receives the samples beginning with the field personnel and ending with the laboratory personnel.

A trip blank accompanies each sampling set, or 5% trip blanks are included for sets of greater than 20 samples. The trip blank is analyzed for some or all of the same compounds as the ground water samples.

SIERRA

WATER SAMPLING DATA

Job Name 1-384-04 Job Number Oakland Sampler L.C

Well Number B-1 Date 09/13/94 Well Diameter

Sample Point Location/Description S/W corner of the lot Well Depth (spec.)

Depth to Water (static) 14.4 Well Depth (sounded) 32.9

Initial height of water in casing 18.5 Volume 12.08 gallons

Volume to be purged 36 gallons

Purged With Sub Pump Sampled With Disp. Bailer

Pumped or Bailed Dry? ___ Yes ✓ No Time ____ After ____ gallons

Water level at sampling ____ Percent Recovery ____

Formulas/Conversions
r = well radius in ft
h = ht of water col. in ft
vol. in cyl. = $\pi r^2 h$
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

CHEMICAL DATA

Purge Time		Purge Volume (gal.)	Cumulative (gal.)	pH	Temp (°C)	Specific Conductance	
Start	Stop					Measurement	x umhos/cm
13.30	13.40	12	12	8.2	64	630	
	13.50	12	24	8.1	65	620	
	14.00	12	36	8.0	65	610	

SAMPLES COLLECTED Time 14.20 Total volume purged (gal.) ____

Water color Clear Odor None

Description of sediments or material in sample: None

Additional Comments: ____

Sample ID	# of Cont.	Container Type	Filtered (size, u)	Preservative (type)	Refrig. (Y/N)	Lab (Init)	Analysis Requested
B-1	3	1	—	HCL	Y	SPA	G/BTEX

Container Type Codes: 1 = 40 ml clear VOA/Teflon septa; 2 = Brown glass/teflon lined cap (specify size); 3 = Clear glass/teflon lined cap (specify size); 4 = Polyethylene/polyethylene cap (specify size); 5 = Other ____; 6 = Other ____

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SIERRA

WATER SAMPLING DATA

Job Name 1-384-04 Job Number Oakland Sampler J.C

Well Number B-4 Date 09/ /94 Well Diameter 2"

Sample Point Location/Description N/E corner of the Cot Well Depth (spec.) _____

Depth to Water (static) 17.14 Well Depth (sounded) 19.30

Initial height of water in casing 2.16 Volume 0.35 gallons

Volume to be purged 1.05 gallons

Purged With Sub Pump ✓ Sampled With Disp. Bailer

Pumped or Bailed Dry? ___ Yes ___ No Time ____ After _____ gallons

Water level at sampling _____ Percent Recovery _____

Formulas/Conversions
r = well radius in ft
h = ht of water col. in ft
vol. in cyl. = $\pi r^2 h$
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

CHEMICAL DATA

Purge Time		Purge Volume (gal.)	Cumulative (gal.)	pH	Temp (°C)	Specific Conductance	
Start	Stop					Measurement	x umhos/cm
12.00	12.05	1	1	7.8	65	610	
	12.10	1	2	7.6	64	600	

SAMPLES COLLECTED Time 12.20 Total volume purged (gal.) _____

Water color Clear Odor None

Description of sediments or material in sample: None

Additional Comments: _____

Sample ID	# of Cont.	Container Type	Filtered (size, u)	Preservative (type)	Refrig. (Y/N)	Lab (Init)	Analysis Requested
B-4	3	1	—	HCL	Y	SPA	G/BTEX

Container Type Codes: 1 = 40 ml clear VOA/Teflon septa; 2 = Brown glass/teflon lined cap (specify size); 3 = Clear glass/teflon lined cap (specify size); 4 = Polyethylene/polyethylene cap (specify size); 5 = Other _____; 6 = Other _____

5

SIERRA

WATER SAMPLING DATA

Job Name 1-384-04 Job Number Oakland Sampler L.C

Well Number E Date 04/21/94 Well Diameter 2

Sample Point Location/Description On MacArthur Blvd Well Depth (spec.) _____

Depth to Water (static) 12.29 Well Depth (sounded) 35.44

Initial height of water in casing 21.15 Volume 3.44 gallons

Volume to be purged 10 gallons

Purged With Sub Pump Sampled With Disp. Bailer

Pumped or Bailed Dry? ___ Yes V No Time ____ After _____ gallons

Water level at sampling _____ Percent Recovery _____

Formulas/Conversions
r = well radius in ft
h = ht of water col. in ft
vol. in cyl. = $\pi r^2 h$
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

CHEMICAL DATA

Purge Time		Purge Volume (gal.)	Cumulative (gal.)	pH	Temp (°C)	Specific Conductance	
Start	Stop					Measurement	x umhos/cm
10.30	10.32	3	3	7.8	65	120	
	10.34	3	6	7.6	64	115	
	10.38	4	10	7.6	65	115	

SAMPLES COLLECTED Time 10.45 Total volume purged (gal.) 10

Water color Clear Odor None

Description of sediments or material in sample: None

Additional Comments: —

Sample ID	# of Cont.	Container Type	Filtered (size, u)	Preservative (type)	Refrig. (Y/N)	Lab (Init)	Analysis Requested
E	3	1	—	HCL	Y	SPA	G/BTEX

Container Type Codes: 1 = 40 ml clear VOA/Teflon septa; 2 = Brown glass/teflon lined cap (specify size); 3 = Clear glass/teflon lined cap (specify size); 4 = Polyethylene/polyethylene cap (specify size); 5 = Other _____; 6 = Other _____

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(3)

SIERRA

WATER SAMPLING DATA

Job Name 1-384-04 Job Number Oakland Sampler L.C

Well Number F Date 09/21/94 Well Diameter 2

Sample Point Location/Description East from recd #E Well Depth (spec.) _____

Depth to Water (static) 16.30 Well Depth (sounded) 29.12

Initial height of water in casing 12.82 Volume 2.08 gallons

Volume to be purged 6 gallons

Purged With Sub Pump Sampled With Disp. Bailer

Pumped or Bailed Dry? ___ Yes V No Time _____ After _____ gallons

Water level at sampling _____ Percent Recovery _____

Formulas/Conversions
r = well radius in ft
h = ht of water col. in ft
vol. in cyl. = $\pi r^2 h$
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

CHEMICAL DATA

Purge Time		Purge Volume (gal.)	Cumulative (gal.)	pH	Temp (°C)	Specific Conductance	
Start	Stop					Measurement	x umhos/cm
10.10	10.12	2	2	8.2	65	134	
	10.14	2	4	8.3	66	134	
	10.16	2	6	8.4	66	134	

SAMPLES COLLECTED Time 10.25 Total volume purged (gal.) 6

Water color Cloudy Odor None

Description of sediments or material in sample: Fine, Light Brown Sediment

Additional Comments: _____

Sample ID	# of Cont.	Container Type	Filtered (size, u)	Preservative (type)	Refrig. (Y/N)	Lab (Init)	Analysis Requested
F	3	1	—	HCL	Y	SPA	G/BTEX

Container Type Codes: 1 = 40 ml clear VOA/Teflon septa; 2 = Brown glass/teflon lined cap (specify size);
3 = Clear glass/teflon lined cap (specify size); 4 = Polyethylene/polyethylene cap (specify size);
5 = Other _____; 6 = Other _____

WATERSAMPLE

(2)

SIERRA

WATER SAMPLING DATA

Job Name 1-384-04 Job Number Oakland Sampler L.C

Well Number EA-1 Date 09/21/94 Well Diameter 4"

Sample Point Location/Description East from well #F Well Depth (spec.) _____

Depth to Water (static) 27.50 Well Depth (sounded) 16.12

Initial height of water in casing 11.38 Volume 7.43 gallons

Volume to be purged 22.2 gallons

Purged With Sub Pump Sampled With Disp. Bailer

Pumped or Bailed Dry? ___ Yes ___ No Time _____ After _____ gallons

Water level at sampling _____ Percent Recovery _____

Formulas/Conversions
r = well radius in ft
h = ht of water col. in ft
vol. in cyl. = $\pi r^2 h$
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

CHEMICAL DATA

Purge Time		Purge Volume (gal.)	Cumulative (gal.)	pH	Temp (°C)	Specific Conductance	
Start	Stop					Measurement	x umhos/cm
9.40	9.45	7	7	8.0	64	138	
	9.50	7	14	7.9	65	137	
	9.55	7	21	7.8	65	136	

SAMPLES COLLECTED Time 10.00 Total volume purged (gal.) 21

Water color Clear (very Clear) Odor None

Description of sediments or material in sample: None

Additional Comments: _____

Sample ID	# of Cont.	Container Type	Filtered (size, u)	Preservative (type)	Refrig. (Y/N)	Lab (Init)	Analysis Requested
EA-1	3	1	—	HCL	Y	SPA	G/BTEX

Container Type Codes: 1 = 40 ml clear VOA/Teflon septa; 2 = Brown glass/teflon lined cap (specify size); 3 = Clear glass/teflon lined cap (specify size); 4 = Polyethylene/polyethylene cap (specify size); 5 = Other _____; 6 = Other _____

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WATER SAMPLING DATA

Job Name 1-384-04 Job Number Oakland Sampler J.C

Well Number EA-2 Date 09/ /94 Well Diameter 4"

Sample Point Location/Description Median on Broadway/1st Well Depth (spec.) _____

Depth to Water (static) 17.6 Well Depth (sounded) 29.8

Initial height of water in casing 12.20 Volume 7.96 gallons

Volume to be purged 23.9 gallons

Purged With SKB Pump Sampled With Disp. Bailer

Pumped or Bailed Dry? ___ Yes ___ No Time ____ After _____ gallons

Water level at sampling _____ Percent Recovery _____

Formulas/Conversions
r = well radius in ft
h = ht of water col. in ft
vol. in cyl. = $\pi r^2 h$
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

CHEMICAL DATA

Purge Time		Purge Volume (gal.)	Cumulative (gal.)	pH	Temp (°C)	Specific Conductance	
Start	Stop					Measurement	x umhos/cm
11.00	11.10	7	7	8.3	64	640	
	11.15	7	14	8.2	65	660	
	11.25	9	23	8.1	65	660	

SAMPLES COLLECTED Time 11.30 Total volume purged (gal.) 23

Water color Clear Odor None

Description of sediments or material in sample: None

Additional Comments: ——→

Sample ID	# of Cont.	Container Type	Filtered (size, u)	Preservative (type)	Refrig. (Y/N)	Lab (Init)	Analysis Requested
EA-2	3	1	—	HCL	Y	SPA	G/BTEX

Container Type Codes: 1 = 40 ml clear VOA/Teflon septa; 2 = Brown glass/teflon lined cap (specify size); 3 = Clear glass/teflon lined cap (specify size); 4 = Polyethylene/polyethylene cap (specify size); 5 = Other _____; 6 = Other _____

(4)

Fax copy of Lab Report and COC to Chevron Contact: ☐ Yes ☐ No

3076E

Chain-of-Custody-Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number: 9-1026
Facility Address: 3701 Broadway, Oakland
Consultant Project Number: 1-384-04
Consultant Name: Sierra Environmental Services
Address: P.O Box 2546, Martinez CA 94553
Project Contact (Name): Ed Mortes
(Phone): 510-370-1280 (Fax Number): 510-370-7959

Chevron Contact (Name): Mark Miller
(Phone): 842-8134
Laboratory Name: SPA
Laboratory Release Number: 490430 495043a
Samples Collected by (Name): L. Chernyak
Collection Date: 09/21/94
Signature: L. Chernyak

Sample Number	Lab Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)					Remarks
TB/LB		2	W	G		HCL	Y	V												Analyze
B-1		3																		
B-4																				
E																				
EA-01																				
EA-02																				
F								V												

Please Initial:
Samples Stored in Ice. Hand delivered 6°C
Appropriate containers
Samples preserved
VOA's without headspace
Intact

Note:
Do Not Bill
TB-LB Samples

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
L. Chernyak	SES				
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
			[illegible]		9/21/94 5:[illegible]

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

9/21/94

Superior Precision Analytical, Inc.

A member of ESSCON Environmental Support Service Consortium

Sierra Environmental
Attn: ED MORALES

Project 1-384-04
Reported 10/03/94

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
30768- 1	TB-LB	09/21/94	09/27/94	Water
30768- 2	B-1	09/21/94	09/27/94	Water
30768- 3	B-4	09/21/94	09/27/94	Water
30768- 4	E	09/21/94	09/27/94	Water
30768- 5	EA-01	09/21/94	09/27/94	Water
30768- 6	EA-02	09/21/94	09/27/94	Water
30768- 7	F	09/21/94	09/27/94	Water

RESULTS OF ANALYSIS

Laboratory Number:	30768- 1	30768- 2	30768- 3	30768- 4	30768- 5
Gasoline:	ND<50	390	32000	ND<50	ND<50
Benzene:	ND<0.5	130	14000	2.5	ND<0.5
Toluene:	ND<0.5	2.7	110	ND<0.5	ND<0.5
Ethyl Benzene:	ND<0.5	2.4	660	1.0	ND<0.5
Total Xylenes:	ND<0.5	7.7	190	ND<0.5	ND<0.5
Concentration:	ug/L	ug/L	ug/L	ug/L	ug/L

Laboratory Number:	30768- 6	30768- 7
Gasoline:	ND<50	ND<50
Benzene:	ND<0.5	ND<0.5
Toluene:	ND<0.5	ND<0.5
Ethyl Benzene:	ND<0.5	ND<0.5
Total Xylenes:	ND<0.5	ND<0.5
Concentration:	ug/L	ug/L

Certified Laboratories

825 Arnold Dr., Suite 114
Martinez, California 94553
(510) 229-1512 / fax (510) 229-1526

1555 Burke St., Unit I
San Francisco, California 94124
(415) 647-2081 / fax (415) 821-7123

309 S. Cloverdale St., Suite B-24
Seattle, Washington 98108
(206) 763-2992 / fax (206) 763-8429

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C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 30768

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
ug/L = parts per billion (ppb)

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Water: 5000ug/L

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 50ug/L

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Water: 0.5ug/L

ANALYTE	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	107/102	5%	56-117
Benzene:	88/90	2%	59-149
Toluene:	99/101	2%	59-149
Ethyl Benzene:	98/100	2%	59-149
Total Xylenes:	102/104	2%	59-149

Senior Chemist 10/3/96