Weiss Associates *Environmental and Geologic Services*

5500 Shellmound Street, Emeryville, CA 94608-2411 *Fax: 510-547-5043* *Phone:* ***510-547-5420***

May 31, 1994

Juliet Shin
Alameda County Department of
Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621-1426

Re: Shell Service Station
WIC #204-0072-0502
2160 Otis Drive
Alameda, California
WA Job #81-429-104

Dear Ms. Shin:

This letter describes recently completed and anticipated activities at the Shell service station referenced above (Figure 1). This status report satisfies the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 265.d. Included below are descriptions and results of activities performed in the second quarter 1994 and proposed work for the third quarter 1994.

Second Quarter 1994 Activities:

- Blaine Tech Services, Inc., (BTS) of San Jose, California measured depths to ground water and collected ground water samples from the site wells. Monitoring wells MW-1 and S-1 were not sampled because they are sampled annually during the first quarter. BTS' report describing these sampling activities and including the laboratory analytic report for ground water samples is included as Attachment A.

- Weiss Associates (WA) compiled the ground water elevation data and the laboratory analytic results (Tables 1 and 2) and prepared a ground water elevation contour map (Figure 2).

- On May 6, 1994, WA responded to a March 24, 1994 letter from Alameda County Department of Environmental Health.

Anticipated Third Quarter 1994 Activities:

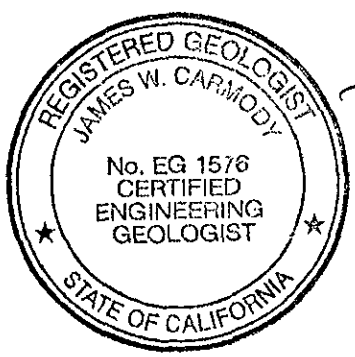
- WA will submit a report presenting the results of the third quarter 1994 ground water sampling and ground water depth measurements. The report will include tabulated chemical analytic results, ground water elevations and a ground water elevation contour map.

- WA will sample all the site wells for dissolved oxygen and total dissolved solids. We will also sample monitoring well MW-1 for volatile organic compounds (VOCs) to assess whether VOCS from an upgradient source are impacting the site. No VOCs have been detected in ground water from well S-1 located adjacent to the waste oil tank since July 1990.

Conclusions and Recommendations

Since the ground water flow direction has remained northerly, and since no hydrocarbons have been detected in wells S-1 and MW-1, and hydrocarbon concentrations have remained stable in monitoring well MW-2 for the last four years, we will continue quarterly ground water monitoring of well MW-2 at this time.

Please call if you have any questions.



Sincerely,
Weiss Associates

J. Michael Aspott
Technical Assistant

James W. Carmody, C.E.G.
Senior Project Hydrogeologist

JMA/JWC:jma

J:\SHELL\425\QMRPTS\429QMMY4.WP
Attachments: A - BTS's Ground Water Monitoring Report

cc: Dan Kirk, Shell Oil Company, P.O. Box 5278, Concord, CA 94520
Kevin Graves, Water Quality Control Board, San Francisco Bay Region, 2101 Webster Street, Suite 500, Oakland, CA 94612

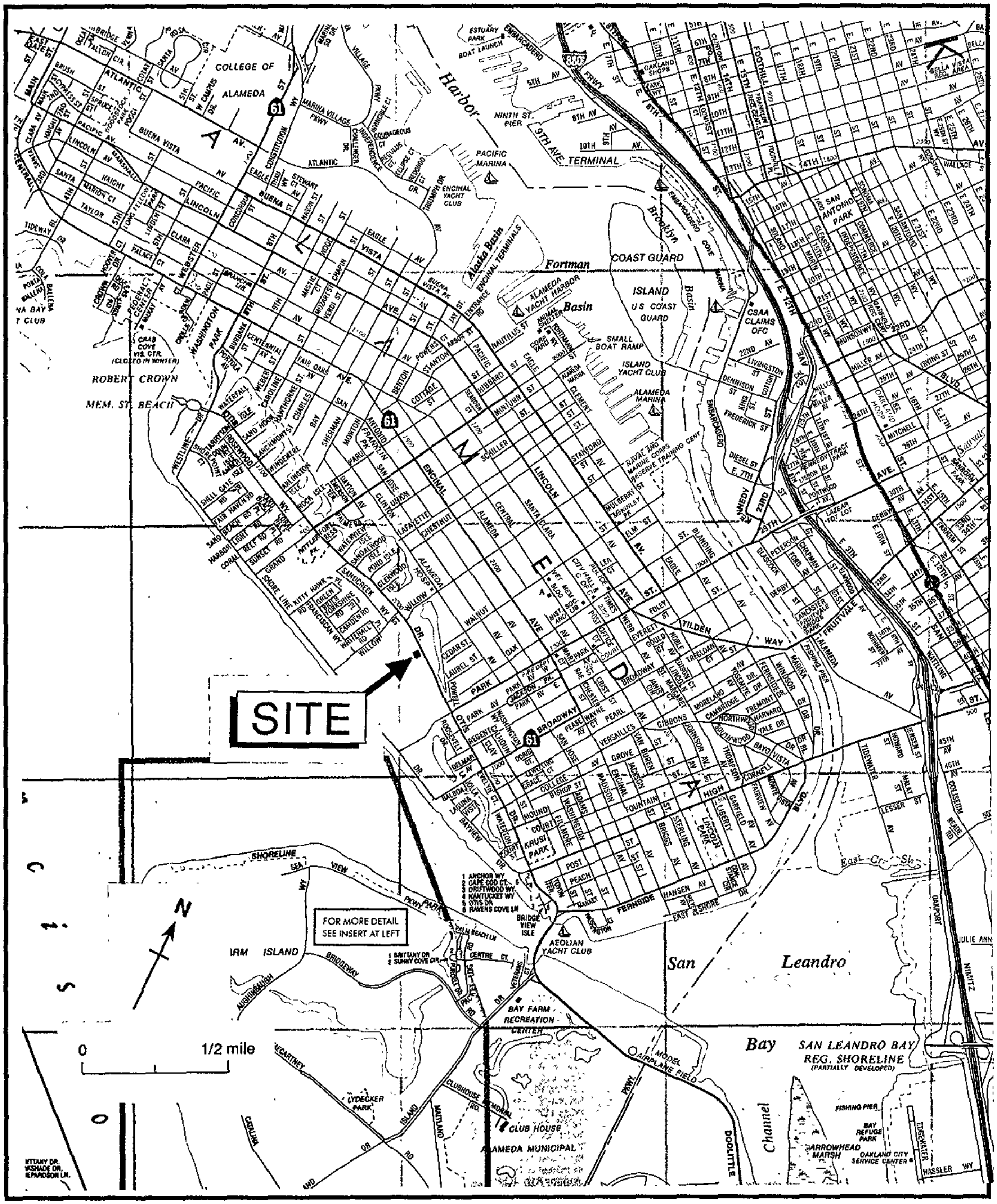


Figure 1. Site Location Map - Shell Service Station, WIC# 204-0072-0502, 2160 Otis Drive, Alameda, CA

8/21/90

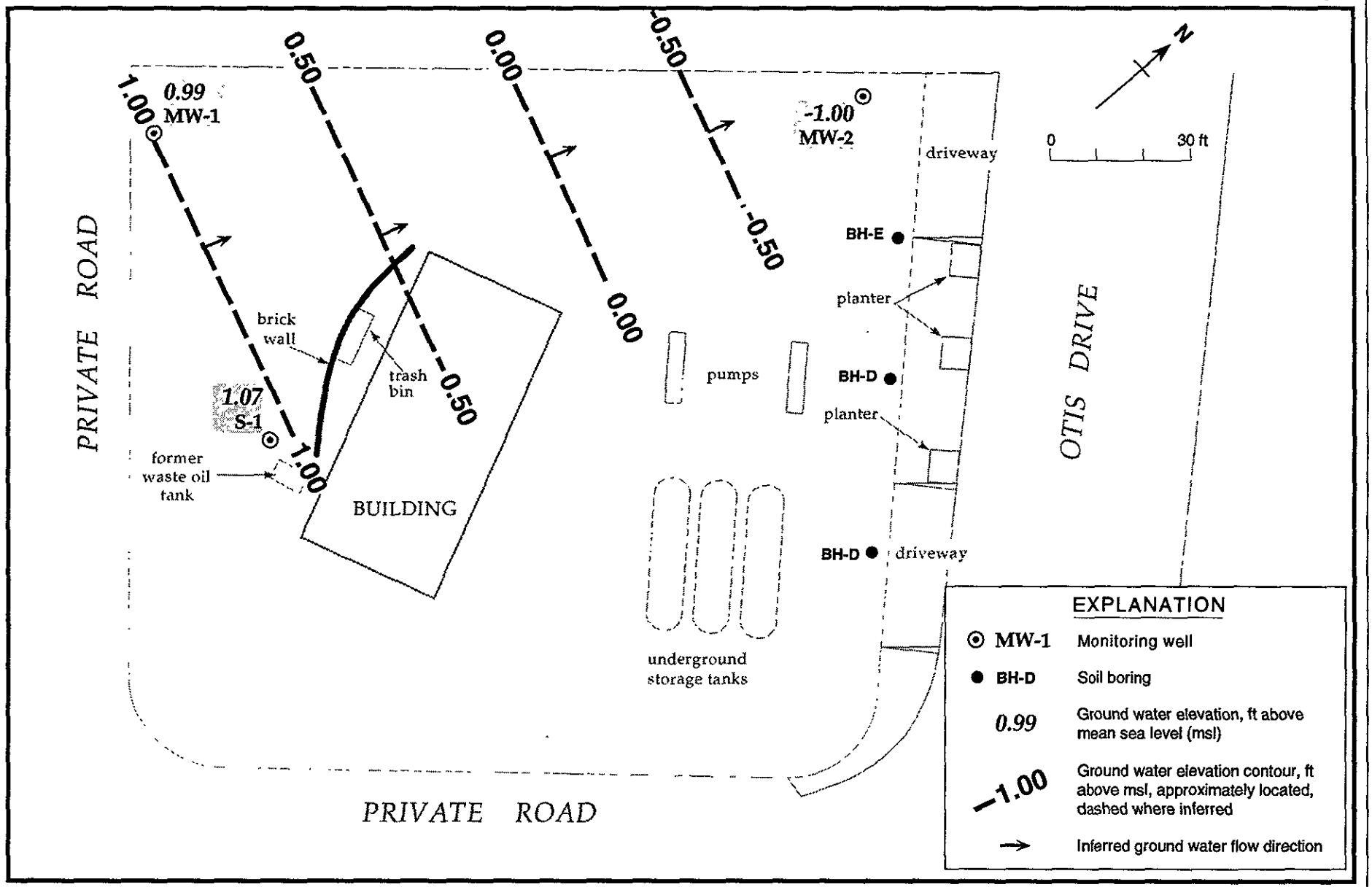


Figure 2. Monitoring Well Locations, Soil Boring Locations and Ground Water Elevation Contours - April 13, 1994 - Shell Service Station WIC #204-0072-2160, 2160 Otis Drive, Alameda, California

Table 1. Ground Water Elevations - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
MW-1	04/11/90	6.00	5.23	0.77
	07/10/90		5.40	0.60
	10/09/90		5.61	0.39
	01/17/91		5.66	0.34
	04/09/91		4.96	1.04
	07/10/91		5.52	0.48
	10/09/91		5.70	0.30
	01/24/92		5.51	0.49
	04/23/92		5.14	0.86
	07/01/92		4.48	1.52
	10/02/92		5.80	0.20
	01/05/93		5.34	0.66
	04/08/93		4.62	1.38
	07/20/93		5.20	0.80
	10/15/93		4.37	1.63
	01/07/94		5.26	0.74
	04/13/94		**5.01**	**0.99**
MW-2	04/11/90	3.29	4.51	-1.22
	07/10/90		4.61	-1.32
	10/09/90		4.74	-1.45
	01/17/91		4.73	-1.44
	04/09/91		4.09	-0.80
	07/10/91		4.66	-1.37
	10/09/91		4.81	-1.52
	01/24/92		4.66	-1.37
	04/23/92		4.51	-1.22
	07/01/92		4.57	-1.28
	10/02/92		4.80	-1.51
	01/05/93		4.39	-1.1
	04/08/93		4.15	-0.86
	07/20/93		4.40	-1.11
	10/15/93		5.41	-2.12
	01/07/94		4.34	-1.05
	04/13/94		**4.29**	**-1.00**
S-1	09/11/90	5.10	4.29	0.81
	04/11/90		4.00	1.10
	07/10/90		4.25	0.85
	10/09/90		4.46	0.64

-- Table 1 continues on next page --

Table 1. Ground Water Elevations - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
	01/17/91		4.53	0.57
	04/09/91		4.20	0.90
	07/10/91		4.42	0.68
	10/09/91		4.87	0.23
	01/24/92		4.90	0.20
	04/23/92		4.66	0.44
	07/01/92		4.85	0.25
	10/02/92		4.80	0.30
	01/05/93		5.38	-0.28
	04/08/93		3.69	1.41
	07/20/93		4.20	0.90
	10/15/93		4.38	0.72
	01/07/94		4.19	0.91
	04/17/94		**4.03**	**1.07**

Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID (Sampling Frequency)	Date Sampled	Depth to Water (ft)	TPH-G	TPH-D	B	E	T	X	POG
			<----------parts per billion (µg/L)---------->						
S-1	09/04/87		---	---	<5	<5	<5	<5	---
(Annually	09/11/89[a]	4.29	<50	<100	<0.5	<1	<1	<3	<1,000
1st Qtr)	04/11/90	4.00	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000
	07/10/90	4.25	<90	---	<0.5	<0.5	<0.5	<0.5	<10,000
	10/09/90	4.46	<50	---	<0.5	<0.5	<0.5	<0.5	<5,000
	01/17/91	4.53	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/09/91	4.20	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/10/91	4.42	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/91	4.87	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/24/92	4.90	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/23/92	4.66	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/01/92	4.85	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	5.80	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93	5.38	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94	4.19	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94	4.19	<50	---	<0.5	<0.5	<0.5	<0.5	---
MW-1	04/11/90	5.23	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000
(Annually	07/10/90	5.40	100	---	<0.5	<0.5	<0.5	<0.5	<10,000
1st Qtr)	10/09/90	5.61	<50	---	<0.5	<0.5	<0.5	<0.5	<5,000
	01/17/91	5.66	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/09/91	4.96	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/10/91	5.52	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/91	5.70	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/24/92	5.51	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/23/92	5.14	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/01/92	4.48	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	4.80	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93	5.34	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93[dup]	5.34	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94	5.26	<50	---	<0.5	<0.5	<0.5	<0.5	---
MW-2	04/11/90	4.51	200[b]	220	2.7	<0.5	0.5	2.4	<10,000
(Quarterly)	07/10/90	4.61	570[b]	450	150	<0.5	0.9	3.1	<10,000
	10/09/90	4.74	190[b]	51	55	<0.5	<0.5	<0.5	<5,000
	01/17/91	4.73	350[b]	<50	51	<0.5	<0.5	<0.5	---
	04/09/91	4.09	---	<50	21	<5	<5	<5	---
	07/10/91	4.66	50[b]	<50	8.4	<0.5	<0.5	<0.5	---
	10/09/91	4.81	150	---	22	<0.5	<0.5	<0.5	---
	01/24/92	4.66	<50	---	4.8	<0.5	<0.5	<0.5	---
	04/23/92	4.51	<50	---	2.3	1.5	<0.5	<0.5	---
	07/01/92	4.57	130[c]	---	19	<0.5	<0.5	<0.5	---
	10/02/92	4.80	120[c]	---	7.8	<0.5	<0.5	<0.8	---
	01/05/93	4.39	200[c]	---	9.0	<0.5	0.6	1.8	---

-- Table 2A continues on next page --

Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Well ID (Sampling Frequency)	Date Sampled	Depth to Water (ft)	TPH-G	TPH-D	B	E	T	X	POG
			<----------parts per billion (µg/L)---------->						
	04/08/93	4.15	170[c]	---	9.6	<0.5	<0.5	1.6	---
	07/20/93	4.40	80[d]	---	16	1.3	1.4	6.1	---
	10/15/93	4.38	400[c]	---	37	0.6	1.1	4.7	---
	01/07/94	4.34	86[d]	---	12	<0.5	<0.5	1.1	<500
	04/13/94	**4.29**	**<50**	---	**14**	**<0.5**	**<0.5**	**<0.5**	
BH-C	12/17/92	5.0	<50	<0.5	<0.5	<0.5	<0.5	<0.5	---
BH-D	12/17/92	5.0	<50	<0.5	<0.5	<0.5	<0.5	<0.5	---
BH-E	12/17/92	5.5	<50	<0.5	<0.5	<0.5	<0.5	<0.5	---
Trip Blank	07/10/90		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/90		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/17/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/09/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/10/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/24/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/23/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/01/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/02/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/08/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/20/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/15/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/13/94		**<50**	---	**<0.5**	**<0.5**	**<0.5**	**<0.5**	---
DTSC MCLs									

-- Table 2A continues on next page --

Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID (Sampling Frequency)	Date Sampled	Depth to Water (ft)	TPH-G	TPH-D	B	E	T	X	POG
			<----------parts per billion (µg/L)---------->						
S-1	09/04/87		---	---	<5	<5	<5	<5	---
(Annually	09/11/89[a]	4.29	<50	<100	<0.5	<1	<1	<3	<1,000
1st Qtr)	04/11/90	4.00	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000
	07/10/90	4.25	<90	---	<0.5	<0.5	<0.5	<0.5	<10,000
	10/09/90	4.46	<50	---	<0.5	<0.5	<0.5	<0.5	<5,000
	01/17/91	4.53	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/09/91	4.20	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/10/91	4.42	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/91	4.87	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/24/92	4.90	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/23/92	4.66	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/01/92	4.85	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	5.80	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93	5.38	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94	4.19	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94	4.19	<50	---	<0.5	<0.5	<0.5	<0.5	---
MW-1	04/11/90	5.23	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000
(Annually	07/10/90	5.40	100	---	<0.5	<0.5	<0.5	<0.5	<10,000
1st Qtr)	10/09/90	5.61	<50	---	<0.5	<0.5	<0.5	<0.5	<5,000
	01/17/91	5.66	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/09/91	4.96	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/10/91	5.52	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/91	5.70	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/24/92	5.51	<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/23/92	5.14	<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/01/92	4.48	<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/02/92	4.80	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93	5.34	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93[dup]	5.34	<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94	5.26	<50	---	<0.5	<0.5	<0.5	<0.5	---
MW-2	04/11/90	4.51	200[b]	220	2.7	<0.5	0.5	2.4	<10,000
(Quarterly)	07/10/90	4.61	570[b]	450	150	<0.5	0.9	3.1	<10,000
	10/09/90	4.74	190[b]	51	55	<0.5	<0.5	<0.5	<5,000
	01/17/91	4.73	350[b]	<50	51	<0.5	<0.5	<0.5	---
	04/09/91	4.09	---	<50	21	<5	<5	<5	---
	07/10/91	4.66	50[b]	<50	8.4	<0.5	<0.5	<0.5	---
	10/09/91	4.81	150	---	22	<0.5	<0.5	<0.5	---
	01/24/92	4.66	<50	---	4.8	<0.5	<0.5	<0.5	---
	04/23/92	4.51	<50	---	2.3	1.5	<0.5	<0.5	---
	07/01/92	4.57	130[c]	---	19	<0.5	<0.5	<0.5	---
	10/02/92	4.80	120[c]	---	7.8	<0.5	<0.5	<0.8	---
	01/05/93	4.39	200[c]	---	9.0	<0.5	0.6	1.8	---

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Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Well ID (Sampling Frequency)	Date Sampled	Depth to Water (ft)	TPH-G	TPH-D	B	E	T	X	POG
			<----------parts per billion (µg/L)---------->						
	04/08/93	4.15	170[c]	---	9.6	<0.5	<0.5	1.6	---
	07/20/93	4.40	80[d]	---	16	1.3	1.4	6.1	---
	10/15/93	4.38	400[c]	---	37	0.6	1.1	4.7	---
	01/07/94	4.34	86[d]	---	12	<0.5	<0.5	1.1	<500
	04/13/94	**4.29**	**<50**	---	**14**	**<0.5**	**<0.5**	**<0.5**	
BH-C	12/17/92	5.0	<50	<0.5	<0.5	<0.5	<0.5	<0.5	---
BH-D	12/17/92	5.0	<50	<0.5	<0.5	<0.5	<0.5	<0.5	---
BH-E	12/17/92	5.5	<50	<0.5	<0.5	<0.5	<0.5	<0.5	---
Trip Blank	07/10/90		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/90		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/17/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/09/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/10/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/09/91		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/24/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/23/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/01/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/02/92		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/05/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/08/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	07/20/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	10/15/93		<50	---	<0.5	<0.5	<0.5	<0.5	---
	01/07/94		<50	---	<0.5	<0.5	<0.5	<0.5	---
	04/13/94		**<50**	---	**<0.5**	**<0.5**	**<0.5**	**<0.5**	---
DTSC MCLs									

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Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
B = Benzene by EPA Method 8020, or 8240
E = Ethylbenzene by EPA Method 8020, or 8240
T = Toluene by EPA Method 8020, or 8240
X = Xylenes by EPA Method 8020, or 8240
POG = Petroleum oil and grease by American Public Health Association Standard Methods 503, or EPA method 5520BF
DTSC MCLs = Department of Toxic Substances Control maximum contaminant levels
<n = Not detected above detection limit of n ppb
NE = DTSC MCL not established
BH-C = Grab Ground Water Sample

Notes:

a = 0.090 ppm chromium, 0.090 ppm lead and 0.10 ppm Zn detected; no cadmium detected above detection limit of 0.010 ppm by EPA Method 6010. No semi-volatile organic compounds or PCBs detected by EPA Method 625. DTSC MCLs for Cr = 0.05 ppm; Pb = 0.05 ppm; secondary MCL for Zn = 5 ppm.
b = Chromatographic pattern not typical for gasoline; the concentration is due mostly to lighter hydrocarbon compounds.
c = The concentration reported as gasoline is partially due to the presence of discrete peaks not indicative of gasoline.
d = The concentration reported as gasoline is primarily due to the presence of discrete peaks not indicative of gasoline.
e = DTSC recommended action level for drinking water; MCL not established

Table 2A. Analytic Results for Ground Water - Petroleum Hydrocarbons - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
B = Benzene by EPA Method 8020, or 8240
E = Ethylbenzene by EPA Method 8020, or 8240
T = Toluene by EPA Method 8020, or 8240
X = Xylenes by EPA Method 8020, or 8240
POG = Petroleum oil and grease by American Public Health Association Standard Methods 503, or EPA method 5520BF
DTSC MCLs = Department of Toxic Substances Control maximum contaminant levels
<n = Not detected above detection limit of n ppb
NE = DTSC MCL not established
BH-C = Grab Ground Water Sample

Notes:

a = 0.090 ppm chromium, 0.090 ppm lead and 0.10 ppm Zn detected; no cadmium detected above detection limit of 0.010 ppm by EPA Method 6010. No semi-volatile organic compounds or PCBs detected by EPA Method 625. DTSC MCLs for Cr = 0.05 ppm; Pb = 0.05 ppm; secondary MCL for Zn = 5 ppm.
b = Chromatographic pattern not typical for gasoline; the concentration is due mostly to lighter hydrocarbon compounds.
c = The concentration reported as gasoline is partially due to the presence of discrete peaks not indicative of gasoline.
d = The concentration reported as gasoline is primarily due to the presence of discrete peaks not indicative of gasoline.
e = DTSC recommended action level for drinking water; MCL not established

Table 2B. Analytic Results for Ground Water - Volatile Organic Compounds - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Well ID	Date Sampled	Depth to Water (ft)	TCE	TCA	PCE	Cloroform	cis-1,2-DCE	trans-1,2-DCE	1,2-DCA	Carbon Disulfate	Vinyl Chloride
			<----------parts per billion (µg/l)---------->								
S-1	09/04/87[a]	---	---	---	---	---	---	---	---	---	---
	09/11/89	4.29	ND	ND	ND	ND	ND	ND	ND	ND	ND
	04/11/90	4.00	<0.4	<0.4	<0.4	1.7	<0.4	<0.4	<0.4	---	<0.4
	07/10/90	4.25	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	---	<2
	10/09/90	4.96	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<2
	01/07/94	4.19	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<0.5
	01/07/94[dup]	4.19	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<0.5
MW-1	04/11/90	5.23	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	---	<0.4
	07/10/90	5.40	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	---	<2
	10/09/90	5.61	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	---	<2
	01/07/94	5.26	---	---	---	---	---	---	---	---	---
MW-2	04/11/90	4.51	1.2	<0.4	<0.4	4.5	<0.4	16	<0.4	---	<2
	07/10/90	4.61	0.93	<0.4	<0.4	1.7	<0.4	11	0.44	---	<2
	10/09/90	4.74	1.3	<0.5	1.6	15	46	6.7	<0.5	---	2.5
	01/17/91[b]	4.73	1.2	<0.5	0.6	2.6	74	12	0.5	---	3.0
	04/09/91	4.09	<5	<5	<5	<5	64	<5	<5	<0.5	<10
	07/10/91	4.66	<0.5	<0.5	6.9	43	<0.5	<0.5	<0.5	14	<10
	10/09/91	4.81	1.9	<1	28	7.4	54	16	<1	---	1.7
	01/24/92	4.66	2.5	<0.5	7.0	19	16	4.3	0.6	---	<0.5
	04/23/92	4.51	<3	<3	3.0	<3	84	18	<3	---	<3
	07/01/92	4.57	2.0	<1	2.0	<1	54	14	<1	---	1.0
	10/92/92	4.80	1.0	<1	<1	<1	61	12	<1	---	<1
	01/05/93	4.39	1.7	<0.5	2.2	<0.5	33	8.7	<0.5	---	.67
	04/08/93	4.15	1.3	<1	<1	<1	38	7.8	<1	---	<1
	07/20/93	4.40	2.4	<1	4.7	2.3	43	10	<0.5	---	<0.5
	10/15/93	4.38	<2.5	<2.5	<2.5	<2.5	110	25	<2.5	---	<2.5
	01/07/94	4.34	3.8	<0.5	14.0	8.9	29	5.4	<0.5	---	<0.5
	04/13/94	**4.29**	**4.3**	**<1.3**	**5.7**	**2.9**	**76**	**14**	**<1.3**	---	---
BH-C	12/17/93	5.0	<2	<2	<2	<2	<2	<2	<2	---	<2
BH-D	12/17/93	5.0	<2	<2	<2	<2	<2	<2	<2	---	<2
BH-E	12/17/93	5.5	<2	<2	<2	<2	<2	<2	<2	---	<2
DTSC MCLs			5	200	5	NE	6	10	5	NE	0.5

-- Table 2B continues on next page --

Table 2B. Analytic Results for Ground Water - Volatile Organic Compounds - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California (continued)

Abbreviations:

TCE = Trichloroethene by EPA Method 601/8010 or 8240
TCA = 1,1,1-Trichloroethane by EPA Method 601/8010 or 8240
PCE = Tetrachloroethene by EPA Method 601/8010 or 8240
cis-1,2-DCE = cis-1,2-Dichloroethene by EPA Method 601/8010 or 8240
trans-1,2-DCE = trans-1,2-Dichloroethene by EPA Method 601/8010 or 8240
--- = Not analyzed
<n = Not detected above detection limit of n ppb
1,2-DCA = 1,2 dichloroethane by EPA Method 601/8010 or 8240
DTCS MCLs = Department of Toxic Substance control maximum contaminant levels
NE = DTSC MCL not established
ND = Analyte not detected, detection limit not known

Notes:

a = 7.0 ppb unknown alcohol and 270 ppb acetone detected
b = 5.0 ppb chlorobenzene detected

ATTACHMENT A

BTS GROUND WATER MONITORING REPORT

BLAINE
TECH SERVICES INC.

985 TIMOTHY DRIVE
SAN JOSE, CA 95133
(408) 995-5535
FAX (408) 293-8773

April 28, 1994

Shell Oil Company
P.O. Box 5278
Concord, CA 94520-9998

Attn: Daniel T. Kirk

SITE:
Shell WIC #204-0072-0502
2160 Otis Drive
Alameda, California

QUARTER:
2nd quarter of 1994

QUARTERLY GROUNDWATER SAMPLING REPORT 940413-L-1

This report contains data collected during routine inspection, gauging and sampling of groundwater monitoring wells performed by Blaine Tech Services, Inc. in response to the request of the consultant who is overseeing work at this site on behalf of our mutual client, Shell Oil Company. Data collected in the course of our field work is presented in a TABLE OF WELL GAUGING DATA. The field information was collected during our preliminary gauging and inspection of the wells, the subsequent evacuation of each well prior to sampling, and at the time of sampling.

Measurements taken include the total depth of the well and the depth to water. The surface of water was further inspected for the presence of immiscibles which may be present as a thin film (a sheen on the surface of the water) or as a measurable free product zone (FPZ). At intervals during the evacuation phase, the purge water was monitored with instruments that measure electrical conductivity (EC), potential hydrogen (pH), temperature (degrees Fahrenheit), and turbidity (NTU). In the interest of simplicity, fundamental information is tabulated here, while the bulk of the information is turned over directly to the consultant who is making professional interpretations and evaluations of the conditions at the site.

STANDARD PROCEDURES

Evacuation

Groundwater wells are thoroughly purged before sampling to insure that the sample is collected from water that has been newly drawn into the well from the surrounding geologic formation. The selection of equipment to evacuate each well is based on the physical characteristics of the well and what is known about the performance of the formation in which the well has been installed. There are several suitable devices which can be used for evacuation. The most commonly employed devices are air or gas actuated pumps, electric submersible pumps, and hand or mechanically actuated bailers. Our personnel frequently employ USGS/Middleburg positive displacement pumps or similar air actuated pumps which do not agitate the water standing in the well.

Normal evacuation removes three case volumes of water from the well. More than three case volumes of water are removed in cases where more evacuation is needed to achieve stabilization of water parameters and when requested by the local implementing agency. Less water may be removed in cases where the well dewaters and does not recharge to 80% of its original volume within two hours and any additional time our personnel have reason to remain at the site. In such cases, our personnel return to the site within twenty four hours and collect sample material from the water which has recharged into the well case.

Decontamination

All apparatus is brought to the site in clean and serviceable condition. The equipment is decontaminated after each use and before leaving the site. Effluent water from purging and on-site equipment cleaning is collected and transported to Shell's Martinez Manufacturing Complex in Martinez, California.

Free Product Skimmer

The column headed, VOLUME OF IMMISCIBLES REMOVED (ml) is included in the TABLE OF WELL GAUGING DATA to cover situations where a free product skimming device must be removed from the well prior to gauging. Skimmers are installed in wells with a free product zone on the surface of the water. The skimmer is a free product recovery device which often prevents normal well gauging and free product zone measurements. The 2.0" and 3.0" PetroTraps fall into the category of devices that obstruct normal gauging. In cases where the consultant elects to have our personnel pull the skimmers out of the well and gauge the well, our personnel perform the additional task of draining the accumulated free product out of the PetroTrap before putting it back in the well. This

recovered free product is measured and logged in the VOLUME OF IMMISCIBLES REMOVED column. Gauging at such sites is performed in accordance with specific directions from the professional consulting firm overseeing work at the site on Shell's behalf.

Sample Containers

Sample material is collected in specially prepared containers which are provided by the laboratory that performs the analyses.

Sampling

Sample material is collected in stainless steel bailer type devices normally fitted with both a top and a bottom check valve. Water is promptly decanted into new sample containers in a manner which reduces the loss of volatile constituents and follows the applicable EPA standard for handling volatile organic and semi-volatile compounds.

Following collection, samples are promptly placed in an ice chest containing prefrozen blocks of an inert ice substitute such as Blue Ice or Super Ice. The samples are maintained in either an ice chest or a refrigerator until delivered into the custody of the laboratory.

Sample Designations

All sample containers are identified with a site designation and a discrete sample identification number specific to that particular groundwater well. Additional standard notations (e.g. time, date, sampler) are also made on the label.

Chain of Custody

Samples are continuously maintained in an appropriate cooled container while in our custody and until delivered to the laboratory under a standard Shell Oil Company chain of custody. If the samples are taken charge of by a different party (such as another person from our office, a courier, etc.) prior to being delivered to the laboratory, appropriate release and acceptance records are made on the chain of custody (time, date, and signature of the person releasing the samples followed by the time, date and signature of the person accepting custody of the samples).

Hazardous Materials Testing Laboratory

The samples obtained at this site were delivered to Sequoia Analytical Laboratory in Redwood City, California. Sequoia Analytical Laboratory is a California Department of Health Services certified Hazardous Materials Testing Laboratory and is listed as DOHS HMTL #1210.

Objective Information Collection

Blaine Tech Services, Inc. performs specialized environmental sampling and documentation as an independent third party. In order to avoid compromising the objectivity necessary for the proper and disinterested performance of this work, Blaine Tech Services, Inc. performs no consulting and does not become involved in the marketing or installation of remedial systems of any kind. Blaine Tech Services, Inc. is concerned only with the generation of objective information, not with the use of that information to support evaluations and recommendations concerning the environmental condition of the site. Even the straightforward interpretation of objective analytical data is better performed by interested regulatory agencies, and those engineers and geologists who are engaged in the work of providing professional opinions about the site and proposals to perform additional investigation or design remedial systems.

Reportage

Submission of this report and the attached laboratory report to interested regulatory agencies is handled by the consultant in charge of the project. Any professional evaluations or recommendations will be made by the consultant under separate cover.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/lp

attachments: table of well gauging data
chain of custody
certified analytical report

cc: Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608-2411
ATTN: Michael Asport

TABLE OF WELL GAUGING DATA

WELL I.D.	DATA COLLECTION DATE	MEASUREMENT REFERENCED TO	QUALITATIVE OBSERVATIONS (sheen)	DEPTH TO FIRST IMMISCIBLES LIQUID (FPZ) (feet)	THICKNESS OF IMMISCIBLES LIQUID ZONE (feet)	VOLUME OF IMMISCIBLES REMOVED (ml)	DEPTH TO WATER (feet)	DEPTH TO WELL BOTTOM (feet)
S-1	4/13/94	TOC	--	NONE	--	--	4.03	18.77
MW-1	4/13/94	TOC	--	NONE	--	--	5.01	16.47
MW-2	4/13/94	TOC	--	NONE	--	--	4.29	17.06

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No: 940413-L1

Date: 4/13/94
Page 1 of 1

Site Address: 2160 Otis Drive, Alameda

WIC#: 204-0072-0502

Shell Engineer: Dan Kirk — Phone No.: (510) 675-6168 Fax #: 675-6160

Consultant Name & Address: Blaine Tech Services, Inc. 985 Timothy Drive San Jose, CA 95133

Consultant Contact: Jim Keller — Phone No.: (408) 995-5535 Fax #: 293-8773

Comments:

Sampled by: [signature]

Printed Name: LAD B OLVER

LAB: ~~Anametrix~~ SEQUOIA

Sample ID	Date	Sludge	Soil	Water	Air	No. of cont.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Combination TPH 8015 & BTEX 8020	EDA 601		Asbestos	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
MW-2	4/13			X		6						X	X							
TB.	4/13			X		2						X								

CHECK ONE (1) BOX ONLY — C/D? — TURN AROUND TIME

	C/D?	TURN AROUND TIME
Quarterly Monitoring	☒ 4441	24 hours ☐
Site Investigation	☐ 4441	48 hours ☐
Soil Closure/Disposal	☐ 4442	15 days ☒ (Normal)
Water Closure/Disposal	☐ 4443	Other ☐ ____
Soil/Air Rem. or Sys. O & M	☐ 4442	
Water Rem. or Sys. O & M	☐ 4443	HOLD: Notify lab as soon as possible of 24/48 hr. TAT.
Other	☐	

Relinquished By (signature)	Printed Name	Date	Time	Received (signature)	Printed Name	Date	Time
[signature]	LAD B OLVER	4/13/94		[signature]	Greg Fulcher	4-14-94	0900
Relinquished By (signature):	Printed Name:	Date:	Time:	Received (signature):	Printed Name:	Date:	Time:
Relinquished By (signature):	Printed Name:	Date:	Time:	Received (signature):	Printed Name:	Date:	Time:

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Blaine Tech Services, Inc.
985 Timothy Drive
San Jose, CA 95133
Attention: Jim Keller

Project: 940413-L1, Shell 2160 Otis Drive

Enclosed are the results from 2 water samples received at Sequoia Analytical on April 14,1994. The requested analyses are listed below:

SAMPLE #	SAMPLE DESCRIPTION	DATE OF COLLECTION	TEST METHOD
4D56401	Water, MW-2	4/13/94	EPA 5030/8015 Mod./8020 EPA 601
4D56402	Water, TB	4/13/94	EPA 5030/8015 Mod./8020

Please contact me if you have any questions. In the meantime, thank you for the opportunity to work with you on this project.

Very truly yours,

SEQUOIA ANALYTICAL

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
1900 Bates Avenue, Suite L, Concord, CA 94520, (510) 686-9600, FAX (510) 686-9689
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Blaine Tech Services, Inc.	Client Project ID:	940413-L1, Shell 2160 Otis Drive	Sampled:	Apr 13, 1994
985 Timothy Drive	Sample Matrix:	Water	Received:	Apr 14, 1994
San Jose, CA 95133	Analysis Method:	EPA 5030/8015 Mod./8020	Reported:	Apr 26, 1994
Attention: Jim Keller	First Sample #:	4D56401		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 4D56401 MW-2	Sample I.D. 4D56402 TB
Purgeable Hydrocarbons	50	N.D.	N.D.
Benzene	0.50	14	N.D.
Toluene	0.50	N.D.	N.D.
Ethyl Benzene	0.50	N.D.	N.D.
Total Xylenes	0.50	N.D.	N.D.
Chromatogram Pattern:		C6	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0
Date Analyzed:	4/16/94	4/16/94
Instrument Identification:	GCHP-17	GCHP-17
Surrogate Recovery, %: (QC Limits = 70-130%)	107	87

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Suzanne Chin
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Blaine Tech Services, Inc.	Client Project ID:	940413-L1, Shell 2160 Otis Drive	Sampled:	Apr 13, 1994
985 Timothy Drive	Sample Descript:	Water, MW-2	Received:	Apr 14, 1994
San Jose, CA 95133	Analysis Method:	EPA 601	Analyzed:	Apr 20, 1994
Attention: Jim Keller	Lab Number:	4D56401	Reported:	Apr 26, 1994

PURGEABLE HALOCARBONS (EPA 601)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	1.3	N.D.
Bromoform	1.3	N.D.
Bromomethane	2.5	N.D.
Carbon tetrachloride	1.3	N.D.
Chlorobenzene	1.3	N.D.
Chloroethane	2.5	N.D.
2-Chloroethylvinyl ether	2.5	N.D.
Chloroform	1.3	2.9
Chloromethane	2.5	N.D.
Dibromochloromethane	1.3	N.D.
1,3-Dichlorobenzene	1.3	N.D.
1,4-Dichlorobenzene	1.3	N.D.
1,2-Dichlorobenzene	1.3	N.D.
1,1-Dichloroethane	1.3	N.D.
1,2-Dichloroethane	1.3	N.D.
1,1-Dichloroethene	1.3	N.D.
cis-1,2-Dichloroethene	1.3	76
trans-1,2-Dichloroethene	1.3	14
1,2-Dichloropropane	1.3	N.D.
cis-1,3-Dichloropropene	1.3	N.D.
trans-1,3-Dichloropropene	1.3	N.D.
Methylene chloride	13	N.D.
1,1,2,2-Tetrachloroethane	1.3	N.D.
Tetrachloroethene	1.3	5.7
1,1,1-Trichloroethane	1.3	N.D.
1,1,2-Trichloroethane	1.3	N.D.
Trichloroethene	1.3	4.3
Trichlorofluoromethane	1.3	N.D.
Vinyl chloride	2.5	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Suzanne Chin
Project Manager

Sequoia Analytical

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819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

Blaine Tech Services, Inc.
985 Timothy Drive
San Jose, CA 95133
Attention: Jim Keller

Client Project ID: 940413-L1, Shell 2160 Otis Drive
Matrix: Liquid
QC Sample Group: 4D56401-02

Reported: Apr 26, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A. Maralit	A. Maralit	A. Maralit	A. Maralit
MS/MSD Batch#:	4D72104	4D72104	4D72104	4D72104
Date Prepared:	-	-	-	-
Date Analyzed:	4/16/94	4/16/94	4/16/94	4/16/94
Instrument I.D.#:	GCHP-17	GCHP-17	GCHP-17	GCHP-17
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	100	100	100	103
Matrix Spike Duplicate % Recovery:	100	100	100	103
Relative % Difference:	0.0	0.0	0.0	0.0
LCS Batch#:	-	-	-	-
Date Prepared:	-	-	-	-
Date Analyzed:	-	-	-	-
Instrument I.D.#:	-	-	-	-
LCS % Recovery:	-	-	-	-
% Recovery Control Limits:	71-133	72-128	72-130	71-120

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL

Suzanne Chin
Project Manager

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
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Blaine Tech Services, Inc.
985 Timothy Drive
San Jose, CA 95133
Attention: Jim Keller

Client Project ID: 940413-L1, Shell 2160 Otis Drive
Matrix: Liquid
QC Sample Group: 4D56401

Reported: Apr 26, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloro-ethene	Trichloro-ethene	Chloro-benzene
Method:	EPA 601	EPA 601	EPA 601
Analyst:	D. George	D. George	D. George
MS/MSD Batch#:	4D41412	4D41412	4D41412
Date Prepared:	4/19/94	4/19/94	4/19/94
Date Analyzed:	4/19/94	4/19/94	4/19/94
Instrument I.D.#:	GCHP-16	GCHP-16	GCHP-16
Conc. Spiked:	25 µg/L	25 µg/L	25 µg/L
Matrix Spike % Recovery:	132	104	108
Matrix Spike Duplicate % Recovery:	88	88	92
Relative % Difference:	40	17	16
LCS Batch#:	-	-	-
Date Prepared:	-	-	-
Date Analyzed:	-	-	-
Instrument I.D.#:	-	-	-
LCS % Recovery:	-	-	-
% Recovery Control Limits:	28-167	35-146	38-150

SEQUOIA ANALYTICAL

Suzanne Chin
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

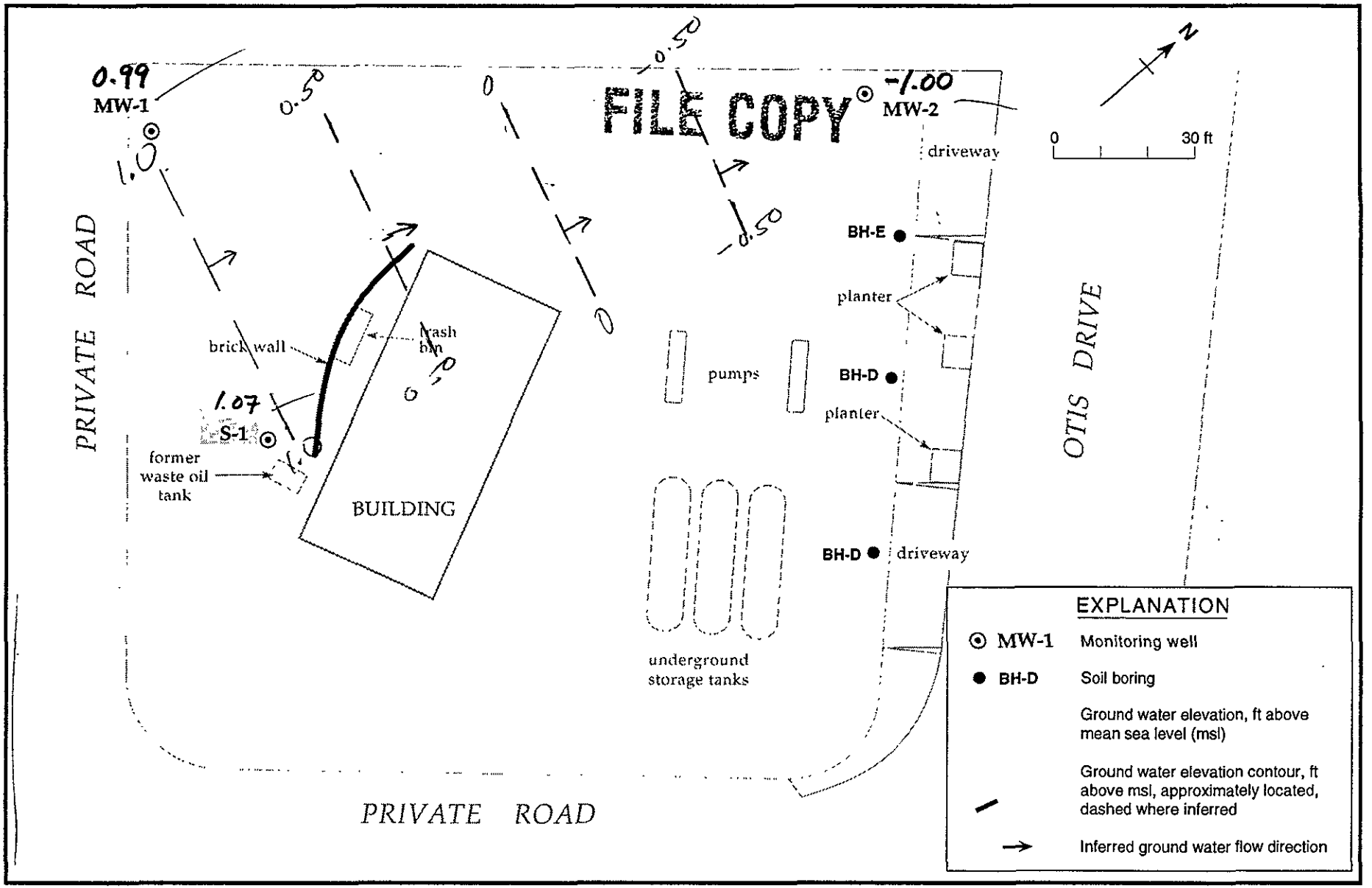

Figure 2. Monitoring Well Locations, Soil Boring Locations and Ground Water Elevation Contours - March 13, 1994 - Shell Service Station WIC #204-0072-2160, 2160 Otis Drive, Alameda, California