Weiss Associates

92 APR 21 AM 8:20

TRANSMITTAL LETTER

FROM: Teresa McClish **DATE:** April 17, 1992

TO: ~~Paul Smith~~ Jennifer Eberle
Alameda County Health Department
Hazardous Materials Department
80 Swan Way, Room 200
Oakland, California 94621

VIA:
- x First Class Mail
- ___ Fax ___ pages
- ___ UPS (Surface)
- ___ Federal Express
- ___ Courier

SUBJECT: CALWATER reports for Shell Oil Company. **JOB:** 81-463-02

AS:
- ___ We discussed on the telephone on _____
- ___ You requested _____
- ___ We believe you may be interested
- x Is required

WE ARE SENDING:
- x Enclosed
- ___ Under Separate Cover Via _____

Copies of 1st quarter CALWATER reports that were sent to the RWQCB for Shell sites in your jurisdiction.

FOR:
- x Your information
- ___ Your use
- ___ Your review & comments
- ___ Return to you

PLEASE:
- x Keep this material
- ___ Return within 2
- ___ Acknowledge receipt

cc: Kurt Miller
Shell Oil Company
P.O. Box 4023
Concord, CA 94524

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SHELL OIL CORPORATION

Stid 1107

QUARTERLY REPORT TO

THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

Piedmont Shell

Date of Report: April 16, 1992

Service Station WIC Number:	204-6001-0109
Site Address (Number, Street):	29 Wildwood
City:	Piedmont 94610
County:	Alameda

Actions in the past three months:

Collected 1st quarter ground water samples and submited 1st quarter monitoring report.

Actions planned for next three months:

Submit 2nd quarter monitoring report.

Soil Contamination defined? Y\N	N
Soil Clean-up in progress? Y\N	N
Free-product plume defined? Y\N	NA
Free-product cleanup in progress? Y\N	NA
Dissolved constituent plume defined? Y\N	Y
Dissolved constituent cleanup in progress? Y\N	N

Contractor: Weiss Associates, Emeryville, California.

Weiss Associates Environmental and Geologic Services

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

March 24, 1992

ST ID 1107

Mr. Paul Smith
Alameda County Department
of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621-1426

Re: Shell Service Station
WIC #204-6001-0109
29 Wildwood Avenue
Piedmont, California
WA Job #81-463-01

Dear Mr. Smith:

This letter describes recently completed and the 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 first quarter 1992, and proposed work for the second quarter 1992.

First Quarter 1992 Activities

- EMCON Associates of San Jose, California measured ground water depths and collected water samples from the six site wells. EMCON's report describing these activities and the analytic results for ground water are included as Attachment A.

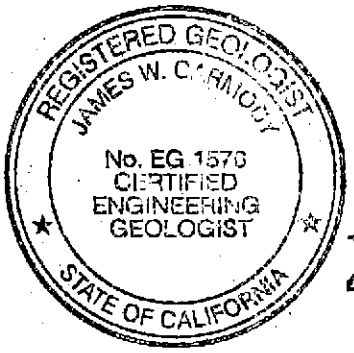
- Weiss Associates (WA) prepared a ground water elevation contour map (Figure 2) using EMCON Associates' ground water depth measurements (Table 1). Current and historical ground water analytic results are summarized in Table 2. Ground water elevation contour maps for the past year are included as Figure 3.

Anticipated Second Quarter 1992 Activities

During the second quarter 1992 WA will submit the second quarter report presenting the results of ground water sampling and ground water level measurements. The report will include tabulated chemical analytic results, a ground water elevation contour map and ground water elevation contour maps for the past year.

Please call if you have any questions.

Sincerely,
Weiss Associates



Jeni Martin
Staff Geologist

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

JM/JWC:fcr

E:\ALL\SHELL\450\463QMMA2.WP

Attachments: Figures
Tables
A - EMCON Associates Ground Water Monitoring Report

cc: Kurt Miller, Shell Oil Company, P.O. Box 5278, Concord, California 94520-9998
Lester Feldman, Regional Water Quality Control Board - San Francisco Bay, 2101 Webster Street, Suite 500, Oakland, California 94612

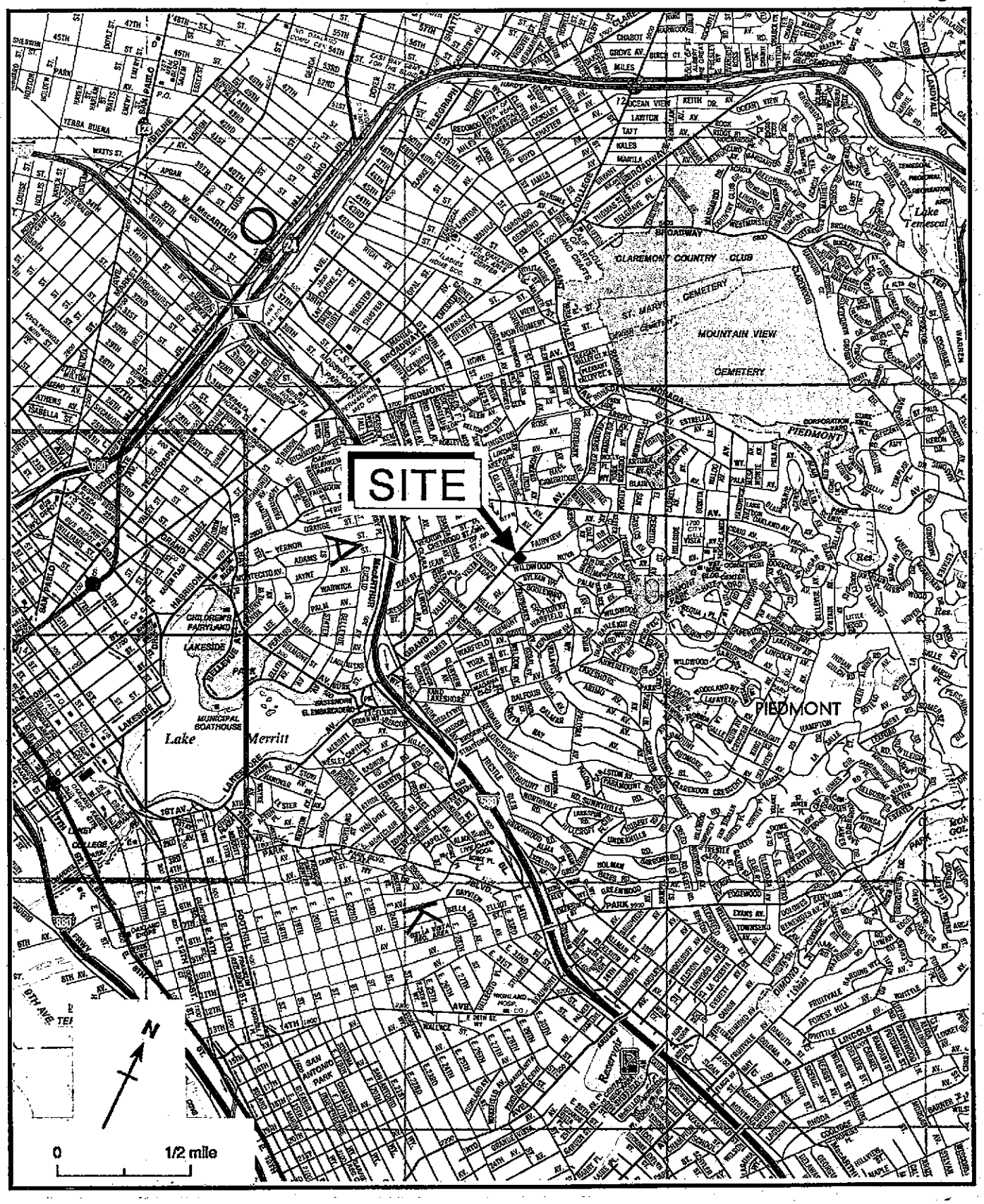


Figure 1. Site Location Map - Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

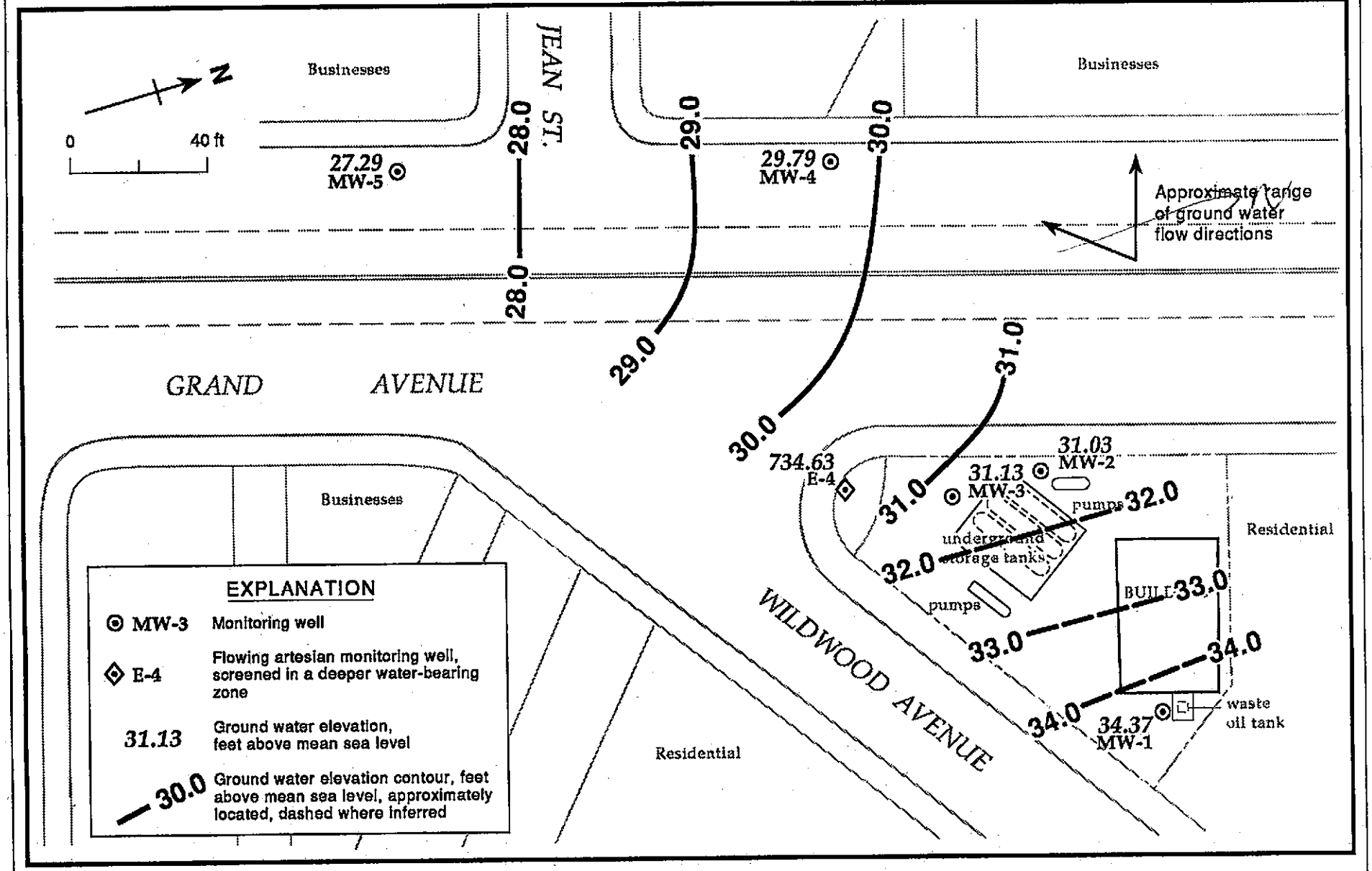


Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - January 20, 1992 - Shell Service Station, WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

3/25/92

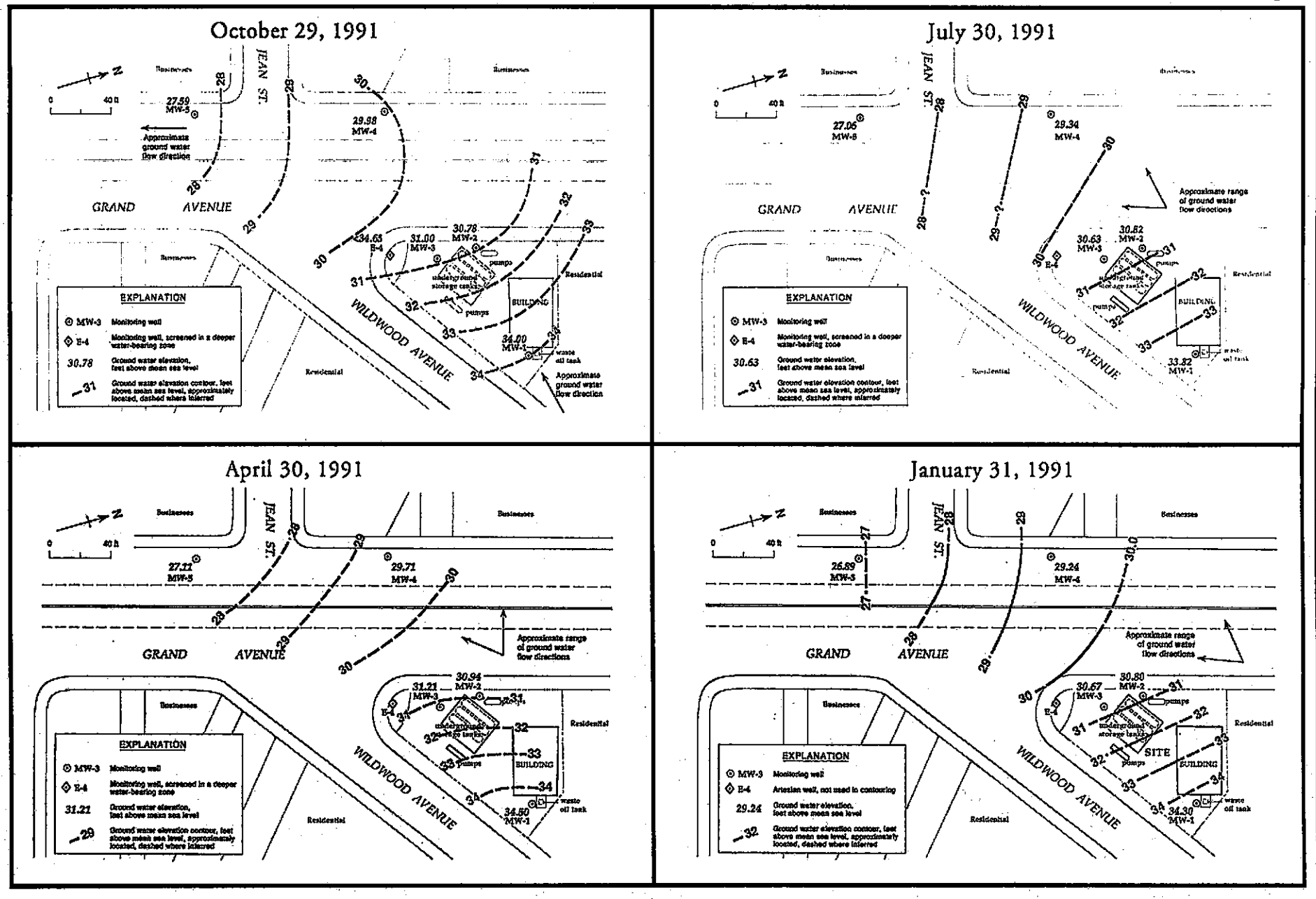


Figure 3. Previous Ground Water Elevation Contour Maps - Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

3/10/92

TABLE 2. Ground Water Elevations, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground water Elevation (ft above msl)
MW-1	07/12/89	37.96	2.76	35.20
	01/30/90		3.10	34.86
	04/27/90		3.24	34.72
	07/31/90		4.26	33.70
	10/30/90		4.25	33.71
	01/31/91		3.66	34.30
	04/30/91		3.46	34.50
	07/30/91		4.14	33.82
	10/29/91		3.96	34.00
	01/20/92		3.59	34.37
MW-2	07/12/89	34.89	3.66	31.23
	01/30/90		3.49	31.40
	04/27/90		3.79	31.10
	07/31/90		4.03	30.86
	10/30/90		4.21	30.68
	01/31/91		4.09	30.80
	04/30/91		3.95	30.94
	07/30/91		4.07	30.82
	10/29/91		4.11	30.78
	01/20/92		3.86	31.03
MW-3	07/12/89	35.00	3.83	31.17
	01/30/90		3.24	31.76
	04/27/90		4.02	30.98
	07/31/90		4.31	30.69
	10/30/90		4.52	30.48
	01/31/91		4.33	30.67
	04/30/91		3.79	31.21
	07/30/91		4.37	30.63
	10/29/91		4.00	31.00
	01/20/92		3.87	31.13
MW-4	01/30/90	33.73	4.50	29.23
	04/27/90		3.62	30.11
	07/31/90		4.19	29.54
	10/30/90		4.19	29.54
	01/31/91		4.49	29.24
	04/30/91		4.02	29.71
	07/30/91		4.39	29.34
	10/29/91		3.75	29.98
	01/20/92		3.94	29.79

-- Table 2 continues on next page --

TABLE 2. Ground Water Elevations, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California (continued)

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground water Elevation (ft above msl)
MW-5	01/30/90	31.38	7.12	24.26
	04/27/90		4.19	27.19
	07/31/90		4.09	27.29
	10/30/90		4.39	26.99
	01/31/91		4.49	26.89
	04/30/91		4.27	27.11
	07/30/91		4.32	27.06
	10/29/91		3.79	27.59
	01/20/92		4.09	27.29
E-4	07/12/89	34.63	a	>39.13
	01/30/90		b	>34.63
	04/27/90		b	>34.63
	07/31/90		b	>34.63
	10/30/90		b	>34.63
	01/31/91		b	>34.63
	04/30/91		b	>34.63
	07/30/91		b	>34.63
	10/29/91		b	>34.63
	01/20/92		b	>34.63

a = Well E-4 is a flowing artesian well. The potentiometric surface was greater than 4.5 ft above ground surface.

b = Well E-4 potentiometric surface was higher than the top of well casing.

Table 3. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

Well ID	Date Sampled	Depth to Water (ft)	TPH-G	B	E	T	X	HVOCs
			<----------parts per million (mg/L)---------->					
MW-1	07/12/89[a]	2.76	<0.05	<0.0005	<0.001	<0.001	<0.003	b
	01/30/90	3.10	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/27/90	3.24	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/31/90	4.26	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/30/90	4.25	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/31/91	3.66	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/30/91	3.46	<0.05	0.0008	0.0006	<0.0005	0.0012	---
	07/30/91	4.14	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/29/91	3.96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/20/92*	**3.59**	**<0.03**	**<0.0003**	**<0.0003**	**<0.0003**	**<0.0003**	---
MW-2	07/12/89[a]	3.66	0.060	0.0027	<0.001	<0.001	<0.003	b
	01/30/90	3.49	<0.05	0.0066	0.00054	<0.0005	0.00093	---
	04/27/90	3.79	0.060	0.0021	<0.0005	<0.0005	<0.0005	---
	07/31/90	4.03	0.070	0.0015	<0.0005	<0.0005	<0.0005	---
	10/30/90	4.21	0.070	<0.0005	<0.0005	0.0007	0.0016	---
	01/31/91	4.09	0.080	<0.0005	0.0009	<0.0005	0.0019	---
	04/30/91	3.95	0.10	0.0059	0.0007	0.0006	0.0020	---
	07/30/91	4.07	<0.05	<0.0005	<0.0005	<0.0007	<0.0005	---
	10/29/91	4.11	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/20/92*	**3.86**	**<0.03**	**<0.00084**	**<0.00041**	**<0.0003**	**<0.00048**	---
MW-3	07/12/89[a]	3.83	3.9	0.38	0.099	0.041	0.030	c
	01/30/90	3.24	5.5	0.44	0.079	0.035	0.13	---
	04/27/90	4.02	4.5	0.31	0.037	0.026	0.11	---
	07/31/90	4.31	3.5	0.21	0.0084	0.017	0.062	---
	10/30/90	4.52	2.3	0.061	<0.0005	<0.0005	0.028	---
	01/31/91	4.33	4.1	0.30	0.019	0.020	0.081	---
	04/30/91	3.79	3.8	0.370	0.0086	0.019	0.060	---
	07/30/91	4.37	3.3	0.160	0.015	0.013	0.087	---
	10/29/91	4.00	1.0	0.035	0.0029	0.0028	0.0081	---
	01/20/92*	**3.87**	**[illegible]**	**[illegible]**	**0.047**	**0.018**	**0.048**	---
MW-4	01/31/90	4.50	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/27/90	3.62	0.13[d]	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/31/90	4.19	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/30/90	4.19	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/31/91	4.49	0.05[d]	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/30/91	4.02	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	e
	07/30/91	4.39	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/29/91	3.75	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/20/92*	**3.94**	**<0.03**	**<0.0003**	**<0.0003**	**<0.0003**	**<0.0003**	---

-- Table 3 continues on next page --

Table 3. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California (continued)

Well ID	Date Sampled	Depth to Water (ft)	TPH-G	B	E	T	X	HVOCs
			<----------parts per million (mg/L)---------->					
MW-5	01/31/90	7.12	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/27/90	4.19	0.21[d]	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/31/90	4.09	0.090	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/30/90	4.39	0.10	0.0008	0.0006	0.0007	0.0014	---
	01/31/91	4.49	0.080[d]	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/30/91	4.27	0.09	<0.0005	<0.0005	<0.0005	<0.0005	f
	07/30/91	4.37	0.09	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/29/91	3.79	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/20/92*	**4.09**	**<0.03**	**<0.0003**	**<0.0003**	**<0.0003**	**<0.0003**	---
E-4	07/12/89[a]	g	<0.05	<0.0005	<0.001	<0.001	<0.003	---
	01/31/90	g	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/27/90	g	0.12[d]	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/31/90	g	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/30/90	g	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/31/91	g	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/30/91	g	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	b
	07/30/91	g	<0.05	<0.0005	<0.0005	0.0006	<0.0005	---
	10/29/91	g	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/20/92*	**g**	**<0.03**	**<0.0003**	**<0.0003**	**<0.0003**	**<0.0003**	---
Trip Blank	07/12/89[a]		<0.05	<0.0005	<0.001	<0.001	<0.003	---
	01/31/90		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/27/90		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/31/90		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/30/90		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/31/91		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	04/30/91		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	07/30/91		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
	10/29/91		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
Bailer Blank	04/27/90		0.11[d]	<0.0005	<0.0005	<0.0005	<0.0005	---
	01/31/91		<0.05	<0.0005	<0.0005	<0.0005	<0.0005	---
DHS MCLs			NE	0.001	0.680	0.10[h]	1.750	i

-- Table 3 continues on next page --

Table 3. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California (continued)

Abbreviations:

TPH-G = Total Petroleum Hydrocarbons as Gasoline by Modified EPA Method 8015
B = Benzene by EPA Method 602 or 8020
E = Ethylbenzene by EPA Method 602 or 8020
T = Toluene by EPA Method 602 or 8020
X = Xylenes by EPA Method 602 or 8020
HVOCs = Halogenated volatile organic compounds by EPA Method 601 or 624
--- = Not analyzed
NE = Not established
DHS MCLs = California Department of Health Services maximum contaminant levels for drinking water
<n = Not detected above detection limit of n ppm

Notes:

a = Analyzed by International Technology Analytical Services, Inc., San Jose, California.
b = No HVOCs detected.
c = BETX detected at 0.41, 0.097, 0.036 and 0.30 ppm, respectively, by EPA Method 624.
d = Non-gasoline peak reported as TPH-G by Modified EPA Method 8015.
e = 0.015 ppm tetrachloroethene (PCE), 0.0041 ppm trichlorethene (TCE) and 0.0034 ppm trans-1,2-dichlorethene (DCE) detected
f = 0.220 ppm PCE, 0.022 ppm TCVE and 0.017 ppm DCE detected
g = Artesian well; potentiometric surface above top-of-casing elevation.
h = DTSC recommended action level for drinking water; MCL not established.
i = DTSC MCLs for PCE = 0.005 ppm; TCE = 0.005 ppm; DCE = 0.01 ppm.
* = Samples analyzed by Sequoia Analytical

Analytical Laboratory:

National Environmental Testing Pacific, Inc., Santa Rosa, California

ATTACHMENT A
GROUND WATER MONITORING REPORT AND ANALYTIC REPORT

EMCON ASSOCIATES
Consultants in Waste Management and Environmental Control

February 25, 1992
Project G67-01.01

Mr. David Elias
Weiss Associates
5500 Shellmound Street
Emeryville, California 94608-2411

Re: First Quarter 1992 Ground-water Monitoring Report, 29 Wildwood Avenue, Piedmont, WIC# 204-6001-0109

Dear Mr. Elias:

This letter report presents the results of the first quarter 1992 ground-water monitoring event for the Shell Oil Company (Shell) service station at 29 Wildwood Avenue, Piedmont. Monitoring at this site is being conducted on a quarterly basis.

GROUND-WATER LEVEL SURVEY

On January 20, 1992, static water levels were measured in all site wells before purging and sampling. Water levels were measured to 0.01 foot using an oil/water interface probe. Water-level measurements are presented in Table 1.

SAMPLING AND ANALYSIS

Ground-water samples were collected on January 20, 1992 from monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5 and E-4. A site map, including the monitoring well locations, is attached, as provided by Weiss Associates. Ground-water monitoring wells were purged before sampling using a polyvinyl chloride bailer, a low-flow submersible pump, or a Teflon® bailer. Samples were collected using a Teflon bailer. The procedures used to purge and sample ground-water monitoring wells were detailed in our November 14, 1991 Proposal to Conduct Ground-water Monitoring for Shell Oil Company, and are attached for your information. Wells MW-2, MW-4, and E-4 were evacuated to dryness after the removal of fewer than three casing volumes. These wells were allowed to recharge for up to 24 hours. Samples were collected as soon as the wells had recharged to a level sufficient for sample collection.

Samples were cooled with ice packs and delivered, under chain-of-custody control, to a Shell-approved analytical laboratory for analysis.

ANALYTICAL RESULTS

Analytical results are summarized in Table 2. Certified analytical reports and chain-of-custody records are included as attachments to this letter.

If you have any questions, please call.

Very truly yours,

EMCON Associates

Sheila R. Kruse
Environmental Sampling Coordinator

Phillip R. Graham
Environmental Sampling Supervisor

SRK/PRG:srk

Attachments: Table 1 Monitoring Well Field Measurement Data
Table 2 Summary of Analytical Results
Attachments: Site Map, Sampling and Analysis Procedures
Certified Analytical Reports and
Chain-of-Custody Records

cc. F. Kurt Miller, Shell Oil Company

Table 1

EMCON Associates
Project: G67-01.01
2/20/92

MONITORING WELL FIELD MEASUREMENT DATA
SHELL OIL COMPANY
29 Wildwood Avenue, Piedmont
FIRST QUARTER 1992

Well ID	Sample Date	Measured total depth (ft)	Depth to water (ft.)	Depth to Floating Product (ft.)	Floating Product Thickness (ft.)	pH (std. units)	Electrical Conductivity (µmhos/cm)	Temperature (degrees F)	Turbidity (NTU)
MW-1	1/20/92	13.1	3.59	--	--	6.86	931	61.2	60.3
MW-2	1/20/92	11.5	3.86	--	--	6.87	678	63.6	7.8
MW-3	1/20/92	9.0	3.87	--	--	7.07	1,007	58.6	>200
MW-4	1/20/92	12.3	3.94	--	--	6.89	753	61.2	69.2
MW-5	1/20/92	16.0	4.09	--	--	6.85	870	62.4	24.3
E-4	1/20/92	34.2	0.0	--	--	7.61	1,234	61.9	34.0

SamplingDoc.G67-07.01

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates
1433 N. Market Blvd.
Sacramento, CA 95834
Attention: Sheila Kruse

Project: 29 Wildwood Ave., Piedmont Shell

Enclosed are the results from 6 water samples received at Sequoia Analytical on January 21,1992. The requested analyses are listed below:

2012858	Water, MW-1	1/20/92	EPA 5030/8015/8020
2012859	Water, MW-2	1/20/92	EPA 5030/8015/8020
2012860	Water, MW-3	1/20/92	EPA 5030/8015/8020
2012861	Water, MW-4	1/20/92	EPA 5030/8015/8020
2012862	Water, MW-5	1/20/92	EPA 5030/8015/8020
2012863	Water, E-4	1/20/92	EPA 5030/8015/8020

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

Maile A. Springer
Project Manager

Table 2

EMCON Associates
Project: G67-01.01
2/20/92

SUMMARY OF ANALYTICAL RESULTS
SHELL OIL COMPANY
29 Wildwood Avenue, Piedmont
FIRST QUARTER 1992

Sample Type: Water
Units: ug/l (ppb), unless noted

Sample Designation	Sample Date	Low/Medium BP Hydrocarbons	Benzene	Toluene	Ethylbenzene	Xylenes
MW-1	1/20/92	ND	ND	ND	ND	ND
MW-2	1/20/92	ND	0.84	ND	0.41	0.48
MW-3	1/20/92	6,900	380	18	47	48
MW-4	1/20/92	ND	ND	ND	ND	ND
MW-5	1/20/92	ND	ND	ND	ND	ND
E-4	1/20/92	ND	ND	ND	ND	ND

ND = Not detected.

SamplingDoc.G67-01.01

SAMPLING PROCEDURES

The sampling and analysis procedures for water-quality monitoring programs are contained in this attachment. The procedures will provide for consistent and reproducible sampling methods; proper application of analytical methods; accurate and precise analytical results; and finally, these procedures will provide guidelines so that the overall objectives of the monitoring program are achieved.

The following documents have been used as guidelines for developing these procedures:

- *Procedures Manual for Ground-water Monitoring at Solid Waste Disposal Facilities*, U.S. Environmental Protection Agency (EPA)-530/SW-611, August 1977
- *RCRA Ground-water Monitoring Technical Enforcement Guidance Document*, OSWER 9950.1, September 1986
- *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, EPA SW-846, 3rd edition, November 1986
- *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*, EPA-600/4-82-057, July 1982
- *Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-79-020, revised March 1983
- *Leaking Underground Fuel Tank Field Manual*, California State Water Resources Control Board, revised October 1989

Sample Collection

Sample collection procedures include equipment cleaning, water-level and total well-depth measurements, and well purging and sampling.

Equipment Cleaning

Before the sampling event is started, equipment that will be placed in the well or will come in contact with ground water will be disassembled and cleaned thoroughly with detergent water, and then steam cleaned with deionized water. During field sampling, equipment surfaces that are placed in the well or contact ground water will be steam cleaned with deionized water before the next well is purged or sampled.

Water-level, Floating Hydrocarbon, and Total Well-depth Measurements

Before purging and sampling occurs, the depth to water, floating hydrocarbon thickness, and the total well depth will be measured using an oil/water interface measuring system. The oil/water interface measuring system consists of a probe that emits a continuous audible tone when immersed in a nonconductive fluid, such as oil or gasoline, and an intermittent tone when immersed in a conductive fluid, such as water. Liquid levels will be recorded relative to the tone emitted at the ground-water surface. The probe will be decontaminated by rinsing with a nonphosphate detergent solution and then double rinsing with deionized water or steam cleaning after each use. Alternatively, an electric sounder and a bottom-filling, clear Teflon® bailer may be used to record floating hydrocarbon thickness and depth to water.

The electric sounder is a transistorized instrument that uses a reel-mounted, two-conductor, coaxial cable that connects the control panel to the sensor. Cable markings are stamped at 1 foot intervals. The water level will be measured by lowering the sensor into the monitoring well. A low-current circuit is completed when the sensor contacts the water, which serves as an electrolyte. The current is amplified and fed into an indicator light and audible buzzer, signaling when water has been contacted. A sensitivity control compensates for highly saline or conductive water. The electric sounder will be decontaminated by rinsing with a nonphosphate detergent solution and then double rinsing with deionized water after each

use. The bailer will be lowered to a point just below the liquid level, retrieved, and observed for floating hydrocarbon.

Liquid measurements will be recorded to the nearest 0.01 foot in the field logbook. The ground-water elevation at each monitoring well will be calculated by subtracting the measured depth to water from the surveyed elevation of the top of the well casing. (Every attempt will be made to measure depth to water for all wells on the same day.) Total well depth will then be measured by lowering the sensor to the bottom of the well. Total well depth, used to calculate purge volumes and to determine whether the well screen is partially obstructed by silt, will be recorded to the nearest 0.1 foot in the field logbook.

Well Purging

Before the sampling event, a polyvinyl chloride bailer, low-flow submersible pump, or Teflon bailer will be used to purge standing water in the casing and gravel pack from the monitoring well. Monitoring wells will be purged according to the protocol presented in Figure B-1. In most monitoring wells, the amount of water purged before sampling will be greater than or equal to three casing volumes. Some monitoring wells are expected to be evacuated to dryness after removing fewer than three casing volumes. These low-yield monitoring wells will be allowed to recharge for up to 24 hours. Samples will be obtained as soon as the monitoring wells have recharged to a level sufficient for sample collection. If insufficient water has recharged after 24 hours, the monitoring well will be recorded as dry for the sampling event.

Ground water purged from the monitoring wells will be containerized in 55-gallon drums for subsequent disposal. Drums will be stored on site at a Shell-designated location.

EMCON will arrange for the disposal of the purged ground water and the removal of drums through Crosby and Overton. During storage, drums will be properly labeled with a Shell drum label.

Field measurements of pH, specific conductance, temperature, turbidity and dissolved oxygen (when requested) will be recorded in a waterproof field logbook. Figure B-2 shows an example of the Water Sample Field Data Sheet on which field data are recorded. Field data sheets will be reviewed for completeness by the sampling coordinator after the sampling event is completed.

The pH, specific conductance, temperature, turbidity, and dissolved oxygen meters will be calibrated each day before field activities begin. The calibration will be checked once each day to verify meter performance. Field meter calibrations will be recorded on the Water Sample Field Data Sheet.

Well Sampling

A Teflon bailer will be the only equipment acceptable for well sampling. When samples for volatile organic analysis are being collected, the flow of ground water from the bailer will be regulated to minimize turbulence and aeration. Glass bottles of at least 40-milliliters volume and fitted with Teflon-lined septa will be used in sampling for volatile organics. These bottles will be filled completely to prevent air from remaining in the bottle. A positive meniscus forms when the bottle is completely full. A convex Teflon septum will be placed over the positive meniscus to eliminate air. After the bottle is capped, it is inverted and tapped to verify that it contains no air bubbles. The sample containers for other parameters will be filled, filtered as required, and capped.

When required, dissolved concentrations of metals will be determined using appropriate field filtration techniques. Samples will be filtered by emptying the contents of the Teflon bailer into a pressure transfer vessel. A disposable 0.45-micron acrylic copolymer filter will be threaded onto the transfer vessel at the discharge point, and the vessel will be sealed. Pressure will be applied to the vessel with a hand pump and the filtrate will be directed into the appropriate containers. Each filter will be used once and discarded.

Sample Preservation and Handling

The following section specifies sample containers, preservation methods, and sample handling procedures.

Sample Containers and Preservation

Sample containers vary with each type of analytical parameter. Container types and materials will be selected to be nonreactive with the particular analytical parameter tested.

Sample Handling

Sample containers will be labeled immediately following collection. Samples will be kept cool with cold packs until received by the laboratory. At the time of sampling, each sample will be logged on a Shell chain-of-custody record that will accompany the sample to the laboratory.

Samples will be transferred from the site to a Shell-approved laboratory by the sampling team. Sample shipments from EMCON to laboratories performing the selected analyses routinely occur within 24 hours of sample collection.

Sample Documentation

The following procedures will be used during sampling and analysis to provide chain-of-custody control during sample handling from collection through storage. Sample documentation will include the use of the following:

- a field logbook to document sampling activities in the field
- labels to identify individual samples
- chain-of-custody record sheets for documenting possession and transfer of samples
- laboratory analysis request sheets for documenting analyses to be performed

Field Logbook

In the field, the sampler will record the following information on the Water Sample Field Data Sheet (see Figure B-2) for each sample collected:

- project number
- client's name
- location
- name of sampler
- date and time
- well accessibility and integrity

- pertinent well data (e.g., casing diameter, depth to water, well depth)
- calculated and actual purge volumes
- purging equipment used
- sampling equipment used
- appearance of each sample (e.g., color, sediment)
- results of field analyses (temperature, pH, specific conductance, turbidity)
- general comments

The field logbook will be signed by the sampler and reviewed by the sampling coordinator.

Labels

Sample labels will contain the following information:

- project number
- sample number (i.e., well designation)
- sampler's initials
- date and time of collection
- type of preservative used (if any)

Sampling and Analysis Chain-of-Custody Record

The Shell chain-of-custody record initiated at the time of sampling will contain, at a minimum, the sample designation, sample type, analytical request, date of sampling, and the name of the sampler. The record sheet will be signed, timed, and dated by the sampler when transferring the samples. The number of custodians in the chain of possession will be minimized. A copy of the Shell chain-of-custody record is returned to EMCON with the analytical results.

Ground-water Sampling and Analysis Request Form

A Ground-water Sampling and Analysis Request Form (see Figure B-3) will communicate to the environmental sampler the requirements of the

monitoring event. At a minimum, the Ground-water Sampling and Analysis Request Form includes the following information:

- date scheduled
- site-specific instructions
- specific analytical parameters
- well number
- well specifications (expected total depth, depth to water, and product thickness)

MONITORING WELL PURGING PROTOCOL

EMCON ASSOCIATES

MEASURE AND RECORD DEPTH TO WATER AND WELL TOTAL DEPTH

CHECK FOR FLOATING PRODUCT

YES

DO NOT SAMPLE WELL FOR DISSOLVED CONSTITUENTS.

NO

CALCULATE PURGE VOLUME BY USING THE FOLLOWING EQUATION:

$$P = \pi r^2 h \times 7.48 \times 3$$

where:

- P = calculated purge volume (gallons)
- π = 3.14
- r = radius of well casing in feet
- h = height of water column in feet

EVACUATE WATER FROM WELL EQUAL TO THE CALCULATED PURGE VOLUME WHILE MONITORING GROUND-WATER STABILIZATION INDICATOR PARAMETERS (pH, CONDUCTIVITY, TEMPERATURE) AT INTERVALS OF ONE CASING VOLUME.

WELL EVACUATED TO PRACTICAL LIMITS OF DRYNESS BEFORE REMOVING CALCULATED PURGE VOLUME

NO

FINAL TWO SETS OF GROUND-WATER STABILIZATION INDICATOR PARAMETER MEASUREMENTS MEET THE FOLLOWING CRITERIA:

pH	= ±	0.1 pH units
COND.	= ±	10 %
TEMP.	= ±	1.0 °F

YES

WELL PURGING CRITERIA MET; PROCEED TO WELL SAMPLING

NO

CONTINUE PURGING; EVACUATE ADDITIONAL CASING VOLUME OF WATER, MONITORING INDICATOR PARAMETERS FOR STABILITY.

YES

WELL RECHARGES TO A LEVEL SUFFICIENT FOR SAMPLE COLLECTION WITHIN 24 HOURS OF EVACUATION TO DRYNESS.

YES

FIELD TEST FIRST RECHARGE WATER FOR INDICATOR PARAMETERS, THEN PROCEED TO WELL SAMPLING.

NO

RECORD WELL AS DRY FOR PURPOSES OF SAMPLING.

EMCON Associates

WELL PURGING PROTOCOL

FIGURE B-1

WATER SAMPLE FIELD DATA SHEET

Rev. 1, 3/90

PROJECT NO: _____ SAMPLE ID: _____

PURGED BY: _____ CLIENT NAME: _____

SAMPLED BY: _____ LOCATION: _____

TYPE: Ground Water ____ Surface Water ____ Treatment Effluent ____ Other ____

CASING DIAMETER (inches): 2 ____ 3 ____ 4 ____ 4.5 ____ 6 ____ Other ____

CASING ELEVATION (feet/MSL) : _____ VOLUME IN CASING (gal.) : _____

DEPTH TO WATER (feet) : _____ CALCULATED PURGE (gal.) : _____

DEPTH OF WELL (feet) : _____ ACTUAL PURGE VOL. (gal.) : _____

DATE PURGED: _____ Start(2400) _____ End(2400) _____

DATE SAMPLED: _____ Start(2400) _____ End(2400) _____

TIME (2400 Hr)	VOLUME (gal.)	pH (units)	E.C. (µmhos/cm@ 25° C)	TEMPERATURE (°F)	COLOR (visual)	TURBIDITY (visual)

D. O. (ppm): _____ ODOR: _____ (COBALT 0-100) (NTU 0-200)

FIELD QC SAMPLES COLLECTED AT THIS WELL (i.e. FB-1, X-DUP-1) : _____

PURGING EQUIPMENT

- ____ 2" Bladder Pump
- ____ Centrifugal Pump
- ____ Submersible Pump
- ____ Well Wizard™
- ____ Bailer (Teflon®)
- ____ Bailer (PVC)
- ____ Bailer (Stainless Steel)
- ____ Dedicated

Other: _____

SAMPLING EQUIPMENT

- ____ 2" Bladder Pump
- ____ DDL Sampler
- ____ Dipper
- ____ Well Wizard™
- ____ Bailer (Teflon®)
- ____ Bailer (Stainless Steel)
- ____ Submersible Pump
- ____ Dedicated

Other: _____

WELL INTEGRITY : _____ LOCK # : _____

REMARKS: _____

Meter Calibration: Date: _____ Time: _____ Meter Serial # _____ Temperature _____

(EC 1000 ____ / ____) (DI H20 ____) (pH 7 ____ / ____) (pH 10 ____ / ____) (pH 4 ____ / ____)

SIGNATURE _____ Reviewed by: _____

EMCON Associates

WATER SAMPLE FIELD DATA SHEET

FIGURE B-2

EMCON ASSOCIATES

EMCON ASSOCIATES-Sacramento
WATER SAMPLING AND ANALYSIS REQUEST FORM

PROJECT NAME:

SCHEDULED DATE:

SPECIAL INSTRUCTIONS/CONSIDERATONS:

Project Authorization: _____

Project No. : _____

Task Code: _____

Send Results To: _____

_____

_____

Well Lock Number(s)

☐ **CHECK BOX TO AUTHORIZE DATA ENTRY**

Site Contact: _____ Name _____ Phone #

Well Number or Source Identification	Casing Diameter (inches)	Casing Length (feet)	Depth to Water (feet)	ANALYSES REQUESTED

Laboratory QC Instructions:

NOTE: IT IS VERY IMPORTANT TO INCLUDE A COPY OF PROJECT PROPOSAL AND WELL LOCATION MAP OR SKETCH WITH THIS REQUEST.

EMCON Associates

WATER SAMPLING AND ANALYSIS REQUEST FORM

FIGURE B-3

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates	Client Project ID:	29 Wildwood Ave., Piedmont Shell	Sampled:	Jan 20, 1992
1433 N. Market Blvd.	Matrix Descript:	Water	Received:	Jan 21, 1992
Sacramento, CA 95834	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Jan 22, 1992
Attention: Sheila Kruse	First Sample #:	201-2858	Amended:	Feb 21, 1992

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)
201-2858	MW-1	N.D.	N.D.	N.D.	N.D.	N.D.
201-2859	MW-2	N.D.	0.84	N.D.	0.41	0.48
201-2860	MW-3	6,900	380	18	47	48
201-2861	MW-4	N.D.	N.D.	N.D.	N.D.	N.D.
201-2862	MW-5	N.D.	N.D.	N.D.	N.D.	N.D.
201-2863	E-4	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**30**	**0.30**	**0.30**	**0.30**	**0.30**

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Emcon Associates
1433 N. Market Blvd.
Sacramento, CA 95834
Attention: Sheila Kruse

Client Project ID: 29 Wildwood Ave., Piedmont Shell

QC Sample Group: 2012858 - 63

Amended: Feb 21, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	M.Nipp	M.Nipp	M.Nipp	M.Nipp
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Jan 22, 1992	Jan 22, 1992	Jan 22, 1992	Jan 22, 1992
QC Sample #:	GBLK012292	GBLK012292	GBLK012292	GBLK012292
Sample Conc.:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30
Conc. Matrix Spike:	9.9	9.9	10	30
Matrix Spike % Recovery:	99	99	100	100
Conc. Matrix Spike Dup.:	9.0	9.0	9.3	28
Matrix Spike Duplicate % Recovery:	90	90	93	93
Relative % Difference:	9.5	9.5	7.3	6.9

SEQUOIA ANALYTICAL

Maile A. Springer
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD
Serial No.: _____

Date: 1/15/92
Page 1 of 1

Site Address: 29 Wildwood Ave, Piedmont

WIC#: 204-6001-0109

Shell Engineer: F. Kurt Miller
Phone No. (510) 687-8797
Fax #:

Consultant Name & Address: EMCON Associates 1433 N. Mrkt Blvd, Sacto, CA 95834

Consultant Contact: Sheila Kruse
Phone No. (916) 928-3300
Fax #: 928-3341

Comments:

Sampled By: [signature]
Printed Name: RPark

Analysis Required

LAB: Sequoia

CHECK ONE (1) BOX ONLY	CT/DT
Quarterly Monitoring	[X] 5461
Site Investigation	[ ] 5441
Soil for disposal	[ ] 5442
Water for disposal	[ ] 5443
Air Sample- Sys O&M	[ ] 5452
Water Sample - Sys O&M	[ ] 5453
Other	[ ]

TURN AROUND TIME
- 24 hours [ ]
- 48 hours [ ]
- 15 days [ ] (Normal)
- Other [X] 10 day

NOTE: Notify Lab as soon as possible of 24/48 hrs. TAT.

Sample ID	Date	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
MW-1	1/15/92 ~~1/15-92~~		X		2	X		X						201858	A/B
MW-2			X			X		X						201859	
MW-3			X			X		X						201860	
MW-4			X			X		X						201861	
MW-5			X			X		X						201862	
E-4			X			X		X						201863	

Relinquished By (signature): [signature]	Printed name: RPark	Date: 1/21/92 Time: 1420	Received (signature): [signature]	Printed name: Scott Foster	Date: 1-21-92 Time: 2:25
Relinquished By (signature): [signature]	Printed name: S Foster	Date: 1/21 Time: 1645	Received (signature): [signature]	Printed name: P Burton	Date: Time:
Relinquished By (signature): [signature]	Printed name: P Burton	Date: 1/21 Time: 936	Received (signature): [signature]	Printed name: Kim Marcus	Date: 1-21-92 Time: 8:30P

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

Last Revision Date: 10/15/91

Weiss Associates *Environmental and Geologic Services*

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

TRANSMITTAL LETTER

FROM: Jeni Martin **DATE:** March 24, 1992

TO: ~~Paul Smith~~ Jennifer Eberle
Alameda County Department
of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621-1426

VIA:
- X First Class Mail
- ___ Fax ___ pages
- ___ UPS (Surface)
- ___ Federal Express
- ___ Courier

SUBJECT: Shell Service Station STID 1107
WIC #204-6001-0109
29 Wildwood Avenue
Piedmont, California 94610

JOB: 81-463-01

AS:
- ___ We discussed on the telephone today
- ___ You requested _____
- ___ We believe you may be interested
- X Is required

WE ARE SENDING:
- X Enclosed
- ___ Under Separate Cover Via _____

1. Quarterly ground water monitoring report for the subject site

FOR:
- ___ Your information
- X Your use
- ___ Your review & comments
- ___ Return to you

PLEASE:
- X Keep this material
- ___ Return within 2 weeks
- ___ Acknowledge receipt

MESSAGE:

Please call if you have any questions.