WEISS ASSOCIATES
Geologic and Environmental Services
Fax: 415-547-5043 Phone: 415-547-5420
5500 Shellmound Street, Emeryville, CA 94608

TRANSMITTAL LETTER

FROM: Tom Fojut

DATE: December 4, 1990

TO: Susan Hugo
Alameda County Department of
Environmental Health
Division of Hazardous Materials
80 Swan Way, Room 200
Oakland, California 94621-1426

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

SUBJECT: Shell Service Station
WIC# 204-6001-0109
29 Wildwood Avenue Piedmont, CA

JOB: 81-463-01

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 _____

Quarterly status 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.

cc: Diane Lundquist, Shell Oil Company, P.O. Box 4023, Concord, CA 94524

Lester Feldman, California Regional Quality Control Board - San Francisco Bay Retion, 1800 Harrison Street, Oakland, CA 94612

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WEISS ASSOCIATES
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December 4, 1990

Susan Hugo
Alameda County Department of Environmental Health
Division of Hazardous Materials
80 Swan Way, Room 200
Oakland, California 94621-1426

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

Dear Ms. Hugo:

This letter describes Weiss Associates' (WA) fourth quarter 1990 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 to date in the fourth quarter 1990, and
- Proposed work for the remainder of the fourth quarter 1990 and the first quarter 1991.

FOURTH QUARTER 1990 ACTIVITIES

During the fourth quarter 1990, WA:

- Collected ground water samples from all six wells,
- Measured ground water depths and determined ground water elevations and the flow direction, and
- Analyzed the ground water samples and tabulated the analytic results. and

These activities are described below:

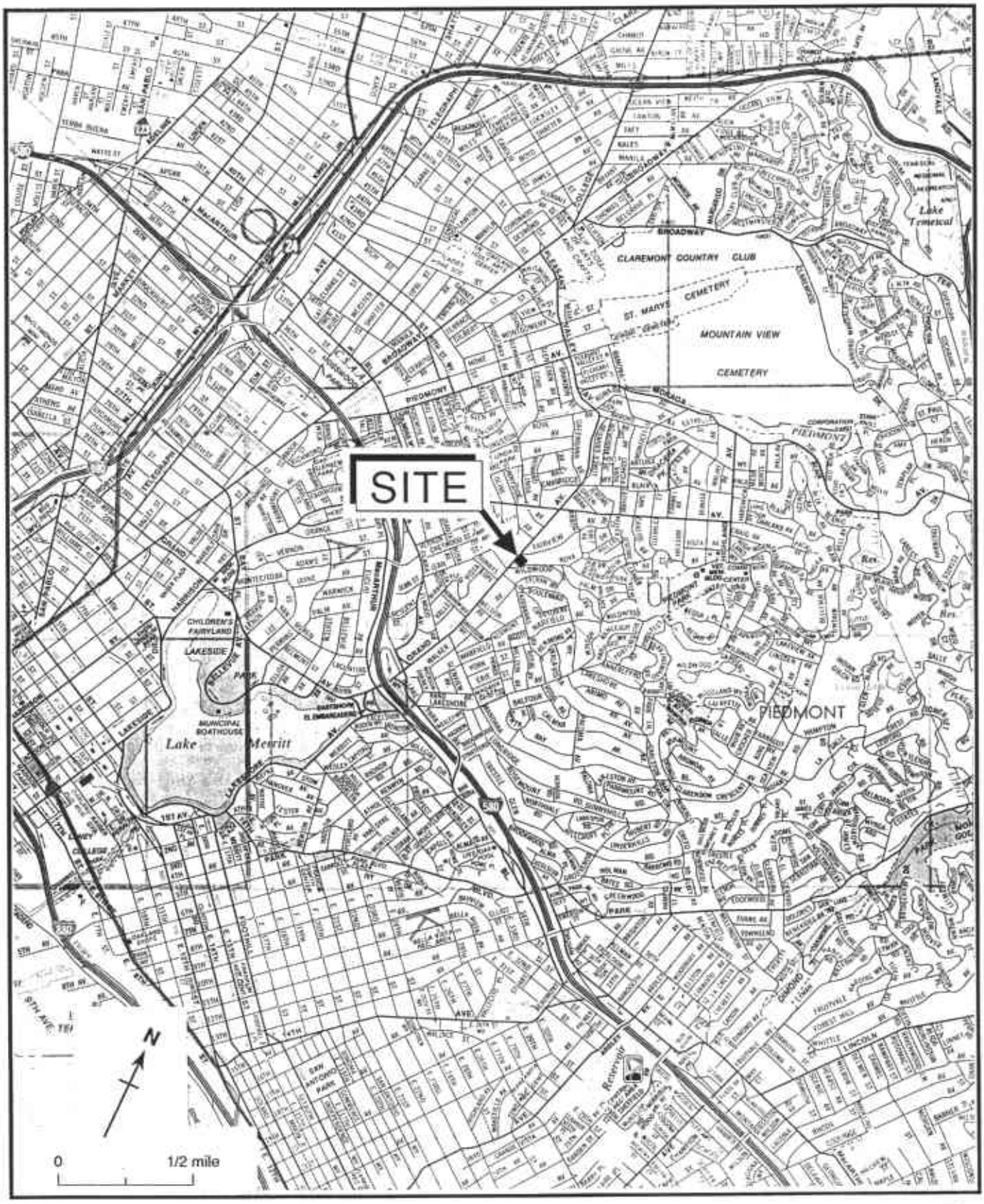

Figure 1. Site Location Map - Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

6/6/90

Ground Water Sampling

WA collected ground water samples from all six monitoring wells on October 30, 1990, as part of the quarterly ground water monitoring program at Shell Service Station WIC #204-6001-0109 in Piedmont, California. Ground water samples from monitoring well MW-3 (Figure 2) contained benzene above the California Department of Health Services (DHS) maximum contaminant level (MCL) for drinking water.

Sampling Personnel: WA Environmental Technicians David Charles and Paul Cardoza

Monitoring Wells Sampled: MW-1 through MW-5 and E-4

Method of Purging Wells:

- Wells MW-1 through MW-5 were purged with dedicated PVC bailers.
- Well E-4 was purged with a steam-cleaned PVC bailer.

Volume of Water Purged Prior to Sampling:

- Wells MW-1 through MW-5 were purged of four well-casing volumes, about 12 to 31 gallons each.
- Well E-4 was purged dry; water level was allowed to recover for about two hours prior to sampling.

Method of Collecting Ground Water Samples:

- Samples from wells MW-1 through MW-5 were drawn through sampling port on side of dedicated PVC bailers.
- Samples from well E-4 were decanted from a steam-cleaned Teflon bailer.

Methods of Containing Ground Water Samples:

- 40 ml glass, volatile organic analysis (VOA) vials, preserved with hydrochloric acid and packed in protective foam sleeves

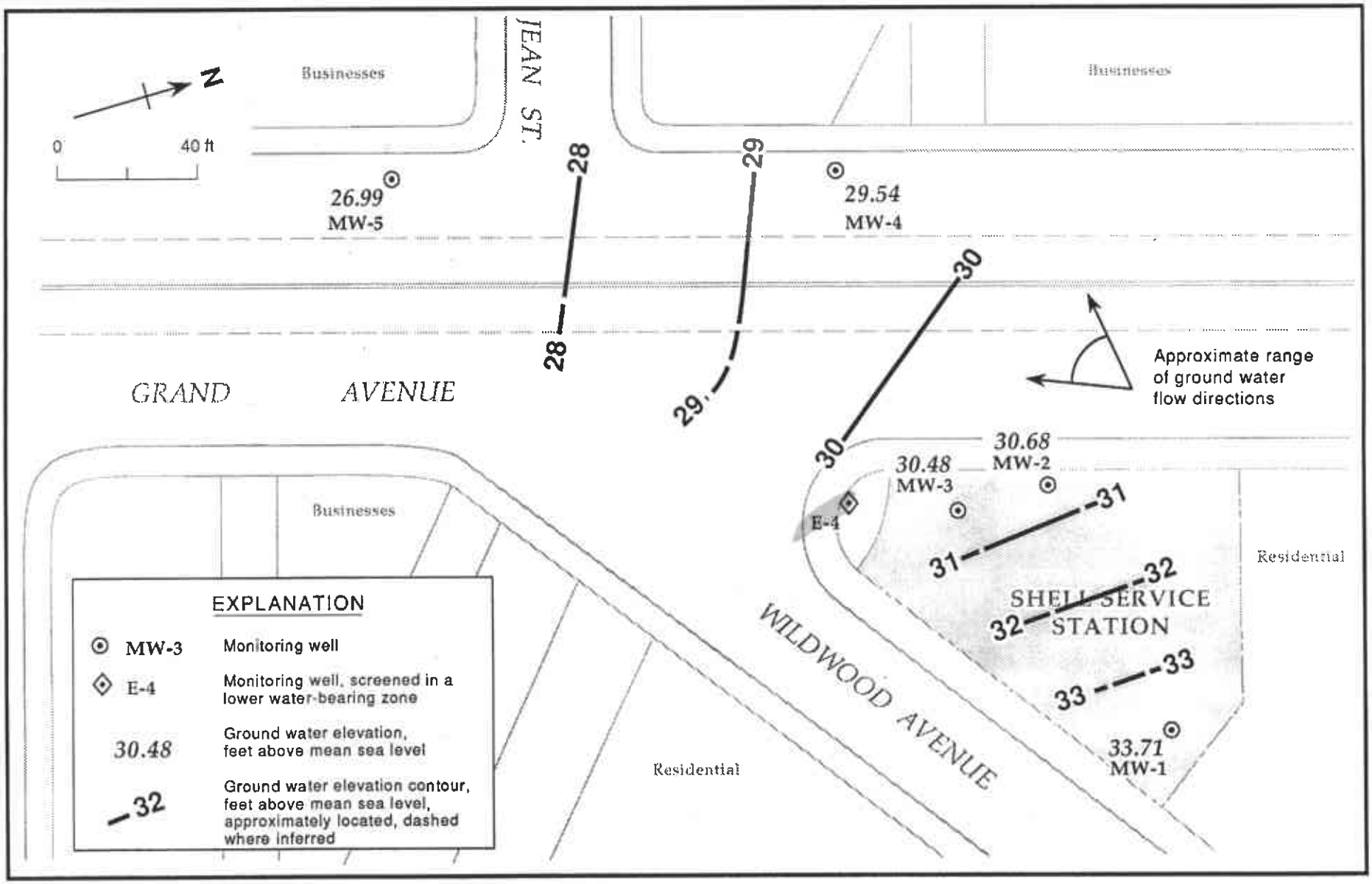

Figure 2. Monitoring Well and Ground Water Elevation Contours - October 30, 1990 - Shell Service Station, WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

12/4/90

All samples were refrigerated and transported under chain-of-custody to the analytical laboratory.

Water Samples Transported to:

- National Environmental Testing, Inc. (NET), Santa Rosa, California, and were received on October 31, 1990

Quality Assurance/Quality Control:

- A travel blank was submitted for analysis.

Water sample collection records and chain-of-custody forms are included in Attachments A and B, respectively.

Ground Water Elevations and Flow Direction

- The depth to water was measured in all wells on October 30, 1990. Ground water elevations are similar to the previous quarter.

- The direction of ground water flow ranges from westward to southwestward. This is similar to previous results.

- The potentiometric surface of flowing artesian well E-4 was greater than 4.5 ft above the top-of-casing in July 1989. This well is screened in a deeper water-bearing zone than the other wells.

Depth to water measurements and ground water elevations are presented in Table 1. Ground water elevation contours are plotted on Figure 2.

Chemical Analyses

The Ground Water Samples were Analyzed for:

- Total petroleum hydrocarbons as gasoline (TPH-G) by modified EPA Method 8015, and

- Benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 602.

The laboratory analyzed the samples on November 7, 1990. The results are presented in Table 2 and the analytic reports are included in Attachment B.

Discussion of Analytic Results of Ground Water for this Quarter:

- No hydrocarbons were detected in samples from wells MW-1, MW-4 and E-4.
- Benzene concentrations decreased to below the laboratory detection limit in samples from well MW-2.
- Although the benzene concentration in ground water from well MW-3 exceeded the DHS MCL for drinking water, hydrocarbon concentrations decreased substantially compared to previous quarters.
- BETX were detected for the first time in samples from well MW-5.

TABLE 1. Ground Water Elevation Data, 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	7/12/89	37.96	2.76	35.20
	1/30/90		3.10	34.86
	4/27/90		3.24	34.72
	7/31/90		4.26	33.70
	10/30/90		4.25	33.71
MW-2	7/12/89	34.89	3.66	31.23
	1/30/90		3.49	31.40
	4/27/90		3.79	31.10
	7/31/90		4.03	30.86
	10/30/90		4.21	30.68
MW-3	7/12/89	35.00	3.83	31.17
	1/30/90		3.24	31.76
	4/27/90		4.02	30.98
	7/31/90		4.31	30.69
	10/30/90		4.52	30.48
MW-4	1/30/90	33.73	4.50	29.23
	4/27/90		3.62	30.11
	7/31/90		4.19	29.54
	10/30/90		4.19	29.54
MW-5	1/30/90	31.38	7.12	24.26
	4/27/90		4.19	27.19
	7/31/90		4.09	27.29
	10/30/90		4.39	26.99
E-4	7/12/89	34.63	[a]	>34.63
	1/30/90		[b]	>34.63
	4/27/90		[b]	>34.63
	7/31/90		[b]	>34.63
	10/30/90		[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 higher that top of well casing

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

Well ID	Date Sampled	Analytical Laboratory	Analytic Methods	TPH-G	B	E	T	X	VOCs
				<---------- parts per billion (µg/L) ---------->					
MW-1	7/12/89	IT	8015/8020/624	<50	<0.5	<1	<1	<3	ND
	1/30/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	4/27/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	7/31/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	10/30/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
MW-2	7/12/89	IT	8015/8020/624	60	2.7	<1	<1	<3	ND
	1/30/90	NET	8015/602	<50	6.6	0.54	<0.5	0.93	---
	4/27/90	NET	8015/602	60	2.1	<0.5	<0.5	<0.5	---
	7/31/90	NET	8015/602	70	1.5	<0.5	<0.5	<0.5	---
	10/30/90	NET	8015/602	70	<0.5	<0.5	0.7	1.6	---
MW-3	7/12/89	IT	8015/8020/624	3,900	380	99	41	30	a
	1/30/90	NET	8015/602	5,500	440	79	35	130	---
	4/27/90	NET	8015/602	4,500	310	37	26	110	---
	7/31/90	NET	8015/602	3,500	210	8.4	17	62	---
	10/30/90	NET	8015/602	2,300	61	<0.5	<0.5	28	---
MW-4	1/31/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	4/27/90	NET	8015/602	130[b]	<0.5	<0.5	<0.5	<0.5	---
	7/31/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	10/30/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
MW-5	1/31/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	4/27/90	NET	8015/602	210[b]	<0.5	<0.5	<0.5	<0.5	---
	7/31/90	NET	8015/602	90	<0.5	<0.5	<0.5	<0.5	---
	10/30/90	NET	8015/602	100	0.8	0.6	0.7	1.4	---
E-4	7/12/89	IT	8015/8020/624	<50	<0.5	<1	<1	<3	ND
	1/31/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	4/27/90	NET	8015/602	120[b]	<0.5	<0.5	<0.5	<0.5	---
	7/31/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	10/30/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
Trip Blank	7/12/89	IT	8015/8020/624	<50	<0.5	<1	<1	<3	---
	1/31/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	4/27/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	7/31/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
	10/30/90	NET	8015/602	<50	<0.5	<0.5	<0.5	<0.5	---
Bailer Blank	4/27/90	NET	8015/8020	110[b]	<0.5	<0.5	<0.5	<0.5	---
DHS MCLs				NE	1	680	100[c]	1,750	

--Table 2 continues on next page--

TABLE 2. 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
B = Benzene
E = Ethylbenzene
T = Toluene
X = Xylenes
VOCs = Volatile Organic Compounds
ND = Not detected at detection limits of 5 to 10 parts per billion (ppb)
--- = Not Analyzed
NE = DHS MCL not established
DHS MCLs = California Department of Health Services Maximum Contaminant Levels for drinking water
<n = Not detected at detection limit of n ppb

Notes:

[a] = BETX detected at 410, 97, 36 and 300 parts per billion, respectively by EPA Method 624
[b] = Non-fuel peak reported as TPH-G by EPA Method 8015
[c] = DHS Recommended Drinking Water Action Levels, MCL not established

Analytical Laboratory:

IT = International Technology Corporation, Inc., San Jose, California
NET = National Environmental Testing, Inc., Santa Rosa, California

Analytic Methods:

602 = EPA Method 602 for BETX
624 = EPA Method 624 for VOCs
8015 = Modified EPA Method 8015 for TPH-G
8020 = EPA Method 8020 for BETX

ANTICIPATED WORK FOR REMAINDER OF FOURTH QUARTER 1990 AND FOR FIRST QUARTER 1991

No work is anticipated at this site for the remainder of the fourth quarter 1990. During the first quarter 1991, on behalf of Shell Oil, WA plans to:

- Continue quarterly monitoring of ground water at this site,
- Review the historic site ground water flow direction and water quality data an recommend sampling frequency modifications, and
- Prepare a quarterly status report presenting all data generated during the previous quarter including the revised sampling schedule, if appropriate.

We are pleased to provide hydrogeologic consulting services to Shell and trust that this submittal satisfies your requirements. Please call if you have any questions.

Sincerely,
Weiss Associates

Thomas Fojut

Thomas J. Fojut
Staff Geologist

Joseph P. Theisen, R.G.
Senior Project Hydrogeologist

TJF/JPT:ss

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Attachments: A - Water Sample Collection Records
B - Analytic Reports and Chain-of-Custody Form

cc: Diane Lundquist, Shell Oil Company, P.O. Box 4023, Concord, California 94524

Lester Feldman, California Regional Quality Control Board -San Francisco Bay Region, 1800 Harrison Street, Oakland, California 94612

ATTACHMENT A

WATER SAMPLE COLLECTION RECORDS

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-1 Date 10/30/90 Time of Sampling ~~12:57~~ 13:51

Job Name Shell Piedmont Job Number 81-463-01 Initials PSC

Sample Point Description M (M = Monitoring Well)

Location

WELL DATA: Depth to Water 4.25 ft (static, pumping) Depth to Product N/A ft.

Product Thickness N/A Well Depth 15' ft (spec) Well Depth 13.6 ft(sounded) Well Diameter 4" in

Initial Height of Water in Casing 9.35 ft. = volume 6.12 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 24.49 gal.

EVACUATION METHOD: Pump # and type N/A Hose # and type N/A

Bailer# and type 3" x 36" PVC Dedicated Y (Y/N)

Other N/A

Evacuation Time: Stop ~~12:40~~ 12:50 13:37

Start 12:40 13:17

Total Evacation Time 30 min

Total Evacuated Prior to Sampling 25 gal.

Evacuation Rate 1.2 gal. per minute

Depth to Water during Evacuation N/A ft. N/A time

Depth to Water at Sampling 5.97 ft. 13:54 time

* Evacuated Dry? Y After 11 gal. Time 12:50

80% Recovery = N/A

% Recovery at Sample Time N/A Time N/A

* Continued until 4 casing volumes removed.

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

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

V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number

Calibration: 4.0 7.0 ~~10.0~~

Measured:	SC/μmhos	pH	T°C	Time	Volume Evacuated (gal.)
		N/A			

SAMPLE: Color Clear Odor None

Description of matter in sample: Very fine suspended particles of silt

Sampling Method: From port on dedicated bailer

Sample Port: Rate N/A gpm Totalizer N/A gal.

Time N/A

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	100-01	w/teVOA	40ml	N	Y	None	8015/602	N	NET

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-2 Date 1/30/90 Time of Sampling 12:54
Job Name Shell Piedmont Job Number 81-463-01 Initials RSC
Sample Point Description M (M = Monitoring Well)
Location By pump island

WELL DATA: Depth to Water 4.21 ft (static, pumping) Depth to Product 0 ft.
Product Thickness 0/A Well Depth 12 ft (spec) Well Depth 11.54 ft(sounded) Well Diameter 4 in
Initial Height of Water in Casing 7.33 ft. = volume 4.79 gal.
4 Casing Volumes to be Evacuated Total to be evacuated 19.15 gal.

EVACUATION METHOD: Pump # and type N/A Hose # and type N/A
Bailer# and type 3"x 36" PVC Dedicated Y (Y/N)
Other N/A

Evacuation Time: Stop 11:26 11:56 12:20
Start 11:15 11:47 12:16
Total Evacation Time 30 min
Total Evacuated Prior to Sampling 19.5 gal.
Evacuation Rate .64 gal. per minute
Depth to Water during Evacuation N/A ft. N/A time
Depth to Water at Sampling 6.33 ft. 12:56 time
* Evacuated Dry? Y After 7 gal. Time 11:26
80% Recovery = N/A
% Recovery at Sample Time N/A Time N/A
* Continued bailing until 4 casing volume removed.

Formulas/Conversions
r = well radius in ft.
h = ht of water col in ft.
vol. in cyl. = $\pi r^2 h$
7.48 gal/ft^3
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
V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number
Calibration: 4.0 7.0 10.0

Measured:	SC/µmhos	pH	T°C	Time	Volume Evacuated (gal.)
		N/A			
		N/A			

SAMPLE: Color Clear Odor None
Description of matter in sample: Very fine suspended silt
Sampling Method: From port on dedicated bailer
Sample Port: Rate N/A gpm Totalizer N/A gal.
Time N/A

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	100-02	w/c VOA	40ml	N	Y	N	8015/602	N	NET

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-3 Date 10/30/90 Time of Sampling 1212
Job Name SHELL PIEDMONT Job Number 61-463-01 Initials P.C.
Sample Point Description M (M = Monitoring Well)
Location MIDDLE OF LOT

WELL DATA: Depth to Water 4.52 ft (static) pumping) Depth to Product ____ ft.
Product Thickness ____ Well Depth ____ ft (spec) Well Depth 9.04 ft(sounded) Well Diameter ____ in
Initial Height of Water in Casing 4.52 ft. = volume 2.95 gal.
4 Casing Volumes to be Evacuated. Total to be evacuated 11.81 gal.

EVACUATION METHOD: Pump # and type — Hose # and type —
Bailer# and type 3X36" PVC Dedicated YES (Y/N)
Other ____

Evacuation Time: Stop ____ 10:39 10:45 10:54 11:46 11:58
Start 1035 10:44 10:53 11:40 11:57
Total Evacation Time 13 MIN
Total Evacuated Prior to Sampling 12 gal.
Evacuation Rate 1.0 gal. per minute
Depth to Water during Evacuation — ft. — time
Depth to Water at Sampling 5.21 ft. 12:10 time
Evacuated Dry? YES After 8 gal. Time 10.54
80% Recovery = —
% Recovery at Sample Time — Time —
* KEPT BAILING UNTIL 4 CAS. VOLS. REMOVED

CHEMICAL DATA: Meter Brand/Number ____
Calibration: ____ 4.0 ____ 7.0 ____ 10.0

Measured:	SC/μmhos	pH	T°C	Time	Volume Evacuated (gal.)

Formulas/Conversions
r = well radius in ft.
h = ht of water col in ft.
vol. in cyl. = $\pi r^2 h$
7.48 gal/ft^3
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
V8 casing = 2.61 gal/ft

SAMPLE: Color NONE Odor LIGHT
Description of matter in sample: SMALL AMT. COARSE SILT CLAY
Sampling Method: ____
Sample Port: Rate ____ gpm Totalizer ____ gal.
Time

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	100-03	W/cV	40mL	N	Y	NONE	8015/602	N	NET

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-4 Date 10/30/96 Time of Sampling 1342

Job Name SHELL PIEDMONT Job Number 81-463-01 Initials DK

Sample Point Description M (M = Monitoring Well)

Location ACROSS GRAND AVE.

WELL DATA: Depth to Water 4.19 ft (static, pumping) Depth to Product 0 ft.

Product Thickness 0 Well Depth ___ ft (spec) Well Depth 11.96 ft(sounded) Well Diameter 4 in

Initial Height of Water in Casing 7.77 ft. = volume 5.07 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 20.29 gal.

EVACUATION METHOD: Pump # and type — Hose # and type —

Bailer# and type 3/4 X 36" PVC Dedicated YES (Y/N)

Other ___

Evacuation Time: Stop 1231 1317 1329

Start 1228 1315 1327

Total Evacation Time 8 MIN.

Total Evacuated Prior to Sampling 20.5 gal.

Evacuation Rate 2.5 gal. per minute

Depth to Water during Evacuation — ft. — time

Depth to Water at Sampling 9.22 ft. 1340 time

* Evacuated Dry? YES After 7 gal. Time 1231

80% Recovery = —

% Recovery at Sample Time — Time —

* KEPT BAILING UNTIL 4 CAS. VOLS. REMOVED

CHEMICAL DATA: Meter Brand/Number ___

Calibration: ___ 4.0 ___ 7.0 ___ 10.0

Measured:	SC/µmhos	pH	T°C	Time	Volume Evacuated (gal.)

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

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

V8 casing = 2.61 gal/ft

SAMPLE: Color LT. BROWN Odor NONE

Description of matter in sample: SUSPENDED BR. SILT

Sampling Method: FROM BED. BLR. PORT

Sample Port: Rate — gpm Totalizer — gal.

Time —

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	100-04	w/cv	40mL	N	Y	NONE	8015/602	N	NET

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-5 Date 10/30/90 Time of Sampling 1347 1422

Job Name SHELL PIEDMONT Job Number 81-463-01 Initials OC

Sample Point Description MW-5 (M = Monitoring Well)

Location CORNER OF JEAN / GRAND

WELL DATA: Depth to Water 4.39 ft (static) pumping) Depth to Product 0 ft.

Product Thickness 0 Well Depth ___ ft (spec) Well Depth 16.15 ft(sounded) Well Diameter 4 in

Initial Height of Water in Casing 11.76 ft. = volume 7.67 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 30.71 gal.

EVACUATION METHOD: Pump # and type — Hose # and type —

Bailer# and type 3X36" PVC Dedicated YES (Y/N)

Other —

Evacuation Time: Stop 1413 1420

Start 1404 1415

Total Evacation Time 14 MIN

Total Evacuated Prior to Sampling 31 gal.

Evacuation Rate 2 gal. per minute

Depth to Water during Evacuation — ft. — time

Depth to Water at Sampling 6.24 ft. 1423 time

Evacuated Dry? NO After — gal. Time —

80% Recovery = —

% Recovery at Sample Time — Time —

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

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

V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number ___

Calibration: ___ 4.0 ___ 7.0 ___ 10.0

Measured:	SC/μmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color LT. BROWN Odor NONE

Description of matter in sample: BROWN SILT / FINE SAND < 1%

Sampling Method: FROM BLR. PORT

Sample Port: Rate — gpm Totalizer — gal.

Time —

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	100-05	W/CV	40mL	N	Y	NONE	8015/602	N	NET

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name E-4 Date 10/30/90 Time of Sampling 1627

Job Name SHELL PIEDMONT Job Number 81-463-01 Initials DC

Sample Point Description M (M = Monitoring Well)

Location BY CORNER - NEAR SIGN

WELL DATA: Depth to Water 0.0 ft (static, pumping) Depth to Product 0 ft.

Product Thickness 0 Well Depth 34.26 ft (spec) Well Depth 34.26 ft (sounded) Well Diameter 3 in

Initial Height of Water in Casing 34.26 ft. = volume 12.57 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 50.3 gal.

EVACUATION METHOD: Pump # and type — Hose # and type —

Bailer# and type 2"x48 PVC Dedicated NO (Y/N)

Other W.A. STOCK

Evacuation Time: Stop 1520

Start 1445

Total Evacation Time 35 MIN

Total Evacuated Prior to Sampling 20 gal.

Evacuation Rate .6 gal. per minute

Depth to Water during Evacuation — ft. — time

Depth to Water at Sampling 25.90 ft. 1619 time

Evacuated Dry? YES After 20 gal. Time 1520

80% Recovery = 6.86 DTW

% Recovery at Sample Time 24 % Time

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

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

V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number

Calibration: 4.0 7.0 10.0

Measured:	SC/μmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color Odor

Description of matter in sample:

Sampling Method: DECANT FROM TEFLON BLR (TF - VERIFIED W/ DC)

Sample Port: Rate — gpm Totalizer — gal.

Time —

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	100-E4	G/CV	40mL	N	Y	NONE	8015/602	N	NET

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

TRAVEL BLANKS

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name — Date 10/30/90 Time of Sampling 1525

Job Name SHELL PIEDMONT Job Number 81-463-01 Initials OC

Sample Point Description _____ (M = Monitoring Well)

Location _____

WELL DATA: Depth to Water _____ ft (static, pumping) Depth to Product _____ ft.

Product Thickness _____ Well Depth ____ ft (spec) Well Depth _____ ft(sounded) Well Diameter ____in

Initial Height of Water in Casing _____ ft. = volume _____ gal.

_____ Casing Volumes to be Evacuated. Total to be evacuated _____ gal.

EVACUATION METHOD: Pump # and type _____ Hose # and type _____

Bailer# and type _____ Dedicated _____ (Y/N)

Other _____

Evacuation Time: Stop _____ _____ _____

Start _____ _____ _____

Total Evacation Time _____

Total Evacuated Prior to Sampling _____ gal.

Evacuation Rate _____ gal. per minute

Depth to Water during Evacuation _____ ft. _____ time

Depth to Water at Sampling _____ ft. _____ time

Evacuated Dry? _____ After _____ gal. Time _____

80% Recovery = _____

% Recovery at Sample Time _____ Time _____

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

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

V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number _____

Calibration: _____ 4.0 _____ 7.0 _____ 10.0

Measured:	SC/µmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color NONE Odor NONE

Description of matter in sample: NONE

Sampling Method: _____

Sample Port: Rate — gpm Totalizer — gal.

Time —

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	100-21	w/cV	40mL	N	Y	NONE	8015/602	N	NET

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

BAILER BLANK

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name E-4 Date 10/20/90 Time of Sampling 1616

Job Name SHELL PIEDMONT Job Number 81-463-01 Initials OC

Sample Point Description _____ (M = Monitoring Well)

Location _____

WELL DATA: Depth to Water _____ ft (static, pumping) Depth to Product _____ ft.

Product Thickness _____ Well Depth ____ ft (spec) Well Depth _____ ft(sounded) Well Diameter ____ in

Initial Height of Water in Casing _____ ft. = volume _____ gal.

_____ Casing Volumes to be Evacuated. Total to be evacuated _____ gal.

EVACUATION METHOD: Pump # and type _____ Hose # and type _____

Bailer# and type 1/4X24" TEF. Dedicated NO (Y/N)

Other WA. # H

Evacuation Time: Stop _____ _____ _____

Start _____ _____ _____

Total Evacation Time _____

Total Evacuated Prior to Sampling _____ gal.

Evacuation Rate _____ gal. per minute

Depth to Water during Evacuation _____ ft. _____ time

Depth to Water at Sampling _____ ft. _____ time

Evacuated Dry? _____ After _____ gal. Time _____

80% Recovery = _____

% Recovery at Sample Time _____ Time _____

Formulas/Conversions

r = well radius in ft.

h = ht of water col in ft.

vol. in cyl. = $\pi r^2 h$

7.48 gal/ft^3

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

V8 casing = 2.61 gal/ft

CHEMICAL DATA: Meter Brand/Number _____

Calibration: _____ 4.0 _____ 7.0 _____ 10.0

Measured:	SC/μmhos	pH	T°C	Time	Volume Evacuated (gal.)

SAMPLE: Color NONE Odor NONE

Description of matter in sample: NONE

Sampling Method: DECANT ARROWHEAD D.I. WTR. INTO TEF. BLR. # H LOT # M07501

Sample Port: Rate ~ gpm Totalizer ~ gal.

Time ~

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	100-22	W/CV	40mL	N	Y	NONE	8015/602	N	NET

1 Sample Type Codes: W = Water, S = Soil, Describe Other
Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B = Clear/Brown Glass, Describe Other
Cap Codes: PT = Plastic, Teflon lined;
2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 week, R = 24 hour, HOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

ATTACHMENT B

ANALYTIC RESULTS AND CHAIN-OF-CUSTODY FORM

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

Tom Fojut
Weiss Associates
5500 Shell Mound Rd.
Emeryville, CA 94524

Date: 11-13-90
NET Client Acct No: 18.09
NET Pacific Log No: 4711
Received: 11-01-90 0800

Client Reference Information

SHELL, 29 Wildwood, Piedmont; Project: 81-463-01

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

Enclosure(s)

NET Pacific, Inc.

Client Acct: 18.09
Client Name: Weiss Associates
NET Log No: 4711

Date: 11-13-90

Ref: SHELL, 29 Wildwood, Piedmont; Project: 81-463-01

		Descriptor, Lab No. and Results			
		100-01 10-30-90	100-02 10-30-90	100-03 10-30-90	
Parameter	Reporting Limit	67012	67013	67014	Units
PETROLEUM HYDROCARBONS		--	--	--	
VOLATILE (WATER)		--	--	--	
DILUTION FACTOR *		1	1	10	
DATE ANALYZED		11-07-90	11-07-90	11-07-90	
METHOD GC FID/5030		--	--	--	
as Gasoline	0.05	ND	0.07	2.3	mg/L
METHOD 602		--	--	--	
DILUTION FACTOR *		1	1	10	
DATE ANALYZED		11-07-90	11-07-90	11-07-90	
Benzene	0.5	ND	ND	61	ug/L
Ethylbenzene	0.5	ND	ND	ND	ug/L
Toluene	0.5	ND	0.7	ND	ug/L
Xylenes, total	0.5	ND	1.6	28	ug/L

NET Pacific, Inc.

Client Acct: 18.09
Client Name: Weiss Associates
NET Log No: 4711

Date: 11-13-90
Page: 3

Ref: SHELL, 29 Wildwood, Piedmont; Project: 81-463-01

		Descriptor, Lab No. and Results			
		100-04 10-30-90	100-05 10-30-90	100-E4 10-30-90	
Parameter	Reporting Limit	67015	67016	67017	Units
PETROLEUM HYDROCARBONS		--	--	--	
VOLATILE (WATER)		--	--	--	
DILUTION FACTOR *		1	1	1	
DATE ANALYZED		11-07-90	11-07-90	11-07-90	
METHOD GC FID/5030		--	--	--	
as Gasoline	0.05	ND	0.10	ND	mg/L
METHOD 602		--	--	--	
DILUTION FACTOR *		1	1	1	
DATE ANALYZED		11-07-90	11-07-90	11-07-90	
Benzene	0.5	ND	0.8	ND	ug/L
Ethylbenzene	0.5	ND	0.6	ND	ug/L
Toluene	0.5	ND	0.7	ND	ug/L
Xylenes, total	0.5	ND	1.4	ND	ug/L

NET Pacific, Inc.

Client Acct: 18.09
Client Name: Weiss Associates
NET Log No: 4711

Date: 11-13-90
Page: 4

Ref: SHELL, 29 Wildwood, Piedmont; Project: 81-463-01

Parameter	Reporting Limit	Descriptor, Lab No. and Results 100-21 10-30-90 67018	Units
PETROLEUM HYDROCARBONS		--	
VOLATILE (WATER)		--	
DILUTION FACTOR *		1	
DATE ANALYZED		11-07-90	
METHOD GC FID/5030		--	
as Gasoline	0.05	ND	mg/L
METHOD 602		--	
DILUTION FACTOR *		1	
DATE ANALYZED		11-07-90	
Benzene	0.5	ND	ug/L
Ethylbenzene	0.5	ND	ug/L
Toluene	0.5	ND	ug/L
Xylenes, total	0.5	ND	ug/L

NET

NET Pacific, Inc.

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 16th Edition, APHA, 1985.

WEISS ASSOCIATES
5300 Shellmound St., Emeryville, CA 94608
Phone: 415-547-5420 FAX: 415-547-5043

Shell Service Station Address:
29 Wildwood
Piedmont, CA
Shell Contact: Diane Lundquist
WIC #: 204600101 09
AFE #: 986698

Please send analytic results
and a copy of the signed chain of custody form to:
~~Eric Anderson~~ TOM FOJUT 4711

Project ID: 81-463-01

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Sampled by: Paul Cardoza David Charles

Laboratory Name: NET

Lab Personnel:
1) Specify analytic method and detection limit in report.
2) Notify us if there are any anomalous peaks on GC or other scans.
3) ANY QUESTIONS/CLARIFICATIONS: CALL US.

No. of Containers	Sample ID	Container Type	Sample Date	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analyze for	Analytic Method	Turn[5]	COMMENTS
3	100-01	WCV	10/30/90	40ml	N	Y	None	TPH-G/BETX	8015/602	W	
3	100-02	WCV	10/30/90	40ml	N	Y	None	TPH-G/BETX	8015/602	W	
3	100-03	WCV	10/30/90	40ml	N	Y	None	TPH-G/BETX	8015/602	W	
3	100-04	WCV	10/30/90	40ml	N	Y	None	TPH-G/BETX	8015/602	W	
3	100-05	WCV	10/30/90	40ml	N	Y	None	TPH-G/BETX	8015/602	W	
3	100-E4	WCV	10/30/90	40ml	N	Y	None	TPH-G/BETX	8015/602	W	
3	100-21	WCV	10/30/90	40ml	N	Y	None	TPH-G/BETX	8015/602	W	
3	100-22	WCV	10/30/90	40ml	N	Y	None	TPH-G/BETX	8015/602	W	HOLD
											custody seal 10/31/90 @ 19:00 intact

1 Paul Cardoza 10/30/90 17:15
Released by (Signature), Date

1 Weiss Associates
Affiliation

2 AJ Purbaugh 10-31-90
Received by (Signature), Date

2 WEISS ASSOC 0945
Affiliation

3 AJ Purbaugh 10-31-90 1231
Released by (Signature), Date

3 WEISS ASSOC.
Affiliation

4 Jeff Nichols 10/31/90
Shipping Carrier, Method, Date

4 NET 12:30
Affiliation

5 Jeff Nichols 10/31/90
Released by (Signature), Date

5 NET
Affiliation

6 [signature] 11/1/90 0800 yes
Received by Lab Personnel, Date — Seal intact?

6 NET 707-526-7200
Affiliation, Telephone

1 Sample Type Codes: W = Water, S = Soil, Describe Other; Container Type Codes: V = VOA/Teflon Septa, P = Plastic, C or B - Clear/Brown Glass, Describe Other;
Cap Codes: PT = Plastic, Teflon Lined 2 = Volume per container; 3 = Filtered (Y/N); 4 = Refrigerated (Y/N)
5 Turnaround [N = Normal, W = 1 Week, R = 24 Hour, HOLD (write out)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

⇒ Released to secure locked area.