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

September 4, 1990

Ms. Susan Hugo
Alameda County Health Department
Hazardous Materials Department
80 Swan Way, Room 200
Oakland, CA 94621

Re: Shell Service Station
WIC# 204-6001-0109
29 Wildwood 94610
Piedmont, California
WA Job #81-463-01

Dear Ms. Hugo:

This letter describes Weiss Associates' (WA) third quarter 1990 ground water monitoring activities at the subject Shell service station. 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. A description of WA's proposed activities for the fourth quarter 1990 is also included below.

GROUND WATER SAMPLING

Weiss Associates (WA) collected ground water samples from six monitoring wells on July 31, 1990 as part of the quarterly ground water monitoring program at Shell Service Station WIC #204-6001-0109 in Piedmont, California (Figure 1). Ground water samples from monitoring wells MW-2 and MW-3 (Figure 2) contained benzene above the California Department of Health Services (DHS) maximum contaminant level (MCL) for drinking water. Details of the sampling and chemical analysis are presented below.

Personnel: Jim Martin
WA Position: Environmental Technician
Date of sampling: July 31, 1990

Monitoring/other wells sampled: MW-1 through MW-5 and E-4

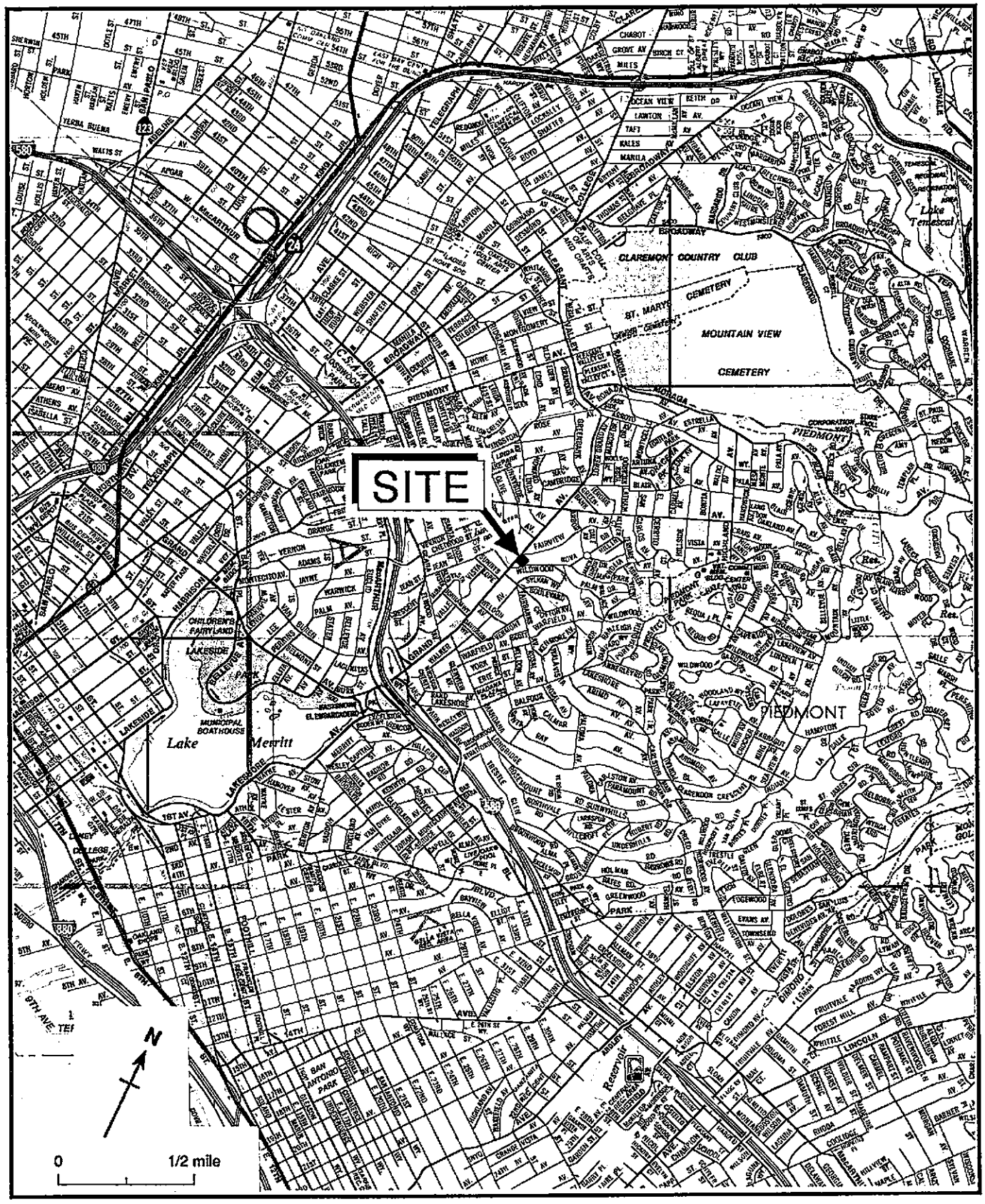

Figure 1. Site Location Map - Shell Service Station WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

6/6/90

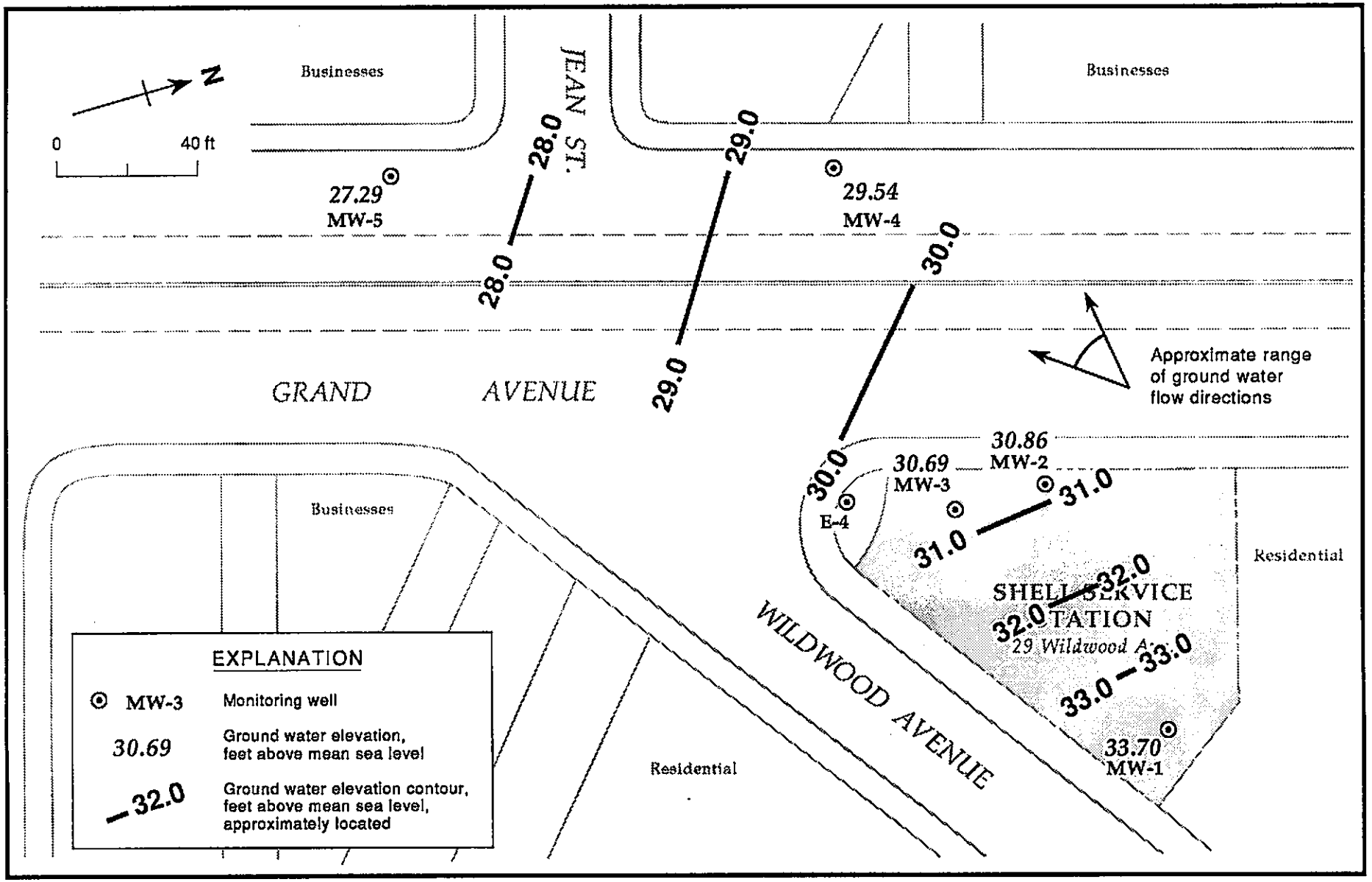

Figure 5. Ground Water Elevation Contours - July 31, 1990 - Shell Service Station, WIC #204-6001-0109, 29 Wildwood Avenue, Piedmont, California

9/5/90

Method of purging wells:

- Dedicated PVC bailers: MW-1 through MW-5
- Steam-cleaned PVC bailer: E-4

Volume of water purged prior to sampling:

- Wells that were purged of about three well-casing volumes, approximately 23 to 32 gallons: wells MW-1 and MW-5
- Wells that were purged dry; water level was allowed to recover to within 80 percent of static water level or for at least two hours prior to sampling: wells MW-2, MW-3, MW-4 and E-4

Method of ground water sample collection:

- Drawn from sampling port or side of dedicated PVC bailer: MW-1 through MW-5
- Decanted from steam cleaned PVC bailer: E-4

Method of containing ground water samples:

- 40 ml glass, volatile organic analysis (VOA) vials

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

Water samples transported to:

- NET Pacific, Santa Rosa, California

Samples were received by the laboratory on August 1, 1990

Quality assurance/quality control:

- A travel blank was submitted for analysis.

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

GROUND WATER ELEVATIONS

Water levels were measured in: MW-1 through MW-5 on July 31, 1990

Direction of ground water flow: Westward to south-southwestward

Water levels and ground water elevations are presented in Table 1. Ground water elevation contours are plotted on Figure 2. The potentiometric surface of flowing artesian well E-4 was greater than 4.5 ft above the TOC in July 1989. This well is screened in a deeper water-bearing zone than the remaining site wells.

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
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
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
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
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
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

[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 water elevation not measured.

CHEMICAL ANALYSES

The ground water samples were analyzed for:

- Total petroleum hydrocarbons as gasoline (TPH-G) by modified EPA Method 8015
- Benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 602

Samples were analyzed by the laboratory on August 3 and 7, 1990. The results of the water analyses are presented in Table 2 and the analytic reports are included as Attachment C.

Discussion of analytic results of ground water for this quarter:

- Hydrocarbons have not been detected in monitoring well MW-1 since sampling began.
- Hydrocarbon concentrations in monitoring wells MW-2 and MW-3 are consistent with historical results.
- TPH-G was not detected in monitoring wells MW-4 and E-4 this quarter. This suggests that the compounds detected in these wells last quarter were probably due to equipment contamination.
- TPH-G was detected at 90 ppb in monitoring well MW-5.

TABLE 2. Analytic Results for Ground Water, Shell Service Station WIC #204-6001-0109, 29 Wildwood, 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	---
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	---
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	---
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	---
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	---
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	---
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	---
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, 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 as required by EPA Method 8015
[b] = 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:

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

ANTICIPATED WORK FOR FOURTH QUARTER

During the fourth quarter 1990, on behalf of Shell Oil, WA plans to:

- Continue quarterly monitoring of ground water at this site, and
- Prepare a quarterly status report presenting all data generated during the previous quarter including the results of water sampling and analysis.

We trust that this submittal meets your needs. Please call if you have any questions.

Sincerely,
Weiss Associates

Eric W. Anderson
Staff Geologist

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

EWA/JPT:jg

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Attachments:
A - Water Sample Collection Records
B - Chain-of-Custody Forms
C - Analytic Reports

cc: Diane Lundquist, Shell Oil Company, P.O. Box 4023, Concord, CA 94524
Lester Feldman, California Regional Water Quality Control Board - San Francisco Bay Region, 1800 Harrison Street, Oakland, CA 94612

ATTACHMENT A

WATER SAMPLE COLLECTION RECORDS

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name MW-1 Date 7/31/90 Time of Sampling 1256
Job Name SHELL-PIEDMONT Job Number 81-163-01 Initials DC
Sample Point Description M (M = Monitoring Well)
Location E. CORNER BEHIND STATION

WELL DATA: Depth to Water 4.26 ft (static) pumping) @ 0836 Depth to Product — ft.
Product Thickness — Well Depth — ft (spec) Well Depth 13.13 ft(sounded) Well Diameter 4 in
Initial Height of Water in Casing 8.77 ft. = volume 5.72 gal.
3 Casing Volumes to be Evacuated. Total to be evacuated 22.88 gal.

EVACUATION METHOD: Pump # and type — Hose # and type —
Bailer# and type 3"X36" PVC Dedicated YES (Y/N)
Other DED. ON 7/31/90

Evacuation Time: Stop 1212 1221 1239
Start 1208 1217 1235
Total Evacation Time 12 MIN.
Total Evacuated Prior to Sampling 23 gal.
Evacuation Rate 1.9 gal. per minute
Depth to Water during Evacuation — ft. — time
Depth to Water at Sampling 4.90 ft. 1254 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 NONE Odor NONE
Description of matter in sample: NONE
Sampling Method: ~~BEGAN~~ 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	070-1	w/cv	40mL	N	Y	NONE	8015/8020	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 7/31/90 Time of Sampling 1131
Job Name Shell Piedmont Job Number 81-463-01 Initials JM
Sample Point Description M (M = Monitoring Well)
Location Near West GAS PUMPS

WELL DATA: Depth to Water 4.03 ft (static, pumping) @ 0846 Depth to Product NA ft.
Product Thickness NA Well Depth 12 ft (spec) Well Depth 11.55 ft(sounded) Well Diameter 4 in
Initial Height of Water in Casing 7.47 ft. = volume 9.88 gal.
4 Casing Volumes to be Evacuated. Total to be evacuated 19.5 gal.

EVACUATION METHOD: Pump # and type NA Hose # and type NA
Bailer# and type 3" PVC. Dedicated YES on 7/31/90 (Y/N)
Other NA

Evacuation Time: Stop 917
Start 913
Total Evacation Time 4 MIN.
Total Evacuated Prior to Sampling 8 gal.
Evacuation Rate 2.0 gal. per minute
Depth to Water during Evacuation NA ft. NA time
Depth to Water at Sampling 4.15 ft. 1128 time
Evacuated Dry? Yes After 8 gal. Time 917
80% Recovery = 5.58 D.T.W.
% Recovery at Sample Time 97% Time 1128

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 NA
Calibration: NA 4.0 NA 7.0 NA 10.0

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

SAMPLE: Color NONE Odor LIGHT ODOR
Description of matter in sample: NONE
Sampling Method: Post on dedicated bailer
Sample Port: Rate NA gpm Totalizer NA gal.
Time NA

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	070/2	w/cv	40ml	N	Y	NONE	EPA 8015/8020	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 7/31/90 Time of Sampling 1144

Job Name Shell Pleasant Job Number 61-463-01 Initials JM

Sample Point Description M (M = Monitoring Well)

Location SW corner of site

WELL DATA: Depth to Water 4.31 ft (static, pumping) @ 836 Depth to Product NA ft.

Product Thickness NA Well Depth 9.0 ft (spec) Well Depth 9.07 ft (sounded) Well Diameter 4 in

Initial Height of Water in Casing 4.76 ft. = volume 3.11 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 12.4 gal.

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

Bailer# and type 3" PVC Dedicated Yes on 7/31/90 (Y/N)

Other NA

Evacuation Time: Stop 936

Start 931

Total Evacation Time 5 min.

Total Evacuated Prior to Sampling 6 gal.

Evacuation Rate 1.2 gal. per minute

Depth to Water during Evacuation NA ft. NA time

Depth to Water at Sampling 4.33 ft. 1143 time

Evacuated Dry? Yes After 6 gal. Time 936

80% Recovery = 5.27 DTW

% Recovery at Sample Time 99% Time 1143

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 NA

Calibration: NA 4.0 NA 7.0 NA 10.0

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

SAMPLE: Color NONE Odor NONE

Description of matter in sample: NONE

Sampling Method: Port on dedicated bailer

Sample Port: Rate NA gpm Totalizer NA gal.

Time NA

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	090-3	w/cv	40ml	N	Y	NONE	EPA 8015/8020	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 7/31/90 Time of Sampling 1234

Job Name Shell Piedmont Job Number 81-963-01 Initials JM

Sample Point Description M (M = Monitoring Well)

Location IN Grand Ave; North of Vernon St

WELL DATA: Depth to Water 4.19 ft (static, pumping) @ 0809 Depth to Product NA ft.

Product Thickness NA Well Depth 16 ft (spec) Well Depth 11.88 ft(sounded) Well Diameter 4 in

Initial Height of Water in Casing 7.69 ft. = volume 5.02 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 20.1 gal.

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

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

Other NA

Evacuation Time: Stop 1044 1102 1107 1218

Start 1038 1100 1106 14 gal 1213

Total Evacation Time 14 min

Total Evacuated Prior to Sampling 20.5 gal.

Evacuation Rate 1.5 gal. per minute

Depth to Water during Evacuation NA ft. NA time

Depth to Water at Sampling 7.67 ft. 1235 time

Evacuated Dry? yes After 7 gal. Time 1044

80% Recovery = NA

% Recovery at Sample Time 55% Time 1235

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 NA

Calibration: NA 4.0 NA 7.0 NA 10.0

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

SAMPLE: Color cloudy - tan Odor none

Description of matter in sample: trace of tan silt

Sampling Method: bot on electrical rope

Sample Port: Rate NA gpm Totalizer NA gal.

Time NA

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	070-4	w/cv	40ml	N	Y	NONE	EPA 8015/8020	W	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 7/31/90 Time of Sampling 1151

Job Name Shell Piedmont Job Number 61-463-01 Initials JM

Sample Point Description M (M = Monitoring Well)

Location In Grand Ave. S. of Jean St; IN BUS STOP

WELL DATA: Depth to Water 4.09 ft (static, pumping) @ 0816 Depth to Product NA ft.

Product Thickness NA Well Depth 16.5 ft (spec) Well Depth 16.06 ft (sounded) Well Diameter 4 in

Initial Height of Water in Casing 11.97 ft. = volume 7.82 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 31.3 gal.

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

Bailer# and type 3" PVC Dedicated Yes on 7/31 (Y/N)

Other NA

Evacuation Time: Stop 1147

Start 1127

Total Evacation Time 20

Total Evacuated Prior to Sampling 32 gal.

Evacuation Rate 1.6 gal. per minute

Depth to Water during Evacuation NA ft. NA time

Depth to Water at Sampling 5.64 ft. 1152 time

Evacuated Dry? NO After NA gal. Time NA

80% Recovery = NA

% Recovery at Sample Time 87% Time 1152

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 NA

Calibration: NA 4.0 NA 7.0 NA 10.0

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

SAMPLE: Color cloudy - tan Odor none

Description of matter in sample: trace tan silt

Sampling Method: Port or dedicated bailer

Sample Port: Rate NA gpm Totalizer NA gal.

Time NA

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	070-5	W/CV	40ml	N	Yes	NONE	EPA 8015/8020	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, BOLD (spell)]

ADDITIONAL COMMENTS, CONDITIONS, PROBLEMS:

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name E-4 Date 7/31/90 Time of Sampling 1305

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

Sample Point Description M (M = Monitoring Well)

Location Corner of Grand & Wildwood - near sidewalk

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

Product Thickness NA Well Depth 34.26 ft (spec) Well Depth ____ 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 NA Hose # and type NA

Bailer# and type 2" x 4' PVC Dedicated NO (Y/(N))

Other NA

Evacuation Time: Stop 1017

Start 958

Total Evacation Time 19

Total Evacuated Prior to Sampling 21 gal.

Evacuation Rate 1.1 gal. per minute

Depth to Water during Evacuation NA ft. NA time

Depth to Water at Sampling 16.18 ft. 1307 time

Evacuated Dry? Yes After 21 gal. Time 1017

80% Recovery = NA

% Recovery at Sample Time 53% Time 1307

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 NA

Calibration: NA 4.0 NA 7.0 NA 10.0

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

SAMPLE: Color None Odor None

Description of matter in sample: None

Sampling Method: decanted from end of PVC bailer

Sample Port: Rate NA gpm Totalizer NA gal.

Time NA

# of Cont.	Sample ID	Cont. Type[1]	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analytic Method	Turn[5]	LAB
3	070-E4	w/cv	40ml	N	Y	None	EPA 8015/8020	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 NA Date 7/31/90 Time of Sampling 0700

Job Name Shell Piedmont Job Number 51-463-01 Initials CM

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. NM 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 NA

Description of matter in sample: Bubbles in both VOAs

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
2	070-21	w/cv	40ml	N	Y	None	EPA 8015/8020	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

CHAIN-OF-CUSTODY FORMS

WEISS ASSOCIATES
5500 Shellmound St., Emeryville, CA 94608
Phone: 415-547-5420 FAX: 415-547-5043

Shell Service Station Address:
29 Wild wood
Piedmont, CA
Shell Contact: Diane Lundquist
WIC #: 204600101 09
AFE #: 986648

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

(3135)

Project ID: 81-463-01

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

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.

Sampled by: Jim Martin, David Charles Laboratory Name: NET

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	070-1	W/cv	7/31/90	40ml	N	Yes	NONE	GAS/BETX	EPA 8015/8020	N	
	070-2										
	070-3										
	070-4										
	070-5										
	070-E4										
2	070-21										

Released by (Signature), Date: Jim Martin 7/31/90
Affiliation 1: Weiss Assoc

Received by (Signature), Date: A J Linford 7/31/90
Affiliation 2: Weiss Assoc.

Released by (Signature), Date: A J Linford 8-1-90
Affiliation 3: Weiss Assoc.

Shipping Carrier, Method, Date: Jeanie Green 8/1/90
Affiliation 4: N.E.T.

Released by (Signature), Date: Jeanie Green 8/1/90
Affiliation 5: N.E.T.

Received by Lab Personnel, Date: K Temple 8/2/90
Affiliation, Telephone 6: NET Pacific 0800

x Yes
Seal intact?

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:

Locked and Stored overnight.

F:\ALL\ADMIN\FORMS\COCSHELL.WP2

NATIONAL ENVIRONMENTAL TESTING, INC.

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

Eric Anderson
Weiss Associates
5500 Shell Mound Rd.
Emeryville, CA 94524

Date: 08-09-90
NET Client Acct No: 18.09
NET Pacific Log No: 3135
Received: 08-02-90 0800

Client Reference Information

SHELL-29 Wildwood, Piedmont, CA 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

JS:rct
Enclosure(s)

Client No: 18.09 Date: 08-09-90
Client Name: Weiss Associates
NET Log No: 3135 Page: 2

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

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results 070-1 07-31-90 59006	 070-2 07-31-90 59007	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-03-90	08-03-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	ND	0.07	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-03-90	08-03-90	
Benzene		0.5	ND	1.5	ug/L
Ethylbenzene		0.5	ND	ND	ug/L
Toluene		0.5	ND	ND	ug/L
Xylenes, total		0.5	ND	ND	ug/L

Client No: 18.09 Date: 08-09-90
Client Name: Weiss Associates
NET Log No: 3135 Page: 3

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

			Descriptor, Lab No. and Results		
			070-3 07-31-90	070-4 07-31-90	
Parameter	Method	Reporting Limit	59008	59009	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			10	1	
DATE ANALYZED			08-07-90	08-03-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	3.5	ND	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			10	1	
DATE ANALYZED			08-07-90	08-03-90	
Benzene		0.5	210	ND	ug/L
Ethylbenzene		0.5	8.4	ND	ug/L
Toluene		0.5	17	ND	ug/L
Xylenes, total		0.5	62	ND	ug/L

Client No: 18.09
Client Name: Weiss Associates
NET Log No: 3135

Date: 08-09-90

Page: 4

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

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results 070-5 07-31-90 59010	 070-E4 07-31-90 59011	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-03-90	08-03-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	0.09	ND	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			08-03-90	08-03-90	
Benzene		0.5	ND	ND	ug/L
Ethylbenzene		0.5	ND	ND	ug/L
Toluene		0.5	ND	ND	ug/L
Xylenes, total		0.5	ND	ND	ug/L

Client No: 18.09
Client Name: Weiss Associates
NET Log No: 3135

Date: 08-09-90

Page: 5

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

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results 070-21 07-31-90 59012	Units
PETROLEUM HYDROCARBONS			--	
VOLATILE (WATER)			--	
DILUTION FACTOR *			1	
DATE ANALYZED			08-03-90	
METHOD GC FID/5030			--	
as Gasoline		0.05	ND	mg/L
METHOD 602			--	
DILUTION FACTOR *			1	
DATE ANALYZED			08-03-90	
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

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following, which supercedes the listed reporting limit.
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (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, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

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.

* 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.