11-8-90

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: November 8, 1990

TO: Mr. Ariu Levi
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 #204-0072-0502
2160 Otis Drive
Alameda, California

JOB: 81-429-01

AS:
- _____ We dicussed 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.

90 NOV 13 PM 2:34

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

November 8, 1990

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

Re: Shell Service Station
WIC #204-0072-0502
2160 Otis Drive
Alameda, California
WA Job #81-429-01

Dear Mr. Levi:

This letter describes Weiss Associates' (WA) fourth quarter 1990 activities at the Shell service station referenced above. This status report satisfies the quarterly reporting requirements outlined in our workplan dated March 19, 1990, and 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 the three site wells,
- Analyzed the ground water samples and tabulated the analytic results, and
- Measured the ground water depth and determined the ground water elevations and flow direction.

These activities are described below:

Ground Water Sampling

WA collected ground water samples from all three monitoring wells on October 9, 1990, as part of the quarterly ground water monitoring program at Shell Service Station WIC #204-0072-0502 in Alameda, California (Figure 1). Ground water samples from monitoring well MW-2 (Figure 2) contained benzene and vinyl chloride above the California Department of Health Services (DHS) maximum contaminant levels (MCLs) for drinking water, and cis-1,2-dichloroethene (c-1,2-DCE) above the DHS recommended action level (RAL) for drinking water.

Sampling Personnel: WA Field Service Coordinator Robert Hoffman

Monitoring Wells Sampled: MW-1, MW-2, and S-1

Method of Purging Wells:

- Dedicated PVC bailers

Volume of Water Purged Prior to Sampling:

- Wells MW-1 and MW-2 were purged of about four well-casing volumes, about 27.5 and 32 gallons respectively.

- Well S-1 was purged dry; water level was allowed to recover to within 80 percent of static water level prior to sampling.

Method of Collecting Ground Water Samples:

- Samples from wells MW-1 and MW-2 were drawn through sampling ports on the side of dedicated PVC bailers

- Samples from well S-1 were decanted from a dedicated PVC bailer

Methods of Containing Ground Water Samples:

- 40 ml glass, volatile organic analysis (VOA) vials, preserved in hydrochloric acid and packed in protective foam sleeves for total petroleum hydrocarbons as gasoline (TPH-G) benzene, ethylbenzene, toluene, and xylenes (BETX), and halogenated volatile organic compounds (HVOCs) analyses

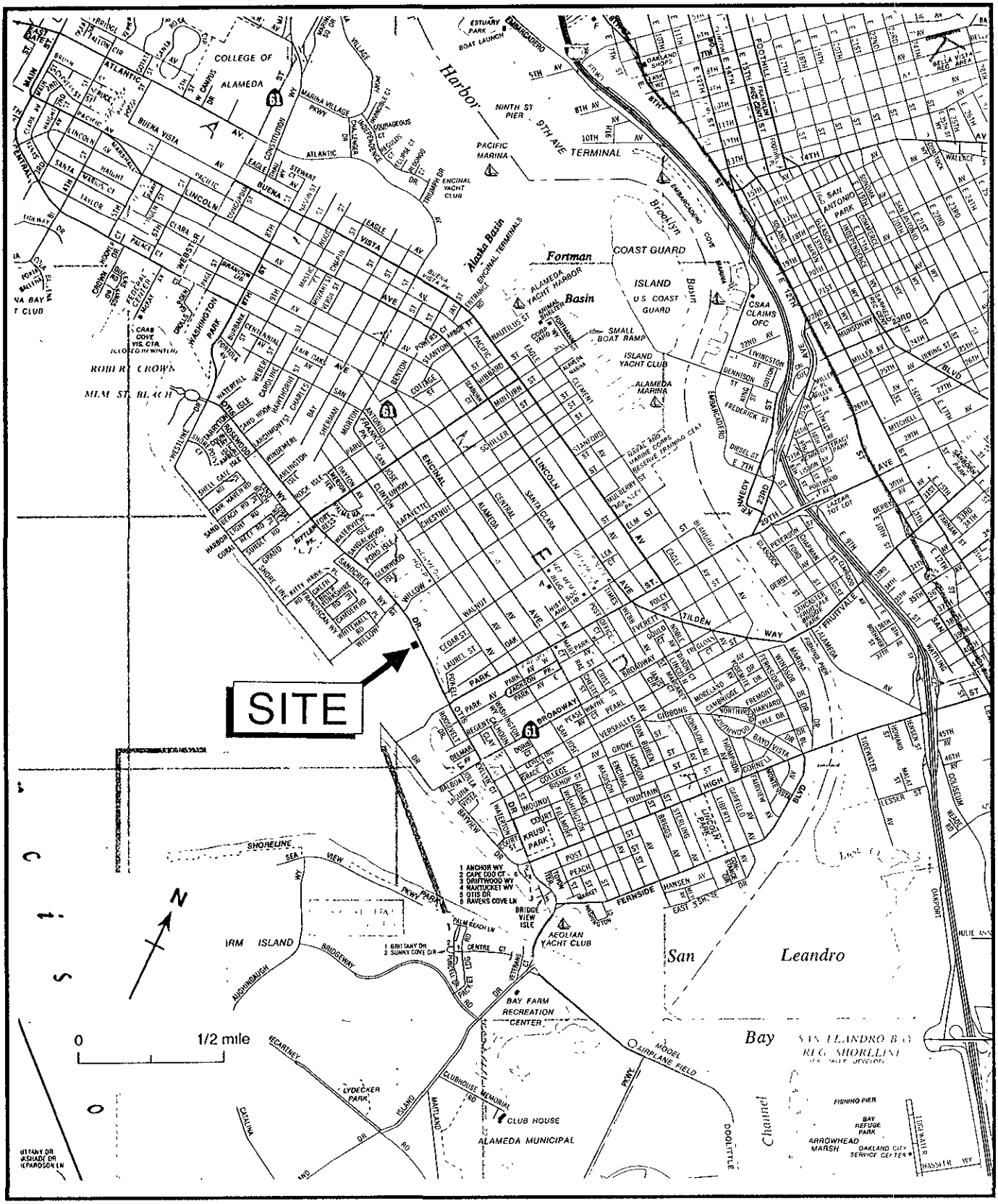

Figure 1. Site Location Map - Shell Service Station, WIC# 204-0072-0502, 2160 Otis Drive, Alameda, CA

8/21/90

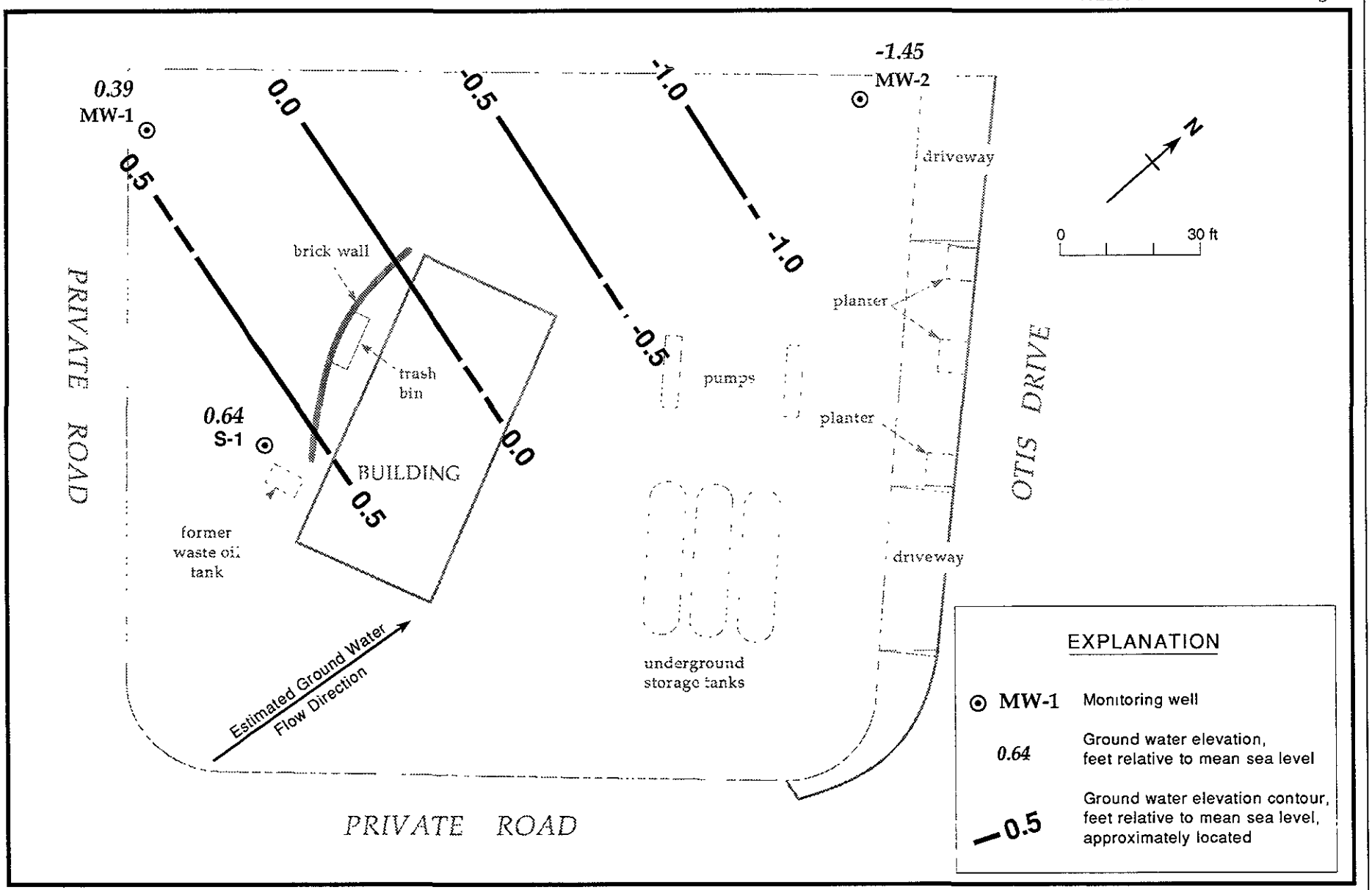

Figure 2. Monitoring Well Locations and Ground Water Elevation Contours - October 9, 1990 - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

11/8/90

- 1000 ml amber glass bottles for total petroleum hydrocarbons as diesel (TPH-D) analysis

- 1000 ml amber glass bottle preserved with sulfuric acid for total oil and grease (TOG) analysis

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

Water Samples Transported to:

- International Technology Analytical Services (IT), San Jose, California, and were received on October 11, 1990.

Quality Assurance/Quality Control:

- A travel blank was submitted for analysis.

- An equipment blank was not necessary because all bailers are dedicated to specific wells.

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 9, 1990. Ground water elevations dropped 0.13 to 0.21 ft from last quarter.

- The direction of ground water flow is northward. This is consistent with historic results.

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

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

Well ID	Date	Top-of-Casing Elevation (ft above msl)	Depth to Water (ft)	Ground Water Elevation (ft above msl)
MW-1	04-11-90	6.00	5.23	0.77
	07-10-90		5.40	0.60
	10-09-90		5.61	0.39
MW-2	04-11-90	3.29	4.51	-1.22
	07-10-90		4.61	-1.32
	10-09-90		4.74	-1.45
S-1	09-11-90	5.10	4.29	0.81
	04-11-90		4.00	1.10
	07-10-90		4.25	0.85
	10-09-90		4.46	0.64

Chemical Analyses

The Ground Water Samples were Analyzed for:

- TPH-G by modified EPA Method 8015,
- BETX by EPA Method 8020,
- TOG by American Public Health Association Standard Method 503E,
- HVOCs by EPA Method 601, and
- TPH-D by modified EPA Method 8015 in samples from well MW-2 only.

The laboratory analyzed the samples on October 18, 19 and 22, 1990. The results are presented in Table 2 and the analytic reports are included in Attachment B.

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

Sample ID	Date Sampled	Sampled By	Analytic Method	Lab	TPH-G	TPH-D	B	E	T	X	TOG	VOCs	Metals/Others
					<----------parts per billion (µg/L)---------->								
S-1	09/04/87	PEG	624	IT	---	---	<5	<5	<5	<5	---	[a]	---
	09/11/89	WA	8015/624/503 625/6010	IT	<50	<100	<0.5	<1	<1	<3	<1,000	<5-50	[b]
	04/11/90	WA	503/601/602/8015	NET	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000	1.7[c]	---
	07/10/90	WA	503/601/602/8015	NET	90	---	<0.5	<0.5	<0.5	<0.5	<10,000	<0.4-10	---
	10/09/90	WA	503/601/8015/8020	IT	<50	---	<0.5	<0.5	<0.5	<0.5	<5,000	<0.5	---
MW-1	04/11/90	WA	503/601/602/8015	NET	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000	<0.4-10	---
	07/10/90	WA	503/601/602/8015	NET	100	---	<0.5	<0.5	<0.5	<0.5	<10,000	<0.4-10	---
	10/09/90	WA	503/601/8015/8020	IT	<50	---	<0.5	<0.5	<0.5	<0.5	<5,000	<0.5	---
MW-2	04/11/90	WA	503/601/602/8015	NET	200	220	2.7	<0.5	0.5	2.4	<10,000	[d]	---
	07/10/90	WA	503/601/602/8015	NET	570	450	150	<0.5	0.9	3.1	<10,000	[e]	
	10/09/90	WA	503/601/8015/8020	IT	190,000	51	55,000	<0.5	<0.5	<0.5	<5,000	[f]	---
Trip Blank	07/10/90	WA	602/8015	NET	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
	10/09/90	WA	8015/8020	IT	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
DHS MCLs					NE	NE	1	620	100[g]	1,750	NE	[h]	[i]

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
B = Benzene
E = Ethylbenzene
T = Toluene
X = Xylenes
TOG = Total hydrocarbon oil and grease (non-polar)
VOCs = Volatile organic compounds including halogenated VOCs
SVOCs = Semi-volatile organic compounds
--- = Not Analyzed
ppb = parts per billion
NE = Action levels not established
<n = Not detected at detection limit of n ppb
WA = Weiss Associates
PEG = Pacific Environmental Group

Analytic Methods:

503 = American Public Health Association Standard Method 503A&E for TOG
601 = EPA Method 601 for HVOCs
602 = EPA Method 602 for BETX
624 = EPA Method 624 for VOCs
625 = EPA Method 625 for SVOCs
6010 = EPA Method 6010 for metals
8015 = Modified EPA Method 8015 for TPH-G and TPH-D
8020 = EPA Method 8020 for BETX

Analytical Laboratories:

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

Notes:

[a] = Unknown alcohol detected at 7 ppb, and acetone detected at 270 ppb
[b] = Metals detected include : chromium at 90 ppb; lead at 90 ppb; zinc at 100 ppb; also analyzed for cadmium (<10 ppb), chlorodiphenyl (PCB) (<0.05 ppb) and SVOCs (<5-10 ppb)
[c] = Chloroform detected at 1.7 ppb
[d] = Chloroform detected at 4.5 ppb; trans-1,2-dichloroethene (t-1,2-DCE) at 16 ppb; trichloroethene (TCE) at 1.2 ppb
[e] = Chloroform detected at 1.7 ppb; 1-2-dichloroethane at 0.44 ppb; t-1,2-DCE detected at 11 ppb; TCE detected at 0.93 ppb.
[f] = Chloroform detected at 15 ppb, cis-1,2-dichloroethene (c-1,2-DCE) at 46 ppb; t-1,2-DCE at 6.7 ppb; tetrachloroethene (PCE) at 1.6 ppb; TCE at 1.3 ppb; vinyl chloride at 2.5 ppb
[g] = DHS recommended action level for drinking water
[h] = DHS MCL for chloroform = 100 ppb; TCE = 5 ppb; PCE = 5 ppb; vinyl chloride = 0.5 ppb; DHS RAL for t-1,2-DCE = 10 ppb; c-1,2-DCE = 6 ppb
[i] = DHS MCL for chromium = 50 ppb; lead = 50 ppb; zinc = 5,000 ppb

Discussion of Analytic Results for Ground Water for this Quarter:

- No hydrocarbons were detected in samples from wells S-1 and MW-1.
- Samples from well MW-2 contained benzene and vinyl chloride above the DHS MCLs and c-1,2-DCE above the DHS RAL.
- In well MW-2, the TPH-G concentration increased significantly from 570 ppb last quarter to 190,000 ppb this quarter, and benzene increased from 150 to 55,000 ppb.

ANTICIPATED WORK FOR FIRST QUARTER 1991

During the remainder of the fourth quarter 1990 and the first quarter 1991, on behalf of Shell Oil, WA plans to:

- Continue quarterly monitoring of ground water at this site,
- Drill soil borings in the vicinity of the former waste oil tank location to determine the horizontal and vertical extent of hydrocarbons over 1,000 parts per million, and excavate the soil,
- Arrange for disposal of the excavated soil, and
- Prepare a quarterly status report presenting all data generated during the previous quarter including water sampling results and analysis and the results of the soil boring and excavation.

We are pleased to provide hydrogeologic consulting services to Shell and trust that this submittal satisfies your requirements. Please contact Tom Fojut or Karen Sixt if you have any questions.

Sincerely,
Weiss Associates

Thomas Fojut

Thomas J. Fojut
Staff Geologist

J. P. T.

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

TJF/JPT:jg
E:\ALL\SHELL\425\429QMNO0.WP

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

cc: E. Paul Hayes, Shell Oil Company, P.O. Box 4848, Anaheim, California 92803
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 10/9/90 Time of Sampling 14:28
Job Name SHELL ALA. I Job Number 81-429-01 Initials RH
Sample Point Description MW (M = Monitoring Well)
Location Rear of STATION ON OTIS DR. ALA.

WELL DATA: Depth to Water 5.61 ft (static, pumping) Depth to Product N/A ft.
Product Thickness N/A Well Depth 16 ft (spec) Well Depth 15.97 ft(sounded) Well Diameter ___ in
Initial Height of Water in Casing 10.36 ft. = volume 6.76 gal.
4 Casing Volumes to be Evacuated. Total to be evacuated 27.06 gal.

EVACUATION METHOD: Pump # and type N/A Hose # and type N/A
Bailer# and type Ded PVC Dedicated Y (Y/N)
Other ___

Evacuation Time: Stop 14:21
Start 14:11
Total Evacation Time 10
Total Evacuated Prior to Sampling 27.5 gal.
Evacuation Rate 2.75 gal. per minute
Depth to Water during Evacuation ___ ft. ___ time
Depth to Water at Sampling 9.45 ft. 14:28 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 Grey Odor NONE DETECTED
Description of matter in sample: Sm. Amt. FINE Grey SILT,
Sampling Method: Ded. BLR. Smpl. 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-MW1	W/V	40	N	Y	HCL	GAS & BETX	N	IT
3	↓	W/V	↓	↓	↓	↓	EPA 601	↓	↓
2	↓	B/G	1 LR	↓	↓	H2SO4	TOG	↓	↓

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 10/9/90 Time of Sampling 15:33
Job Name Shell A-A.I Job Number 81-429-01 Initials RH
Sample Point Description M (M = Monitoring Well)
Location

WELL DATA: Depth to Water 4.74 ft (static, pumping) Depth to Product N/A ft.
Product Thickness N/A Well Depth 17 ft (spec) Well Depth 16.93 ft (sounded) Well Diameter ___ in
Initial Height of Water in Casing 12.19 ft. = volume 7.96 gal.
4 Casing Volumes to be Evacuated. Total to be evacuated 31.84 gal.

EVACUATION METHOD: Pump # and type N/A Hose # and type N/A
Bailer# and type ded. PVC Dedicated Y (Y/N)
Other —

Evacuation Time: Stop 15:04 15:30
Start 14:56 15:22
Total Evacation Time 16
Total Evacuated Prior to Sampling 32 gal.
Evacuation Rate 2 gal. per minute
Depth to Water during Evacuation N/A ft. ___ time
Depth to Water at Sampling 12.00 ft. 15:33 time
Evacuated Dry? Yes After 26 gal. Time 15:04
80% Recovery = PURGED ENTIRE VOL.
% Recovery at Sample Time N/A 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 SLIGHT GREY "HAZE" Odor NONE
Description of matter in sample: VERY SM. AMT. FINE GREY SILT
Sampling Method: DED. BLR. SAMPLE 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-MW2	W/V	40	N	Y	HCL	GAS; BETX	N	IT
3		↓	↓	↓	↓	↓	EPA 601	↓	↓
2		B/G	1LT			H2SO4	TOG		
2		↓	↓			HCL	DIESEL		

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 S-1 Date 10/9/90 Time of Sampling 16:56

Job Name Shell ALA I Job Number 81-429-01 Initials RH

Sample Point Description - M (M = Monitoring Well)

Location Rear of STATION

WELL DATA: Depth to Water 4.46 ft (static, pumping) Depth to Product _____ ft.

Product Thickness _____ Well Depth 19 ft (spec) Well Depth 18.50 ft(sounded) Well Diameter ___ in

Initial Height of Water in Casing 14.04 ft. = volume 5.15 gal.

4 Casing Volumes to be Evacuated. Total to be evacuated 20.6 gal.

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

Bailer# and type Ded. 5' PVC Dedicated Y (Y/N)

Other _____

Evacuation Time: Stop 16:11 > CONTINUED TO BAIL @ 10 GAL OFF + ON

Start 16:05 _____ _____

Total Evacation Time _____

Total Evacuated Prior to Sampling 10 gal.

Evacuation Rate _____ gal. per minute

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

Depth to Water at Sampling 6.73 ft. 16:56 time

Evacuated Dry? Yes After 6 gal. Time 16:11

80% Recovery = D.T.W. 7.27'

% Recovery at Sample Time 83% Time 16:56

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 Grey Odor None

Description of matter in sample: FLOATING matter & some FINE SILT

Sampling Method: Ded. 5' PVC.

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-S1	W/V	40	N	Y	HCL	GAS BeTX	N	IT
3	↓	W/V	↓	↓	↓	↓	EPA 601	↓	↓
2	↓	B/G	1 LTR	↓	↓	H2SO4	TOG	↓	↓

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:

TRIP BLANK, SUPPLIED BY SUPERIOR

WEISS ASSOCIATES

WATER SAMPLING DATA

Well Name TRIP BLANK Date 10/9/90 Time of Sampling 16:15

Job Name Shell ALA I Job Number 81-429-01 Initials RH

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: SM. BUBBLE IN ONE SAMPLE

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/V	40	N	Y	HCL	GAS/BeTX	N	ET

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

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Shell Oil Company
Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608
Karen Sixt

Date: 10/29/90

Work Order: TO-10-166

P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: 81-429-01, 2160 Otis Dr., Al
Date Received: 10/11/90
Number of Samples: 4
Sample Type: aqueous

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 10/29/90
Client Work ID: 81-429-01, 2160, Otis Dr., Al

Work Order: TO-10-166

TEST NAME: **Halocarbons by 8010/601**

SAMPLE ID: **100-MW1**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **T010166-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **10/22/90**

RESULTS in Milligrams per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.0005	None
Bromoform	0.0005	None
Bromomethane	0.0005	None
Carbon tetrachloride	0.0005	None
Chlorobenzene	0.0005	None
Chloroethane	0.0005	None
Chloroform	0.0005	None
Chloromethane	0.0005	None
Dibromochloromethane	0.0005	None
1,2-Dichlorobenzene	0.0005	None
1,3-Dichlorobenzene	0.0005	None
1,4-Dichlorobenzene	0.0005	None
Dichlorodifluoromethane	0.0005	None
1,1-Dichloroethane	0.0005	None
1,2-Dichloroethane	0.0005	None
1,1-Dichloroethene	0.0005	None
cis-1,2-Dichloroethene	0.0005	None
trans-1,2-Dichloroethene	0.0005	None
1,2-Dichloropropane	0.0005	None
cis-1,3-Dichloropropene	0.0005	None
trans-1,3-Dichloropropene	0.0005	None
Methylene chloride	0.0005	None
1,1,2,2-Tetrachloroethane	0.0005	None
Tetrachloroethene	0.0005	None
1,1,1-Trichloroethane	0.0005	None
1,1,2-Trichloroethane	0.0005	None
Trichloroethene	0.0005	None
Trichlorofluoromethane	0.0005	None
1,1,2-Trichlorotrifluoroethane	0.0005	None
Vinyl chloride	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 10/29/90
Client Work ID: 81-429-01, 2160 Otis Dr., Al

Work Order: TO-10-166

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **100-MW1**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **T010166-01**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		10/18/90
Low Boiling Hydrocarbons	Mod.8015		10/18/90
Oil and Grease	503E	10/18/90	10/19/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None
Oil and Grease	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 10/29/90
Client Work ID: 81-429-01, 2160, Otis Dr., Al

Work Order: TO-10-166

TEST NAME: **Halocarbons by 8010/601**

SAMPLE ID: **100-MW2**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **T010166-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **10/22/90**

RESULTS in Milligrams per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.0005	None
Bromoform	0.0005	None
Bromomethane	0.0005	None
Carbon tetrachloride	0.0005	None
Chlorobenzene	0.0005	None
Chloroethane	0.0005	None
Chloroform	0.0005	0.015
Chloromethane	0.0005	None
Dibromochloromethane	0.0005	None
1,2-Dichlorobenzene	0.0005	None
1,3-Dichlorobenzene	0.0005	None
1,4-Dichlorobenzene	0.0005	None
Dichlorodifluoromethane	0.0005	None
1,1-Dichloroethane	0.0005	None
1,2-Dichloroethane	0.0005	None
1,1-Dichloroethene	0.0005	None
cis-1,2-Dichloroethene	0.0005	0.046
trans-1,2-Dichloroethene	0.0005	0.0067
1,2-Dichloropropane	0.0005	None
cis-1,3-Dichloropropene	0.0005	None
trans-1,3-Dichloropropene	0.0005	None
Methylene chloride	0.0005	None
1,1,2,2-Tetrachloroethane	0.0005	None
Tetrachloroethene	0.0005	0.0016
1,1,1-Trichloroethane	0.0005	None
1,1,2-Trichloroethane	0.0005	None
Trichloroethene	0.0005	0.0013
Trichlorofluoromethane	0.0005	None
1,1,2-Trichlorotrifluoroethane	0.0005	None
Vinyl chloride	0.0005	0.0025

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: **Shell Oil Company**
Date: **10/29/90**
Client Work ID: **81-429-01, 2160 Otis Dr., Al**

Work Order: **T0-10-166**

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **100-MW2**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **T010166-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		10/18/90
Low Boiling Hydrocarbons	Mod.8015		10/18/90
High Boiling Hydrocarbons	Mod.8015	10/19/90	10/19/90
Oil and Grease	503E	10/18/90	10/19/90

PARAMETER	DETECTION LIMIT	DETECTED	
Low Boiling Hydrocarbons calculated as Gasoline	0.05	**190.**	
BTEX			
Benzene	0.0005	**55.**	
Toluene	0.0005	**None**	
Ethylbenzene	0.0005	**None**	
Xylenes (total)	0.0005	**None**	
High Boiling Hydrocarbons calculated as Diesel	0.05	**0.051**	*
Oil and Grease	5.	**None**	

Comments:
* Chromatographic pattern of compounds detected and calculated as diesel is similar to but does not match that of the diesel standard used for calibration.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 10/29/90
Client Work ID: 81-429-01, 2160, Otis Dr., Al

Work Order: TO-10-166

TEST NAME: **Halocarbons by 8010/601**

SAMPLE ID: **100-S1**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **T010166-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **10/22/90**

RESULTS in Milligrams per Liter

PARAMETER	DETECTION LIMIT	DETECTED
Bromodichloromethane	0.0005	None
Bromoform	0.0005	None
Bromomethane	0.0005	None
Carbon tetrachloride	0.0005	None
Chlorobenzene	0.0005	None
Chloroethane	0.0005	None
Chloroform	0.0005	None
Chloromethane	0.0005	None
Dibromochloromethane	0.0005	None
1,2-Dichlorobenzene	0.0005	None
1,3-Dichlorobenzene	0.0005	None
1,4-Dichlorobenzene	0.0005	None
Dichlorodifluoromethane	0.0005	None
1,1-Dichloroethane	0.0005	None
1,2-Dichloroethane	0.0005	None
1,1-Dichloroethene	0.0005	None
cis-1,2-Dichloroethene	0.0005	None
trans-1,2-Dichloroethene	0.0005	None
1,2-Dichloropropane	0.0005	None
cis-1,3-Dichloropropene	0.0005	None
trans-1,3-Dichloropropene	0.0005	None
Methylene chloride	0.0005	None
1,1,2,2-Tetrachloroethane	0.0005	None
Tetrachloroethene	0.0005	None
1,1,1-Trichloroethane	0.0005	None
1,1,2-Trichloroethane	0.0005	None
Trichloroethene	0.0005	None
Trichlorofluoromethane	0.0005	None
1,1,2-Trichlorotrifluoroethane	0.0005	None
Vinyl chloride	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 10/29/90
Client Work ID: 81-429-01, 2160 Otis Dr., Al

Work Order: TO-10-166

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **100-S1**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **T010166-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		10/19/90
Low Boiling Hydrocarbons	Mod.8015		10/19/90
Oil and Grease	503E	10/18/90	10/19/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None
Oil and Grease	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: **Shell Oil Company**
Date: **10/29/90**
Client Work ID: **81-429-01, 2160, Otis Dr., Al**

Work Order: **T0-10-166**

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **100-21**
SAMPLE DATE: **10/09/90**
LAB SAMPLE ID: **T010166-04**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

RESULTS in Milligrams per Liter:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020		10/18/90
Low Boiling Hydrocarbons	Mod.8015		10/18/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	0.05	None
BTEX		
Benzene	0.0005	None
Toluene	0.0005	None
Ethylbenzene	0.0005	None
Xylenes (total)	0.0005	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 10/29/90
Client Work ID: 81-429-01, 2160, Otis Dr., Al

Work Order: TO-10-166

TEST CODE 601 TEST NAME **Halocarbons by 8010/601**

The method of analysis for volatile halocarbons is taken from E.P.A. Methods 601 and 8010. Samples are examined using the purge and trap technique. Final detection is by gas chromatography using an electrolytic conductivity detector.

TEST CODE **ONGEW** TEST NAME **EPA 503E in Water**

The method of analysis for oil and grease is taken from Standard Methods for the Examination of Water and Wastewater, Section 503E. Samples are extracted with repeated portions of solvent and the extract is treated with silica gel to remove polar compounds. The extract is evaporated and oil and grease is determined gravimetrically.

TEST CODE **TPHN** TEST NAME **TPH High Boiling by 8015**

The method of analysis for high boiling hydrocarbons involves extracting the samples with solvent and examining the extracts by gas chromatography using a flame ionization detector.

TEST CODE **TPHVB** TEST NAME **TPH Gas,BTEX by 8015/8020**

The method of analysis for low boiling hydrocarbons is taken from E.P.A. Methods 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatograhy using a flame ionization detector as well as a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline and includes benzene, toluene, ethylbenzene and xylenes.

TO-10-166

Page 1 of 1

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

Shell Service Station Address:
2166 OTIS DR.
ALAMEDA, CA

Shell Contact:
WIC #: 204-007-205
AFE #: 98602 32

Please send analytic results and a copy of the signed chain of custody form to:
KAREN SIXT

Project ID: 81-429-01

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: R. HOFFMAN

Laboratory Name: I.T.

No. of Containers	Sample ID	Container Type[1]	Sample Date	Vol[2]	Fil[3]	Ref[4]	Preservative (specify)	Analyze for	Analytic Method	Turn[5]	COMMENTS
01ABC 3	100-MW1	W/V	10/9/90	40	N	Y	HCL	GAS/BETX	EPA 8015/8020	N	JK coor 10/11/90
02ABC	100-MW2										
03ABC	100-S1										
04ABC	100-Z1										
01DEF 3	100-MW1							HALOGENATED VOCs	EPA 601		
02DEF	100-MW2										
03DEF	100-S1										
01GH 2	100-MW1	W/B/G		L+R			SULFURIC ACID	T.O.G.	EPA 563 A/E		
02GH	100-MW2										
03GH	100-~~MW~~S1										
02IJ 2	100-MW2						HCL	DIESEL	MOD. 8015		

1 Released by (Signature), Date: [signature] 10/10/90

1 Affiliation: WEISS ASSOC.

2 Received by (Signature), Date: [signature] 10-11-90

2 Affiliation: WEISS ASSOC.

3 Released by (Signature), Date: [signature] for A.P. 10/11/90 13:25

3 Affiliation: Weiss Assoc. 13:25

4 Shipping Carrier, Method, Date: [signature] 10/11/90

4 Affiliation: IT

5 Released by (Signature), Date: [signature] 10/11/90 18:15

5 Affiliation: 1815

6 Received by Lab Personnel, Date: Jason J. Koehn 10/11/90

6 Affiliation, Telephone: IT 943 1540 x22

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:

TO SECURE LOCKED AREA

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