7-25-90

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

July 25, 1990

Ariu Levi
Alameda County Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

Re: Shell Service Station
WIC #204-0072-0502
2160 Otis Drive
Alameda, California
WA Job #81-429-02

Dear Mr. Levi:

This letter describes the second quarter 1990 activities at the subject Shell Service Station (Figure 1). 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 2652.d. Included below are:

- A summary of previous site activities,
- Descriptions of activities performed during the second quarter 1990 (April 1 through June 1, 1990), including tabulated chemical analytic results, and
- Proposed work for the third quarter 1990.

SUMMARY OF PREVIOUS ACTIVITIES

In June 1987 a steel 550-gallon waste oil tank was removed from the site and replaced with a 550-gallon fiberglass tank. Following the tank removal, Blaine Tech Services of San Jose, California, collected a soil sample directly beneath the former tank location at 7 ft depth, a soil sample from the excavation sidewall at 3.5 ft depth, a sample of ground water from the tank pit, and samples of soil stockpiles excavated from the tank pit.[1] The sample from 7

[1]Blaine Tech Services, Inc., 1987, Sampling Report 87165-T-1, Shell Service Station 2160 Otis Drive, Alameda, California, consultant's letter-report prepared for Shell Oil Company, June 26, 1987, 3 pp. and 2 attachments.

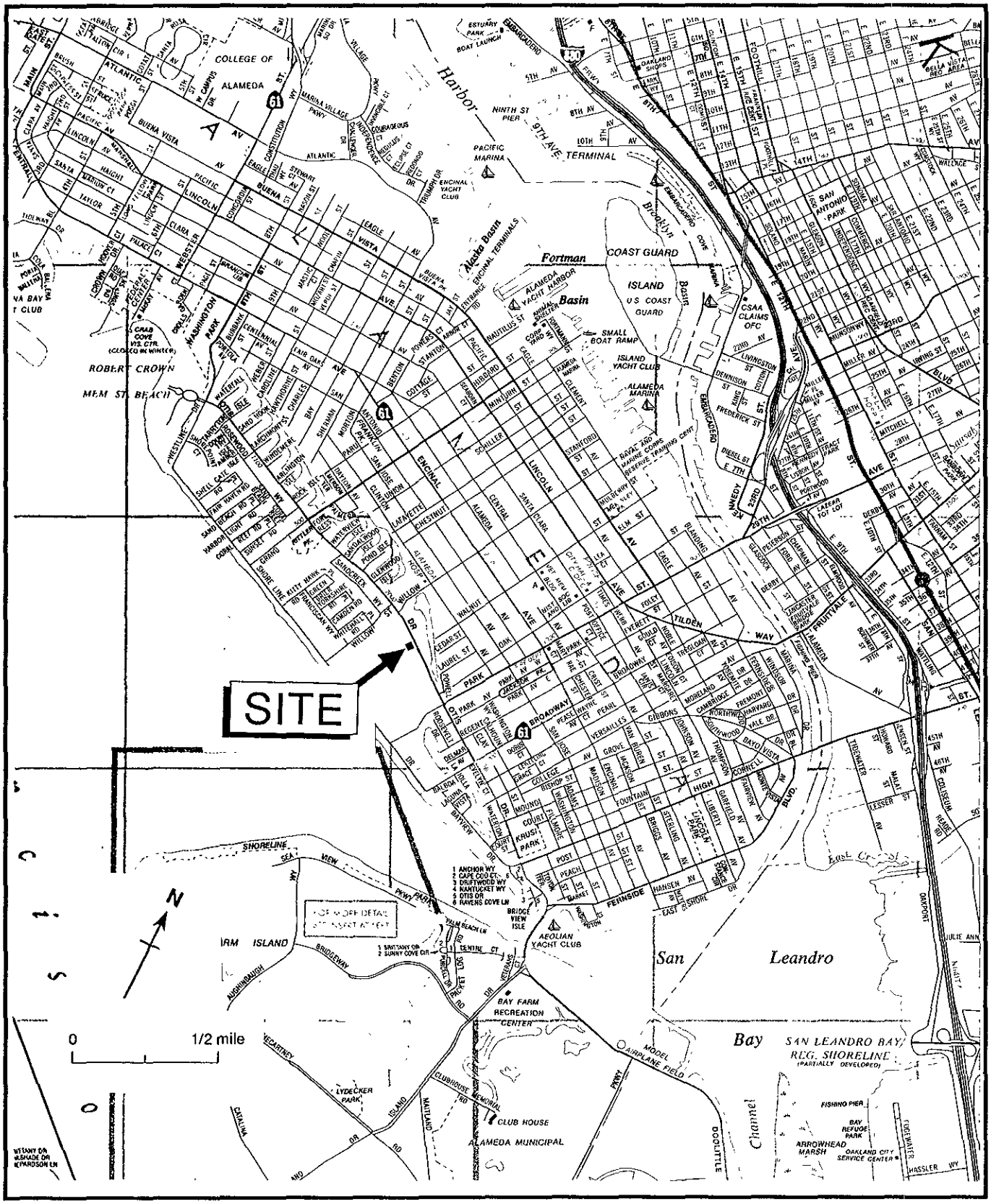

Figure 1. Site Location Map - Shell Service Station, WIC#204007205, 2160 Otis Drive, Alameda, CA

3/14/90

ft depth contained 1,700 parts per million (ppm) total oil and grease (TOG). Total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) were not detected in this sample. The sample from 3.5 ft depth contained 47 ppm TOG. TOG was not detected in the water sample. The water sample was not analyzed for any other compounds. Field observations by Blaine Tech personnel indicate that the tank had a tar wrapping, and that both the tank and wrapping appeared to be in good condition, with no holes, when removed.

In September 1987, Pacific Environmental Group of Santa Clara, California conducted a subsurface investigation to determine whether hydrocarbons were in the ground water beneath the site.[2] The investigation consisted of drilling one soil boring to a depth of 20.5 ft adjacent to the southwest side of the waste oil tank pit, installing ground water monitoring well S-1 in the boring, and analyzing soil and ground water samples. Ground water was encountered in the borehole at about 8 ft depth and stabilized in the monitoring well at about 5 ft depth. Soil samples were collected from the boring about every 5 ft for chemical analysis. TOG was detected in all four of the soil samples from the boring at a maximum TOG concentration of 1,600 ppm in the 5 ft depth sample. Benzene, ethylbenzene, toluene and xylenes (BETX) and VOCs were not detected in the 10 ft depth soil sample. A ground water sample from monitoring well S-1 contained 0.027 ppm acetone and an unknown alcohol at 0.007 ppm. Fuel hydrocarbons were not detected in the water sample.

To confirm the absence of fuel hydrocarbons in ground water and to determine whether the acetone detected in the initial water sample could have been the result of laboratory contamination, WA collected ground water samples from well S-1 on September 11, 1989.[3] At this time, the depth to water in the well was about 4.3 ft. Chromium, lead and zinc were detected in the ground water at 0.09 ppm, 0.09 ppm and 0.10 ppm, respectively. Fuel hydrocarbons, PCBs, VOCs and semi-volatile organic compounds (SVOCs) were not detected in the ground water. Acetone and alcohol, detected in the ground water samples from September 1987, were not detected in the recent samples. Therefore, it is likely that the previous results reflected laboratory contamination.

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[2]Pacific Environmental Group, 1987, Soil and Groundwater Investigation at Shell Service Station, 2160 Otis Drive, Alameda, California, consultant's letter-report prepared for Shell Oil Company, October 27, 1987, 3 pp. and 7 attachments.

[3]Weiss Associates, 1989, Petition for Tank Closure, Shell Service Station, 2160 Otis Drive, Alameda, California, consultant's letter prepared for Shell Oil Company, October 13, 1989, 9 pp. and 4 attachments.

In December 1989, Shell Oil retained Weiss Associates to drill two additional borings at the site, install wells in the borings, determine the ground water gradient, monitor ground water, investigate ground water and lend use in the site vicinity, and, because TOG was detected in soil over 1,000 ppm, to investigate alternatives for site remediation.

SECOND QUARTER 1990 ACTIVITIES

During the second quarter 1990 Weiss Associates (WA):

- Drilled two soil borings and installed ground water monitoring wells in the borings,
- Collected soil samples from the borings for chemical analysis,
- Developed the new wells and sampled all site wells,
- Determined the ground water gradient,
- Evaluated the soil and ground water analytic results to determine if additional investigation and/or remediation is necessary, and
- Investigated ground water and land use near the site.

These tasks are described below.

Monitoring Well Installation

On April 2, 1990, WA geologist Robert Kitay drilled two soil borings at the site and installed ground water monitoring wells in the borings (Figure 2). The objectives of the investigation were to determine if hydrocarbons from the former waste oil tank are in soil and ground water beneath the site, and to determine whether existing well S-1 is downgradient of the former waste oil tank excavation. All soil samples collected from the borings were analyzed for:

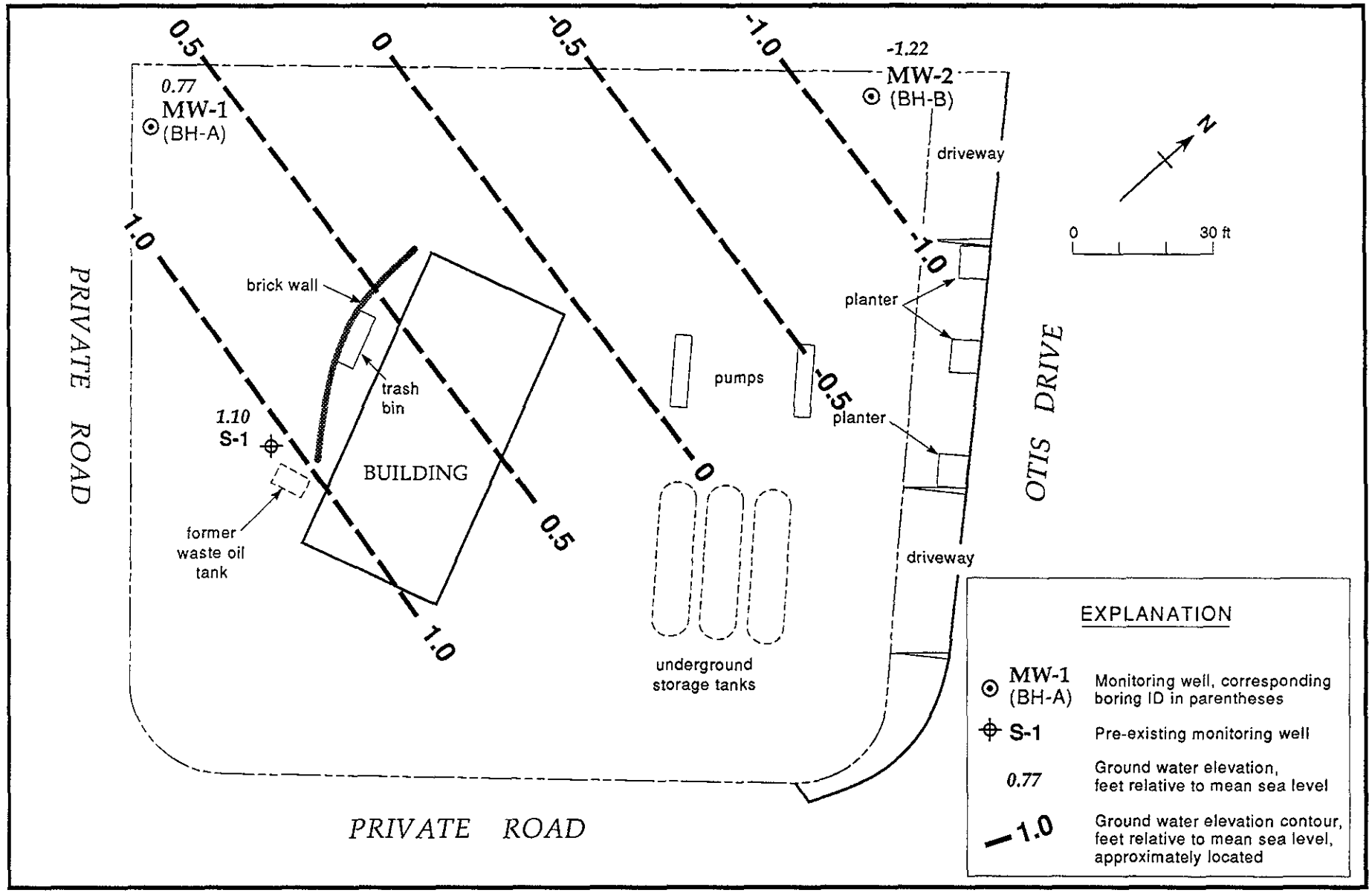

Figure 2. Ground Water Elevation Contours - April 4, 1990 - Shell Service Station WIC #204-007-205, 2160 Otis Drive, Alameda, California

6/18/90

- Total petroleum hydrocarbons as gasoline (TPH-G) by modified EPA Method 8015, gas chromatography with flame ionization detection (GC/FID), and

- Benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8020, gas chromatography with photoionization detection (GC/PID).

The soil sample collected from just above the static water level in each boring was also analyzed for:

- Total oil and grease (TOG) by American Public Health Association (APHA) Standard Methods 503 D&E,

- Halogenated volatile organic compounds (HVOCs) by EPA Method 8010, gas chromatography with Hall electrolytic conductivity detection (GC/HALL), and

- Total petroleum hydrocarbons as diesel (TPH-D) by modified EPA Method 8015, GC/FID.

Analytic results for soil are presented in Table 1, and copies of laboratory analytic reports and chain of custody documents for soil samples are presented as Attachment A. The soil sample from 4.8 ft depth in boring BH-B contained 270 ppm TOG. Benzene was detected at 0.008 ppm at 10.2 ft depth in boring BH-B. No HVOCs and no other hydrocarbons were detected in any of the soil samples.

Drill cuttings were sampled and temporarily stockpiled onsite on plastic sheeting. The stockpile was covered with plastic sheeting to prevent infiltration of rainwater and aeration of volatile compounds. Based on the analytic results of composite borehole samples, the soil was subsequently transported to a Class III disposal facility by a licensed waste hauler under contract with Shell Oil.

Monitoring Well Development and Sampling

Monitoring wells MW-1 and MW-2 were developed on April 3, 1990, by WA environmental technician Michael Cooke. The wells were developed using surge block agitation and airlift evacuation. On April 11, 1990, WA collected ground water samples from all three wells onsite. The sample from well S-1 was collected in a steam-cleaned Teflon bailer. Well S-1 was purged dry and allowed to recover its former static water level before sampling. Samples were collected from wells MW-1 and MW-2 with dedicated 3-inch diameter PVC bailers, and decanted into the sample containers through a sampling port on the side of the bailer. Between

Table 1. Analytic Results for Soil - Shell Service Station, WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

Soil Boring (Well ID)	Sample Depth (ft)	Date Sampled	Analytic Lab	Analytic Method	Sat/ Unsat	TPH-G	TPH-D[a]	B	E	T	X	HVOCS	TOG[b]
						<---------- parts per million (mg/kg) ---------->							
BH-A (MW-1)	3.8	4-2-90	NET	8015/8020 8010/503	Unsat	<1	<1	<0.0025	<0.0025	<0.0025	<0.0025	<0.002-0.05	<50
	6.8	4-2-90	NET	8015/8020	Sat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	14.2	4-2-90	NET	8015/8020	Sat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
BH-B	3.2	4-2-90	NET	8015/8020	Unsat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
(MW-2)	4.8	4-2-90	NET	8015/8020 8010/503	Sat	<1	<1	<0.0025	<0.0025	<0.0025	<0.0025	<0.002-0.05	270
	10.2	4-2-90	NET	8015/8020	Sat	<1	---	0.008	<0.0025	<0.0025	<0.0025	---	---

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline
TPH-D = Total petroleum hydrocarbons as diesel
TPH-MO = Total petroleum hyrdorcarbons as motor oil
B = Benzene
E = Ethylbenzene
T = Toluene
X = Xylenes
HVOCs = Halogenated volatile organic compounds
TOG = Total hydrocarbon oil and grease (non-polar)
Sat = Saturated soil sample
Unsat = Unsaturated soil sample
<n = Not detected at detection limit of n ppm

Notes:

[a] = Analytic results for TPH-MO are reported with TPH-D results by the laboratory. TPH-MO results are included in the analytic reports in Attachment B.

[b] = Analytic results for total oil and grease (polar and non-polar) are reported with the hydrocarbon (non-polar) TOG by the laboratory. These results are included in the analytic reports in Attachment C.

Analytical Laboratory:

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

Analytic Methods:

503 = APHA Standard Method 503D&E for TOG
8010 = EPA Method 8010 for HVOCs
8015 = Modified EPA Method 8015 for TPH-G and TPH-D
8020 = EPA Method 8020 for BETX

28 and 33 gallons, approximately four well casing volumes, were evacuated from each well prior to sampling. The samples were decanted into 40 ml glass volatile organic analysis vials. Samples for TPH-D and TOG analysis were decanted into 1 liter glass bottles. All samples were labeled and refrigerated for transport under chain-of-custody to National Environmental Testing, Inc., of Santa Rosa, California.

Analytic results for ground water are summarized in Table 2 and the laboratory analytic reports and chain-of-custody forms are presented in Appendix B. Ground water samples from wells MW-1, MW-2 and S-1 were analyzed for:

- TPH-G & D by modified EPA method 8015, GC/FID,
- BETX by EPA Method 602, GC/PID,
- TOG by APHA Standard Methods 503 A&E, and
- HVOCs by EPA Method 601, GC/HALL

Ground water samples from well MW-2 contained 200 parts per billion (ppb) TPH-G, 220 ppb TPH-D, and benzene above the DHS MCL. Low concentrations of chloroform, trichloroethylene and *trans* 1,2-dichloroethlyene were also detected in well MW-2. Only a trace concentration of chloroform was detected in well S-1. Hydrocarbons and HVOCs were not detected in ground water from well MW-1. TOG was not detected in ground water from any of the wells.

Water purged from the wells for development and sampling was temporarily stored onsite in California Department of Transportation (DOT)-approved 55-gallon metal drums. The water was transported for reclamation to the Shell Oil refinery in Martinez, California, by a licensed waste hauler under contract with Shell Oil.

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[a]	B	E	T	X	TOG[b]	VOCs	Metals/Others
				<--			parts per billion (µg/L)						-->
S-1	9/4/87	PEG	624	IT	---	---	<5	<5	<5	<5	---	*[c]	---
	9/11/89	WA	8015/624/503 625/6010	IT	<50	<100	<0.5	<1	<1	<3	<1000	<5-50	*[d]
	4/11/90	WA	8015/8020/503 /601	NET	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000	1.7[e]	---
MW-1	4/11/90	WA	8015/8020/503 /601	NET	<50	<50	<0.5	<0.5	<0.5	<0.5	<10,000	<0.4-10	---
MW-2	4/11/90	WA	8015/8020/503 /601	NET	200	220	2.7	<0.5	0.5	2.4	<10,000	*[f]	---
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
ND = Not Detected
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
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 & 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] = Analytic results for total petroleum hydrocarbons as motor oil (TPH-MO) are reported with TPH-D results by the laboratory. TPH-MO results are specified in the analytic reports in Appendix C.
[b] = Analytic results for total oil and grease (polar and non-polar) and TOG (non-polar) are included in the analytic reports in Appendix C.
[c] = Unknown alcohol detected at 7 ppb, and acetone detected at 270 ppb
[d] = Metals detected include : chromium at 90 ppb; lead at 90 ppb; zinc at 100 ppb; also analyzed for cadimium (<10 ppb), PCBs (<0.05 ppb) and SVOCs (<5-10 ppb)
[e] = Chloroform detected at 1.7 ppb
[f] = Chloroform detected at 4.5 ppb; trans 1,2-Dichloroethylene at 16 ppb; Trichloroethylene at 1.2 ppb
[g] = DHS recommended action level for drinking water
[h] = DHS MCL for chloroform = 100 ppb; TCE = 5 ppb; Action level for trans 1,2-DCE = 16 ppb
[i] = DHS MCL for chromium = 50 ppb; lead = 50 ppb; zinc = 5,000 ppb

Ground Water Elevations

Top-of-casing elevations for the new wells and the existing well were surveyed relative to mean sea level on April 3, 1990, by John E. Koch of Berkeley, California (California Land Surveyor, License No. LS4811). The datum elevation for the survey was a City of Alameda marker at the intersection of Whitehall and Willow Streets.

WA measured the depth to ground water in all wells within a nine minute period on April 11, 1990. Ground water elevation data are presented in Table 3 and ground water elevation contours are shown in Figure 2. The ground water flow direction on this date was to the north with a gradient of 0.017 ft/ft. Well S-1, is therefore, approximately downgradient of the former waste oil tank excavation. Although tidal lagoons are directly northeast of the site, it is not clear whether tidal action influences the ground water flow direction.

Table 3. 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)	Time	Depth of Water (ft)	Ground Water Elevation (ft above msl)
S-1	9-11-89	5.10	---	4.29	0.81
	4-11-90		11:17	4.00	1.10
MW-1	4-11-90	6.00	11:22	5.23	0.77
MW-2	4-11-90	3.29	11:26	4.51	-1.22

ANTICIPATED WORK FOR THIRD QUARTER 1990

During the third quarter of 1990, on Shell's behalf, WA plans to:

- Further define extent of soil containing over 1,000 ppm TOG in the vicinity of the former waste oil tank excavation, and investigate remediation alternatives.
- Continue quarterly monitoring of ground water at this site, and
- Prepare quarterly status reports presenting all data generated during the previous quarter including the results of the water sampling and analysis.

A comprehensive subsurface investigation report, including boring logs, tabulated area well survey data and area land use map, will be submitted to Shell Oil after the extent of hydrocarbons in soil and ground water is defined.

We trust that this submittal satisfies your requirements. Please call Karen Sixt or Joe Theisen if you have any questions.

Sincerely,
Weiss Associates

Karen C. Sixt
Senior Staff Geologist

Richard B. Weiss
Principal Hydrogeologist

REGISTERED GEOLOGIST
RICHARD B. WEISS
No. EG 1112
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

KCS/RBW:jg
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Attachments: A - Analytic Reports and Chain-of-Custody for Soil
B - Analytic Reports and Chain-of-Custody for Ground Water

cc: E. Paul Hayes, Shell Oil Company, P.O. Box 4848, Anaheim, California 92803
D. Lundquist, Shell Oil Company, P.O. Box 4023, Concord, California, 94524
Lester Feldman, California Regional Water Quality Control Board - San Francisco Bay Region, 1800 Harrison Street, Oakland, California 94612

ATTACHMENT A
ANALYTIC REPORTS AND CHAIN-OF-CUSTODY FOR SOIL

NET NATIONAL ENVIRONMENTAL TESTING, INC.

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

Robert Kitay
Weiss Associates
5500 Shell Mound Rd.
Emeryville, CA 94524

Date: 04-23-90
NET Client Acct. No: 18.09
NET Pacific Log No: 1482
Received: 04-06-90 2300

Client Reference Information

SHELL- 2160 Otis Dr., Alameda Project ID: 81-429-02

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)

Ref: SHELL- 2160 Otis Dr., Alameda Project ID: 81-429-02

SAMPLE DESCRIPTION: BH-A 3.8' 04-02-90
LAB Job No: (-50325)

Parameter	Reporting Limit	Results	Units
Oil & Grease(Total)	50	ND	mg/Kg
Oil & Grease(Non-Polar)	100	ND	mg/Kg
METHOD 8010			
DATE ANALYZED		04-11-90	
DILUTION FACTOR*		1	
Bromodichloromethane	2.0	ND	ug/Kg
Bromoform	2.0	ND	ug/Kg
Bromomethane	2.0	ND	ug/Kg
Carbon tetrachloride	2.0	ND	ug/Kg
Chlorobenzene	2.0	ND	ug/Kg
Chloroethane	2.0	ND	ug/Kg
2-Chloroethylvinyl ether	5.0	ND	ug/Kg
Chloroform	2.0	ND	ug/Kg
Chloromethane	2.0	ND	ug/Kg
Dibromochloromethane	2.0	ND	ug/Kg
1,2-Dichlorobenzene	2.0	ND	ug/Kg
1,3-Dichlorobenzene	2.0	ND	ug/Kg
1,4-Dichlorobenzene	2.0	ND	ug/Kg
Dichlorodifluoromethane	2.0	ND	ug/Kg
1,1-Dichloroethane	2.0	ND	ug/Kg
1,2-Dichloroethane	2.0	ND	ug/Kg
1,1-Dichloroethene	2.0	ND	ug/Kg
trans-1,2-Dichloroethene	2.0	ND	ug/Kg
1,2-Dichloropropane	2.0	ND	ug/Kg
cis-1,3-Dichloropropene	2.0	ND	ug/Kg
trans-1,3-Dichloropropene	2.0	ND	ug/Kg
Methylene Chloride	50	ND	ug/Kg
1,1,2,Tetrachloroethane	2.0	ND	ug/Kg
Tetrachloroethene	2.0	ND	ug/Kg
1,1,1-Trichloroethane	2.0	ND	ug/Kg
1,1,2-Trichloroethane	2.0	ND	ug/Kg
Trichloroethene	2.0	ND	ug/Kg
Trichlorofluoromethane	2.0	ND	ug/Kg
Vinyl chloride	2.0	ND	ug/Kg

Ref: SHELL- 2160 Otis Dr., Alameda Project ID: 81-429-02

SAMPLE DESCRIPTION: BH-A 3.8' 04-02-90
LAB Job No: (-50325)

Parameter	Reporting Limit	Results	Units
PETROLEUM HYDROCARBONS		--	
VOLATILE (SOIL)		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-11-90	
METHOD GC FID/5030		--	
as Gasoline	1	ND	mg/Kg
METHOD 8020		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-11-90	
Benzene	2.5	ND	ug/Kg
Ethylbenzene	2.5	ND	ug/Kg
Toluene	2.5	ND	ug/Kg
Xylenes, total	2.5	ND	ug/Kg
PETROLEUM HYDROCARBONS		--	
EXTRACTABLE (SOIL)		--	
DILUTION FACTOR *		1	
DATE EXTRACTED		04-11-90	
DATE ANALYZED		04-12-90	
METHOD GC FID/3550		--	
as Diesel	1	ND	mg/Kg
as Motor Oil	10	ND	mg/Kg

Ref: SHELL- 2160 Otis Dr., Alameda Project ID: 81-429-02

SAMPLE DESCRIPTION: BH-B 4.8' 04-02-90
LAB Job No: (-50326)

Parameter	Reporting Limit	Results	Units
Oil & Grease(Total)	50	480	mg/Kg
Oil & Grease(Non-Polar)	100	270	mg/Kg
METHOD 8010			
DATE ANALYZED		04-11-90	
DILUTION FACTOR*		1	
Bromodichloromethane	2.0	ND	ug/Kg
Bromoform	2.0	ND	ug/Kg
Bromomethane	2.0	ND	ug/Kg
Carbon tetrachloride	2.0	ND	ug/Kg
Chlorobenzene	2.0	ND	ug/Kg
Chloroethane	2.0	ND	ug/Kg
2-Chloroethylvinyl ether	5.0	ND	ug/Kg
Chloroform	2.0	ND	ug/Kg
Chloromethane	2.0	ND	ug/Kg
Dibromochloromethane	2.0	ND	ug/Kg
1,2-Dichlorobenzene	2.0	ND	ug/Kg
1,3-Dichlorobenzene	2.0	ND	ug/Kg
1,4-Dichlorobenzene	2.0	ND	ug/Kg
Dichlorodifluoromethane	2.0	ND	ug/Kg
1,1-Dichloroethane	2.0	ND	ug/Kg
1,2-Dichloroethane	2.0	ND	ug/Kg
1,1-Dichloroethene	2.0	ND	ug/Kg
trans-1,2-Dichloroethene	2.0	ND	ug/Kg
1,2-Dichloropropane	2.0	ND	ug/Kg
cis-1,3-Dichloropropene	2.0	ND	ug/Kg
trans-1,3-Dichloropropene	2.0	ND	ug/Kg
Methylene Chloride	50	ND	ug/Kg
1,1,2,Tetrachloroethane	2.0	ND	ug/Kg
Tetrachloroethene	2.0	ND	ug/Kg
1,1,1-Trichloroethane	2.0	ND	ug/Kg
1,1,2-Trichloroethane	2.0	ND	ug/Kg
Trichloroethene	2.0	ND	ug/Kg
Trichlorofluoromethane	2.0	ND	ug/Kg
Vinyl chloride	2.0	ND	ug/Kg

Ref: SHELL- 2160 Otis Dr., Alameda Project ID: 81-429-02

SAMPLE DESCRIPTION: BH-B 4.8' 04-02-90
LAB Job No: (-50326)

Parameter	Reporting Limit	Results	Units
PETROLEUM HYDROCARBONS		--	
VOLATILE (SOIL)		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-12-90	
METHOD GC FID/5030		--	
as Gasoline	1	ND	mg/Kg
METHOD 8020		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-12-90	
Benzene	2.5	ND	ug/Kg
Ethylbenzene	2.5	ND	ug/Kg
Toluene	2.5	ND	ug/Kg
Xylenes, total	2.5	ND	ug/Kg
PETROLEUM HYDROCARBONS		--	
EXTRACTABLE (SOIL)		--	
DILUTION FACTOR *		1	
DATE EXTRACTED		04-11-90	
DATE ANALYZED		04-12-90	
METHOD GC FID/3550		--	
as Diesel	1	ND	mg/Kg
as Motor Oil	10	28	mg/Kg

Ref: SHELL- 2160 Otis Dr. Alameda, Project ID: 81-429-02

SAMPLE DESCRIPTION: BH-A/B comp 04-02-90
LAB Job No: (-50327)

Parameter	Reporting Limit	Results	Units
Lead (EPA 7421)	0.2	1.5	mg/Kg
Organic Lead	1	1.0	mg/Kg
PETROLEUM HYDROCARBONS		--	
VOLATILE (SOIL)		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-12-90	
METHOD GC FID/5030		--	
as Gasoline	1	ND	mg/Kg
METHOD 8020		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-12-90	
Benzene	2.5	ND	ug/Kg
Ethylbenzene	2.5	ND	ug/Kg
Toluene	2.5	ND	ug/Kg
Xylenes, total	2.5	ND	ug/Kg

Ref: SHELL- 2160 Otis Dr., Alameda, Project ID: 81-429-02

SAMPLE DESCRIPTION: BH-A 6.8' 04-02-90
LAB Job No: (-50374)

Parameter	Reporting Limit	Results	Units
PETROLEUM HYDROCARBONS		--	
VOLATILE (SOIL)		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-12-90	
METHOD GC FID/5030		--	
as Gasoline	1	ND	mg/Kg
METHOD 8020		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-12-90	
Benzene	2.5	ND	ug/Kg
Ethylbenzene	2.5	ND	ug/Kg
Toluene	2.5	ND	ug/Kg
Xylenes, total	2.5	ND	ug/Kg

Ref: SHELL- 2160 Otis Dr., Alameda, Project ID: 81-429-02

SAMPLE DESCRIPTION: BH-A 14.2' 04-02-90
LAB Job No: (-50375)

Parameter	Reporting Limit	Results	Units
PETROLEUM HYDROCARBONS		--	
VOLATILE (SOIL)		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-12-90	
METHOD GC FID/5030		--	
as Gasoline	1	ND	mg/Kg
METHOD 8020		--	
DILUTION FACTOR *		1	
DATE ANALYZED		04-12-90	
Benzene	2.5	ND	ug/Kg
Ethylbenzene	2.5	ND	ug/Kg
Toluene	2.5	ND	ug/Kg
Xylenes, total	2.5	ND	ug/Kg

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.

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

Shell Service Station Address: 2160 Otis Drive, Alameda, CA
Shell Contact: E. Paul Hayes
WIC #: 204-007-205
AFE #: 986632

Please send analytic results and a copy of the signed chain of custody form to:
Robert Kitay
Project ID: 81-429-02

1482

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: Robert Kitay 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
1	BH-A 3.8	S	4-2-90	2x4's	No	Yes	None	TPH-G+D, BETX, HVOCs, TOC	8015/8020/601/503	N	
1	BH-A 6.8	S	4-2-90	2x4	No	Yes	None	gas, BTXE		Hold	
1	BH-A 9.8	S	4-2-90	2x4	No	Yes	None			Hold	
1	BH-A 14.2	S	4-2-90	2x4	No	Yes	None	gas, BTXE		Hold	
1	BH-A 18.8	S	4-2-90	2x4	No	Yes	None			Hold	
1	BH-B 3.2	S	4-2-90	2x4	No	Yes	None	gas, BTXE		Hold	
1	BH-B 4.8	S	4-2-90	2x4	No	Yes	None	TPH-G+D, BETX, HVOCs, TOC	8015/8020/601/503	N	
1	BH-B 6.2	S	4-2-90	2x4	No	Yes	None			Hold	
1	BH-B 10.2	S	4-2-90	2x4	No	Yes	None	gas, BTXE		Hold	
1	BH-B 15.2	S	4-2-90	2x4	No	Yes	None			Hold	
1	BH-B 20	S	4-2-90	2x4	No	Yes	None			Hold	
—	comp.	please	comp	BH-A 6.8/	BH-A	14.2/	BH-B 6.2/	BH-B 15.2 and	analyze for	TPH-G/	BETX/ and total PB + organic lead

1 Robert E. Kitay 4-6-90
Released by (Signature), Date

1 Weiss Assoc.
Affiliation

2 [signature] 4-6-90
Received by (Signature), Date

2 Weiss Assoc.
Affiliation

3 [signature] 4-6-90
Released by (Signature), Date

3 Weiss Assoc.
Affiliation

4 [signature]
Shipping Carrier, Method, Date

4 N.E.T.
Affiliation

5 [signature] 4/6/90
Released by (Signature), Date

5 N.E.T.
Affiliation

6 [signature] 4-6-90 2300
Received by Lab Personnel, Date

6 NET Pacific
Affiliation, Telephone

x
Seal intact?

gas BTXE, Total PB added per RK to CS 4/9/90

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:
* CUSTODY SEAL APPLIED UPON RECEIPT 4/6/90 2100p
[signature]

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

custody seal intact by 4/6

ATTACHMENT B
ANALYTIC REPORTS AND CHAIN-OF-CUSTODY FOR GROUND WATER

NATIONAL ENVIRONMENTAL TESTING, INC.

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

Robert Kitay
Weiss Associates
5500 Shell Mound Rd.
Emeryville, CA 94524

Date: 04-23-90
NET Client Acct No: 18.09
NET Pacific Log No: 1565
Received: 04-13-90 0800

Client Reference Information

SHELL, 2160 Otis Drive, Alameda; Project: 81-429-01

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:

Judy Riddley for
Jules Skamarack
Laboratory Manager

Enclosure(s)

Ref: SHELL, 2160 Otis Drive, Alameda; Project: 81-429-01

Parameter	Reporting Limit	Descriptor, Lab No. and Results 040-MW1 04-11-90 50753	 040-MW2 04-11-90 50754	 040-S-1 04-11-90 50755	Units
Oil & Grease(Total)	5	ND	ND	ND	mg/L
Oil & Grease(Non-Polar)	10	ND	ND	ND	mg/L
METHOD 601					
DATE ANALYZED		04-18-90	04-18-90	04-18-90	
DILUTION FACTOR*		1	1	1	
Bromodichloromethane	0.4	ND	ND	ND	ug/L
Bromoform	0.4	ND	ND	ND	ug/L
Bromomethane	0.4	ND	ND	ND	ug/L
Carbon tetrachloride	0.4	ND	ND	ND	ug/L
Chlorobenzene	0.4	ND	ND	ND	ug/L
Chloroethane	0.4	ND	ND	ND	ug/L
2-Chloroethylvinyl ether	1.0	ND	ND	ND	ug/L
Chloroform	0.4	ND	4.5	1.7	ug/L
Chloromethane	0.4	ND	ND	ND	ug/L
Dibromochloromethane	0.4	ND	ND	ND	ug/L
1,2-Dichlorobenzene	0.4	ND	ND	ND	ug/L
1,3-Dichlorobenzene	0.4	ND	ND	ND	ug/L
1,4-Dichlorobenzene	0.4	ND	ND	ND	ug/L
Dichlorodifluoromethane	0.4	ND	ND	ND	ug/L
1,1-Dichloroethane	0.4	ND	ND	ND	ug/L
1,2-Dichloroethane	0.4	ND	ND	ND	ug/L
1,1-Dichloroethene	0.4	ND	ND	ND	ug/L
trans-1,2-Dichloroethene	0.4	ND	16	ND	ug/L
1,2-Dichloropropane	0.4	ND	ND	ND	ug/L
cis-1,3-Dichloropropene	0.4	ND	ND	ND	ug/L
trans-1,3-Dichloropropene	0.4	ND	ND	ND	ug/L
Methylene Chloride	10	ND	ND	ND	ug/L
1,1,2,2-Tetrachloroethane	0.4	ND	ND	ND	ug/L
Tetrachloroethene	0.4	ND	ND	ND	ug/L
1,1,1-Trichloroethane	0.4	ND	ND	ND	ug/L
1,1,2-Trichloroethane	0.4	ND	ND	ND	ug/L
Trichloroethene	0.4	ND	1.2	ND	ug/L
Trichlorofluoromethane	0.4	ND	ND	ND	ug/L
Vinyl chloride	2.0	ND	ND	ND	ug/L

Ref: SHELL, 2160 Otis Drive, Alameda; Project: 81-429-01

Parameter	Reporting Limit	Descriptor, Lab No. and Results 040-MW1 04-11-90 50753	 040-MW2 04-11-90 50754	 040-S-1 04-11-90 50755	Units
PETROLEUM HYDROCARBONS		--	--	--	
VOLATILE (WATER)		--	--	--	
DILUTION FACTOR *		1	1	1	
DATE ANALYZED		04-17-90	04-17-90	04-17-90	
METHOD GC FID/5030		--	--	--	
as Gasoline	0.05	ND	0.20	ND	mg/L
METHOD 602		--	--	--	
DILUTION FACTOR *		1	1	1	
DATE ANALYZED		04-17-90	04-17-90	04-17-90	
Benzene	0.5	ND	2.7	ND	ug/L
Ethylbenzene	0.5	ND	ND	ND	ug/L
Toluene	0.5	ND	0.5	ND	ug/L
Xylenes, total	0.5	ND	2.4	ND	ug/L
PETROLEUM HYDROCARBONS		--	--	--	
EXTRACTABLE (WATER)		--	--	--	
DILUTION FACTOR *		1	1	1	
DATE EXTRACTED		04-18-90	04-18-90	04-18-90	
DATE ANALYZED		04-19-90	04-19-90	04-19-90	
METHOD GC FID/3510		--	--	--	
as Diesel	0.05	ND	0.22	ND	mg/L
as Motor Oil	0.05	ND	ND	ND	mg/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.

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

Shell Service Station Address: 2160 OTIS DR. ALAMEDA, CA
Shell Contact:
WIC #: 204-007-205
AFE #: 986632

Please send analytic results and a copy of the signed chain of custody form to:
ROBERT KITAY - WEISS ASSOC.

1565

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: DAVID CHARLES

Laboratory Name: N.E.T. PACIFIC

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
3	040-MW-1	W/cV	4/11/90	40mL	N	Y	NONE	GAS / BETX	8015/8020	N	
	040-MW-2										
	040-S-1										
	040-MW-1							HVOC's	601		
	040-MW-2										
	040-S-1										
2	040-MW-1	W/B		1L.				8015-DIESEL	8015-D		
	040-MW-2										
	040-S-1										
	040-MW-1							TOTAL OIL & GREASE	503 A & E		
	040-MW-2										
	040-S-1										
	040-21	W/cV		40mL				"HOLD"			

1 David Clark 4/11/90
Released by (Signature), Date

1 Weiss Assoc.
Affiliation

2 [signature] 4/12/90
Received by (Signature), Date

2 Weiss ASS.
Affiliation

3 [signature] 4/12/90
Released by (Signature), Date

3 Weiss ASS.
Affiliation

4 James Green
Shipping Carrier, Method, Date

4 N.E.T.
Affiliation

5 James Green
Released by (Signature), Date

5 N.E.T.
Affiliation

6 K Temple 4-13-90 0800
Received by Lab Personnel, Date

6 NET Pacific (VIA W.C.S.)
Affiliation, Telephone

x K Temple
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:
Released to secure, locked storage area; sealed and signed @ 2135 - D.C.

* SEALED UPON RECEIPT J.A.

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