



September 8, 1992

RECEIVED
SEP 10 1992
ENVIRO BAY AREA

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

Re: Subsurface Investigation
Shell Service Station
WIC #204-5508-2709
3750 East 14th Street
Oakland, California
WA Job #81-425-06

Dear Mr. Chan:

This letter presents the results of Weiss Associates' (WA) subsurface investigation at the Shell service station referenced above (Figure 1). The investigation was conducted in response to a January 21, 1992 letter from Barney Chan of Alameda County Health Care Services (ACHCS) to Kurt Miller of Shell Oil Company. Since ACHCS requested the installation of a monitoring near the former underground storage tanks (UST's), the investigation objectives were to assess whether hydrocarbons are in soil and ground water immediately downgradient of the former UST's and to determine whether the existing or former UST's are the source of the hydrocarbons detected in ground water samples from monitoring well MW-3 as outlined in WA's February 19, 1992 workplan.¹

SCOPE OF WORK

WA's scope of work for this investigation was to:

- Drill and sample one boring within 10 ft of the anticipated downgradient side of the former UST's and install a ground water monitoring well in the boring to assess whether hydrocarbons are in soil or ground water downgradient of the tanks (Figure 2),

¹ WA, February 19, 1992, Consultant's letter-workplan regarding the proposed installation of one ground water monitoring well at the Shell service station at 3750 East 14th Street in Oakland, California, 4 pages.



- Analyze soil and water samples to assess whether hydrocarbons are in soil or ground water downgradient of the tanks,
- Measure ground water depths in the wells and determine the ground water gradient, and
- Report the results.

INVESTIGATION RESULTS

Site Setting

Geographic Location:

The site is located in West Oakland, about one-half mile east of the Brooklyn Basin tidal canal, and is in the East Bay Plain ground water basin.

Topography:

The site is about 35 ft above mean sea level. Local topography slopes southwestward.

Surroundings:

Mixed commercial and residential development.

Wells in the Site Vicinity:

Although the well survey identified 52 wells within one-half mile of the site, none of the wells are used for domestic or municipal water supply (Table 1).

Site Geology:

The sediments beneath the site are primarily sandy silt and gravel, with discontinuous silty clay lenses. These sediments are typical of the Quaternary alluvium underlying much of the East Bay. The main regional water-bearing unit is a thick Pleistocene alluvial deposit that extends beneath the entire East Bay Plain Area, including Oakland².

² Alameda County Flood Control and Water Conservation District (Zone 7), 1988, Geohydrology and Groundwater Quality Overview, East Bay Plain Area, Alameda County, California, 205(j) Report, 83 pp. and 6 appendices.



Previous Investigations

1986 Waste Oil Tank Removal: In November 1986, Petroleum Engineering of Santa Rosa, California removed a 550-gallon waste oil tank and installed a new 550-gallon fiberglass tank in the former tank pit. Immediately following the tank removal, Blaine Tech Services (BTS) of San Jose, California collected a soil sample beneath the former tank location at 7 ft depth. The soil sample contained 117.4 parts per million (ppm) petroleum oil and grease (POG)³. The condition of the tank at the time of removal is unknown.

1990 Well Installation: In April 1990, WA installed ground water monitoring wells MW-1, MW-2 and MW-3.⁴ Analytic results for soil from these borings are compiled in Table 2. WA or other consultants have sampled wells MW-1, MW-2 and MW-3 quarterly since April 1990. Previous ground water analytic and elevation data is included as Attachment E.

Drilling

Drilling Date: June 24, 1992

Drilling Geologist: David C. Elias, WA Staff Geologist

Drilling Method: Hollow-stem auger using a CME-75 drill rig. (Drilling and sampling procedures are presented in Attachment A.)

Number of Borings: 1 (BH-D, Figure 2)

Boring Depth: 26.5 ft

Soil Sampling Method: Steam-cleaned split-barrel drive sampler lined with brass tubes.

³ BTS, November 2, 1986, Sampling Report 86306-t-1, Shell Service Station, 3750 East 14th Street, Oakland, California, Consultant's letter-report prepared for Shell Oil Company, 3 pages and 2 attachments.

⁴ WA, July 18, 1990, Consultant's letter-report prepared for Shell Oil Company regarding a subsurface investigation at the Shell service station located at 3750 East 14th Street in Oakland, California, 22 pages and 3 attachments.



Analytical Methods for Soil:

Total petroleum hydrocarbons as gasoline (TPH-G), benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Modified Method 8015 and 8020 respectively.

Sediments Encountered:

Gravelly sand to two ft depth; sandy and clayey silt to 12 ft depth; gravelly sand/sandy gravel to 25 ft depth; sandy silt to 26.5 ft depth. The boring log and well construction details are presented in Attachment B.

Waste Disposal:

Soil cuttings were disposed at the Browning-Ferris, Inc. (BFI) landfill in Livermore, California as Class III waste; steam clean rinsate and purge water were recycled at the Shell Refinery in Martinez, California.

Well Construction

Number of Wells:

1, installed in boring BH-D (Figure 2).

Well Materials:

4-inch diameter Schedule 40 PVC well casing with 0.020-inch slotted screen; Monterey #3 sand

Screened Interval:

5 to 25 ft depth

Well Development Method:

Surge block agitation and bailer evacuation

Ground Water Evacuation Rate:

1 to 2 gallons per minute during well development

Ground Water Sampling Method:

Steam-cleaned teflon bailer

Analytic Methods for Ground Water:

TPH-G and BETX by EPA Modified Method 8015 and 8020 respectively

Ground Water Depth:

12 ft below grade (Table 3)

Ground Water Flow Direction:

Southward with a gradient of about 0.01 ft/ft (Figure 3)

HYDROCARBON DISTRIBUTION IN SOIL

Boring BH-D was drilled immediately south and downgradient of the former underground fuel storage tanks to assess whether hydrocarbons were in soil and to install a ground water monitoring well within 10 ft of the former tanks. Although no benzene was detected, soil samples collected from near the water table contained up to 44 ppm TPH-G (Table 2, Attachment C). Based on the soil analytic results for wells MW-1 through MW-4, hydrocarbons are in soil a few ft above the water table downgradient of the former USTs.

HYDROCARBON DISTRIBUTION IN GROUND WATER

Hydrocarbons have been detected in water samples from the three pre-existing wells at up to 0.90 ppm TPH-G and 0.0071 ppm benzene (Attachment E). To determine whether the source of these hydrocarbons was the existing or the former UST locations it was necessary to install a fourth monitoring well between the existing and the former USTs. Since the BETX and TPH-G concentrations are higher in ground water and soil samples from newly installed well MW-4 than in samples from well MW-3, the source of the hydrocarbons detected in wells MW-3 and MW-4 is probably the former USTs.

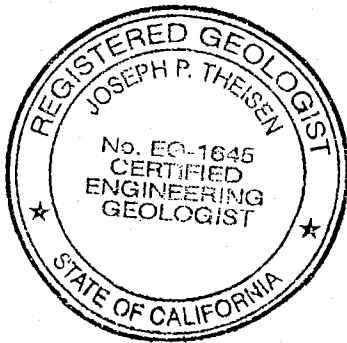
Barney Chan
September 8, 1992

6

Weiss Associates



Please call if you have any questions or comments.



Sincerely,
Weiss Associates

David C. Elias
Staff Geologist

Joseph P. Theisen, C.E.G.
Senior Hydrogeologist

DCE/NSM/JPT:fer

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- Attachments:
- Figures
 - Tables
 - A - Sampling Procedures
 - B - Boring Logs
 - C - Analytic Results for Ground Water
 - D - Analytic Results for Soil
 - E - Previous Ground Water Elevations and Analytic Results

cc: Mr. Dan Kirk, Shell Oil Company, P.O. Box 4023, Concord, California 94524
Lester Feldman, California Regional Water Quality Control Board, San Francisco Bay
Region, 2101 Webster Street, Suite 500, Oakland, California 94612

FIGURES

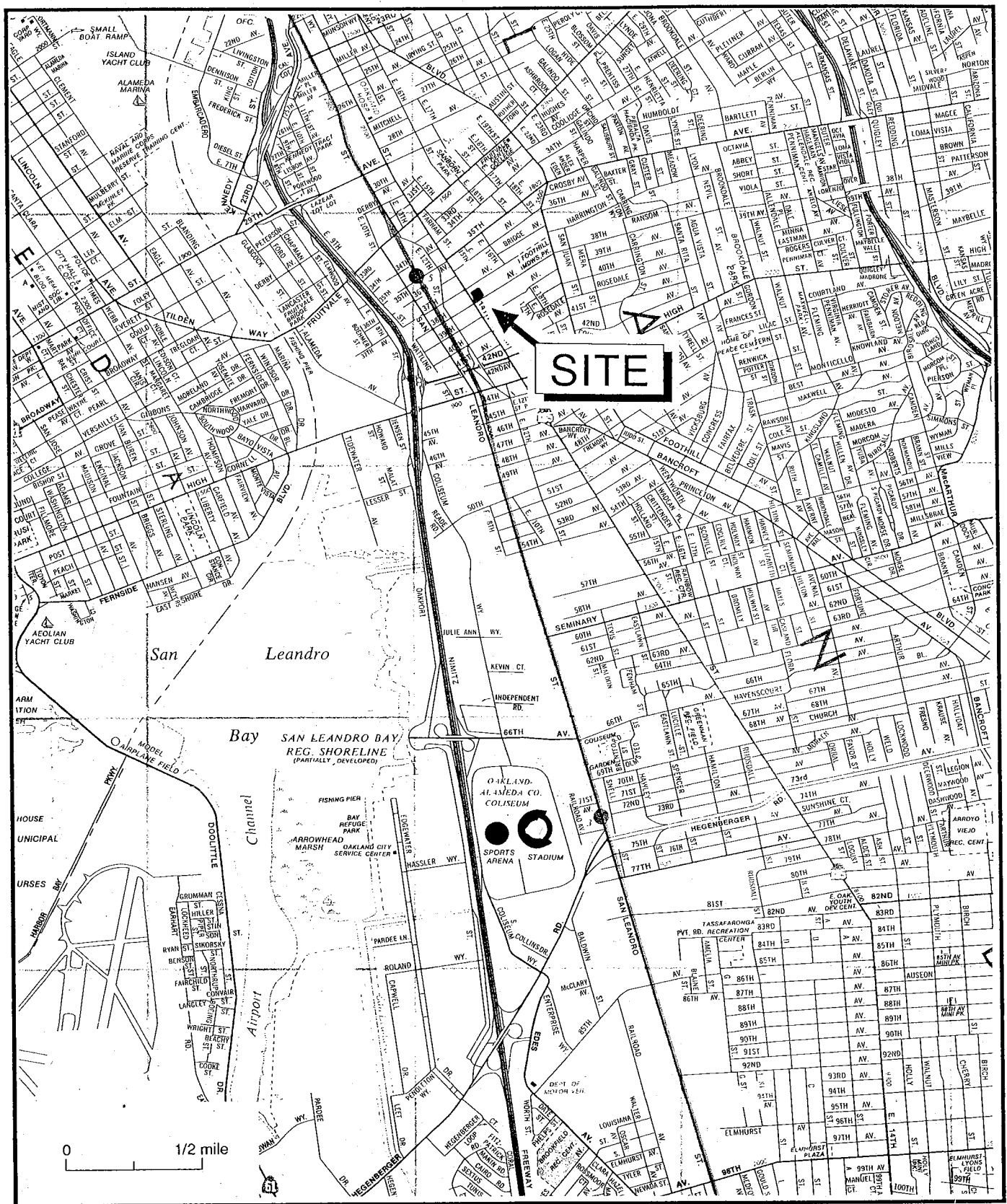
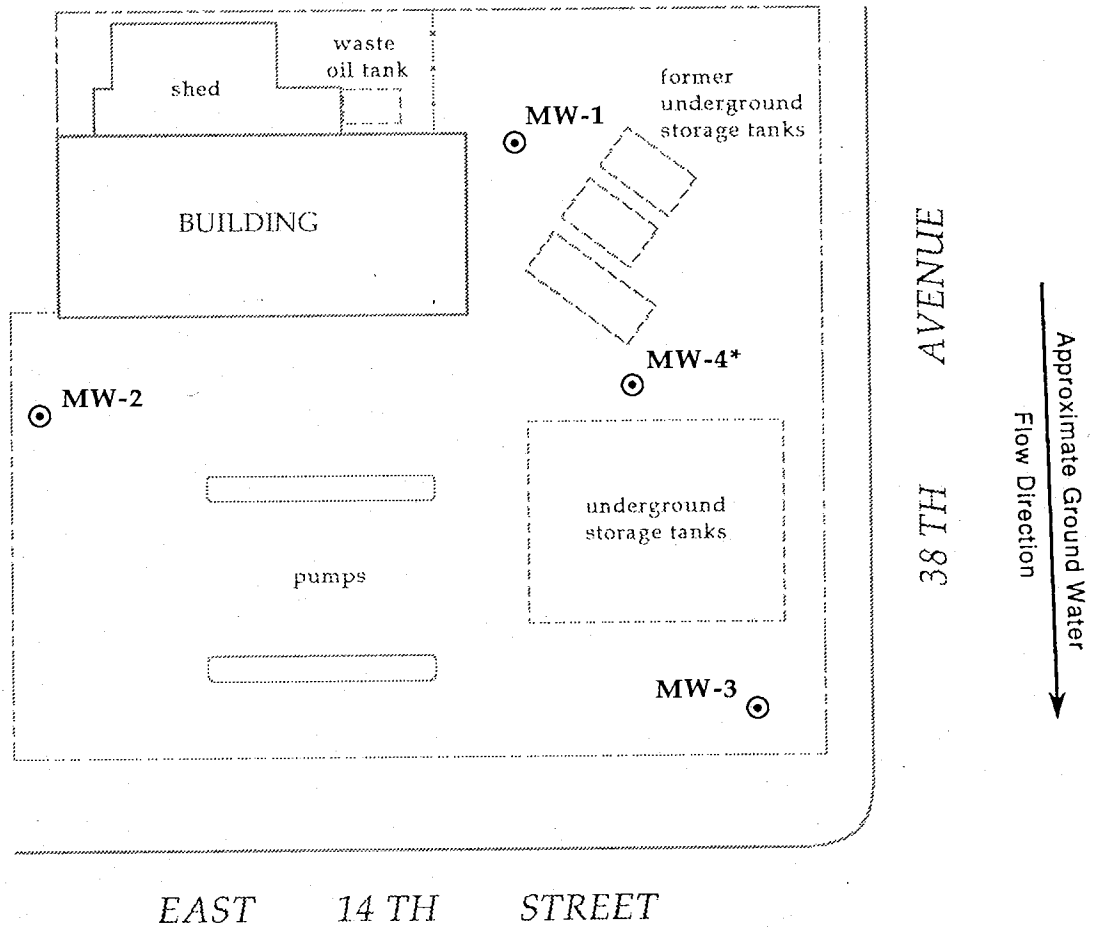


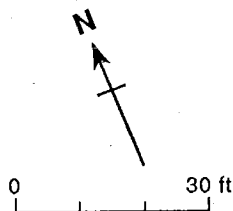
Figure 1. Site Location Map - Shell Service Station WIC #204-5508-2709, 3750 East 14th Street, Oakland, California



EAST 14 TH STREET

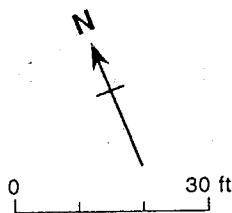
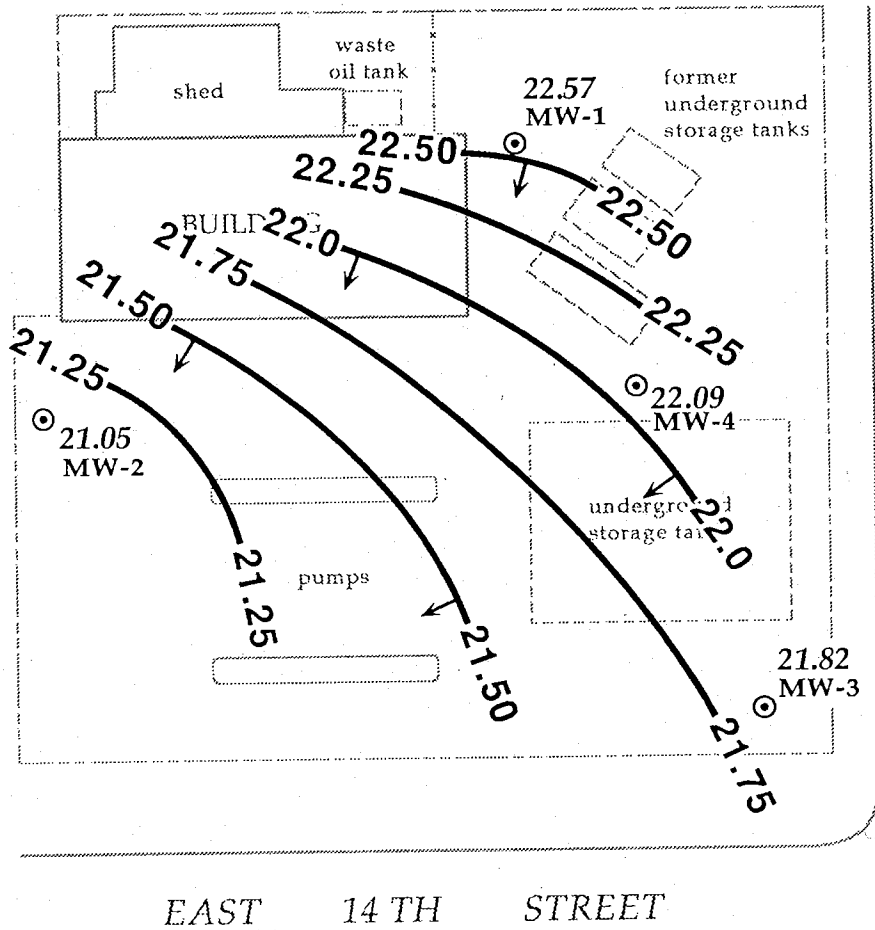
38 TH AVENUE

Approximate Ground Water
Flow Direction



EXPLANATION	
⊙ MW-1	Existing monitoring well
⊙ MW-4*	Recently installed monitoring well

Figure 2. Monitoring Well Locations - Shell Service Station WIC #204-5508-2709, 3750 East 14th Street, Oakland, California



EXPLANATION	
⊙ MW-1	Existing monitoring well
22.57	Ground water elevation, feet above mean sea level
- 21.5	Ground water elevation contour, approximately located
→	Inferred ground water flow direction

Figure 3. Monitoring Well Locations and Ground Water Elevation Contours - July 2, 1992 - Shell Service Station WIC #204-5508-2709, 3750 East 14th Street, Oakland, California



TABLES

Table 1. Wells Located Within 1/2 Mile of Shell Service Station #204-5508-2709, 3750 East 14th Street, Oakland, California

Well ID	Well Owner	Well Location	Year Drilled	Well Use
1	PG&E	18th St./34th St.	1976	CAT
2	Trust for Public Land	1601 39th Ave.	1977	IRR
3	PG&E	39th St./Foothill Blvd.	1975	CAT
4	PG&E	37th St./12th St.	1973	CAT
5	Vernon McIlraith	3614 San Leandro St.	1988	MW
6	American Can Co.	Alameda Ave./E. 8th St.	1986	MW
7-10	Chevron USA	4265 Foothill Blvd./High St.	1987	MW
11-14	BP Oil Co.	4280 Foothill Blvd./High St.	1989	MW
15	Craig Levitt	1033 44th St.	1988	MW
16-18	Peterson Properties	1066 47th Ave. Oak	1989	MW
19-31	The Clorox Co.	860 42nd Ave.	1982-1986	MW
32-35	Commercial Fueling Co.	4301 San Leandro St./High St.	1986	MW
36-45	Exxon	720 High St./Alameda Ave.	1987-1988	MW
46-49	Shell Oil	630 High St./Jensen St.	1989	MW
50-52	Robert Hekeboll	High St./Coliseum Way	1989	MW

CAT = Cathodic Protection Well

IRR = Irrigation Well

MW = Monitoring Well

Table 2. Results of Soil Analyses - Shell Service Station, WIC #204-5508-2709, 3750 East 14th Street, Oakland, 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 HVOC POG ^b							
						-----parts per million (mg/kg)----->							
BH-A (MW-1)	5.2	04/04/90	NET	8015/8020	Unsat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	9.8	04/04/90	NET	8015/8020	Unsat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	12.8	04/04/90	NET	8015/8020/8010/503	Unsat	<1	<1	<0.0025	<0.0025	<0.0025	<0.0025	ND ^c	<50
	20.2	04/04/90	NET	8015/8020	Sat	<1	---	<0.0025	<0.0025	0.0032	0.0031	---	---
	29.2	04/04/90	NET	8015/8020/8010/503	Sat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	ND ^c	<50
BH-B (MW-2)	6.8	04/05/90	NET	8015/8020	Unsat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	11.2	04/05/90	NET	8015/8020/8010/503	Unsat	<1	<1	<0.0025	<0.0025	<0.0025	<0.0025	ND ^c	<50
	19.2	04/05/90	NET	8015/8020	Sat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	29.2	04/05/90	NET	8015/8020/8010/503	Sat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	ND ^c	<50
BH-C (MW-3)	6.8	04/05/90	NET	8015/8020	Unsat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	11.2	04/05/90	NET	8015/8020/8010/503	Unsat	3.5	<1	<0.0025	0.0077	0.0043	0.016	ND ^c	<50
	14.2	04/05/90	NET	8015/8020	Sat	130	---	0.032	0.73	0.55	2.0	---	---
	19.2	04/05/90	NET	8015/8020	Sat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	24.2	04/05/90	NET	8015/8020	Sat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	29.2	04/05/90	NET	8015/8020/8010/503	Sat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	ND ^c	<50
BH-D (MW-4)	5.5	06/24/92	NET	8015/8020	Unsat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	8.0	06/24/92	NET	8015/8020	Unsat	6.4	---	<0.0025	<0.0025	<0.0025	0.020	---	---
	10.5	06/24/92	NET	8015/8020	Unsat	2.5	---	<0.0025	0.0051	0.0074	0.024	---	---
	13.0	06/24/92	NET	8015/8020	Unsat	44	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---
	15.0	06/24/92	NET	8015/8020	Sat	9.1 ^d	---	<0.0025	<0.0025	<0.0025	0.039	---	---
	25.5	06/24/92	NET	8015/8020	Sat	<1	---	<0.0025	<0.0025	<0.0025	<0.0025	---	---

Abbreviations:

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

Analytical Laboratory:

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

Analytic Methods:

503 = APHA Standard Methods 503D&E for TOG
 8010 = EPA Method 8010 (GC/HALL) for HVOCs
 8015 = Modified EPA Method 8015 (GC/FID) for TPH-G and TPH-D
 8020 = EPA Method 8020 (GC/PID) for BETX

Notes:

a = Analytic results for total petroleum hydrocarbons as motor oil (TPH-MO) are reported with TPH-D results by the laboratory
 b = Analytic results for petroleum oil and grease are reported with the hydrocarbon (non-polar) oil and grease by the laboratory
 c = Not detected at detection limits of 0.002 to 0.05 parts per million (ppm)
 d = The result for petroleum hydrocarbons as gasoline does not appear to have a typical gasoline pattern



Table 3. Analytic Results for Ground Water - Shell Service Station, WIC #204-5508-2709, 3750 East 14th Street, Oakland, California

Sample	Date Sampled	Depth to Water	TPH-G	B	E	T	X
			-----parts per million (mg/l)-----				
MW-4	06/29/92	12.00	1.3	0.040	0.047	0.003	0.017
DHS MCLs			NE	0.001	0.680	0.10 ^c	1.750

Abbreviations:

TPH-G = Total Petroleum Hydrocarbons as Gasoline by Modified EPA Method 8015
 TPH-D = Total Petroleum Hydrocarbons as Diesel by Modified EPA Method 8015
 B = Benzene by EPA Method 602 or 8020
 E = Ethylbenzene by EPA Method 602 or 8020
 T = Toluene by EPA Method 602 or 8020
 X = Xylenes by EPA Method 602 or 8020
 <n = Not detected at detection limits of n ppb
 DHS MCLs = Department of Health Services maximum contaminant levels for drinking water
 NE = Not established
 --- = Not analyzed

Analytical Laboratory:

NET = National Environmental Testing of Santa Rosa, California

Notes:

a = DHS recommended action level for drinking water, MCL not established



ATTACHMENT A
SAMPLING PROCEDURES

STANDARD FIELD PROCEDURES

WA has developed standard procedures for drilling and sampling soil borings and installing, developing and sampling ground water monitoring wells. These procedures comply with Federal, State and local regulatory guidelines. Specific procedures are summarized below.

SOIL BORING AND SAMPLING

Objectives/Supervision

Soil sampling objectives include characterizing subsurface lithology, assessing whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and collecting samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG).

Soil Boring and Sampling

Deep soil borings or borings for well installation are typically drilled using hollow-stem augers. Split-barrel samplers lined with steam-cleaned brass or stainless steel tubes are driven through the hollow auger stem into undisturbed sediments at the bottom of the borehole using a 140 pound hammer dropped 30 inches. Soil samples can also be collected without using hollow-stem augers by progressively driving split-barrel soil samplers to depths of up to 30 ft.

Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Near the water table and at lithologic changes, the sampling interval may be less than five ft.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Analysis

After noting the lithology at each end of the sampling tubes, the tube chosen for analysis is immediately trimmed of excess soil and capped with teflon tape and plastic end caps. The sample is labelled, stored at or below 4°C, and transported under chain-of-custody to a State-certified analytic laboratory.

Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the stratigraphy and ground water depth to select soil samples for analysis.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe. If wells are completed in the borings, the well installation, development and sampling procedures summarized below are followed.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Wells are installed to monitor ground water quality and determine the ground water elevation, flow direction and gradient. Well depths and screen lengths are based on ground water depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and state and local regulatory guidelines. Well screens typically extend 15 ft below and 5 ft above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three ft thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about

one to two ft above the well screen. A two ft thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of cement with 3-5% bentonite.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

After 24 hours, the wells are developed using a combination of ground water surging and extraction. Surging agitates the ground water and dislodges fine sediments from the sand pack. After about ten minutes of surging, ground water is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of ground water are extracted and the sediment volume in the ground water is negligible. All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

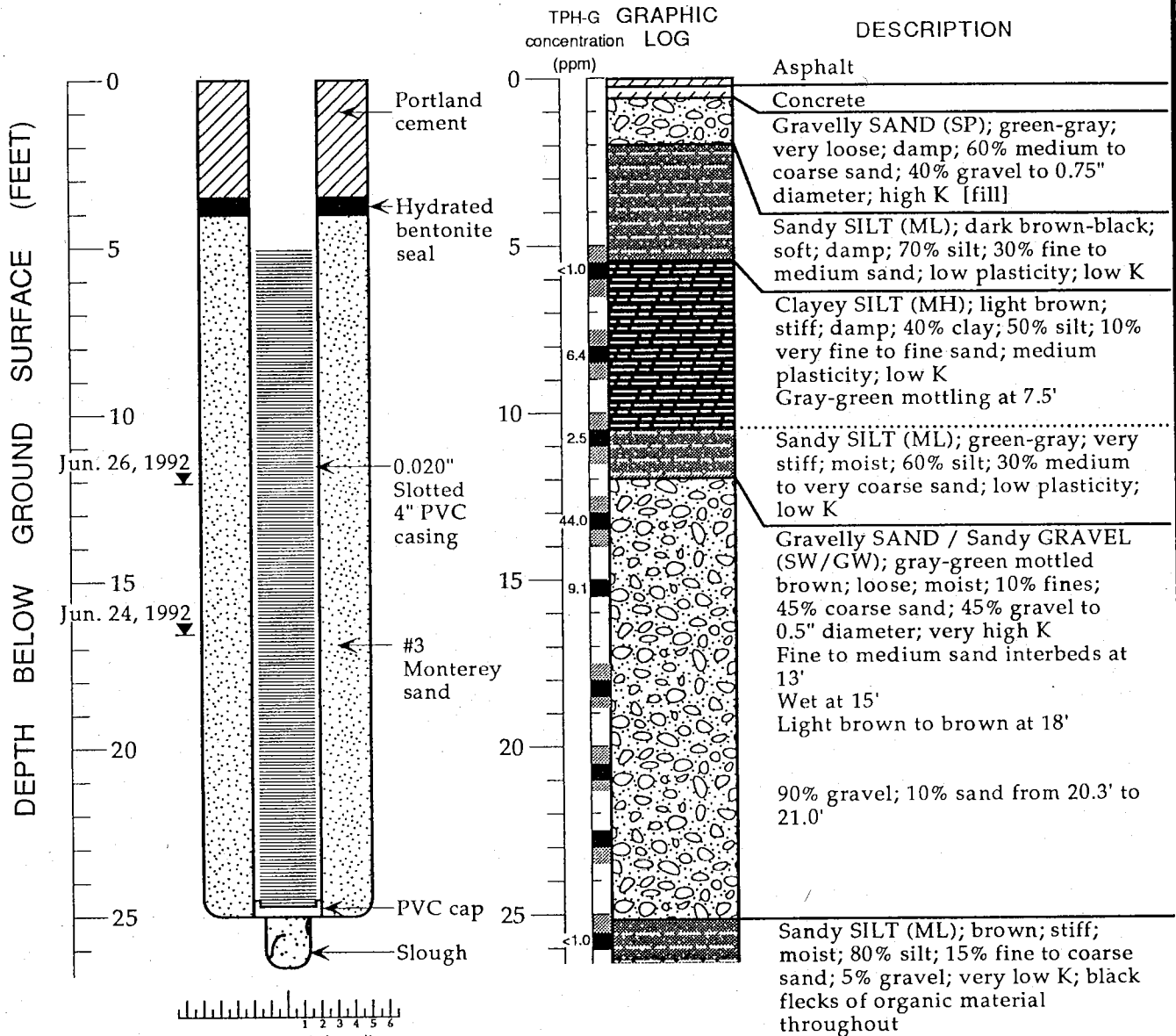
Ground Water Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of ground water are purged prior to sampling. Purging continues until ground water pH, conductivity, and temperature have stabilized. Ground water samples are collected using bailers or pumps and are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labelled, placed in protective foam sleeves, stored at 4°C, and transported under chain-of-custody to the laboratory. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

ATTACHMENT B
BORING LOG



WELL MW-4 (BH-D)



EXPLANATION

- ▼ Water level during drilling (date)
- ▽ Water level (date)
- Contact (dotted where approximate)
- ?-?-? Uncertain contact
- //// Gradational contact
- ▨ Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- ▩ Cutting sample
- K = Estimated hydraulic conductivity

Logged By: David C. Elias
 Supervisor: James W. Carmody; CEG 1576
 Drilling Company: Soils Exploration Services, Vacaville, CA
 License Number: C57-582696
 Driller: Mike Duffy
 Drilling Method: Hollow-stem auger
 Date Drilled: June 24, 1992
 Well Head Completion: 2" locking well-plug, traffic-rated vault
 Type of Sampler: Split barrel (2.5" ID)
 Ground Surface Elevation: 34.4 feet above mean sea level
 TPH-G: Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-4 (BH-D) - Shell Service Station WIC# 204-5508-2709, 3750 East 14th, Oakland, California



ATTACHMENT C
ANALYTIC REPORT FOR SOIL



NATIONAL
ENVIRONMENTAL
TESTING, INC.

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

David Elias
Weiss Associates
5500 Shellmound St.
Emeryville, CA 94608

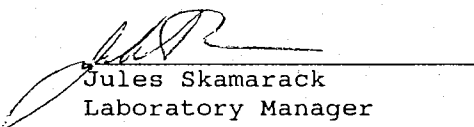
Date: 07/08/1992
NET Client Acct No: 1809
NET Pacific Job No: 92.3589
Received: 06/26/1992

Client Reference Information

Shell, 3750 E. 14th St., Oakland, Job No. 81-425-06

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)



NET Pacific, Inc.

Client No: 1809
Client Name: Weiss Associates
NET Job No: 92.3589

Date: 07/08/1992

Page: 2

Ref: Shell, 3750 E. 14th St., Oakland, Job No. 81-425-06

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	BH-D-5.5	BH-D-15.0	Units
			06/24/1992	06/24/1992	
			127729	127730	
TPH (Gas/BTXE,Solid)			--	--	
METHOD 5030 (GC,FID)					
DATE ANALYZED			07-02-92	07-02-92	
DILUTION FACTOR*			1	1	
as Gasoline	5030	1	ND	9.1**	mg/Kg
METHOD 8020 (GC,Solid)			--	--	
DATE ANALYZED			07-02-92	07-03-92	
DILUTION FACTOR*			1	10	
Benzene	8020	0.0025	ND	ND	mg/Kg
Ethylbenzene	8020	0.0025	ND	ND	mg/Kg
Toluene	8020	0.0025	ND	ND	mg/Kg
Xylenes (Total)	8020	0.0025	ND	0.039	mg/Kg
SURROGATE RESULTS			--	--	
Bromofluorobenzene	5030		98	105	% Rec.

** The positive result for Petroleum Hydrocarbons as Gasoline does not appear to have a typical Gasoline pattern.



NET Pacific, Inc.

Client No: 1809
Client Name: Weiss Associates
NET Job No: 92.3589

Date: 07/08/1992

Page: 3

Ref: Shell, 3750 E. 14th St., Oakland, Job No. 81-425-06

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	BH-D-10.5	BH-D-8.0	Units
			06/24/1992	06/24/1992	
			127731	127732	
TPH (Gas/BTXE, Solid)			--	--	
METHOD 5030 (GC, FID)					
DATE ANALYZED			07-06-92	07-06-92	
DILUTION FACTOR*			2	2	
as Gasoline	5030	1	2.5	6.4	mg/Kg
METHOD 8020 (GC, Solid)			--	--	
DATE ANALYZED			07-06-92	07-06-92	
DILUTION FACTOR*			2	2	
Benzene	8020	0.0025	ND	ND	mg/Kg
Ethylbenzene	8020	0.0025	0.0051	ND	mg/Kg
Toluene	8020	0.0025	0.0074	ND	mg/Kg
Xylenes (Total)	8020	0.0025	0.024	0.020	mg/Kg
SURROGATE RESULTS			--	--	
Bromofluorobenzene	5030		95	118	% Rec.



NET Pacific, Inc.

Client No: 1809
Client Name: Weiss Associates
NET Job No: 92.3589

Date: 07/08/1992

Page: 4

Ref: Shell, 3750 E. 14th St., Oakland, Job No. 81-425-06

Descriptor, Lab No. and Results

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results		Units
			BH-D-13.0 06/24/1992 127733	BH-D-25.5 06/24/1992 127734	
TPH (Gas/BTXE,Solid)			--	--	
METHOD 5030 (GC,FID)					
DATE ANALYZED			07-02-92	07-02-92	
DILUTION FACTOR*			10	1	
as Gasoline	5030	1	44	ND	mg/Kg
METHOD 8020 (GC,Solid)			--	--	
DATE ANALYZED			07-02-92	07-02-92	
DILUTION FACTOR*			10	1	
Benzene	8020	0.0025	ND	ND	mg/Kg
Ethylbenzene	8020	0.0025	ND	ND	mg/Kg
Toluene	8020	0.0025	ND	ND	mg/Kg
Xylenes (Total)	8020	0.0025	ND	ND	mg/Kg
SURROGATE RESULTS			--	--	
Bromofluorobenzene	5030		107	98	% Rec.



NET Pacific, Inc.

Client No: 1809
Client Name: Weiss Associates
NET Job No: 92.3589

Date: 07/08/1992

Page: 5

Ref: Shell, 3750 E. 14th St., Oakland, Job No. 81-425-06

Descriptor, Lab No. and Results

BH-D-8.0, 13
.0, 25.5 Com
06/24/1992

Parameter	Method	Reporting Limit	127735	Units
CAM METALS (Solid, TLC)				
Antimony (ICP)	EPA 6010	10	ND	mg/Kg
Arsenic (GFAA)	EPA 7060	0.5	2.2	mg/Kg
Barium (ICP)	EPA 6010	2.0	140	mg/Kg
Beryllium (ICP)	EPA 6010	2.0	ND	mg/Kg
Cadmium (ICP)	EPA 6010	2.0	ND	mg/Kg
Chromium (ICP)	EPA 6010	2.0	39	mg/Kg
Chromium+6 (FLAA)	EPA 7197	0.5	NA	mg/Kg
Cobalt (ICP)	EPA 6010	5.0	18	mg/Kg
Copper (ICP)	EPA 6010	2.0	ND	mg/Kg
Lead (GFAA)	EPA 7421	0.2	9.0	mg/Kg
Mercury (CVAA)	EPA 7471	0.1	ND	mg/Kg
Molybdenum (ICP)	EPA 6010	5.0	ND	mg/Kg
Nickel (ICP)	EPA 6010	5.0	140	mg/Kg
Selenium (GFAA)	EPA 7740	0.5	ND	mg/Kg
Silver (ICP)	EPA 6010	2.0	ND	mg/Kg
Thallium (ICP)	EPA 6010	20	ND	mg/Kg
Vanadium (ICP)	EPA 6010	5.0	38	mg/Kg
Zinc (ICP)	EPA 6010	2.0	49	mg/Kg



NET Pacific, Inc

KEY TO ABBREVIATIONS and METHOD REFERENCES

- < : Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
- * : Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
- ICVS : Initial Calibration Verification Standard (External Standard).
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, 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, $100 \text{ [Value 1 - Value 2] / mean value}$.
- 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 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

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

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

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.



Client No: 1809
Client Name: Weiss Associates
NET Job No: 92.3589

Date: 07/08/1992

Page: 6

NET Pacific, Inc

Ref: Shell, 3750 E. 14th St., Oakland, Job No. 81-425-06

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	1	mg/Kg	119	ND	85	88	3.5
Benzene	0.0025	mg/Kg	117	ND	85	90	5.5
Toluene	0.0025	mg/Kg	114	ND	94	97	2.9
Antimony	10	mg/Kg	96	ND	89	95	6.5
Arsenic	0.5	mg/Kg	97	ND	106	95	2.5
Barium	2	mg/Kg	103	ND	102	109	6.6
Beryllium	2	mg/Kg	104	ND	101	113	11
Cadmium	2	mg/Kg	108	ND	103	111	7.5
Chromium	2	mg/Kg	106	ND	101	107	5.8
Cobalt	5	mg/Kg	108	ND	105	111	5.6
Copper	2	mg/Kg	97	ND	102	108	6.0
Lead	20	mg/Kg	99	ND	92	106	6.5
Mercury	0.1	mg/Kg	106	ND	120	112	7.7
Molybdenum	5	mg/Kg	109	ND	97	106	3.0
Nickel	5	mg/Kg	109	ND	107	114	6.3
Selenium	0.5	mg/Kg	102	ND	121	119	1.7
Silver	2	mg/Kg	103	ND	79	84	4.1
Thallium	20	mg/Kg	100	ND	84	85	1.2
Vanadium	5	mg/Kg	103	ND	100	107	6.8
Zinc	2	mg/Kg	107	ND	102	105	2.9



NET Pacific, Inc

KEY TO ABBREVIATIONS and METHOD REFERENCES

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- * : Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
- ICVS : Initial Calibration Verification Standard (External Standard).
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, 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, $100 \text{ [Value 1 - Value 2]}/\text{mean value}$.
- 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 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

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

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

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.



SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD

Serial No.: 7244

Date: 5-21-91
Page of

Site Address: 3750 E. 14th ST., OAKLAND, CA. 946

Analysis Required

LAB: NET

WIC#: 204-5508-2709

CHECK ONE (1) BOX ONLY CT/DT TURN AROUND TIME

Shell Engineer: DAN KIRK Phone No: 510-675-6168
Fax #: 510-675-6192

- Quarterly Monitoring 5461 24 hours
 - Site Investigation 5441 48 hours
 - Soil for disposal 5442 15 days (Normal)
 - Water for disposal 5443 Other
 - Air Sample- Sys O&M 5452
 - Water Sample - Sys O&M 5453
 - Other
- NOTE: Notify Lab as soon as possible of 24/48 hrs. TAT.

Consultant Name & Address: WEISS ASSOCIATES, 5500 SHELLMOUND ST., OAKLAND, CA 94608

Consultant Contact: DAVID ELIAS Phone No: 510-547-5420
Job Number: 81-425-06 Fax #: 510-547-5043

Comments:

Sampled By: David Elias
Printed Name: DAVID ELIAS

Sample ID	Date	Soil	Water	Air	No. of conts.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal	Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
BH-D-5.5	6-24-92	X			1	X	X				2 1/2 X 6	H/A	N	SOIL & GAS	gas station
BH-D-15.0	6-24-92	X			1	X	X				"	"	"	"	per DEGR
BH-D-10.5	6-24-92	X			1	X	X				"	"	"	"	6/26/92
BH-D-8.0	6-24-92	X			1	X	X		X		"	"	Y	"	1/CS
BH-D-13.0	6-24-92	X			1	X	X		X		"	"	Y	"	
BH-D-25.5	6-24-92	X			1	X	X		X		"	"	Y	"	

COC SEaled
 1900 MWJ Seal
 Conf for H/C on 6/25/92

Relinquished By (signature): <u>Mariette Shin</u>	Printed name: <u>Mariette Shin</u>	Date: <u>6/24/92</u>	Received (signature): <u>Mary Tavani</u>	Printed name: <u>M. TAVANI</u>	Date: <u>6/25/92</u>
Relinquished By (signature): <u>Mary Tavani</u>	Printed name: <u>M. TAVANI</u>	Date: <u>6/25/92</u>	Received (signature):	Printed name:	Date: <u>1/30/92</u>
Relinquished By (signature): <u>(unclear)</u>	Printed name:	Date:	Received (signature): <u>K. Temple</u>	Printed name: <u>K. Temple</u>	Date: <u>6/24/92</u>

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

container got - soil & gas

ATTACHMENT D
ANALYTIC REPORT 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

Dave Elias
Weiss Associates
5500 Shellmound St.
Emeryville, CA 94608

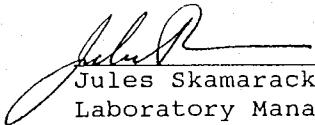
Date: 07/10/1992
NET Client Acct No: 1809
NET Pacific Job No: 92.3666
Received: 06/30/1992

Client Reference Information

Shell, 3750 E. 14th St., Oakland

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:rcr
Enclosure(s)



NET Pacific, Inc

Client No: 1809
Client Name: Weiss Associates
NET Job No: 92.3666

Date: 07/10/1992

Page: 2

Ref: Shell, 3750 E. 14th St., Oakland

Parameter	Method	Reporting Limit	<u>Descriptor, Lab No. and Results</u>		Units
			062-04 06/29/1992 128261	062-21 06/29/1992 128262	
TPH (Gas/BTXE,Liquid)			--	--	
METHOD 5030 (GC,FID)					
DATE ANALYZED			07-06-92	07-06-92	
DILUTION FACTOR*			1	1	
as Gasoline	5030	0.05	1.3	ND	mg/L
METHOD 8020 (GC,Liquid)			--	--	
DATE ANALYZED			07-06-92	07-06-92	
DILUTION FACTOR*			1	1	
Benzene	8020	0.0005	0.040	ND	mg/L
Ethylbenzene	8020	0.0005	0.047	ND	mg/L
Toluene	8020	0.0005	0.003	ND	mg/L
Xylenes (Total)	8020	0.0005	0.017	ND	mg/L
SURROGATE RESULTS			--	--	
Bromofluorobenzene	5030		108	86	% Rec.



NET Pacific, Inc

Client No: 1809
Client Name: Weiss Associates
NET Job No: 92.3666

Date: 07/10/1992

Page: 3

Ref: Shell, 3750 E. 14th St., Oakland

QUALITY CONTROL DATA

<u>Parameter</u>	<u>Reporting Limits</u>	<u>Units</u>	<u>Cal Verf Stand % Recovery</u>	<u>Blank Data</u>	<u>Spike % Recovery</u>	<u>Duplicate Spike % Recovery</u>	<u>RPD</u>
Gasoline	0.05	mg/L	90	ND	95	92	3.0
Benzene	0.0005	mg/L	107	ND	101	97	4.0
Toluene	0.0005	mg/L	105	ND	104	100	3.0

COMMENT: Blank Results were ND on other analytes tested.



NET Pacific, Inc

KEY TO ABBREVIATIONS and METHOD REFERENCES

- < : Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
- * : Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
- ICVS : Initial Calibration Verification Standard (External Standard).
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, 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, $100 \text{ [Value 1 - Value 2] / mean value}$.
- 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

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

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.



SHELL OIL COMPANY
RETAIL ENVIRONMENTAL ENGINEERING - WEST

CHAIN OF CUSTODY RECORD

Serial No.: 7314

Date: 6/29/92
Page 1 of 1

Site Address:
3750 E. 14th St., Oakland, CA

Analysis Required

LAB: NET

WIC#: 204-5508-2709

Shell Engineer:
DAN KIRK

Phone No. (510)
675-6168
Fax #: (510) 675-6172

Consultant Name & Address:
WEISS ASSOCIATES

Consultant Contact: DAVE ELIAS
Job Number: 81-425-06

Phone No. (510) 547-5420
Fax #: (510) 547-5043

Comments:

Sampled By: Brian Busch
Printed Name: BRIAN BUSCH

CHECK ONE (1) BOX ONLY	CT/DT	TURN AROUND TIME
Quarterly Monitoring <input type="checkbox"/>	5461	24 hours <input type="checkbox"/>
Site Investigation <input checked="" type="checkbox"/>	5441	48 hours <input type="checkbox"/>
Soil for disposal <input type="checkbox"/>	5442	15 days <input checked="" type="checkbox"/> (Normal)
Water for disposal <input type="checkbox"/>	5443	Other <input type="checkbox"/>
Air Sample- Sys O&M <input type="checkbox"/>	5452	NOTE: Notify Lab as soon as possible of 24/48 hrs. TAT.
Water Sample - Sys O&M <input type="checkbox"/>	5453	
Other <input type="checkbox"/>		

Sample ID	Date	Soil	Water	Air	No. of conds.	TPH (EPA 8015 Mod. Gas)	TPH (EPA 8015 Mod. Diesel)	BTEX (EPA 8020/602)	Volatile Organics (EPA 8240)	Test for Disposal				Container Size	Preparation Used	Composite Y/N	MATERIAL DESCRIPTION	SAMPLE CONDITION/ COMMENTS
062-04	6/29/92		X		3	X	X							40ml	HCl	N	GW/GAS	
062-21	6/29/92		X		3	X	X							40ml	HCl	N	GW/GAS	TRAVEL BLANK

Relinquished By (signature): <u>Brian Busch</u>	Printed name: <u>BRIAN BUSCH</u>	Date: <u>6/29/92</u> Time: <u>15:05</u>	Received (signature):	Printed name:	Date:
Relinquished By (signature):	Printed name:	Date:	Received (signature):	Printed name:	Date:
Relinquished By (signature):	Printed name:	Date:	Received (signature): <u>A. Lopez</u>	Printed name: <u>Anny Lopez</u>	Date: <u>6/30/92</u> Time: <u>13:10</u>

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

Last Revision Date: 10/15/91

→ STORED OVERNIGHT IN A LOCKED, SECURE PLACE.

ATTACHMENT E
PREVIOUS GROUND WATER LEVEL AND ANALYTICAL RESULTS

Table 1
Monitoring Well Field Measurement Data
Second Quarter 1992

Shell Station: 3750 East 14th Street
Oakland, California
WIC #: 204-5508-2709

Date: 05/27/92
Project Number: G67-33.01

Well Designation	Water Level Field Date	TOC Elevation (ft-MSL)	Depth to Water (feet)	Ground-water Elevation (ft-MSL)	Total Well Depth (feet)	Floating Product Thickness (feet)	Water Sample Field Date	pH (std. units)	Electrical Conductivity (micromhos/cm)	Temperature (degrees F)	Turbidity (NTU)
MW-1	04/23/91	34.67	8.42	26.25	NR	NR	04/23/91	NR	NR	NR	NR
MW-1	07/23/91	34.67	12.87	21.80	NR	NR	07/23/91	NR	NR	NR	NR
MW-1	10/23/91	34.67	14.52	20.15	NR	NR	10/23/91	NR	NR	NR	NR
MW-1	01/24/92	34.67	12.33	22.34	26.3	ND	01/24/92	7.10	697	62.3	>200
MW-1	04/28/92	34.67	9.18	25.49	26.3	ND	04/28/92	7.00	885	67.5	>200
MW-2	04/23/91	34.75	9.05	25.70	NR	NR	04/23/91	NR	NR	NR	NR
MW-2	07/23/91	34.75	13.41	21.34	NR	NR	07/23/91	NR	NR	NR	NR
MW-2	10/23/91	34.75	15.03	19.72	NR	NR	10/23/91	NR	NR	NR	NR
MW-2	01/24/92	34.75	12.86	21.89	28.0	ND	01/24/92	6.98	693	60.9	>200
MW-2	04/28/92	34.75	9.56	25.19	28.0	ND	04/28/92	7.18	974	65.3	>200
MW-3	04/23/91	33.12	8.13	24.99	NR	NR	04/23/91	NR	NR	NR	NR
MW-3	07/23/91	33.12	12.06	21.06	NR	NR	07/23/91	NR	NR	NR	NR
MW-3	10/23/91	33.12	13.79	19.33	NR	NR	10/23/91	NR	NR	NR	NR
MW-3	01/24/92	33.12	11.58	21.54	27.8	ND	01/24/92	6.95	724	61.0	>200
MW-3	04/28/92	33.12	8.55	24.57	27.8	ND	04/28/92	7.09	1018	66.1	>200

TOC = top of casing
ft-MSL = elevation in feet, relative to mean sea level
std. units = standard pH units
micromhos/cm = micromhos per centimeter
degrees F = degrees Fahrenheit
NTU = nephelometric turbidity units
NR = Not reported; data not available
ND = None detected

Table 2
 Summary of Analytical Results
 Second Quarter 1992
 milligrams per liter (mg/l) or parts per million (ppm)

Shell Station: 3750 East 14th Street
 Oakland, California
 WIC #: 204-5508-2709

Date: 06/01/92
 Project Number: G67-33.01

Sample Designation	Water Sample Field Date	TPH-g (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl-benzene (mg/l)	Total Xylenes (mg/l)	TPH-d (mg/l)
MW-1	04/23/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-1	07/23/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-1	10/23/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-1	01/24/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-1	04/28/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-2	04/23/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-2	07/23/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-2	10/23/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-2	01/24/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-2	04/28/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-3	04/23/91	0.53	0.0071	0.011	0.017	0.018	0.73&
MW-3	07/23/91	0.90	0.0020	0.0028	<0.0005	0.0046	0.77&
MW-3	10/23/91	0.80	0.0056	0.0007	<0.0005	0.0046	0.57&
MW-3	01/24/92	1.3	0.0023	0.0023	0.0038	0.0052	0.83
MW-3	04/28/92	0.52&	0.0006	0.0009	0.0012	0.0034	0.30&
TB	04/23/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
TB	07/23/91	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
TB	10/23/91	NR	NR	NR	NR	NR	NR
TB	01/24/92	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
TB	04/28/92	NA	NA	NA	NA	NA	NA

TPH-g = total petroleum hydrocarbons as gasoline

TPH-d = total petroleum hydrocarbons as diesel

NA = Not analyzed

& = Results due primarily to low boiling hydrocarbons

NR = Not reported; data not available

Table 3
Summary of Analytical Results
Volatile Organic Compounds by EPA Method 601
Second Quarter 1992
milligrams per liter (mg/l) or parts per million (ppm)

Shell Station: 3750 East 14th Street
Oakland, California
WIC #: 204-5508-2709

Date: 05/27/92
Project Number: G67-33.01

Sample Designation	Water Sample Field Date	TCE	TCA
		(mg/l)	(mg/l)
MW-1	04/23/91	<0.0005	<0.0005
MW-1	07/23/91	<0.0005	<0.0005
MW-1	10/23/91	<0.0005	<0.0005
MW-1	01/24/92	<0.0005	<0.0005
MW-1	04/28/92	<0.0005	<0.0005
MW-2	04/23/91	0.0006	<0.0005
MW-2	07/23/91	0.0006	<0.0005
MW-2	10/23/91	<0.0005	<0.0005
MW-2	01/24/92	<0.0005	<0.0005
MW-2	04/28/92	<0.0005	<0.0005
MW-3	01/18/91	<0.0005	<0.0005

TCE = Trichloroethene
TCA = 1,1,1-Trichloroethane



Table 1. Ground Water Elevations - Shell Service Station WIC #204-5508-2709, 3750 East 14th Street, Oakland, 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	34.67	12.01	22.66
	07/23/90		13.40	21.27
	10/23/90		15.71	18.96
	01/18/91		13.11	21.56
	04/23/91		8.42	26.25
	07/23/91		12.87	21.80
	10/23/91		14.52	20.15
MW-2	04/11/90	34.75	12.46	22.29
	07/23/90		13.84	20.91
	10/23/90		16.21	18.54
	01/18/91		13.64	21.11
	04/23/91		9.05	25.70
	07/23/91		13.41	21.34
	10/23/91		15.03	19.72
MW-3	04/11/90	33.12	11.20	21.92
	07/23/90		12.53	20.59
	10/23/90		14.92	18.20
	01/18/91		12.64	20.48
	04/23/91		8.13	24.99
	07/23/91		12.06	21.06
	10/23/91		13.79	19.33

Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-5508-2709, 3750 East 14th Street, Oakland, California

Sample	Date Sampled	Depth to Water (ft)	TPH-G	TPH-D	B	E	T	X	TCE	TCA	TOG	-----parts per million (mg/l)-----										
MW-1	04/11/90 ^a	12.01	<0.050	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<10										
	07/23/90	13.40	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0010	<5										
	10/23/90	15.71	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<5										
	01/18/91	13.11	0.072	---	0.0018	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	---										
	04/23/91	8.42	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	---										
	07/23/91	12.87	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	---										
	10/23/91	14.52	<.050	---	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	---										
MW-2	04/11/90 ^a	12.46	<0.050	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	0.00074	<0.0004	<0.0004	<10										
	07/23/90	13.84	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	<5										
	10/23/90	16.21	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	0.0008	<0.0005	<0.0005	---										
	01/18/91	13.64	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	---										
	04/23/91	9.05	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	---										
	07/23/91	13.41	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	---										
	10/23/91	15.03	<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	---										
MW-3	04/11/90 ^a	11.20	0.29	0.33	<0.0005	0.0006	<0.0005	0.0009	<0.0004	<0.0004	<0.0004	<10										
	07/23/90	12.53	0.60	---	0.0031	0.013	0.0016	0.015	<0.0005	0.0006	<5											
	10/23/90	14.92	0.12	0.13	0.0006	<0.0005	<0.0005	0.0011	<0.0005	<0.0005	<5											
	01/18/91	12.64	0.46	0.76 ^b	0.0064	0.0032	0.0017	0.0014	<0.0005	<0.0005	---											
	04/23/91	8.13	0.53	0.73 ^b	0.0071	0.017	0.011	0.018	---	---	---											
	07/23/91	12.06	0.90	0.77 ^b	0.0020	<0.0005	0.0028	0.0046	---	---	---											
	10/23/91	13.79	0.80	0.57	0.0056	<0.0005	0.0007	0.0046	---	---	---											
Trip	04/11/90 ^a		<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---	---										
	07/23/90		<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---	---										
	10/23/90		<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---	---										
	01/18/91		<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---	---										
	07/23/91		<0.050	---	<0.0005	<0.0005	<0.0005	<0.0005	---	---	---	---										
DHS MCLs			NE	NE	0.001	0.680	0.10 ^c	1.750	0.005	0.200	NE											

-- Table 2 continues on next page --



Table 2. Analytic Results for Ground Water - Shell Service Station, WIC #204-5508-2709, 3750 East 14th Street, Oakland, California (continued)

Abbreviations:

TPH-G = Total Petroleum Hydrocarbons as Gasoline by Modified EPA Method 8015
TPH-D = Total Petroleum Hydrocarbons as Diesel by Modified EPA Method 8015
B = Benzene by EPA Method 602 or 8020
E = Ethylbenzene by EPA Method 602 or 8020
T = Toluene by EPA Method 602 or 8020
X = Xylenes by EPA Method 602 or 8020
TCE = Trichloroethene by Method 8010/601
TCA = 1,1,1-Trichloroethane by EPA Method 8010/601
TOG = Total non-polar oil and grease by American Public Health Association
Standard Methods 503A&E
<n = Not detected at detection limits of n ppm
DHS MCL = Department of Health Services Maximum Contaminant Levels for
drinking water
NE = Not established
--- = Not analyzed

Analytical Laboratory:

IT = International Technology Analytical Services, San Jose, California

Notes:

a = Samples analyzed by National Environmental Testing Pacific, Inc.,
Santa Rosa, California
b = Primarily gasoline-range hydrocarbons
c = DHS recommended action level for drinking water, MCL not established