Converse Environmental Consultants California

55 Hawthorne Street, Suite 500
San Francisco, California 94105

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6/21/89
ALAMEDA COUNTY
DEPT. OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS

June 20, 1989
88-44-369-01-111

Ms. Leslie Ferguson
Water Resource Control Engineer
San Francisco Bay Regional Quality Control Board
1111 Jackson Street, Sixth Floor
Oakland, California 94607

Subject: Shell Oil Company - Quarterly Report
630 High Street
Oakland, California 94601

Dear Ms. Ferguson:

Enclosed please find one copy of the Shell Oil Company Quarterly Report of Activities for Quarter 2, 1989 prepared by Converse Environmental Consultants California - (San Francisco).

Please call if you have any questions.

Very truly yours,

Converse Environmental Consultants California

REGISTERED PROFESSIONAL GEOLOGIST
Douglas W. Charlton
No. 4110
STATE OF CALIFORNIA

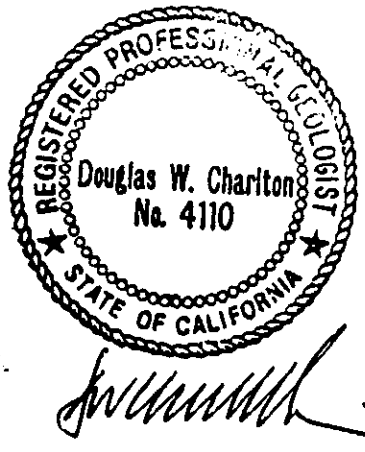
Douglas W. Charlton
California Registered Geologist #4110

DWC:nl
enclosure

cc: Ms. Diane Lundquist - Shell Oil Company (w/encl.)
Mr. Rafat Shahid - Alameda County Health (w/encl.)
Ms. Robin Breuer - CECC (w/encl.)

HIGH STREET\FERGUSO1_111.LTR

Converse Environmental
Consultants California



REPORT OF ACTIVITIES

SHELL OIL COMPANY FACILITY
630 High Street
Oakland, California

For Quarter 2, 1989
Submitted:June 20, 1989

RWQCB Representative:	Ms. Leslie Ferguson Water Resource Control Engineer
LIA Representative:	Mr. Rafat Shahid Alameda County Health Care Services Agency
Shell Engineer:	Ms. Diane Lundquist Environmental Engineer
Converse Project Manager:	Ms. Robin Breuer, Project Manager 55 Hawthorne Street, Suite 500 San Francisco, California 94105 (415) 543-4200
Registered Geologist in Charge:	Douglas W. Charlton, Principal Geologist 55 Hawthorne Street, Suite 500 San Francisco, California 94105 (415) 543-4200
Site Owner:	Shell Oil Company

1. SITE DESCRIPTION

1.1 Maps

Vicinity Map: See Drawing 1
Plot Plan: See Drawing 2

1.2 Neighborhood Topography

Slightly sloping to the northwest.

1.3 Primary Surface Waters Nearby

Alameda Estuary is approximately one-eighth of a mile to the west.

1.4 Water Table Information

Q2/89: Depth to Water: 10 - 11 feet below grade.
Depth to Highest High Water by redox boundary: 9 feet below grade.

2. INVESTIGATION HISTORY

2.1 Soil Borings Drilled to Period Start

None.

2.2 Soil Borings Abandoned to Period Start

None.

2.3 Groundwater Wells Drilled to Period Start

None.

2.4 Groundwater Wells Abandoned to Period Start

None.

2.5 Investigative History Summary

CHRONOLOGICAL SUMMARY

The following chronological summary is based on information available to CECC for preparation of this Work Plan.

Date	Description of Activity
01/85	Re-modernization of gas station. Armer/Norman dismantled and removed all fuel dispensing facilities and excavated certain areas near former pump islands, product lines and areas which smelled of gasoline.
01/26/89	Blaine Tech Services collected and analyzed (10) excavation soil samples. The inspector from the Alameda County Health Department specified sampling locations. Soils were analyzed for TPH-g, BTEX and organic lead.
02/03/89	Blaine Tech Services collected and analyzed soil samples in areas of product dispensing pump islands after additional excavation in these areas and in areas of former waste oil and gasoline tank pits (sample No. 10 - 75 ppm and No. 12 - 600 ppm TPH-g).
02/03/89	Further excavation in former waste oil tank pit. Soil and groundwater samples were collected and analyzed in the area around sample no. 12 of February 3, 1989 sampling event. These soil samples contained less than 50 ppm TPH-d. Groundwater sample no. 3 from that area contained 1,800 ppb TPH-g and 200 ppb TPH-d.
02/24/89	Alameda County Environmental Health Department notified Shell that site conditions indicated a confirmed release, which required an investigation Work Plan within 25 days of the letter date.
3/89	Shell transferred project to CECC.
3/20/89	CECC submitted Revised Work Plan to agencies.
4/26/89	**CECC installed wells MW-1 through MW-4.**
4/27/89	**CECC installed soil borings SB-1 and SB-2.**

3. WORK COMPLETED THIS PERIOD

3.1 Introduction

Work initiated and completed during the quarter followed the task descriptions and modifications of the site Work Plan dated March 20, 1989. The relative timing and schedule of these activities is shown in summary in the Critical Path for the project (Drawing 3).

3.2 Soil Boring Drilling/Sampling

A total of six soil borings were drilled, sampled, and abandoned following the protocols described in Appendices A and B. Soil cuttings were handled by Crosby Overton, following task procedures described in Appendix G. Boring logs are enclosed as Attachment 1. A summary of soil boring activities is presented in Table 2.

TABLE 2: Summary of Soil Borings Drilled

Boring No.	Date Drilled	Diameter (inches)	T.D. (ft. bgs)	Unsaturated Soil Samples (ft. bgs)	Saturated Soil Samples (ft. bgs)
SB-1	4/27/89	4	10	5	None
SB-2	4/27/89	4	10	5,10	None
MW-1	4/25/89	12	20.0	5	None
MW-2	4/25/89	12	25.0	5,10,15	None
MW-3	4/26/89	12	26.0	5,10	None
MW-4	4/26/89	12	22.0	5,10	None

3.3 Well Installations

Four groundwater monitoring wells were installed, developed and sampled following the protocols in Appendices A, C, D and E. All wells were installed as 4-inch diameter filter-packed PVC wells through hollow-stem auger drilling equipment. Boring logs and as-built well construction diagrams are included as Attachment 1. A summary of well installations is provided in Table 3.

TABLE 3: Summary of Groundwater Monitoring Well Installations

Well No.	Date	Diameter Well (in.)	Initial Water Table (ft. bgs)	Static Water Table (ft. bgs)	T.D. Well (ft. bgs)	Screen (ft. bgs)	Bentonite Seal (ft. bgs)	Grout Seal (ft. bgs)
MW-1	4/25/89	4	10	NA	20	13-9	9-6	6-0
MW-2	4/25/89	4	14.5	16.0	25	20-10	10-8	8-0
MW-3	4/26/89	4	11.5	NA	20	17-8	8-6	6-0
MW-4	4/26/89	4	10.0	NA	22	17-7	7-6	6-0

3.4 Soil Analysis/Results

Soil samples were properly packaged and transferred to a California State-certified analytical laboratory under proper chain-of-custody and preservation (see Appendix E).

Composite samples were prepared by taking equal weight subsamples from each sample depth in the borings. The composite samples were then analyzed for TPH as gasoline (EPA Methods 5030 and 8015), TPH as diesel (EPA Methods 3550 and 8015), TPH as motor oil (EPA Methods 3550 and 8015) and for Pb (EPA Methods 3050 and 7421). Analytical results are summarized in Table 4, and certified sheets from all analyses are enclosed as Attachment 2.

TABLE 4: Soil Analytical Results (ppm)

Boring No.	Sample Depth (ft. bgs)	TPH-g	TPH-d	TPH-mo	Benzene	Toluene	Ethyl-benzene	Xylene	Total Lead
SB-1	5	12*	27	85	<0.025	0.10	<0.075	0.14	71
SB-2	5	<10	<10	<10	0.042	0.054	<0.075	<0.075	16
SB-2	5,10**	<10	<10	130	<0.025	0.04	<0.075	<0.075	10
MW-1	5	11	<10	<10	<0.025	0.11	<0.075	<0.075	9.6
MW-1	5,10**	63	<10	<10	0.042	0.14	<0.075	0.16	7.6
MW-2	5	<10	<10	<10	<0.025	0.34	<0.075	<0.075	13
MW-2	5,10,15**	<10	<10	<10	<0.025	0.15	<0.075	<0.075	4.0
MW-3	10	<10	<10	<10	<0.025	<0.025	<0.075	<0.075	3.9
MW-3	5,10**	<10	<10	<10	<0.025	0.068	<0.075	<0.075	5.1
MW-4	5	<10	<10	<10	0.046	0.21	<0.075	<0.075	26
MW-4	5,10**	<10	<10	<10	<0.025	0.066	<0.075	<0.075	27

* Sample contains higher boiling hydrocarbons not characteristic with gasoline.
** Composite sample.

3.5 Groundwater Analysis and Results

Groundwater samples were properly packaged and transferred to a California State-certified analytical laboratory under proper chain-of-custody and preservation (see Appendix E). The samples were analyzed for TPH as gasoline (Methods 5030 and 8015), TPH as diesel (Methods 3510 and 8015), TPH as motor oil (EPA Methods 3510 and 8015) and BTEX (EPA Methods 5030 and 602). Selected analytical results are summarized in Table 5, and certified sheets from all analyses are enclosed as Attachment 3.

TABLE 5: Groundwater Analytical Results (ppm)

Well No.	Date Sampled	TPH-g	TPH-d	TPH-mo	Benzene	Toluene	Ethyl-benzene	Xylene
MW-1	5/25/89	11	7.1	1.6	0.0066	0.023	0.023	0.180
MW-2	5/25/89	<0.05	<0.05	<0.05	<0.0005	<0.0005	<0.0015	<0.0015
MW-3	5/25/89	1.2	0.40	0.088	<0.0005	<0.0005	<0.0015	<0.0015
MW-4	5/25/89	2.9	1.1	0.29	<0.0005	0.0094	<0.0015	0.0034

3.6 Physical Monitoring Results

A total of four wells were physically monitored for depth to water table, and measurement of floating product, if any, one time during the quarter. A summary of these results is presented in Table 6.

TABLE 6: Physical Monitoring Results: Evidence of Contamination*

Well No.	Date	Depth to Water (ft.)	Petroleum Water Odor	Thickness Floating Product (inches)	Notes
MW-1	5/25/89	10.43	Strong	None	Gray sheen
MW-2	5/25/89	11.63	None	None	No sheen
MW-3	5/25/89	10.43	None	None	No sheen
MW-4	5/25/89	10.72	Moderate	None	Sheen

* Sheen; odor; FID; color; PID (opened/odor trapped in casing)

3.7 Hydrologic Tests and Research

Certain public files and records were researched, and conversations were held with authorities on local water conditions to provide background on the location and thickness of saturated zone, soil stratigraphy, groundwater flow patterns, seasonal variation of water tables, beneficial uses, etc. This information is included in the interpretive diagrams presented in Section 4 of this report.

4. REVIEW OF DATA AND INTERPRETATIONS

4.1 Groundwater Elevation and Gradient

- The tops of casings were not surveyed this quarter. This work will be done in early Q3/89, to establish groundwater gradient. This information, with a map, will be provided to the RWQCB under separate cover.

4.2 Distribution of Product Contamination in Soil (See Drawings 4 and 5)

- Minor soil contamination was discovered near the location of the former tank complex.
- TPH-g and TPH-d were present in detectable quantities in two of six borings, at low concentrations.
- TPH-mo contamination was present in the soil borings, near the waste oil tank.

- Lead contamination exceeded 50 ppm in one sample, at SB-1.

4.3 Distribution of Dissolved MVF Contamination in Groundwater (See Drawing 6, 7, 8)

- TPH-g and TPH-d contamination was indicated in MW-1, near the former tank complex. Two other wells contained low ppm concentrations of TPH-g and TPH-d in groundwater.

- The ratio of detectable TPH-g to TPH-d in groundwater ranged from 3:1 to 3:2.

4.4 Distribution of Floating Product on Groundwater

- None

4.5 Geologic Cross Section, Showing Groundwater (See Drawing 9)

5. WORK PLAN MODIFICATIONS

- None

6. STATUS OF SCHEDULE

With the exception of the completion of surveying, task time lines established on the Critical Path were met (see Drawing 3).

7. WORK PLANNED BUT NOT COMPLETED

- None. Hydrologic research is in progress.

8. WORK PLANNED FOR NEXT QUARTER

Tasks 1a, 5a, 6a, and 7,8 (see Critical Path) will be started next quarter (See Drawing 10).

Task 1a: Drill/Sample Soil Borings: Two soil borings (SB-3 and SB-4) will be drilled near the former tank complex, to further investigation of the lateral extent of soil contamination in SB-1, following protocols of Task 1 of the project Work Plan, with analyses per Table 7, attached.

Task 5a: Install/Develop New Groundwater Monitoring Wells: Four groundwater monitoring wells (MW-5 through MW-8) will be drilled onsite, to further investigation of groundwater contamination, following the protocols of Task 5 of the project Work Plan.

Task 6a: Sample/Analyze Groundwater: Groundwater samples will be analyzed per Table 7, attached, following protocols of the project Work Plan.

Task 8: Neighborhood Assessment: A records assessment of neighborhood property owners and historical use of fuels and underground storage tanks will begin.

In addition, groundwater monitoring will be conducted as field measurements quarterly on eight wells, and as groundwater sampling for TPH-g, TPH-d and BTEX, analysis on eight wells.

TABLE 7
REVISED 6 OCTOBER 1988

RECOMMENDED MINIMUM VERIFICATION ANALYSES FOR UNDERGROUND TANK LEAKS

HYDROCARBON LEAK	SOIL ANALYSIS			WATER ANALYSIS		
		Prep	Analysis		Prep	Analysis
Unknown Fuel	TPH G	5030	8015	TPH G	5030	8015
	TPH D	3550	8015	TPH D	3510	8015
	BTX&E	5030	8020/8240	BTX&E	5030	602/624
	LEAD	3050	7421	LEAD	3050	7421
Leaded Gas	TPH G	5030	8015	TPH G	5030	8015
	BTX&E	5030	8020/8240	BTX&E	5030	602/624
	LEAD	3050	7421	LEAD	3050	7421
Unleaded Gas	TPH G	5030	8015	TPH G	5030	8015
	BTX&E	5030	8020/8240	BTX&E	5030	602/624
Diesel	TPH D	3550	8015	TPH D	3510	8015
	BTX&E	5030	8020/8240	BTX&E	5030	602/624
Waste Oil or Unknown	TPH G	5030	8015	TPH G	5030	8015
	TPH D	3550	8015	TPH D	3510	8015
	O & G	503D	503E	O & G	503A	503E
	BTX&E	5030	8020/8240	BTX&E	5030	8020/8240
	CL HC	5030	8010/8240	CL HC	5030	601/624
	ICAP or AA to detect metals: Cd, Cr, Pb, Zn					

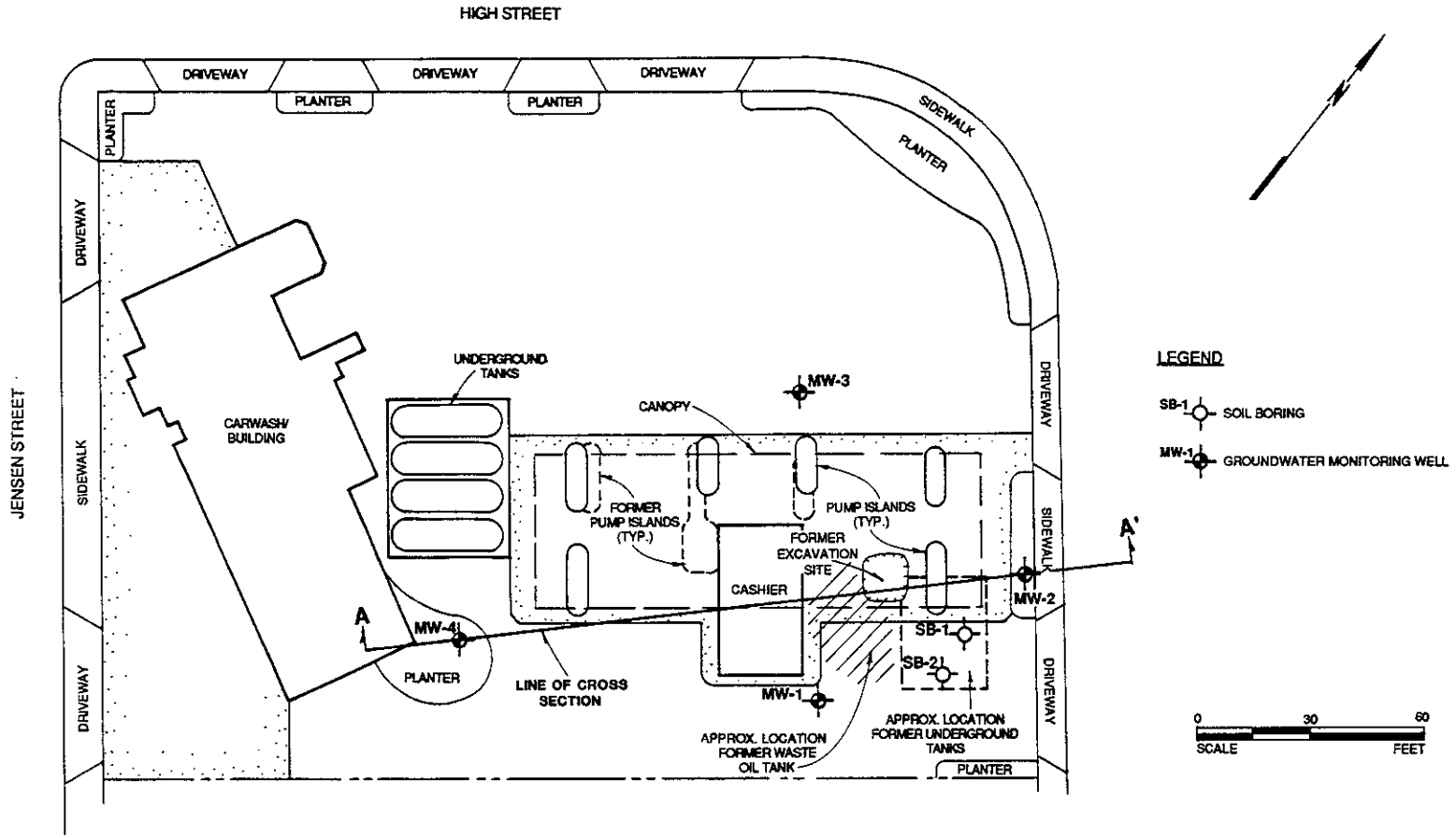
SOURCE: California State Automobile Association

SITE LOCATION MAP

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale: AS SHOWN	Project No.: 88-44-369-01
Prepared by: KGC	Date: 3/16/89
Checked by: RMB	Drawing No.: 1
Approved by: DWC	



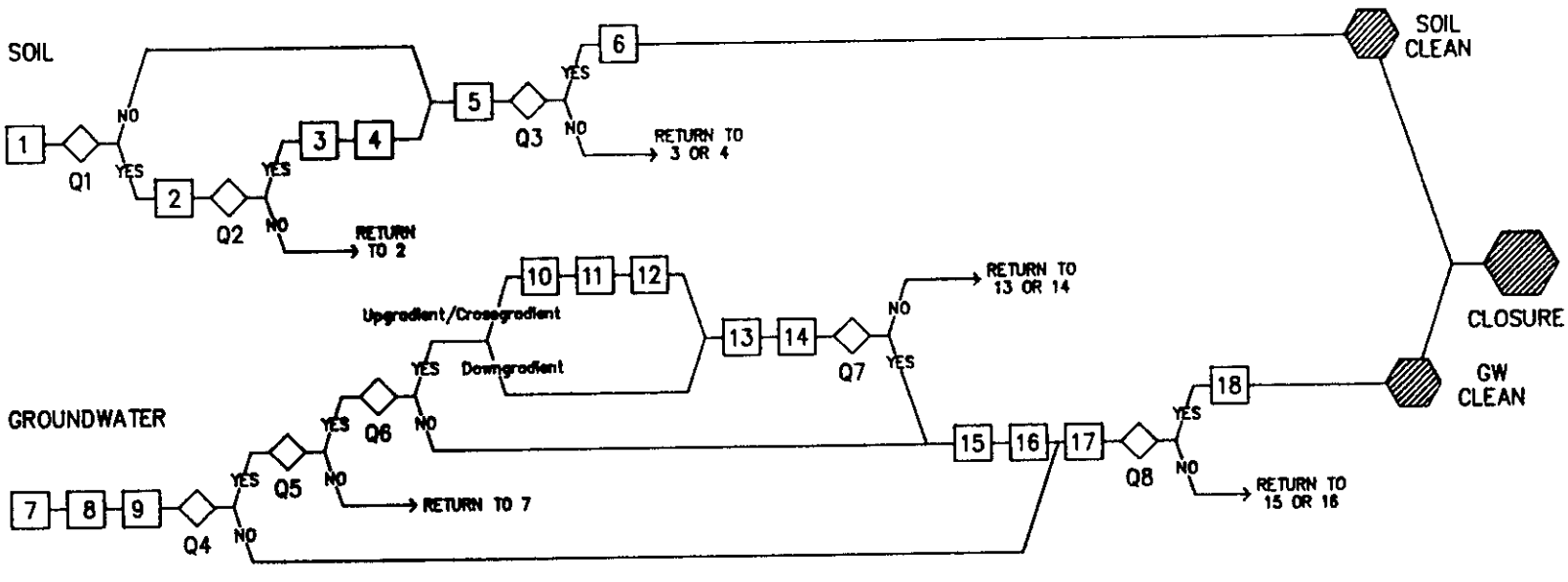
PLOT PLAN

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale	AS SHOWN
Date	6/17/89
Prepared By	KGC
Checked By	RMB
Approved By	DWC
Project No.	98-44-369-01
Drawing No.	2

Base Map: after Robert H. Lee & Ass. Inc.



TASKS

Program 1: Onsite Soil Investigation/Remediation

Task 1 Drill and Sample Soil Borings
Task 2 Drill Step-Out Borings
Task 3 Prepare Soil Remedial Action Plan (if needed)
Task 4 Remediate Soil (if needed)
Task 5 Establish Clean Standards - Soil
Task 6 Confirm Remediated Soil

Program 2: Onsite Groundwater Investigation

Task 7 Install/Develop Groundwater Monitoring Wells
Task 8 Sample/Analyze Groundwater
Task 9 Conduct Hydrology Tests and Research

Program 3: Offsite Groundwater Investigation (if needed)

Task 10 Perform Neighborhood Assessment
Task 11 Refer to Legal Counsel
Task 12 Inform RWQCB
Task 13 Prepare Offsite Groundwater Investigation Plan
Task 14 Install Offsite Wells, Sample/Analyze

Program 4: Groundwater Remediation (if needed)

Task 15 Prepare Groundwater Remedial Action Plan
Task 16 Implement Remedial Action Plan
Task 17 Establish Cleanup Standards - Groundwater
Task 18 Confirm Groundwater Remediation

QUESTIONS

Q1: Are there concentrations of TPH greater than 100 ppm in any soil?

Q2: Is soil characterized?

Q3: Is the leaching potential acceptably low for contaminants proposed to be left in place?

Q4: Is groundwater actionable?

Q5: Is groundwater characterized onsite?

Q6: Does groundwater pollution extend offsite?

Q7: Is groundwater characterized offsite?

Q8: Is the environmental risk acceptably low for contaminants proposed to be left in groundwater?

SUMMARY OF PROGRESS - QUARTER 2, 1989

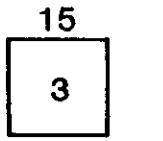
SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

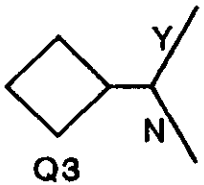
Scale	N/A
Date	5-24-89
Prepared By	LQL
Checked By	RMB
Approved By	DWC
Project No	88-44-369-01
Drawing No	3

KEY TO CRITICAL PATH DIAGRAMS

Time proceeds from left to right, with Tasks shown in relative order of succession.

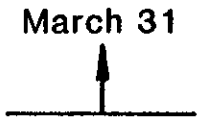


Task, showing Task number (inside) and anticipated number of days to completion (above), including preparatory activities, report preparation and review, and other related actions.



Question to be answered based on information from prior tasks.

Solid symbols indicate Letter Reports or formal Completion Reports coincident with question response.



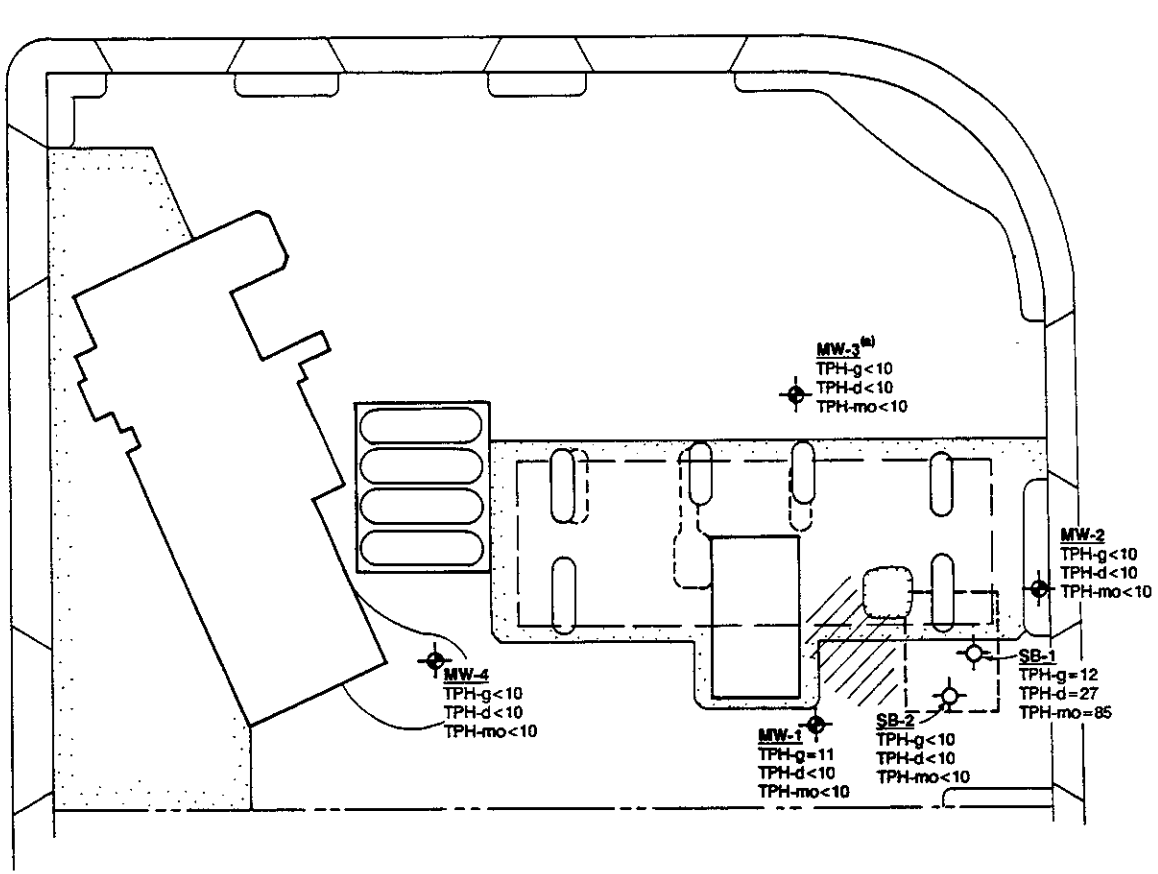
Relative calendar dates and dates of quarterly program reports to regulatory agencies.

KEY TO CRITICAL PATH DIAGRAM

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale	N/A
Date	3/16/89
Prepared By	LQL
Checked By	RMB
Approved By	DWC
Project No	88-44-369-01
Drawing No	3a



LEGEND

TPH-g = GASOLINE(ppm)

TPH-d = DIESEL(ppm)

TPH-mo = MOTOR OIL (ppm)

SB-1 SOIL BORING

MW-1 GROUNDWATER MONITORING WELL

NOTE: [a] COMPOSITE: (-5) AND (-10) FEET BGS

0 30 60

SCALE FEET

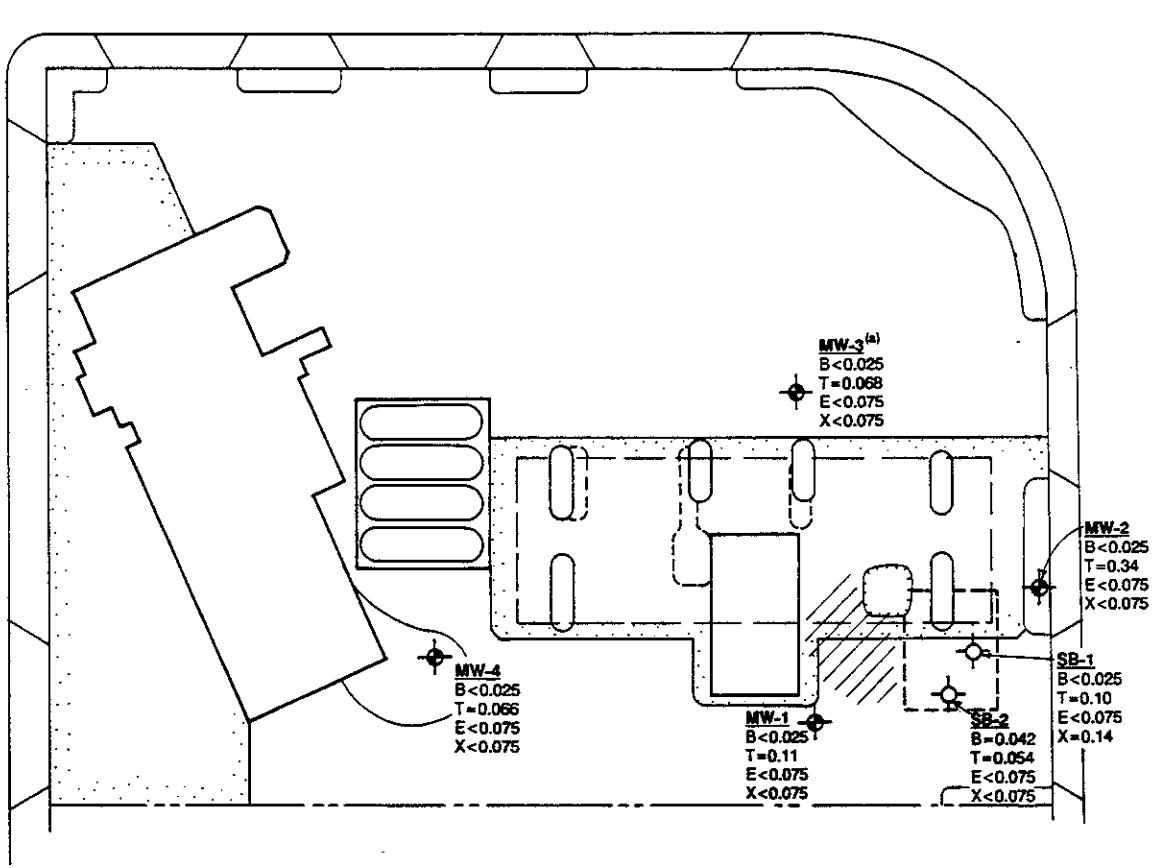
Base Map: after Robert H. Lee & Ass. Inc. 1986.

PLAN : SOIL TPH-g, TPH-d, TPH-mo AT (-5') Q2/89

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale	AS SHOWN
Date	6/19/89
Prepared By	KGC
Checked By	RMB
Approved By	DWC
Project No.	88-44-389-01
Drawing No.	4



LEGEND

SB-1 SOIL BORING

MW-1 GROUNDWATER MONITORING WELL

NOTE: (a) COMPOSITE: (-5), (-10) FEET BGS

B = BENZENE (ppm)

T = TOLUENE (ppm)

E = ETHYLBENZENE (ppm)

X = XYLENE (ppm)

0 30 60

SCALE FEET

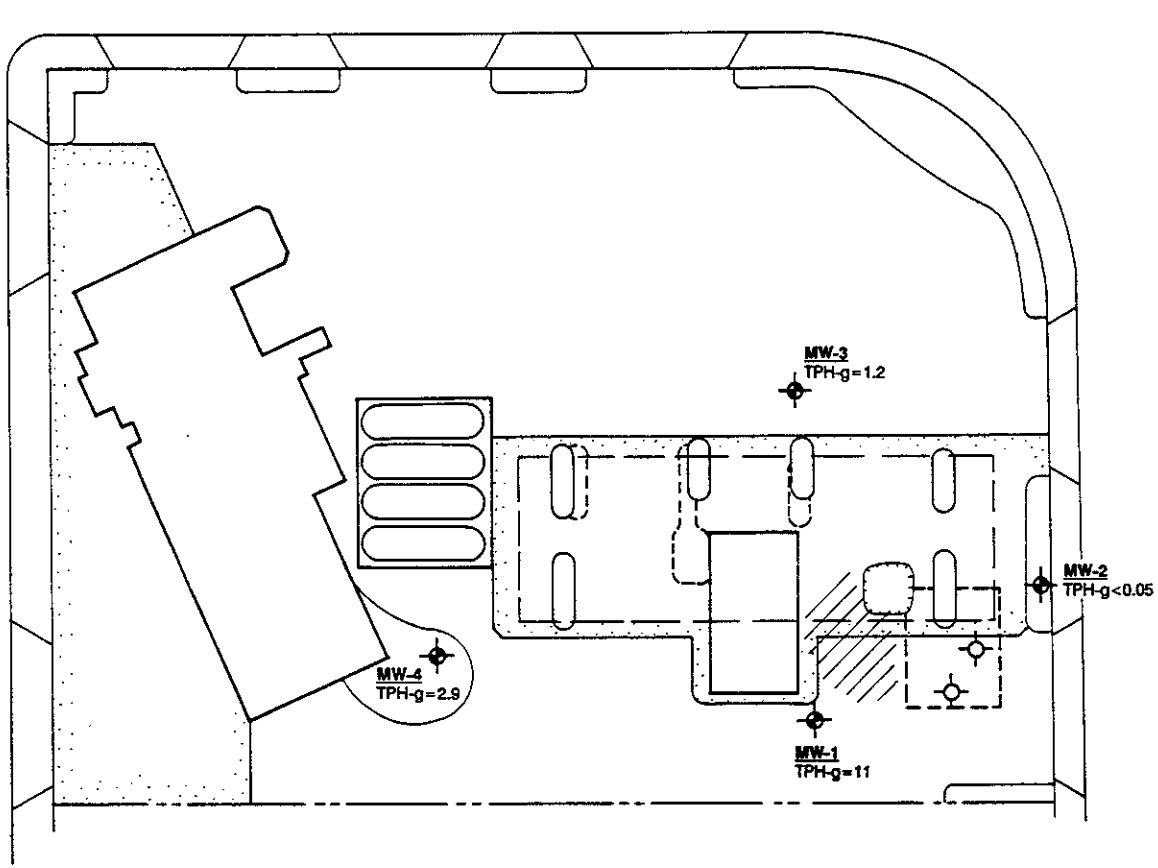
PLAN : SOIL BTEX AT (-5') Q2/89

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale	AS SHOWN
Date	6/19/89
Prepared By	CRB /KGC
Checked By	RMB
Approved By	DWC
Project No.	88-44-389-01
Drawing No.	5

Base Map: after Robert H. Lee & Ass. Inc.1986.



LEGEND

TPH-g = GASOLINE(ppm)

SB-1 SOIL BORING

MW-1 GROUNDWATER MONITORING WELL

0 30 60

SCALE FEET

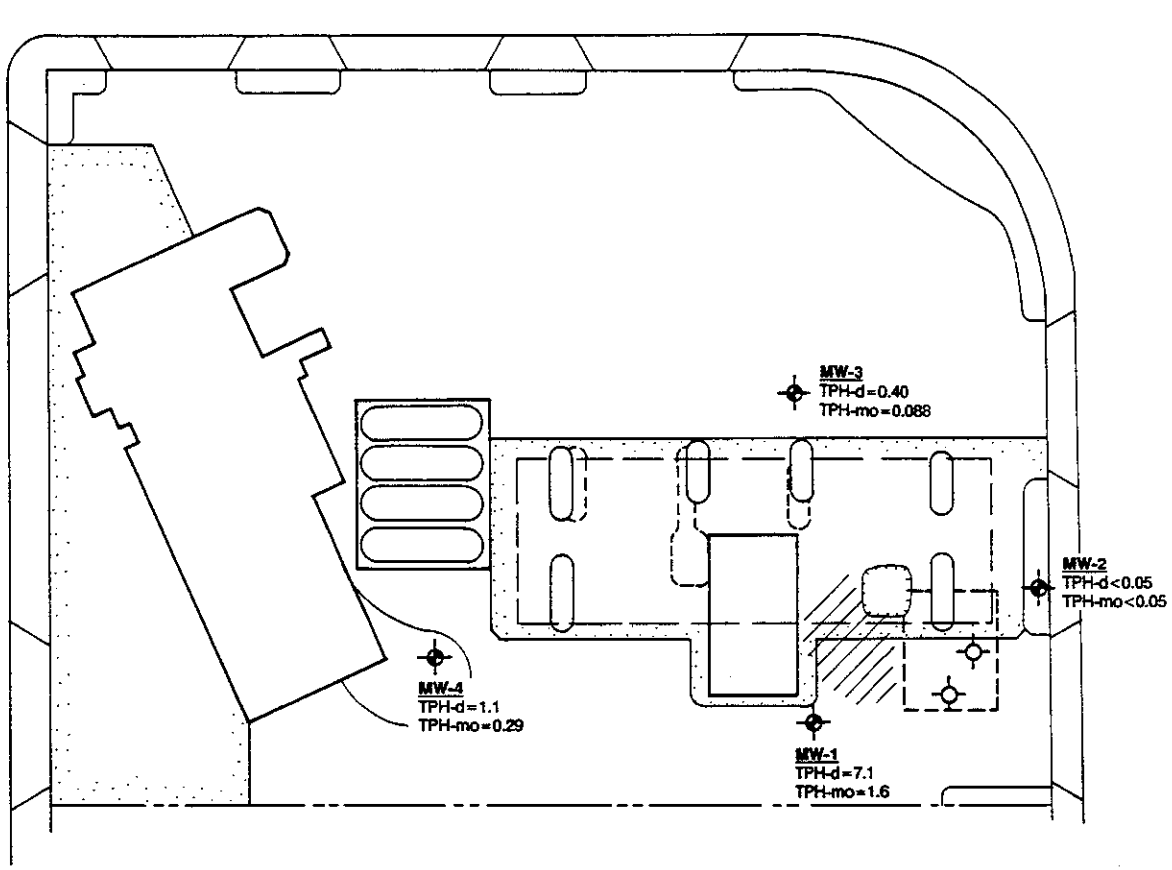
PLAN : GROUNDWATER TPH-g Q2/89

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale	AS SHOWN
Date	6/19/89
Prepared By	KGC
Checked By	RMB
Approved By	DWC
Project No.	88-44-389-01
Drawing No.	6

Base Map: after Robert H. Lee & Ass. Inc.1986.



LEGEND

SB-1 SOIL BORING

MW-1 GROUNDWATER MONITORING WELL

TPH-d = DIESEL(ppm)

TPH-mo = MOTOR OIL (ppm)

0 30 60

SCALE FEET

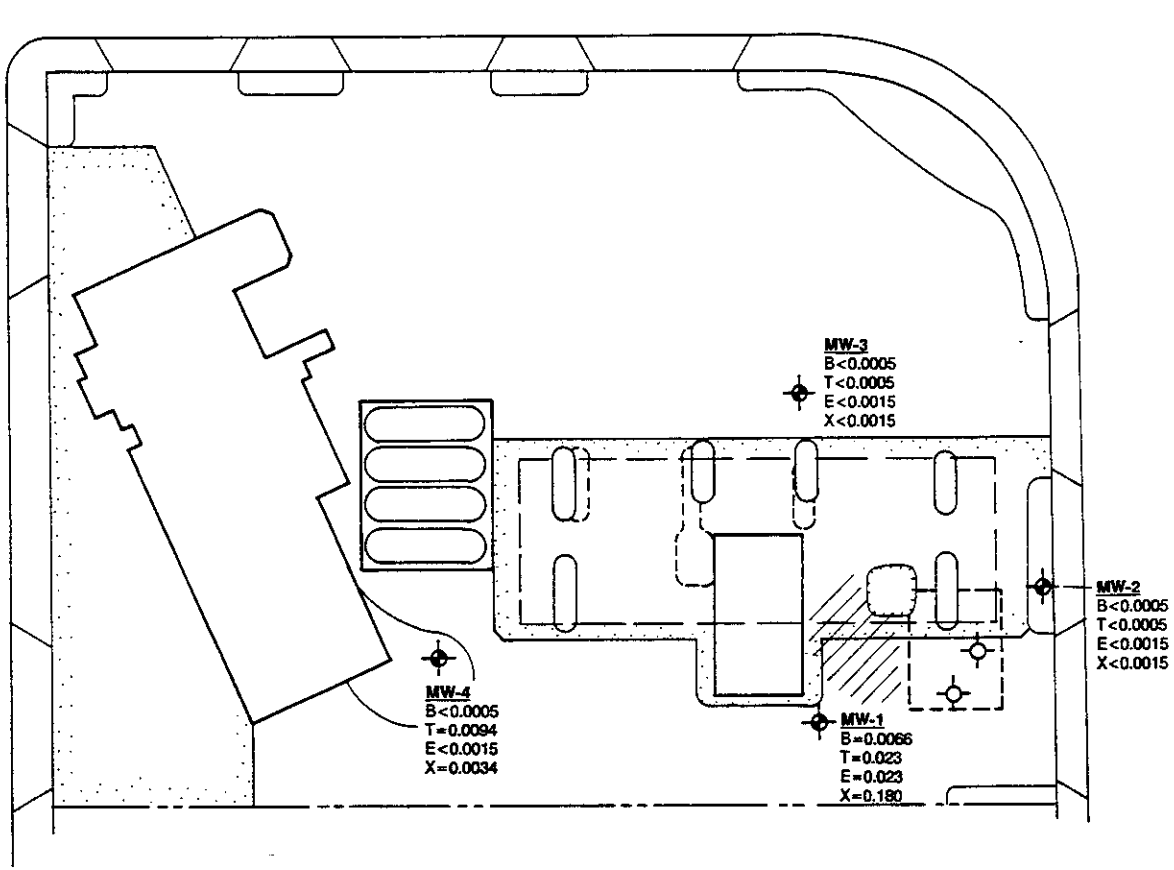
Base Map: after Robert H. Lee & Ass. Inc.1986.

PLAN : GROUNDWATER TPH-d and TPH-mo Q2/89

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale	AS SHOWN
Date	6/20/89
Prepared By	CRB KGC
Checked By	RMB
Approved By	DWC
Project No.	86-44-369-01
Drawing No.	7



LEGEND

B = BENZENE (ppm)

T = TOLUENE (ppm)

E = ETHYLBENZENE (ppm)

X = XYLENE (ppm)

SB-1 SOIL BORING

MW-1 GROUNDWATER MONITORING WELL

0 30 60

SCALE FEET

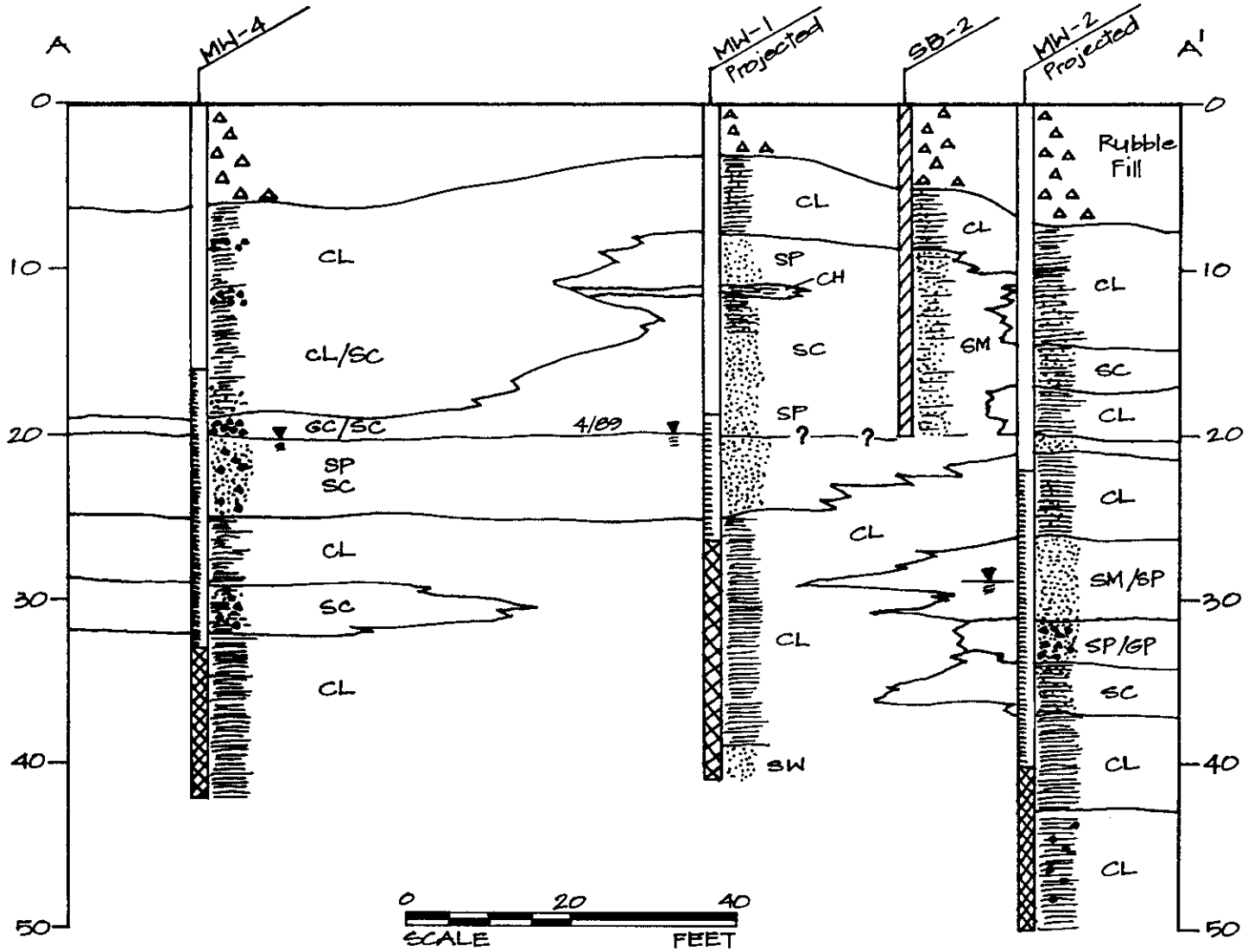
Base Map: after Robert H. Lee & Ass. Inc.1986.

PLAN : GROUNDWATER BTEX Q2/89

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale	AS SHOWN
Date	6/20/89
Prepared By	KGC
Checked By	RMB
Approved By	DWC
Project No.	88-44-389-01
Drawing No.	8

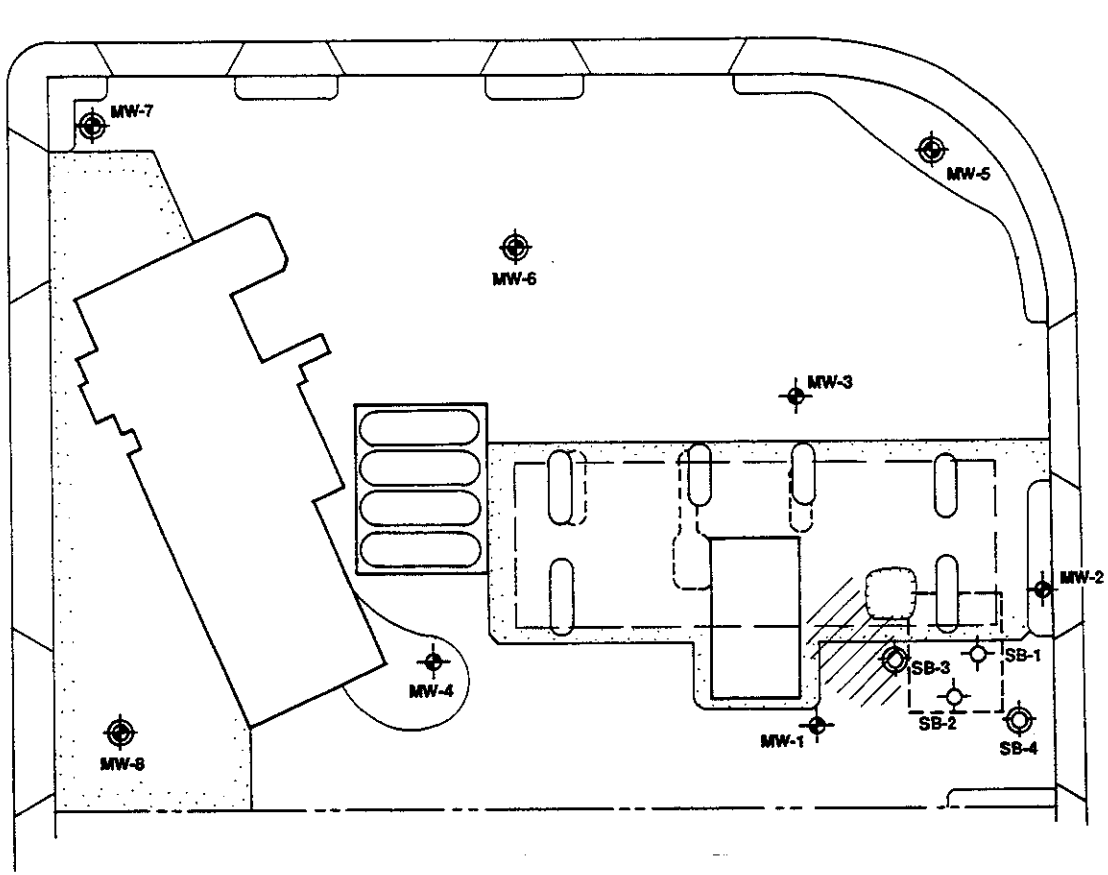


CROSS SECTION A-A'

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale	AS SHOWN
Date	6/20/89
Prepared By	CRB
Checked By	RMB
Approved By	PHC
Project No.	88-44-360-01
Drawing No.	9



LEGEND

SB-6 PROPOSED SOIL BORING

MW-9 PROPOSED GROUNDWATER MONITORING WELL

SB-1 SOIL BORING

MW-1 GROUNDWATER MONITORING WELL

0 30 60

SCALE FEET

Base Map: after Robert H. Lee & Ass. Inc.1986.

PROPOSED GROUNDWATER MONITORING WELLS AND SOIL BORINGS

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental Consultants California

Scale	AS SHOWN
Date	6/20/89
Prepared By	KGC
Checked By	RMB
Approved By	DWC
Project No.	88-44-399-01
Drawing No.	10

ATTACHMENT 1

LOG OF BORING NO. SB-1

DATE DRILLED: 4/27/89	ELEVATION:	WL TAKEN: N/A	EQUIPMENT: 3-3/4" x 8" Hollow Stem

DEPTH (ft)	SAMPLE	WATER LEVEL	SYMBOL	MOISTURE	PLASTICITY	COLOR	DESCRIPTION	BLOWS/FT.	MOISTURE CONTENT	DRY DENSITY lb/ft³	TESTS
				damp	medium dense	brown	CLAYEY SAND and Gravel-size rock fragments (Fill)				
				damp	medium dense	dark gray	SILTY CLAY (Fill) CL Silty clay and sand Slight odor Mixed silty and sandy clay	9 8			
10							Bottom of Boring at 10 ft.				
15											
20											

REGISTERED PROFESSIONAL ENGINEER
Douglas W. Charlton
No. 4110
STATE OF CALIFORNIA
OCT 1989

SHELL OIL COMPANY
630 High Street
Oakland, California

Project No.
88-44-369-01

Converse Environmental Consultants California

Drawing No.
A-1

LOG OF BORING NO. SB-2

DATE DRILLED: 4/27/89	ELEVATION:	WL TAKEN: N/A	EQUIPMENT: 3-3/4" x 8" Hollow Stem

DEPTH (ft)	SAMPLE	WATER LEVEL	SYMBOL	MOISTURE	PLASTICITY	COLOR	DESCRIPTION	BLOWS/FT.	MOISTURE CONTENT	DRY DENSITY lb/ft^3	TESTS
				damp	medium dense	brown	CLAYEY SAND and Gravel-size rock fragments (Fill)				
				damp	medium dense	gray	SILTY CLAY CL Mix clay, silty and sandy (Fill)				
5				damp	medium dense	gray	SILTY Fine SAND (Fill) SM Trace mica Slight odor	15			
							Mixed clay and silty sand				
10							Odor	7			
							Bottom of Boring at 10 ft.				
15											
20											

REGISTERED PROFESSIONAL GEOLOGIST
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STATE OF CALIFORNIA

SHELL OIL COMPANY
630 High Street
Oakland, California

Project No.
88-44-369-01

Converse Environmental Consultants California

Drawing No.
A-2

LOG OF BORING NO. MW-1

DATE DRILLED: 4/25/89	ELEVATION:	WL TAKEN: 4/25/89	EQUIPMENT: 3-3/4" x 8" & 8-1/2" x 12

DEPTH (ft)	SAMPLE	WATER LEVEL	SYMBOL	MOISTURE	PLASTICITY	COLOR	DESCRIPTION	WELL CONSTRUCTION	BLOWS/FT.	T.P.H Mg/Kg	TESTS
				slightly moist		brown	CLAYEY SAND and fine to coarse gravel-size rock fragments				
				moist		dark gray-brown	SANDY CLAY CL				
5				moist		light gray	Mix Bay Mud? SP-CH Fine clean SAND (Fill) Odor		8		
				damp to slightly moist		light gray	Pockets or layers of fine SAND, CLAYEY SAND, BAY MUD (Fill) SC		24		
				moist to very moist		dark gray	Fine SAND SP Trace mica, trace silt		9		
10		▼		wet			Sheen of product on water Lenses sand and clayey sand Product sheen		5 59		
				very moist		mottled gray-brown-rust	SILTY CLAY CL Trace fine sand		37		
15				very moist					44 22		
				very moist			Very SILTY CLAY fine SAND CL-SW		22		
20											

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SHELL OIL COMPANY
630 High Street
Oakland, California

Project No.
88-44-369-01

Drawing No.
A-3

Converse Environmental Consultants California

LOG OF BORING NO. MW-2

DATE DRILLED: 4/25/89	ELEVATION:	WL TAKEN: 4/25/89	EQUIPMENT: 3-3/4" x 8" & 8-1/2" x 12

DEPTH (ft)	SAMPLE	WATER LEVEL	SYMBOL	MOISTURE	PLASTICITY	COLOR	DESCRIPTION		WELL CONSTRUCTION	BLOWS/FT.	T.P.H Mg/Kg	TESTS
				slightly moist	loose	brown	Top Soil with Redwood Chips					
				moist	medium	dark brown	SILTY CLAY With concrete fragments (Fill) No odor	CL				
5				moist	stiff	black	SILTY CLAY Trace gravel	CH		10 26		
				moist	very stiff	gray-mottled rust	SILTY CLAY and sand No odor	CL		37 24		
10				moist	dense	gray	CLAYEY SAND	SC				
				moist	very stiff	tan-mottled rust	SILTY CLAY	CL		44		
				moist	medium dense	tan	SILTY SAND little GRAVEL	SP-SM		67		
15				wet.			Silty fine Sand			26		
				wet	medium	tan	GRAVELLY SAND	SP-GP		48		
				wet	medium dense	tan	Coarse SAND	SP				
				wet			Coarse SAND some clay	SC		60		
				moist	stiff	tan-mottled black	SILTY CLAY	CL		17		
20												

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SHELL OIL COMPANY
630 High Street
Oakland, California

Project No.
88-44-369-01

Converse Environmental Consultants California

Drawing No.
A-4

LOG OF BORING NO.MW-2

continued - page 2

DEPTH (ft)	SAMPLE	WATER LEVEL	SYMBOL	MOISTURE	PLASTICITY	COLOR	DESCRIPTION	WELL CONSTRUCTION	BLOWS/FT.	T.P.H Mg/Kg	TESTS
				moist	stiff	tan	SILTY CLAY CL		27		
				moist		gray-tan	SILTY CLAY trace gravel CL		31		
							SILTY CLAY some gravel CL				
							SILTY CLAY trace fine gravel CL				
25							Bottom of Hole at 25 ft.				
30											
35											
40											

REGISTERED GEOLOGIST
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SHELL OIL COMPANY
630 High Street
Oakland, California

Project No.
88-44-369-01

Converse Environmental Consultants California

Drawing No.
A-5

LOG OF BORING NO. MW-3

DATE DRILLED: 4/26/89	ELEVATION:	WL TAKEN: 4/26/89	EQUIPMENT: 3-3/4" x 8" & 8-1/2" x 12

DEPTH (ft)	SAMPLE	WATER LEVEL	SYMBOL	MOISTURE	PLASTICITY	COLOR	DESCRIPTION	WELL CONSTRUCTION	BLOWS/FT.	T.P.H Mg/Kg	TESTS
				slightly moist	moist	brown	CLAYEY SAND and Gravel-size rock fragment (Fill) SC-GC				
				moist	stiff	dark brown	SANDY CLAY with little fine to coarse sand (Fill) CL				
5				moist	stiff	black	SILTY CLAY CH No odor		13		
						dark gray			20		
						mottled gray-brown	SANDY CLAY CL No odor		32		
					medium dense		CLAYEY SAND SC Trace pea gravel				
				very moist		green-gray	CLAYEY SAND SC		14		
10					very stiff	gray	SANDY CLAY CL Trace pea gravel sand lense		41		
					dense	mottled gray brown	CLAYEY SAND SC-GC Little pea gravel		77		
				wet		gray	Medium SAND SP Trace fines				
				very moist							
15				wet	stiff	brown	SANDY CLAY CL		65		
				very moist	dense	brown	Lenses fine SAND, med. SAND SP Lenses CLAYEY SAND and SILTY SAND		57		
				very moist	stiff	mottled tan-brown	SILTY CLAY CL Trace fine sand		30		
20											

REGISTERED PROFESSIONAL GEOLOGIST
Douglas W. Charlton
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STATE OF CALIFORNIA

SHELL OIL COMPANY
630 High Street
Oakland, California

Project No.
88-44-369-01

Converse Environmental Consultants California

Drawing No.
A-6

LOG OF BORING NO. MW-4

DATE DRILLED: 4/25/89	ELEVATION:	WL TAKEN: 4/25/89	EQUIPMENT: 3-3/4" x 8" & 8-1/2" x 12"

DEPTH (ft)	SAMPLE	WATER LEVEL	SYMBOL	MOISTURE	PLASTICITY	COLOR	DESCRIPTION	WELL CONSTRUCTION	BLOWS/FT.	T.P.H Mg/Kg	TESTS
				slightly moist	loose	brown	GRAVELLY SAND (Fill)				
				slightly moist	medium dense	gray	Sub-angular SANDY GRAVEL (Fill)				
				moist	soft	dark brown	SANDY CLAY CL Some odor				
5					medium	black	SILTY CLAY Trace gravel, sand		14		
							Fine gravel		34		
					stiff	gray	SANDY CLAY and SILT		51		
10				wet	medium dense	gray	CLAYEY SAND and GRAVEL GC-SC CLAYEY fine SAND		22		
							Clean coarse SAND SP		44		
						gray	CLAYEY fine SAND SC Strong odor				
							Lens coarse SAND SP				
				moist	stiff	gray-mottled rust-brown	SILTY CLAY CL		54		
15				wet	loose	gray	CLAYEY SAND and GRAVEL SC Lenses of sandy gravel Odor		59		
				very moist	medium	tan mottled black	SILTY CLAY CL		16		
							Trace fine sand with depth		18		
20							Less odor				

REGISTERED PROFESSIONAL GEOLOGIST
Douglas W. Charlton
No. 4110
STATE OF CALIFORNIA

SHELL OIL COMPANY
630 High Street
Oakland, California

Project No.
88-44-369-01

Converse Environmental Consultants California

Drawing No.
A-7

LOG OF BORING NO. MW-4

continued - page 2

DEPTH (ft)	SAMPLE	WATER LEVEL	SYMBOL	MOISTURE	PLASTICITY	COLOR	DESCRIPTION	WELL CONSTRUCTION	BLOWS/FT.	T.P.H Mg/Kg	TESTS
				moist	stiff	tan-mottled / black	SILTY CLAY CL Trace fine sand No odor		30		
							Bottom of Hole at 22 ft.				

25

30

35

40

REGISTERED PROFESSIONAL GEOLOGIST
Douglas W. Charlton
No. 4110
STATE OF CALIFORNIA

SHELL OIL COMPANY
630 High Street
Oakland, California

Project No.
88-44-369-01

Converse Environmental Consultants California

Drawing No.
A-8

ATTACHMENT 2

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-6623

Formerly: ANATEC Labs, Inc.

Robin Breuer
Converse Consultants
55 Hawthorne St, Ste 500
San Francisco, CA 94105

05-30-89
NET Pacific Log No: 6378
Series No: 212
Client Ref: Project# 88-44-369-01

Subject: Analytical Results for Shell - 630 High St. Received 05-09-89.
REVISED 6-20-89

Dear Ms. Breuer:

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Submitted by:

Brian Figs
Group Leader
Atomic Spectroscopy

Approved by:

Susan Joy Griffin
Group Leader
Gas Chromatography

/sm

NET

KEY TO ABBREVIATIONS

mean	:	Average; the sum of the measurements divided by the total number of measurments.
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, unless noted otherwise.
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.
ND	:	Not detected; the analyte concentration is less than the listed reporting limit.
NR	:	Not requested.
NTU	:	Nephelometric turbidity units.
RL	:	Reporting limit.
RPD	:	Relative percent difference, $[V^1-V^2/V \text{ mean}]x100$.
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.
ug/filter	:	Concentration in units of micrograms of analyte per filter.
umhos/cm	:	Micromhos per centimeter.
*	:	See cover letter for details.

THE COVER LETTER AND KEY TO ABBREVIATIONS ARE AN INTEGRAL PART OF THIS REPORT

NET

ANALYTE: Organic Lead
REPORTING LIMIT: 0.05 (ppm)

Lab No.	Descriptor		Results	Units
-27051	Soil Boring #2	04-27-89	ND	ppm
-27052	MW-2-1 @ 5'	04-27-89	ND	ppm
-27053	MW-4-1 @ 5'	04-25-89	ND	ppm
-27054	MW-4 comp	04-25-89	ND	ppm

ANALYTE: WET-Soluble Lead[a]
REPORTING LIMIT: 0.002 (ppm)

Lab No.	Descriptor		Results	Units
-27050	Soil Boring #1	04-27-89	0.25	ppm

[a]Soluble Threshold Limit Concentration (STLC) for WET-Soluble Lead is 5.0 mg/L

NET NATIONAL ENVIRONMENTAL TESTING, INC.

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

Formerly: ANATEC Labs, Inc.

Robin Breuer
Converse Consultants
55 Hawthorne St, Ste 500
San Francisco, CA 94105

05-30-89
NET Pacific Log No: 6378
Series No: 212
Client Ref: Project# 88-44-369-01

Subject: Analytical Results for Shell - 630 High St. Received 05-09-89.

Dear Ms. Breuer:

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Submitted by:

Brian Fies
Group Leader
Atomic Spectroscopy

Approved by:

Susan Joy Griffin
Group Leader
Gas Chromatography

/sm

KEY TO ABBREVIATIONS

mean	:	Average; the sum of the measurements divided by the total number of measurments.
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, unless noted otherwise.
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.
ND	:	Not detected; the analyte concentration is less than the listed reporting limit.
NR	:	Not requested.
NTU	:	Nephelometric turbidity units.
RL	:	Reporting limit.
RPD	:	Relative percent difference, $[V^1-V^2/V$ mean$]$x100.
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.
ug/filter	:	Concentration in units of micrograms of analyte per filter.
umhos/cm	:	Micromhos per centimeter.
*	:	See cover letter for details.

THE COVER LETTER AND KEY TO ABBREVIATIONS ARE AN INTEGRAL PART OF THIS REPORT

DELETE: MW-7 comp MW-7-1

ANALYTE: Organic Lead
REPORTING LIMIT: 0.05 (ppm)

Lab No.	Descriptor		Results	Units
-27233*	MW-7 Comp	04-27-89	0.06	ppm
-27051	Soil Boring #2	04-27-89	ND	ppm
-27052	MW-2-1 @ 5'	04-27-89	ND	ppm
-27053	MW-4-1 @ 5'	04-25-89	ND	ppm
-27054	MW-4 comp	04-25-89	ND	ppm
-27055*	MW-7-1 @5'	04-27-89	0.08	ppm

ANALYTE: ORGANIC Lead
REPORTING LIMIT: 0.2 (ppm)

Lab No.	Descriptor		Results	Units
-27050	Soil Boring #1	04-27-89	0.25	ppm

* See REPORT OF ACTIVITIES, Q2/89, 285 Hegenberger, Oakland, CA.

NET NATIONAL ENVIRONMENTAL TESTING, INC.

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

Robin Breuer
Converse Consultants
55 Hawthorne St, Ste 500
San Francisco, CA 94105

05-25-89
NET Pacific Log No: 6387
Series No: 212
Client Ref: Project# 88-44-369-01

Subject: Analytical Results for "630 High St, Oakland Shell" Received 05-09-89

Dear Ms. Breuer:

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Submitted by:

Brian Fies
Group Leader
Atomic Spectroscopy

Approved by:

Susan Joy Griffin
Group Leader
Gas Chromatography

/ml

KEY TO ABBREVIATIONS

mean	:	Average; the sum of the measurements divided by the total number of measurments.
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, unless noted otherwise.
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.
ND	:	Not detected; the analyte concentration is less than the listed reporting limit.
NR	:	Not requested.
NTU	:	Nephelometric turbidity units.
RL	:	Reporting limit.
RPD	:	Relative percent difference, $[V^1-V^2/V$ mean$]$x100.
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.
ug/filter	:	Concentration in units of micrograms of analyte per filter.
umhos/cm	:	Micromhos per centimeter.
*	:	See cover letter for details.

THE COVER LETTER AND KEY TO ABBREVIATIONS ARE AN INTEGRAL PART OF THIS REPORT

SAMPLE DESCRIPTION: MW-7-1 @ 5' 04-27-89
LAB NO.: (-27056)

Parameter	Reporting Limit	Results	Units
Bunson Burner Flame Test		Negative	

NET NATIONAL ENVIRONMENTAL TESTING, INC.

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

Formerly: ANATEC Labs, Inc.

Robin Brewer
Converse Consultants
55 Hawthorne St, Ste 500
San Francisco, Ca., 94105

05-09-89
NET Pacific Log No: 6282
Series No: 212
Client Ref: Project# 88-44-369-01

Subject: Analytical Results for Shell-630 High Street, Oakland Received 04-28-89

Dear Ms. Brewer:

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Submitted by:

Brian Fies
Group Leader
Atomic Spectroscopy

Approved by:

Susan Griffin
Group Leader
Gas Chromatography

/ara
Enc: Sample Custody Document

KEY TO ABBREVIATIONS

mean	:	Average; the sum of the measurements divided by the total number of measurments.
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, unless noted otherwise.
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.
ND	:	Not detected; the analyte concentration is less than the listed reporting limit.
NR	:	Not requested.
NTU	:	Nephelometric turbidity units.
RL	:	Reporting limit.
RPD	:	Relative percent difference, $[V^1-V^2/V \text{ mean}]x100$.
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.
ug/filter	:	Concentration in units of micrograms of analyte per filter.
umhos/cm	:	Micromhos per centimeter.
*	:	See cover letter for details.

THE COVER LETTER AND KEY TO ABBREVIATIONS ARE AN INTEGRAL PART OF THIS REPORT

SAMPLE DESCRIPTION: Soil Boring #1 04-27-89
LAB NO.: (-26459)

Parameter	Reporting Limit	Results	Units	Methods
Lead	**0.2**	**71**	**ppm**	**7421**
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	**10**	**12[a]**	**ppm**	**GC/FID 5030**
DATE ANALYZED		**05-03-89**		
Extractable,				
as Motor Oil	10	85	ppm	8015/3550
as Diesel Fuel	10	27	ppm	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		5-02-89		
PURGEABLE AROMATICS				
Benzene	0.025	ND	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	0.10	ppm	
Xylenes, total	0.075	0.14	ppm	

[a]Sample contains higher boiling hydrocarbons not characteristic with gasoline.

SAMPLE DESCRIPTION: Soil Boring #2 04-27-89
LAB NO.: (-26460)

Parameter	Reporting Limit	Results	Units	Methods
Lead	**0.2**	**16**	**ppm**	**7421**
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	**10**	**ND**	**ppm**	**GC/FID 5030**
DATE ANALYZED		**05-03-89**		
Extractable,				
as Motor Oil	10	ND	ppm	8015/3550
as Diesel Fuel	10	ND	ppm	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		05-02-89		
PURGEABLE AROMATICS				
Benzene	0.025	0.042	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	0.054	ppm	
Xylenes, total	0.075	ND	ppm	

SAMPLE DESCRIPTION: MW-1-1 @ 5' 04-27-89
LAB NO.: (-26461)

Parameter	Reporting Limit	Results	Units	Methods
Lead	**0.2**	**9.6**	**ppm**	**7421**
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	**10**	**11**	**ppm**	**GC/FID 5030**
DATE ANALYZED		05-03-89		
Extractable,				
as Motor Oil	10	ND	ppm	8015/3550
as Diesel Fuel	10	ND	ppm	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		05-02-89		
PURGEABLE AROMATICS				
Benzene	0.025	ND	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	0.11	ppm	
Xylenes, total	0.075	ND	ppm	

SAMPLE DESCRIPTION: MW-2-1 @ 5' 04-27-89
LAB NO.: (-26462)

Parameter	Reporting Limit	Results	Units	Methods
Lead	0.2	13	ppm	7421
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	10	ND	ppm	GC/FID 5030
DATE ANALYZED		05-04-89		
Extractable,				
as Motor Oil soil	10	ND	ppm	8015/3550
as Diesel Fuel	10	ND	ppm	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		05-02-89		
PURGEABLE AROMATICS				
Benzene	0.05	ND	ppm	8020
Ethylbenzene	0.15	ND	ppm	
Toluene	0.05	0.34	ppm	
Xylenes, total	0.15	ND	ppm	

SAMPLE DESCRIPTION: MW-3-4 @ 10'04-26-89
LAB NO.: (-26463)

Parameter	Reporting Limit	Results	Units	Methods
Lead	0.2	3.9	ppm	7421
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	10	ND	ppm	GC/FID 5030
DATE ANALYZED		05-04-89		
Extractable,				
as Motor Oil soil	10	ND	ppm	8015/3550
as Diesel Fuel	10	ND	ppm	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		05-02-89		
PURGEABLE AROMATICS				
Benzene	0.025	ND	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	ND	ppm	
Xylenes, total	0.075	ND	ppm	

SAMPLE DESCRIPTION: MW-4-1 @ 5' 04-25-89
LAB NO.: (-26464)

Parameter	Reporting Limit	Results	Units	Methods
Lead	**0.2**	**26**	**ppm**	**7421**
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	**10**	**ND**	**ppm**	**GC/FID 5030**
DATE ANALYZED		**05-04-89**		
Extractable,				
as Motor Oil soil	**10**	**ND**	**ppm**	**8015/3550**
as Diesel Fuel	**10**	**ND**	**ppm**	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		05-02-89		
PUREGABLE AROMATICS				
Benzene	0.025	0.046	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	0.21	ppm	
Xylenes, total	0.075	ND	ppm	

SAMPLE DESCRIPTION: SB 2 Comp 04-27-89
LAB NO.: (-26465)

Parameter	Reporting Limit	Results	Units	Methods
Lead	**0.2**	**10**	**ppm**	**7421**
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	**10**	**ND**	**ppm**	**GC/FID 5030**
DATE ANALYZED		**05-04-89**		
Extractable,				
as Motor Oil soil	10	130	ppm	8015/3550
as Diesel Fuel	10	ND	ppm	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		05-02-89		
PURGEABLE AROMATICS				
Benzene	0.025	ND	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	0.04	ppm	
Xylenes, total	0.075	ND	ppm	

SAMPLE DESCRIPTION: MW 1 Comp 04-27-89
LAB NO.: (-26466)

Parameter	Reporting Limit	Results	Units	Method
Lead	**0.2**	**7.6**	**ppm**	**7421**
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	**10**	**63**	**ppm**	**GC/FID 5030**
DATE ANALYZED		**05-04-89**		
Extractable,				
as Motor Oil	10	ND	ppm	8015/3550
as Diesel Fuel	10	ND	ppm	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		05-02-89		
PURGEABLE AROMATICS				
Benzene	0.025	0.042	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	0.14	ppm	
Xylenes, total	0.075	0.16	ppm	

SAMPLE DESCRIPTION: MW 2 Comp 04-27-89
LAB NO.: (-26467)

Parameter	Reporting Limit	Results	Units	Methods
Lead	**0.2**	**4.0**	**ppm**	**7421**
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	**10**	**ND**	**ppm**	**GC/FID 5030**
DATE ANALYZED		**05-04-89**		
Extractable,				
as Motor Oil soil	**10**	**ND**	**ppm**	**8015/3550**
as Diesel Fuel	**10**	**ND**	**ppm**	
DATE ANALYZED		05-03-899		
DATE EXTRACTED		05-02-89		
PURGEABLE AROMATICS				
Benzene	0.025	ND	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	0.15	ppm	
Xylenes, total	0.075	ND	ppm	

SAMPLE DESCRIPTION: MW 3 Comp 04-26-89
LAB NO.: (-26468)

Parameter	Reporting Limit	Results	Units	Methods
Lead	**0.2**	**5.1**	**ppm**	**7421**
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	**10**	**ND**	**ppm**	**GC/FID 5030**
DATE ANALYZED		**05-04-89**		
Extractable,				
as Motor Oil soil	**10**	**ND**	**ppm**	**8015/3550**
as Diesel Fuel	**10**	**ND**	**ppm**	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		05-02-89		
PURGEABLE AROMATICS				
Benzene	0.025	ND	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	0.068	ppm	
Xylenes, total	0.075	ND	ppm	

SAMPLE DESCRIPTION: MW 4 Comp 04-25-89
LAB NO.: (-26469)

Parameter	Reporting Limit	Results	Units	Methods
Lead	**0.2**	**27**	**ppm**	**7421**
PETROLEUM HYDROCARBONS				
Volatile, as Gasoline	**10**	**ND**	**ppm**	**GC/FID 5030**
DATE ANALYZED		**05-04-89**		
Extractable,				
as Motor Oil soil	**10**	**ND**	**ppm**	**8015/3550**
as Diesel Fuel	**10**	**ND**	**ppm**	
DATE ANALYZED		05-03-89		
DATE EXTRACTED		05-02-89		
PURGEABLE AROMATICS				
Benzene	0.025	ND	ppm	8020
Ethylbenzene	0.075	ND	ppm	
Toluene	0.025	0.066	ppm	
Xylenes, total	0.075	ND	ppm	

Converse Consultants

6282

CHAIN OF CUSTODY RECORD

Project No.	Project Name
[illegible]	Shell - 630 High St Oakland

Samplers: (signature)

Station No.	Date	Time	Comp.	Grab	Station Location	Number of Containers Brass Sleeves	TPH-D	8020/BTEX	8015 - gas	TPH [illegible]			Remarks
[illegible]	4/27/[illegible]			V	Soil Boring 1-1 @ 5.0	discrete	✓	✓	✓	✓			Standard turn around time
[illegible] 2	4/27/8[illegible]			V	SB-2-1 @ 5.0	discrete	✓	✓	✓	✓	} comp		TAT (5 DAYS)
[illegible] 2	4/27/8[illegible]			V	SB-2-2 @ 10.0		✓	✓	✓	✓			
MW-1	4/27/8[illegible]			V	MW-1-1 @ 5.0	discrete	✓	✓	✓	✓	} comp		
MW-1	4/27/8[illegible]			V	MW-1-2 @ 10.0		✓	✓	✓	✓			285 Hagenberger on MW-5 + MW-7
MW-2	4/2[illegible]			✓	MW-2-1 @ 5.0	discrete	✓	✓	✓	✓	} comp		
MW-2	4/2[illegible]			✓	MW-2-2 @ 10.0		✓	✓	✓	✓			
MW-2	4/27/8[illegible]			✓	MW-2-3 @ 15.0		✓	✓	✓	✓			
MW-3	4/26/[illegible]			V	MW-3-1 @ 5.0		✓	✓	✓	✓	} comp		
MW-3	[illegible]			V	MW-3-4 @ 10.0	discrete	✓	✓	✓	✓			
MW-4	4/25/[illegible]			V	MW-4-1 @ 5.0	discrete	✓	✓	✓	✓	} comp		
MW-4	4/25/[illegible]			✓	MW-4-2 @ 10.0		✓	✓	✓				
MW-5	4/27/8[illegible]			V	MW-5-1 @ 5.0	discrete	✓	✓	✓	✓	} comp	} Log 6285	
[illegible]	4/27/8[illegible]			✓	MW-5-4 @ 10.0	[illegible]	✓	✓	✓	✓			
MW-7	4/27/[illegible]			✓	MW-7-1 @ 5.0	discrete	✓	✓	✓	✓	} comp		
MW-7	4/27/[illegible]			✓	MW-7-4 @ 10.0		✓	✓	✓	✓			

Remarks: Shell
① Composite all samples from each station.
② Contact Ron or Robert Monday for info. on which samples to analyze as discretes. RETH

Relinquished by: (signature)	Date/Time	Received by: (signature)	Relinquished by: (signature)	Date/Time	Received by: (signature)
REH for Charlie Brown		Robert Z. Hodgson [illegible]	Robert Z. Hodgson [illegible]	4/28/89 1543	Diane Kruger
Relinquished by: (signature)	**Date/Time**	**Received by: (signature)**	**Relinquished by: (signature)**	**Date/Time**	**Received by: (signature)**
Diane Kruger	4/28/89	GARY	GARY	4-28-89 930	
Relinquished by Courier: (signature)	**Date/Time**	**Received by Mobile Lab: (signature)**	**Relinquished by Mobile Lab: (signature)**	**Date/Time**	**Received by Courier: (signature)**
Method of Shipment		**Shipped by: (signature)**	**Courier from Airport: (signature)**	**Received for Laboratory: (signature)**	**Date/Time**
				K[illegible]	4/29/89 [illegible]

ATTACHMENT 3

NET NATIONAL ENVIRONMENTAL TESTING, INC.

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

Formerly: ANATEC Labs, Inc.

Robin Breuer/Fadwa Samara
Converse Consultants
55 Hawthorne St, Ste 500
San Francisco, CA 94105

06-09-89
NET Pacific Log No: 6608
Series No: 212
Client Ref: Project# 88-44-369-01

Subject: Analytical Results for Shell - 630 High St.,Oakland Received 05-26-89.

Dear Robin Breuer/Fadwa Samara

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Submitted by:

Sue J. Long
Group Leader
Classical Chemistry

Approved by:

Susan Joy Griffin
Group Leader
Gas Chromatography

/sm
Enc: Sample Custody Document

KEY TO ABBREVIATIONS

mean	:	Average; the sum of the measurements divided by the total number of measurments.
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, unless noted otherwise.
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.
ND	:	Not detected; the analyte concentration is less than the listed reporting limit.
NR	:	Not requested.
NTU	:	Nephelometric turbidity units.
RL	:	Reporting limit.
RPD	:	Relative percent difference, $[V^1-V^2/V \text{ mean}]x100$.
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.
ug/filter	:	Concentration in units of micrograms of analyte per filter.
umhos/cm	:	Micromhos per centimeter.
*	:	See cover letter for details.

THE COVER LETTER AND KEY TO ABBREVIATIONS ARE AN INTEGRAL PART OF THIS REPORT

Parameter	Reporting Limit (ppm)	Descriptor, Lab No. and Results (ppm) MW-4 05-25-89 1230 (-28280)	MW-3 05-25-89 1300 (-28281)	MW-2 05-25-89 1400 (-28282)	MW-1 05-25-89 1430 (-28283)	Methods
PETROLEUM HYDROCARBONS						
Volatile, as Gasoline	0.05	2.9[a]	1.2[a]	ND	11	8015/5030
DATE ANALYZED		06-05-89	06-25-89	06-05-89	06-25-89	
Extractable,						GCFID/3510
as Motor Oil	0.05	0.29	0.088	ND	1.6	
as Diesel Fuel	0.05	1.1	0.40	ND	7.1[b]	
DATE ANALYZED		06-05-89	06-05-89	06-05-89	06-05-89	
DATE EXTRACTED		05-30-89	05-30-89	05-30-89	05-30-89	

Parameter	Reporting Limit (ppm)	Descriptor, Lab No. and Results (ppm) MW-4 05-25-89 1230 (-28280)	MW-3 05-25-89 1300 (-28281)	MW-2 05-25-89 1400 (-28282)	MW-1 05-25-89 1430 (-28283)	Methods
PURGEABLE AROMATICS						602
Benzene	0.0005	ND	ND	ND	0.0066	
Ethylbenzene	0.0015	ND	ND	ND	0.023	
Toluene	0.0005	0.0094	ND	ND	0.023	
Xylenes, total	0.0015	0.0034	ND	ND	0.180	

[a]Sample contains higher boiling hydrocarbons not characteristic of gasoline.
[b]Sample contains lower boiling hydrocarbons not characteristic of diesel.

P.M. ROBERT MANSFIELD

Converse Consultants

CHAIN OF CUSTODY RECORD

Project No.	Project Name
88.44.369.01	Shell-630 High st-Oakland

Samplers: (signature) Kelly Shuter, Thomas Smith

Station No.	Date	Time	Comp.	Grab	Station Location	Number of Containers	2 VOA's 1 Liter's VOA's	TPH-G (with BTEX) 10/6	TPH-D (with MOD.) 6/6	Remarks
mw-4	5/25/89	12:30		✓	630 High st-Oakland	5	✓	✓		Shell (630 HIGH)
mw-3	5/25/89	1:00		✓	" "	5	✓	✓		Standard turn around time
mw-2	5/25/89	2:00		✓	" "	5	✓	✓		TAT (Five days)
mw-1	5/25/89	2:30		✓	" "	5	✓	✓		" "

1 type per Bk 4/30

Relinquished by: (signature)	Date/Time	Received by: (signature)	Relinquished by: (signature)	Date/Time	Received by: (signature)
Kelly Shuter, Thomas Smith	5/25/89 1355	Diane Krueger	Diane Krueger	5-26 1750	GARY A
Relinquished by: (signature)	Date/Time	Received by: (signature)	Relinquished by: (signature)	Date/Time	Received by: (signature)
Relinquished by Courier: (signature)	Date/Time	Received by Mobile Lab: (signature)	Relinquished by Mobile Lab: (signature)	Date/Time	Received by Courier: (signature)
Method of Shipment		Shipped by: (signature)	Courier from Airport: (signature) CL/A NCSJ	Received for Laboratory: (signature) A Temple	Date/Time 5/26/89 2136

APPENDIX A

Hollow-Stem Auger Drilling and Soil Sampling

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING

Borings shall be drilled with a hollow-stem auger and sampled with a modified California-type split-spoon sampler. Soil samples shall be of sufficient volume to perform the analyses which may be required, including replicate analyses. Aside from deionized water or distilled water, no fluids will be used in drilling.

Undisturbed (intact) soil samples shall be recovered from soil borings without introducing liquids into the borings. Soil samples as core or cuttings shall be taken continuously from ground surface to termination depth (TD), or through the aquifer zone of interest for lithologic logging.

Soils from all borings shall be described in detail using the Unified Soil Classification System and shall be logged by a professional geologist, civil engineer, or engineering geologist who is registered or certified by the State of California and who is experienced in the use of the Unified Soil Classification System. A technician trained and experienced in the use of the Unified Soil Classification System who is working under the direct supervision of one of the aforementioned professionals shall be qualified to log borings, provided the aforementioned professional reviews the logs and assumes responsibility for the accuracy and completeness of the logs.

All wet zones above the free water zone shall be noted and accurately logged.

If evidence of contamination is detected by sight, smell, or other field analytical methods, drilling shall be halted until the responsible professional determines if drilling deeper is advisable.

All drilling tools shall be thoroughly decontaminated with trisodium phosphate (TSP) or steam cleaner immediately before starting each boring.

Soil samples shall be taken in decontaminated brass sampling tubes in the split-spoon. The brass sleeves will be cut apart using a clean knife. The ends of the tubes will be covered tightly with teflon wrap, capped with tight-fitting plastic caps, wrapped with plastic electricians' tape, and properly labeled.

APPENDIX B

Standards for Backfilling Borings and Sealing Wells

STANDARDS FOR BACKFILLING BORINGS AND SEALING WELLS

INTRODUCTION

As standard practice, all borings and observation and monitoring wells shall be backfilled or sealed with "relatively impervious" grout to prevent surface contamination or cross-contamination between aquifers. Borings will be sealed from termination depth to the surface and observation and monitoring wells shall be backfilled and sealed above the water table. This practice will reduce liability if it is determined and proven that groundwater contamination occurred along a "vertical pathway" in an improperly sealed or filled boring or well.

In hazardous and potentially hazardous waste sites where deep borings or wells are installed, appropriate geologic information will be reviewed to determine if multiple aquifer system(s) exist(s). If such system(s) exist(s), drilling and sealing techniques will be used to prevent contamination of a lower aquifer by upper, potentially contaminated aquifer(s). Grout seals will be installed according to the following techniques through all thicknesses of impermeable zones which separate aquifer.

Borehole grouting shall consist of backfilling with bentonite pellets, cement/bentonite grout, or a thick bentonite slurry, depending upon the depth of the boring, depth to ground water, and type of drilling equipment used. Details of currently acceptable sealing methods are outlined below.

GENERAL SPECIFICATIONS

- All grouting and well construction and sealing and abandonment of borings shall be consistent with local ordinances.

- Cement/bentonite grout used to seal wells will be of a hard consistency that can resist traffic loads, but not installed to create a "concrete pile" that will obstruct further earthwork. Bentonite slurry, which does not support surface loads, will not be used for sealing wells.

GROUTING/SEALING TECHNIQUES

Dry Holes and Borings Containing Less Than 5 Feet of Water

Option 1: Backfill boring with bentonite pellets or granules in about 2-foot lifts. Add a gallon of water to hole after each lift.

Option 2: Pour in a mixture of cement/bentonite group (9 parts cement, 1 part bentonite powder plus water as needed to make mixture consistency of pancake batter).

Option 3: Pour in a thick mixture of bentonite and water. Soil cuttings can be used to bulk this mixture is soil is not contaminated and chunks are small and well-mixed in slurry.

Borings Containing More Than 5 Feet of Water

Option 1: Pump out water and use criteria for "dry hole."

Option 2: Pump cement/bentonite grout to bottom of hole or use tremie. Do not pour grout through water.

Option 3: Pump or tremie bentonite slurry. This alternative is particularly efficient if you are using rotary wash equipment since all you have to do is thicken the drilling mud and pump it through the drill rod.

Monitoring/Observation Well Sealing (Single Aquifer)

A. Place sand pack around well casing to about 2 feet above slotted interval. Anticipate fluctuation of water level so screened interval covers maximum water elevation.

B. Place 2-foot thick bentonite pellet seal above sand pack. Add a bucket of clean water to swell pellets.

C. Pour cement/bentonite grout or bentonite slurry above pellet seal to ground surface.

APPENDIX C

Groundwater Monitoring Well Construction

GROUNDWATER MONITORING WELL CONSTRUCTION

Groundwater monitoring wells shall be constructed according to the general specifications described in the EPA Technical Enforcement Guidance Document (TEGD, 1986) and shown on the attached well construction diagram.

Groundwater monitoring wells shall be installed through hollow stem augers in borings drilled and sampled per Appendix A. Groundwater monitoring wells shall extend to the base of the upper aquifer, as defined by the first consistent (>5-foot thick) clay layer below the upper aquifer, or at least 15 feet below the top of the upper aquifer, whichever is shallower. The wells shall not extend through the laterally extensive clay layer below the upper aquifer. The wells shall be terminated 1 to 2 feet into such a clay layer.

The groundwater monitoring wells shall be single-cased wells which extend to the bottom of the boring or into a bentonite plug, if one is used at the bottom of the boring as a hydraulic seal. The screens shall be factory-perforated from the bottom of the upper blank casing at least 5 feet above the top of the upper aquifer as defined by boring lithology and/or geophysics. The base of the screen shall be the bottom of the well, or above a 2-5 foot long silt trap in the bottom of the well.

Groundwater monitoring wells shall be constructed as filter-packed wells that will prevent the migration of the surrounding formation into the well. Wells shall have 4-inch diameter factory-perforated casing with slots which match formation grain size as determined by field grain-size distribution analysis. Well casings shall have a threaded bottom cap or plug, and may have a silt trap below the screened zone.

All casing and screen shall be flush threaded, and no adhesive shall be used. PVC casing screen shall be steam-cleaned prior to installation. Filter pack shall be washed, graded sand.

Filter packs shall extend at least 2 feet above the top of the perforated interval. A layer of bentonite pellets 1 to 2 feet thick shall be placed on top of the filter pack. Approximately 2 gallons of water shall be added to hydrate the bentonite pellets. The wells shall then be sealed from the top of the bentonite seal to the surface with neat cement. All sand, bentonite and cement shall be placed using a tremie pipe.

Wellheads shall be installed in flush-mounted watertight structures and provided with a watertight caps. Wellheads shall be provided with locked security devices that protect the wells from the entry of surface water, accidental damage, unauthorized access, and vandalism.

Soil and water sampling equipment and materials used to construct the wells shall not donate, capture, mask, nor alter the chemical composition of the soils and ground water.

All well casings, casing fittings, screens, and all other components that are installed in the well shall be thoroughly decontaminated immediately before starting each well installation.

APPENDIX D

Well Development

WELL DEVELOPMENT

For all newly installed groundwater monitoring wells, the well casing, filter pack and adjacent formation shall be cleared of disturbed sediment and water before representative water samples are collected. A field geologist shall supervise such development work.

Before well development begins, the grout and bentonite seals shall set at least 24 hours and one pre-development water sample will be taken for each well. These water samples will be collected and analyzed for possible contaminants present according to CECC groundwater sampling protocol and QA/QC. These samples will be stored in the laboratory pending a decision to analyze, if required. If analyzed, standard laboratory procedures will be used. Samples not analyzed will be discarded.

All well development tools shall be thoroughly cleaned immediately before each well development. Well development shall begin with bailing using either a stainless steel or teflon bailer. This procedure will remove heavy sediments from within each well casing, reducing the possibility of the well screen abrasion and pump damage during subsequent pumping. Wells shall be bailed until water samples contain only trace amounts of fine to coarse sand, as measured in sampling jars after 15 minutes of settling.

The wells will be mechanically surged with a surge or flapper block for 15 strokes or 30 minutes, whichever is less. The block will be lowered to the well plug and then carefully drawn up to the top of the well screen or until it emerges from the water. For wells in moderate soils, the rate of surging will be progressively increased with each stroke. When working in areas of loose sediments, surging will be at a constant, slow stroke rate. Areas of dense or over-compacted sediments may require more vigorous surging. Between surging episodes, the wells will be bailed and/or pumped to remove the sediment-rich water generated.

After surging, wells under development will be pumped using stainless steel 3-inch positive displacement development pumps, 2-inch bladder pumps or other appropriate equipment. In this procedure, the pumps will operate at maximum rate which is less than the recharge rate of the pumped well. For complete development, the wells will be pumped until: (1) the discharge is clear or nearly clear; and (2) the turbidity has not noticeably changed with one-half hour.

All water and sediment generated by well development shall be collected in clean, 55-gallon steel drums unless only a small volume (less than 100 gallons) is produced. Drums of this development water will be temporarily contained onsite, pending sampling and laboratory analysis. Non-hazardous development waters shall be disposed of by surface dumping (small volumes) or sewerage. Potentially hazardous development water shall be properly disposed of at a suitable hazardous waste disposal site or properly treated for non-hazardous discharge. Small volumes of development water may be disposed of by surface dumping if, in the opinion of the onsite geologist, potential contamination to the environment is minimal.

APPENDIX E

Groundwater Sampling

GROUNDWATER SAMPLING

Groundwater samples shall be collected for laboratory analysis by the following procedures:

1. Before sampling or purging begins, all bailers, pumps, cables and lines will be steam-cleaned. An established and designated cleaning area will be kept clean by lining with visqueen or using a cleaning rack.

2. A pre-purge sample shall first be obtained with a bailer from as deep in the well as possible. Standard "Water Sampling Field Survey Forms" will be filled out for this and all future samples, to include the following information:

   - Depth to water and total depth of water column, measured and recorded before purging begins;
   - Conductivity, checked and recorded for every 5 gallons of purged water (for small volumes); and
   - Purged volume (as appropriate), with stabilized readings for pH, conductivity and temperature.

The well shall then be bailed or pumped to remove four to ten well volumes prior to sampling. The well will be purged until conductivity has been stabilized. "Stabilized" is defined as three consecutive readings within 15% of one another. A casing volume will be based on actual measurements made on the day of sampling, i.e., the total depth minus depth to water on day of sampling, time the cross-sectioned area of the casing.

If the well is emptied before four to ten well volumes are removed, the sample shall be taken when the water level in the well recovers to 80% of its initial water level or better.

Whenever possible, samples will be collected within 24 hours after purging; ideally, samples will be collected immediately after purging.

Following the required volume of evacuation from the well, the sample shall be obtained with a teflon or stainless steel bailer on a 60-pound monofilament or polypropylene (washed) line. Care will be taken to properly clean cables with braided stainless steel cable or plastic coverings, if used. Air lift sampling and bladder pumps shall not be used.

Unless specifically waived or changed by the local, prevailing regulatory agency, water samples shall be handled and preserved according to the latest EPA methods as described in the Federal Register (Volume 44, No. 233, Monday, December 3, 1979, Page 69544, Table II) for the type of analysis to be performed.

Purge water will be properly disposed of or temporarily contained in steel barrels pending chemical analysis to designate proper disposal procedure.

APPENDIX F

Chain-of-Custody

CHAIN-OF-CUSTODY

SAMPLE COLLECTION, HANDLING AND IDENTIFICATION

Sample collection, handling, and identification will follow the guidelines set by the California Department of Health Services. Field records will be completed when the sample is collected and will be signed or initialed, including the date and time, by the sample collector(s). Field records will contain the following information:

1. Unique sample or log number;
2. Date and time;
3. Source of sample (including name, location and sample type);
4. Preservative used;
5. Analyses required;
6. Name of collector(s);
7. Pertinent field data (pH, DO, C1, residual, etc.); and
8. Serial number on seals and transportation cases.

Each sample will be identified by affixing a pressure sensitive, gummed label, or standardized tag on the container(s). This label will contain the sample identification number, date and time of sample collection, source of sample preservative used, and the collector(s) initial(s). Analysis required will be identified. Where a label is not available, the same information will be affixed to the sample contained with an indelible, waterproof, marking pen.

The sample container will be placed in a transportation case along with the chain-of-custody record form, pertinent field records, and analyses request form. The transportation case will then be sealed and labeled. Records will be filled out legibly in pen.

TRANSFER OF CUSTODY AND SHIPMENT

When transferring the possession of the samples, the transferee will sign and record the date and time on the chain-of-custody record. Custody transfer, if made to a sample custodian in the field, will account for each individual sample, although samples may be transferred as a group.

The field custodian or field inspector will be responsible for properly packaging and dispatching samples to the appropriate laboratory for analysis. This responsibility includes filling out, dating, and signing the appropriate portion of the chain-of-custody record.

All packages sent to the laboratory will be accompanied by the chain-of-custody record and other pertinent forms. A copy of these forms will be retained by the originating office.

Mailed packages can be registered with return receipt requested. If packages are sent by common carrier, receipts should be retained as part of the permanent chain-of-custody documentation.

Samples to be shipped will be sealed locked so evidence of tampering may be readily detected.

LABORATORY CUSTODY PROCEDURES

Chain-of-custody procedures will be followed in the laboratory from the time of sample receipt to the time the sample is discarded.

The sample control officer (SCO) will be the designated custodian, and an alternate is designated to act as custodian in the custodian's absence. All incoming samples are received by the SCO, who shall indicate receipt by signing the accompanying custody forms and who shall retain the signed forms as permanent records.

The SCO will maintain a permanent log book to record, for each sample, the person delivering the sample, the person receiving the sample, date and time received, source of sample, sample identification or log number, how transmitted to the laboratory, and condition received (sealed, unsealed, broken container, or other pertinent remarks). A standardized format will be established for log book entries.

A clean, dry, isolated room, building, and/or refrigerated space that can be securely locked from the outside, will be designated as a "sample storage security area."

The SCO will ensure that heat-sensitive, light-sensitive samples, radioactive, or other sample materials having unusual physical characteristics, or requiring special handling, are properly stored and maintained prior to analysis.

Only the custodian will distribute samples to the section leaders who are responsible for the laboratory performing the analysis.

The laboratory area will be maintained as a secured area, restricted to authorized personnel only.

Laboratory personnel will be responsible for the care and custody of the sample once it is received by them. These personnel shall be prepared to testify that the sample was in their possession and view, or secured in the laboratory at all times, from the moment it was received from the SCO, until the time that the analyses are completed.

Once the sample analyses are completed, the unused portion of the sample, together with all identifying labels, will be returned to the SCO. The returned tagged sample will be retained in the custody room until permission to destroy the sample is received by the SCO.

Samples will be destroyed only upon the order of the Laboratory Director, in consultation with previously-designated Project Manager, and/or client, or when it is certain that the information is no longer required or the samples have deteriorated. The same procedure will apply to tags and laboratory records.

APPENDIX G

Drum Handling Procedures

OUTLINE OF DRUM HANDLING PROCEDURES

1. Complete drummed worksheets onsite, forward a copy to Shell.

2. Test material per Shell's site-specific test requirements (Appendix J).

3. Classify Material as: Clean/Non-Hazardous/Hazardous

4. Labeling of Drums

   - Pending Label: Used to describe material pending final analytical testing. Labels must be immediately affixed to drum during field work.

   - Non-Hazardous Label: Required within 48 hours after analytical results are received.

   - Hazardous Label: Required within 48 hours after analytical results are received.

   - For Pick-Up Label: Must be affixed to drum prior to Shell Hazardous Waste Coordinator arranged pick-up date.

5. Remove within 14 days of date of generation. Empty drums, where material was disposed in bulk, must be removed the same day they are emptied.

6. Dispose of Material:

   - Clean: Any local landfill
   - Non-Hazardous: Class III landfill. If a Class III landfill will not accept, contact Shell Hazardous Waste Coordinator for assistance
   - Hazardous: Class I landfill arranged by Shell Hazardous Waste Coordinator.

   Mail or FAX completed Hazardous Waste Pick-Up Forms to the Shell Hazardous Waste Coordinator with a copy of the analytical results and worksheets.

7. If required, contact the Shell Hazardous Waste Coordinator:

   Shell Oil Company
   Hazardous Waste Coordinator
   Anna Sampson
   P.O. Box 6249
   Carson, California 90749
   Phone: (213) 816-2037
   FAX: (213) 816-2114

8. Manifests may be signed by the onsite contractor or consultant, station dealer, or other authorized Shell Oil representatives. The transporter CAN NOT sign the manifest.

   IT IS THE RESPONSIBILITY OF THE CONTRACTOR/CONSULTANT TO ARRANGE FOR A PERSON TO SIGN THE MANIFEST ON THE DAY OF PICK-UP.

9. Reporting

   All reports must be received by the Shell Hazardous Waste Coordinator within 7 working days of disposal. Reports shall include the following:

   - **Completed drummed soil and water worksheets.**
   - **Attach a copy of the analytical results.**
   - **State how and where material was disposed.**
   - **If drums are emptied and material was disposed in bulk, state how empty drums were handled.**
   - The signed blue and yellow copies of the hazardous waste manifest.

SOIL:

1. Test Requirements and Methods: Per Shell's site-specific test requirements

   - TPH: EPA Method 8015
   - BTEX: EPA Method 8020
   - Lead:

     -One composite sample from each boring
     -See attached decision tree
     -Total Lead - EPA Method 7421
     -Inorganic (soluble) Lead - DOS Title 22, Waste Extraction Test, §22-66700

   - Ignitable:

     -One composite sample from each boring
     -Bunsen Burner Test Flame Test

2. Classification:

   - Clean: TPH, BTEX, and Lead non-detectable
   - Non-Hazardous if any are true:

     -TPH less than 1000 ppm

-Lead -Inorganic (soluble) Lead less than 5 ppm (STLC)
or less than 100 ppm (TTLC)
-Organic Lead less than 13 ppm (TTLC)

-Ignitable - If TPH < 1000 ppm do not conduct test

- Hazardous if any are true:

-TPH greater than 1000 ppm

-Lead -Inorganic (soluble) Lead greater than 5 ppm (STLC)
or greater than 1000 ppm (TTLC)
-Organic Lead greater than 13 PPM (TTLC)

-Ignitable -If TPH >1000 ppm, then conduct Bunsen Burner Test
-If soil burns vigorously and persistently, soils are RCRA D001

3. Responsibility for Disposal:
   - Clean: Consultant/Contractor
   - Non-Hazardous: Consultant/Contractor or Shell Hazardous Waste Coordinator
   - Hazardous: Shell Hazardous Waste Coordinator
4. Types of Drums: DOT-17H for a solid, solidified, or sludge material.
5. Disposal Facility:
   - Clean: Any local landfill
   - Non-Hazardous: Class III landfill. If a Class III landfill will not accept, contact Shell Hazardous Waste Coordinator for assistance
   - Hazardous: Class I landfill arranged by Shell Hazardous Waste Coordinator

WATER:

1. Test Requirements and Methods: Per Shell's site-specific test requirements.
   - TPH: EPA Method 8015
   - BTEX: EPA Method 602
2. Classification:
   - Clean Water: TPH and BTEX non-detectable

- Non-Hazardous:

  -Water with dissolved product and detectable TPH and BTEX
  -Water with free product
  -Free product only

3. Responsibility for Disposal:

   - Clean: Consultant/Contractor

   - Non-Hazardous: Consultant/Contractor or Shell Hazardous Waste Coordinator

4. Types of Drums: DOT-17C or DOT-17E for liquid or slurry

5. Disposal Facility:

   - Clean Water: Into dealer's sanitary sewer or with proper approval from Water Board to storm sewer

   - Non-Hazardous:

     Water with TPH and BTEX only -

     -Into dealer's sanitary sewer with approval from the POTW
     -Contact Shell Hazardous Waste Coordinator to arrange disposal

     Water with free product -

     -Contact Shell Hazardous Waste Coordinator to arrange disposal

   - Hazardous:

     Free product only -

     -Contact Shell Hazardous Waste Coordinator to arrange disposal