CONVERSE ENVIRONMENTAL WEST

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June 28, 1990
88-44-369-20-717

Ms. Dyan Whyte
Water Resource Control Engineer
San Francisco Bay Regional Water Quality Control Board
1800 Harrison Street, Room 700
Oakland, California 94612

Subject: Shell Oil Company - Quarterly Report - Q2/1990
630 High Street
Oakland, California

Dear Ms. Whyte:

Enclosed please find one copy of the Shell Oil Company Quarterly Report of Activities Quarter 2, 1990 prepared by Converse Environmental West (CEW) - San Francisco.

Please call if you have any questions.

Very truly yours,

Converse Environmental West

Robin M. Breuer
Senior Regulatory Specialist

RMB:cjd

Enclosure

cc: Mr. Rafat Shahid - Alameda County Health Care Services
Mr. Douglas W. Charlton - Converse Environmental West

630 HIGH STREET\WHYTE.717

PROJECT STATUS SUMMARY - QUARTER 2, 1990

Shell Oil Company Facility
630 High Street
Oakland, California

Investigation Activity	Not Applicable	Done (Date)	In Progress	Planned for Next Quarter			
				Plan	Initiate	Continue	Complete
1. Construction Predrill	[X]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
2. Release Discovery	[ ]	[X] 1/85	[ ]	[ ]	[ ]	[ ]	[ ]
3. Tanks Removal/Replacement	[ ]	[X] 1/85	[ ]	[ ]	[ ]	[ ]	[ ]
4. Source Removal	[ ]	[X] 2/89	[ ]	[ ]	[ ]	[ ]	[ ]
5. Excavation Backfill	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
6. RIFS Work Plan	[X]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
7. Preliminary Site Assessment - Soil							
a) Onsite	[ ]	[ ]_____	[X]	[ ]	[ ]	[ ]	[ ]
b) Offsite	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
8. Preliminary Site Assessment - Groundwater							
a) Onsite	[ ]	[ ]_____	[X]	[ ]	[ ]	[ ]	[ ]
b) Offsite	[ ]	[ ]_____	[X]	[ ]	[ ]	[ ]	[ ]
9. Migration Control - Product	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
10. Remedial Invest. Studies							
a) Soil Extent	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
b) Groundwater Extent	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
c) Leachability Tests	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
d) Hydrologic Assmt	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
e) Beneficial Use Assmt	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
f) Interim Remediation	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
g) Final RI Report	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
11. Feasibility Studies							
a) Corrective Action Analysis	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
b) Corrective Action Plan - Soil	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
c) Corrective Action Plan - Groundwater	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
12. Corrective Action							
a) Soil	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
b) Groundwater	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
13. Verification Monitoring							
a) Soil	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
b) Groundwater	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
14. Remediation Effectiveness Monitoring							
a) Soil	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
b) Groundwater	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
15. Application for Closure	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]
16. Case Closure	[ ]	[ ]_____	[ ]	[ ]	[ ]	[ ]	[ ]

REPORT OF ACTIVITIES
QUARTER 2, 1990

SHELL OIL COMPANY
630 HIGH STREET
OAKLAND, CALIFORNIA

Prepared for:

Shell Oil Company
1390 Willow Pass Road
Concord, California 94520

Prepared by:

Converse Environmental West
55 Hawthorne, Suite 500
San Francisco, California 94105

June 30, 1990

CEW Project No. 88-44-369-20

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SECTION 1

INTRODUCTION

1.1 BACKGROUND AND OBJECTIVES

This report presents the results of investigative activities conducted by Converse Environmental West (CEW) during Quarter 2, 1990 (Q2/90) for the Shell Oil Company (Shell) station ("site") at 630 High Street, Oakland, California (Drawing 1). This report is prepared to fulfill the quarterly reporting requirements as specified in the Work Plan prepared by CEW (March 20, 1989) for achievement of environmental closure of the site. The Work Plan is on file with the regulatory agencies of jurisdiction.

The site is located on the Southeast corner of High Street and Jensen Street in Oakland, California (Drawing 2). The site is approximately 240 feet long by 180 feet wide. Shell operated a retail fuel sales operation on the site, under lease from the property owner, the City of Oakland.

Available data provided by Shell indicates that soil and groundwater contamination by petroleum hydrocarbons exists on the property. This condition has been established by preliminary and advanced remedial investigations conducted by consultants since 1985. A general description of site conditions is included as Appendix A. A chronological summary of environmental activities conducted at the site is presented in Appendix B.

1.2 SCOPE OF ACTIVITIES

The investigative activities conducted during Q2/90 were authorized under an existing purchase order and blanket number from Shell for environmental services at the site. The work completed during Q2/90 consisted of the following activities:

- Collecting groundwater samples from MW-1 through MW-10.

- Evaluating the findings from field activities and preparing this report.

- Filing necessary documents with City of Oakland for an encroachment permit for one offsite monitoring well.

As a consultant to Shell on this project, CEW is contracted to perform specific activities related to acquiring data and information which will lead to the ultimate successful closure of the site under investigation. CEW's primary obligation is to collect information within proper standard of care and practice, and in accordance with protocols which have been created by CEW and which are on file with the regulatory agencies of jurisdiction. From time to time, because of site-specific conditions or limitations, CEW may find it necessary to deviate from these protocols. Under these conditions, CEW will describe in appropriate reports the rationale and necessities for the deviations which occurred, along with a statement of the possible impact these deviations may have on the database generated.

In compilation of its findings, CEW will follow the scientific method and develop multiple working hypotheses which explain site conditions and findings. CEW will not report and justify these multiple working hypotheses to the regulatory agencies for two principal reasons:

(1) The number of assumptions and limitations that are part of the process are numerous and would require substantial discussion and justification, and

(2) The multiple working hypothesis process is iterative to the time of closure, at which point a final, best hypothesis will be provided and fully explained to the regulatory agencies in closure documentation.

SECTION 2

WORK COMPLETED THIS QUARTER

Work initiated and completed during Q2/90 followed the task descriptions of the CEW Work Plan (March, 1989) the project critical path (Drawing 3) and the CEW protocols on file with the regulatory agencies of jurisdiction. A Quarter 2, 1990 Activity Summary is presented in Table 1.

2.1 SOIL SAMPLING AND ANALYSES

No soil samples were taken during Q2/90. Previous soil boring information and analytical results are presented in Tables 2 and 3.

2.2 GROUNDWATER SAMPLING AND ANALYSES

Well installation information is presented in Table 4. Groundwater samples were collected on April 23, 24, and 25, 1990 from monitoring wells MW-1 through MW-10 following CEW protocols. These samples were submitted to NET Pacific, Inc., a California-certified laboratory in Santa Rosa, California, following appropriate chain-of-custody. The samples were analyzed for TPH-g, TPH-d, TPH-mo, and BTEX following the recommended analytical methods listed in Table 5. Additional analytical tests were performed for consideration of remediation alternatives. Analytical data for the water samples collected from the monitoring wells are summarized in Tables 6 and 7. Laboratory reports and chain-of-custody forms from Q2/90 monitoring are provided in Appendix D.

2.3 PHYSICAL MONITORING

During Q2/90, wells MW-1 through MW-10 were tested once for depth to water table and observed for floating product. No measurable thickness of floating product was present. A summary of these results is presented in Table 7.

2.4 EXISTING HYDROGEOLOGIC DATA

CEW is in the process of obtaining records on file with the Alameda County Health Department. Alameda County has not provided CEW with any of this information to date. This research may provide background hydrogeologic information for the site vicinity as well as potential for offsite sources.

SECTION 3

FINDINGS AND DISCUSSION

3.1 SOIL

3.1.1 Stratigraphy

The uppermost unsaturated zone consists of fill, extends approximately four feet below ground surface (bgs), and is comprised of gravel, sand and clay in heterogeneous mixtures. None of the fine-grained sediments constitute a laterally-continuous layer which would potentially impede downward flow from the surface (the existing asphalt cover at the site impedes vertical movement). Beneath the fill layer is a clay zone varying from approximately two to eight feet in thickness. Immediately underlying the clay zone are sands and gravel of interbeds Clay underlies these to a depth of approximately 24 feet bgs.

3.2.1 Results of Chemical Analysis

Soil investigations to date show that trace TPH concentrations are contained in isolated soil samples SB-2, SB-4, MW-1 and MW-10 in the shallow 5 to 10 foot bgs zone near the former underground storage tank area in the northeast portion of the site (Table 3). Detectable concentration levels of toluene are contained in soil samples at the 5 foot zone laterally across the site, (except in MW-5 and MW-8). The vertical and lateral soil contamination is almost completely characterized at the site.

3.2 GROUNDWATER

3.2.1. Physical Parameters

Floating product was not present in the wells monitored during Q2/90. With the exception of MW-1, no petroleum hydrocarbon odors were noted in water collected from wells (Table 7).

3.2.2 Elevation and Gradient

Reported Q2/89

The tops of well casings were not surveyed during Q2/89.

Reported Q3/89

The tops of well casings MW-5 through MW-8 were surveyed to an arbitrary datum for Q3/89. The flow direction varied from southwest to west with a gradient magnitude of approximately 0.005 ft/ft.

Reported Q4/89

Groundwater was measured at approximately 10 feet bgs across much of the site with a southwest/west flow and a gradient of approximately 0.005 ft/ft.

Reported Q1/90

Groundwater depths onsite ranged from 11.5 to 7.73 feet bgs with flow to the west/northwest, and a gradient of approximately 0.042 ft/ft.

Reported Q2/90

Groundwater depths onsite ranged from 7.83 to 11.76 feet bgs with a west/northwest flow and an approximate gradient of 0.0025 ft/ft (Drawing 4).

3.2.3 Results of Chemical Analyses

Following is a list of the principal findings and conclusions from groundwater chemical monitoring at 630 High Street (1989-1990) (Table 6).

Reported Q2/89

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.

Reported Q3/89

- TPH-g was detected at wells MW-1, and MW-3 through MW-5. The highest concentration was detected at MW-1 (17 ppm).
- TPH-d was detected at wells MW-1, and MW-3 through MW-6. The highest concentration was detected at MW-1 (7.2 ppm).
- TPH-mo was detected at wells MW-1, and MW-3 through MW-6. The highest concentration was detected at MW-1 (1.9 ppm).
- Benzene was detected at wells MW-1, and MW-3 through MW-5. The highest concentration was detected at MW-1 (0.20 ppm).

- Toluene was detected at wells MW-1, and MW-3 through MW-5. The highest concentration was detected at MW-1 (0.18 ppm).

- Ethylbenzene was detected at wells MW-1, and MW-3 through MW-5. The highest concentration was detected at MW-1 (0.059 ppm).

- Xylenes were detected at wells MW-1, and MW-3 through MW-5. The highest concentration was detected at MW-1 (0.55 ppm).

- Lead was not detected at any well.

- Groundwater from MW-1 was analyzed for cadmium, chromium, and zinc. Cadmium and chromium were not detected. Zinc was detected at 0.09 ppm.

- Groundwater from MW-1 was analyzed for oil and grease. These compounds were not detected.

Groundwater from MW-1 was analyzed for chlorinated hydrocarbons by EPA Method 624. Benzene (0.24 ppm), ethylbenzene (0.62 ppm) and xylenes (0.73 ppm) were detected. Toluene was not detected.

Reported Q4/89

- TPH-g was detected at wells MW-1, and MW-3 through MW-5. The highest concentration was detected at MW-1 (13 ppm).

- TPH-d was detected at wells MW-1 through MW-7, and MW-9 through MW-10. The highest concentration was detected at MW-1 (4.4 ppm).

- TPH-mo was detected at wells MW-2, MW-9, and MW-10. The highest concentration was detected at MW-9 (0.54 ppm).

Reported Q1/90

The groundwater analyses for MW-1 continues to contain the highest concentrations of TPH and dissolved TPH. The monitoring wells MW-1, MW-3 and MW-5 on eastern side of the site continue after one year of quarterly monitoring to contain detectable concentrations of chemicals tested.

- TPH-g was detected at wells MW-1, MW-3 and MW-4. The highest concentration was detected at MW-1 (11 ppm).

- TPH-d was detected at wells MW-1, MW-3 through MW-6, and MW-10. Concentration detected at MW-1 was 3.8 ppm.

- TPH-mo was not detected at wells MW-1 through MW-10.

Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) were detected at wells MW-1, and MW-3 through MW-5. Concentrations of BTEX detected at MW-1 were 0.24, 0.034, 0.35, and 0.57, respectively.

MW-2 continued to lack detectable concentrations (ND) of TPH-g or TPH-d, and BTEX, completing one year of such conditions. MW-2 contained trace TPH-d and trace TPH-mo in December 1989. Consequently, Shell plans to reduce the frequency of monitoring at MW-2 well immediately. Effective 1990, Shell will only monitor MW-2 semi-annually, during February (Q1) and August (Q3) each year.

Reported Q2/90

Selected groundwater analyses follow:

- TPH-g was detected at MW-1, MW-3 through MW-6, and MW-8. The concentration detected at MW-1 was 9.4.

- TPH-d was detected at MW-1 and MW-3 through MW-6. The concentration detected at MW-1 was 3.8.

- Benzene, toluene, ethylbenzene and xylenes (BTEX) were detected at wells MW-1 and MW-3 through MW-5 (Drawing 5). The concentrations detected in MW-1 were 0.17, 0.035, 0.0086, and 0.39 respectively.

Groundwater analytical results for all monitoring wells will be presented in the Q3/90 report. Reduced monitoring will recur during Q4/90. Depth to water and other physical monitoring will continue for all wells on a quarterly basis.

3.2.4 Discussion

Contamination in groundwater (TPH-d, TPH-g and BTEX) is centered at MW-1, which is located near the former underground fuel and waste oil tanks (Drawing 2 and Table 5).

CEW intends to continue investigation of the upgradient groundwater plume that lies offsite to the northwest. Additional neighborhood assessment investigations are being conducted to help identify possible sources of commingled groundwater plume contamination.

SECTION 4

NEXT QUARTER ACTIVITIES

4.1 WORK PLAN MODIFICATIONS

Based on the information collected to date, no modifications to the Work Plan are proposed for Q3/90:

4.2 PROPOSED ACTIVITIES

The following activities will be conducted in Q3 and Q4, 1990:

(1) Continue monitoring groundwater conditions, with modifications as discussed in Section 3.2.3 of this report.

(2) Prepare and submit results from hydrologic slug tests performed during Q1/90.

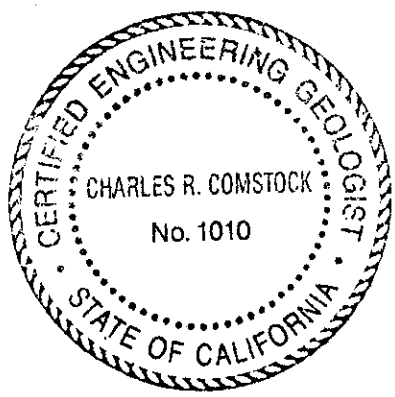
(3) Submit Q3/90 Report.

CERTIFICATION

This report of activities for the Shell Oil Company site at 630 High Street Oakland, California has been prepared by the staff of **Converse Environmental West** under the professional supervision of the Engineer and/or Geologist whose seal(s) and signature(s) appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the Client, after being prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied.

Respectfully submitted,



Robin M. Breuer

ROBIN M. BREUER
Principal Regulatory Specialist

CHARLES R. COMSTOCK
Technical Director

PRIMARY CONTACTS

Shell Oil Company Facility
630 High Street
Oakland, California

Quarter 2, 1990

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Site Owner:	Shell Oil Company

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CEW - see Converse Environmental West

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RWQCB - see California Regional Water Quality Control Board

TABLES

TABLE 1. ACTIVITY SUMMARY - QUARTER 2, 1990

Shell Oil Company
630 High Street
Oakland, California

Activity	Percent Complete			
	Quarter 2, 1990		Total to Date	
	Onsite	Offsite	Onsite	Offsite
Soil Characterization	85	-----	85	-----
Groundwater Characterization (Dissolved Product)	70	-----	70	-----
Groundwater Characterization (Floating Product)	NA	NA	NA	NA
Soil Remediation	0	-----	0	-----
Groundwater Remediation (Dissolved Product)	0	-----	0	-----
Groundwater Remediation (Floating Product)	NA	NA	NA	NA

NOTES:

NA Not Applicable

TABLE 2. SOIL BORING INFORMATION

Shell Oil Company
630 High Street
Oakland, California

Boring No.	Date Drilled	Total Depth (ft bgs)	Completion	Unsaturated Soil Samples (ft bgs)	Saturated Soil Samples (ft bgs)	Highest OVM Reading (ppm)
SB-1	4/27/89	10	Abandoned	5	None	NR
SB-2	4/27/89	10	Abandoned	5,10	None	NR
SB-3	8/17/89	10	Abandoned	5,10	None	1300 @ 5'
SB-4	11/15/89	9	Abandoned	5,9	None	0

NOTES:

NR Not recorded

TABLE 3: RESULTS OF SOIL CHEMICAL ANALYSIS

Concentration (ppm)

Boring No.	Sample Depth (ft. bgs)	TPH-g	TPH-d	TPH-mo	Benzene	Toluene	Total Oil and Grease	Xylene	Total Lead
SB-1	5	12*	27	85	<0.025	0.10	NA	0.14	71
SB-2	5	<10	<10	<10	0.042	0.054	NA	<0.075	16
SB-2	5,10**	<10	<10	130	<0.025	0.04	NA	<0.075	10
SB-3	5	<10	<10	<10	<0.025	0.22	290	<0.075	66
SB-3	10	<10	<10	<10	<0.025	0.045	<50	<0.075	4.2
SB-4	5	<1	16	77	<0.0025	0.032	NA	<0.0025	220
SB-4	9	<1	<1	11	<0.0025	0.056	NA	<0.0025	3.9
MW-1	5	11	<10	<10	<0.025	0.11	NA	<0.075	9.6
MW-1	5,10**	63	<10	<10	0.042	0.14	NA	0.16	7.6
MW-2	5	<10	<10	<10	<0.025	0.34	NA	<0.075	13
MW-2	5,10,15**	<10	<10	<10	<0.025	0.15	NA	<0.075	4.0
MW-3	10	<10	<10	<10	<0.025	<0.025	NA	<0.075	3.9
MW-3	5,10**	<10	<10	<10	<0.025	0.068	NA	<0.075	5.1
MW-4	5	<10	<10	<10	0.046	0.21	NA	<0.075	26
MW-4	5,10**	<10	<10	<10	<0.025	0.066	NA	<0.075	27
MW-5	5	<10	<10	<10	<0.025	<0.025	<50	<0.075	14.0
MW-5	10	<10	<10	<10	<0.025	<0.025	<50	<0.075	5.9
MW-6	5	<10	<10	<10	<0.025	0.057	220	<0.075	5.6
MW-6	10	<10	<10	<10	<0.025	<0.025	<50	<0.075	4.3
MW-7	5	<10	<10	<10	<0.025	0.040	<50	<0.075	9.8
MW-7	10	<10	<10	<10	<0.025	<0.025	<50	<0.075	3.7
MW-8	5	<10	<10	<10	<0.025	<0.025	<50	<0.075	5.1
MW-8	10	<10	<10	<10	<0.025	<0.025	<50	<0.075	2.6
MW-9	5	<1	<1	10	<0.0025	0.013	NA	<0.0025	170
MW-10	5	<1	<1	240	<0.0025	0.049	NA	<0.0025	120
MW-10	9	<1	380	3.1	<0.0025	<0.0025	NA	<0.0025	3.1

NOTES:

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

TABLE 4: WELL INSTALLATION INFORMATION

Shell Oil Company
630 High Street
Oakland, California

Well No.	Date Drilled	Well Diameter (inches)	Initial Water Table (ft. bgs)	Static Water Table (ft. bgs)	Total Depth of Well (ft. bgs)	Screen (ft. bgs)	Bentonite Seal (ft. bgs)	Grout Seal (ft. bgs)
MW-1	4/25/89	4	10.0	10.43	20	13 - 9	9 - 6	6 - 0
MW-2	4/25/89	4	14.5	11.67	25	20 - 10	10 - 8	8 - 0
MW-3	4/26/89	4	11.5	10.36	20	17 - 8	8 - 6	6 - 0
MW-4	4/26/89	4	10.0	10.91	22	17 - 7	7 - 6	6 - 0
MW-5	08/17/89	4	12.0	11.34	18	8 - 18	5 - 7	1 - 5
MW-6	08/16/89	4	15.0	10.58	20	10 - 20	7 - 9	1 - 7
MW-7	08/15/89	4	17.5	9.76	20	10 - 20	7 - 9	1 - 7
MW-8	08/15/89	4	9.0	9.01	21	9 - 21	6 - 8	1 - 6
MW-9	11/15/89	4	10.0	11.52	12	6 - 12	4 - 5	1 - 4
MW-10	11/16/89	4	11.0	9.55	13	7 - 13	5 - 6	1 - 5

NOTES:

ft bgs feet below ground surface

TABLE 5. RECOMMENDED MIMIMUM VERIFICATION ANALYSES FOR UNDERGROUND TANK LEAKS

From: RWQCB Guidelines for Additional Fuel Tank Leaks (Revised May 18, 1989)

HYDROCARBON LEAK	SOIL ANALYSIS				WATER ANALYSIS			
	Prep	Analysis		D.L. (mg/kg)	Prep	Analysis		D.L. (µg/l)
Unknown Fuel	TPH-g	5030	GCFID	1.0	TPH-g	5030	GCFID	50.0
	TPH-d	3550	GCFID	1.0	TPH-d	3510	GCFID	50.0
	BTEX	5030	8020/8240	0.005	BTEX	5030	602/624	0.50
Leaded Gas	TPH-g	5030	GCFID	1.0	TPH-g	5030	GCFID	50.0
	BTEX	5030	8020/8240	0.005	BTEX	5030	602/624	0.50
	TEL*	---	DHS-LUFT		TEL	---	DHS-LUFT	
	EDB*	---	DHS-AB1803		EDB	---	DHS-AB1803	
Unleaded Gas	TPH-g	5030	GCFID	1.0	TPH-g	5030	GCFID	50.0
	BTEX	5030	8020/8240	0.005	BTEX	5030	602/624	0.50
Diesel	TPH-d	3550	GCFID	1.0	TPH-d	3510	GCFID	50.0
	BTEX	5030	8020/8240	0.005	BTEX	5030	602/624	0.50
Waste Oil or Unknown	TPH-g	5030	GCFID	1.0	TPH-g	5030	GCFID	50.0
	TPH-d	3550	GCFID	1.0	TPH-d	3510	GCFID	50.0
	O&G	---	503D&E	50.0	O&G	---	503A&E	5000.0
	BTEX	5030	8020/8240	1.0	BTEX	5030	602/624	0.50
	CL HC	5030	8010/8240	1.0	CL HC	5030	601/624	0.50
	ICAP or AA for soil or water to detect metals: Cadmium, Chromium, Lead, Zinc							
	Method 8270 for soil or water to detect: PCB, PCP, PNA, Creosote							

NOTES:

*	Optional Analysis
RWQCB	Regional Water Quality Control Board
µg/l	microgram per liter
mg/kg	milligram per kilogram
D.L.	Detection Limit
TPH-g	Total Petroleum Hydrocarbons as Gasoline
TPH-d	Total Petroleum Hydrocarbons as Diesel
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
O & G	Oil and Grease
CL HC	Chlorinated Hydrocarbons
TEL	Tetra Ethyl Lead
EDB	Ethylene Dibromide

TABLE 6. RESULTS OF GROUNDWATER CHEMICAL ANALYSES

Shell Oil Company
630 High Street
Oakland, California

Concentration (ppm)

Well No.	Date Sampled	TPH-g	TPH-d	TPH-mo	Benzene	Toluene	Ethyl-benzene	Xylenes	Lead
MW-1	5/25/89	11	7.1	1.6	0.0066	0.023	0.023	0.180	NA
MW-1	8/29/89	17	7.2	1.9	0.20	0.18	0.059	0.55	<0.002
MW-1	12/12/89	13	4.4	<0.05	0.250	0.036	0.270	0.380	NA
MW-1	2/20/90	11	3.8	<0.05	0.24	0.034	0.35	0.57	NA
MW-1	**4/25/90**	**9.4**	**3.8**	**<0.05**	**0.17**	**0.035**	**0.0086**	**0.39**	**NA**
MW-2	5/25/89	<0.05	<0.05	<0.05	<0.0005	<0.0005	<0.0015	<0.0015	NA
MW-2	8/29/89	<0.05	<0.05	<0.05	<0.0005	<0.0005	<0.0015	<0.0015	<0.002
MW-2	12/11/89	<0.05	0.081	0.22	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-2	2/20/90	<0.05	<0.05	<0.05	<0.0005	0.0006	<0.0005	<0.0005	NA
MW-2[1]									
MW-3	5/25/89	1.2	0.40	0.088	<0.0005	<0.0005	<0.0015	<0.0015	NA
MW-3	8/29/89	2.5	0.81	<0.05	0.025	0.01	0.0065	0.0055	<0.002
MW-3	12/15/89	2.8	0.81	<0.05	0.015	0.008	0.004	0.012	NA
MW-3	2/15/90	2.6	0.53	<0.05	0.016	0.0019	0.0076	0.0041	NA
MW-3	**4/24/90**	**2.6**	**0.48**	**<0.05**	**0.028**	**0.007**	**0.007**	**0.015**	**NA**
MW-4	5/25/89	2.9	1.1	0.29	<0.005	0.0094	<0.0015	0.0034	NA
MW-4	8/29/89	2.9	1.5	0.79	0.029	<0.0005	0.012	0.0016	<0.002
MW-4	12/12/89	4.6	1.0	<0.05	0.170	0.026	0.011	0.020	NA
MW-4	2/13/90	1.9	0.86	<0.05	0.055	0.0091	0.0047	0.0026	NA
MW-4[2]	**4/24/90**	**3.0**	**1.1**	**<0.05**	**0.17**	**0.020**	**0.0067**	**0.016**	**NA**
MW-5	8/30/89	1.4	0.30	<0.05	0.0049	0.00079	0.0056	0.0068	<0.002
MW-5	12/5/89	1.4	0.33	<0.05	0.0049	0.0038	0.0091	0.008	NA
MW-5	2/15/90	<0.05	0.18	<0.05	0.0042	0.00076	0.0024	0.0033	NA
MW-5	**4/24/90**	**0.42**	**0.16**	**<0.05**	**0.0056**	**0.001**	**0.0006**	**0.0041**	**NA**
MW-6	8/29/89	<0.05	0.32	0.45	<0.0005	<0.0005	<0.0015	<0.0015	<0.002
MW-6	12/5/89	<0.05	0.60	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-6	2/15/90	<0.05	0.55	<0.05	<0.0005	<0.0005	<0.0005	0.0045	NA
MW-6	**4/23/90**	**0.18**	**1.2**	**<0.05**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**
MW-7	8/29/89	<0.05	<0.05	<0.05	<0.0005	<0.0005	<0.0015	<0.0015	<0.002
MW-7	12/5/89	<0.05	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-7	2/13/90	<0.05	<0.05	<0.05	<0.0005	0.00056	<0.0005	<0.0005	NA
MW-7	**4/24/90**	**<0.05**	**<0.05**	**<0.05**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**

NOTES:

Bold Samples analyzed during Q2/90
NA Not Analyzed
BTEX analyses by GCMS (EPA Method 624)
1 MW-2 analyzed semi-annually, next analyses Q3/90.
2 Sample dilution factor = 10

TABLE 6 (cont'd). RESULTS OF GROUNDWATER CHEMICAL ANALYSES

Shell Oil Company
630 High Street
Oakland, California

Concentration (ppm)

Well No.	Date Sampled	TPH-g	TPH-d	TPH-mo	Benzene	Toluene	Ethyl-benzene	Xylenes	Lead
MW-8	8/29/89	<0.05	<0.05	<0.05	<0.0005	<0.0005	<0.0015	<0.0015	<0.002
MW-8	12/11/89	<0.05	<0.05	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-8	2/13/90	<0.05	<0.05	<0.05	<0.0005	0.00056	<0.0005	<0.0005	NA
MW-8	**4/23/90**	**0.18**	**<0.05**	**<0.05**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**
MW-9	12/13/89*	<0.05	0.23	0.54	<0.0044	<0.006	<0.0072	<0.005	NA
MW-9	2/20/90	<0.05	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-9	**4/24/90**	**<0.05**	**<0.05**	**<0.05**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**
MW-10	12/13/89*	<0.05	0.11	0.30	<0.0044	<0.006	<0.0072	<0.005	NA
MW-10	02/20/90	<0.05	0.06	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-10[3]	**4/25/90**	**<0.05**	**NA**	**NA**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**

NOTES:

*
NA Not Analyzed
BTEX analyses by GCMS (EPA Method 624)
1 MW-2 analyzed semi-annually, next analyses Q3/90.
2 Sample dilution factor = 10
Bold Samples analyzed during Q2/90
3 TPH-d and TPH-mo analyses omitted accidently next analyses Q3/90

TABLE 7. GROUNDWATER MONITORING INFORMATION

Shell Oil Company
630 High Street
Oakland, California

Well No.	Date Monitored	Depth to Water (ft bgs)	Petroleum Odor In Water	Floating Product Thickness (inches)	Comments
MW-1	5/25/89	10.43	Yes	None	Gray sheen
El. 99.31	8/29/89	10.94	Yes	None	Sheen
	12/5/89	10.32	Yes	None	No sheen
	02/20/90	9.94	Yes	None	None
	04/23/90	**10.34**	**Strong**	**None**	**light sheen**
MW-2	5/25/89	11.63	None	None	No sheen
El. 101.11	8/29/89	12.62	None	None	No sheen
	12/5/89	11.83	None	None	No sheen
	02/20/90	11.50	None	None	None
	04/23/90	**11.76**			**No sample taken**
MW-3	5/25/89	10.43	None	None	No sheen
El. 99.47	8/29/89	10.90	None	None	No sheen
	12/5/89	10.46	Yes	None	No sheen
	02/01/90	10.15	None	None	None
	04/23/90	**10.43**	**Slight**	**None**	
MW-4	5/25/89	10.72	Yes	None	Sheen
El. 99.43	8/29/89	11.28	Yes	None	No sheen
	12/5/89	10.53	Yes	None	No sheen
	02/13/90	10.15	Yes	None	None
	04/23/90	**10.65**	**None**	**None**	**None**
MW-5	8/30/89	11.38	Yes	None	No sheen
El. 99.91	12/5/89	11.27	Yes	None	No sheen
	02/01/90	10.81	Yes	None	None
	04/23/90	**11.06**	**Slight**	**None**	**Clear**
MW-6	8/29/89	10.59	Yes	None	No sheen
El. 98.56	12/5/89	8.23	None	None	No sheen
	02/01/90	9.43	None	None	None
	04/23/90	**9.97**	**None**	**None**	**None**
MW-7	8/29/89	9.75	None	None	No sheen
El. 97.64	12/5/89	9.29	None	None	No sheen
	02/13/90	8.65	None	None	None
	04/23/90	**8.94**	**None**	**None**	**None**

NOTES:

Bold Samples analyzed in Quarter 2, 1990
ft bgs feet below ground surface
All elevations are tied into a temporary benchmark elevation of 100.00 feet

TABLE 7 (cont'd) GROUNDWATER MONITORING INFORMATION

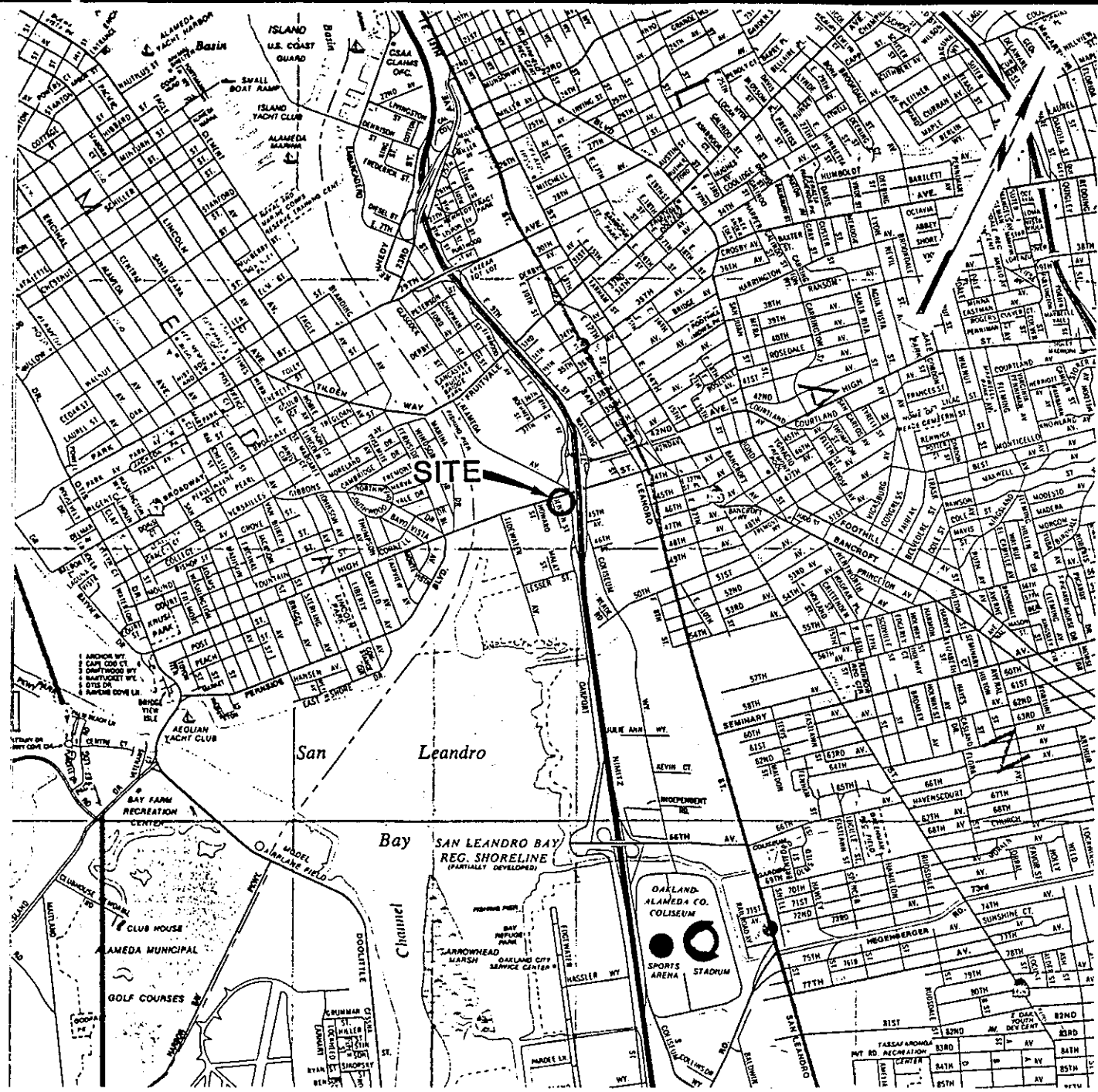
Shell Oil Company
630 High Street
Oakland, California

Well No.	Date Monitored	Depth to Water (ft bgs)	Petroleum Odor In Water	Floating Product Thickness (inches)	Comments
MW-8	8/29/89	9.02	None	None	No sheen
El. 97.14	12/5/89	9.87	None	None	No sheen
	02/13/90	7.73	None	None	None
	04/23/90	**7.83**	**None**	**None**	**Clear**
MW-9	12/5/89	11.52	None	None	No sheen
El. 99.73	02/20/90	7.94	None	None	
	04/23/90	**8.15**	**None**	**None**	**Clear**
MW-10	12/5/89	9.55	None	None	No sheen
El. 99.00	02/20/90	10.69	None	None	None
	04/23/90	**10.00**	**None**	**None**	**Clear**

NOTES:

Bold Samples analyzed in Quarter 2, 1990
ft bgs feet below ground surface
All elevations are tied into a temporary benchmark elevation of 100.00 feet

DRAWINGS



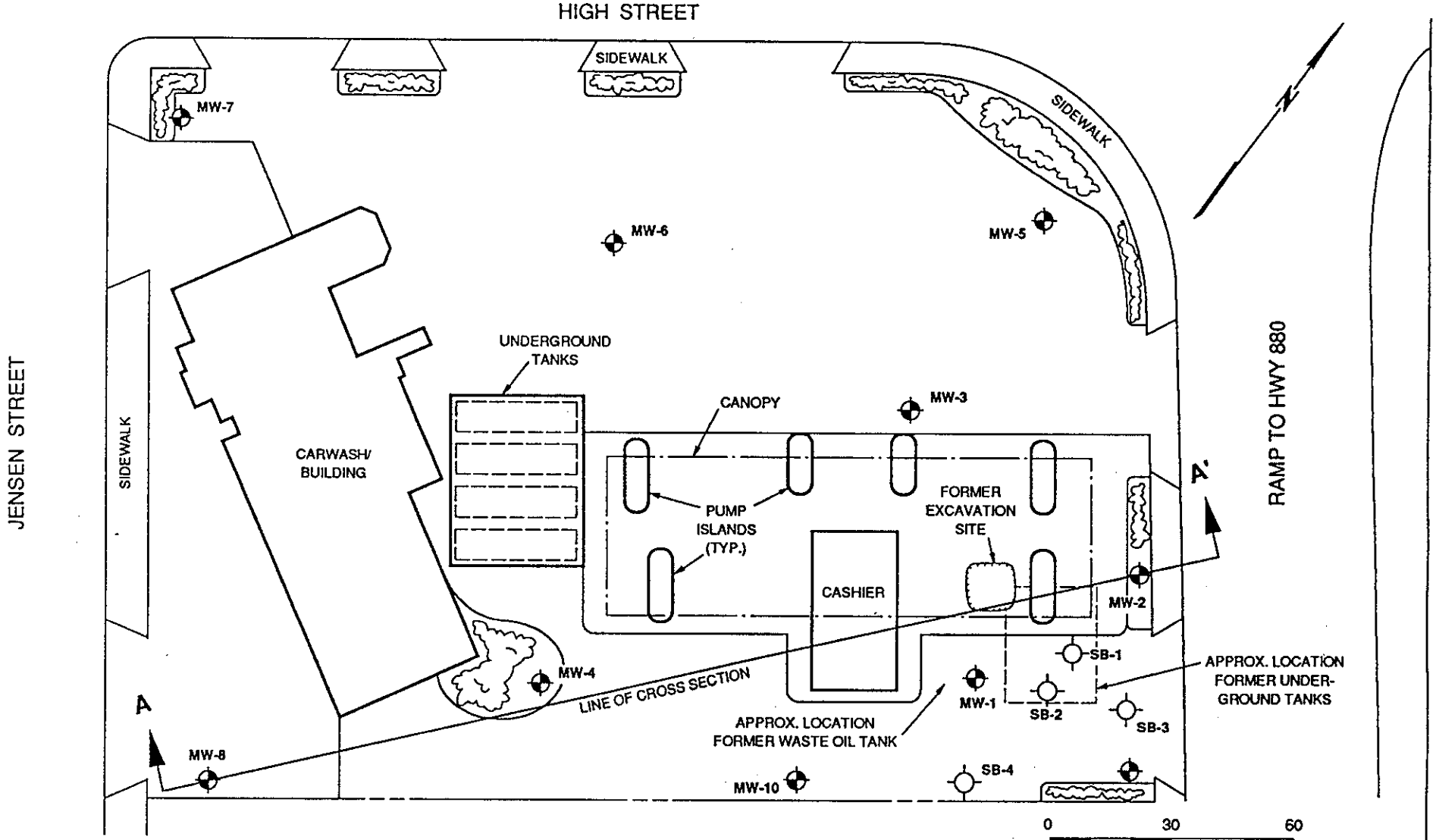
SOURCE: California State Automobile Association

SITE LOCATION MAP

SHELL OIL COMPANY
630 High Street
Oakland, California

Scale	AS SHOWN
Project No.	88-44-369-20
Prepared by	KGC
Date	6/5/90
Checked by	RMB
Drawing No.	1
Approved by	CRC

Converse Environmental West



Base Map: Surveyed with EDM, Converse 1989.

LEGEND

SB-1 ⊕ SOIL BORING (locations approximate)

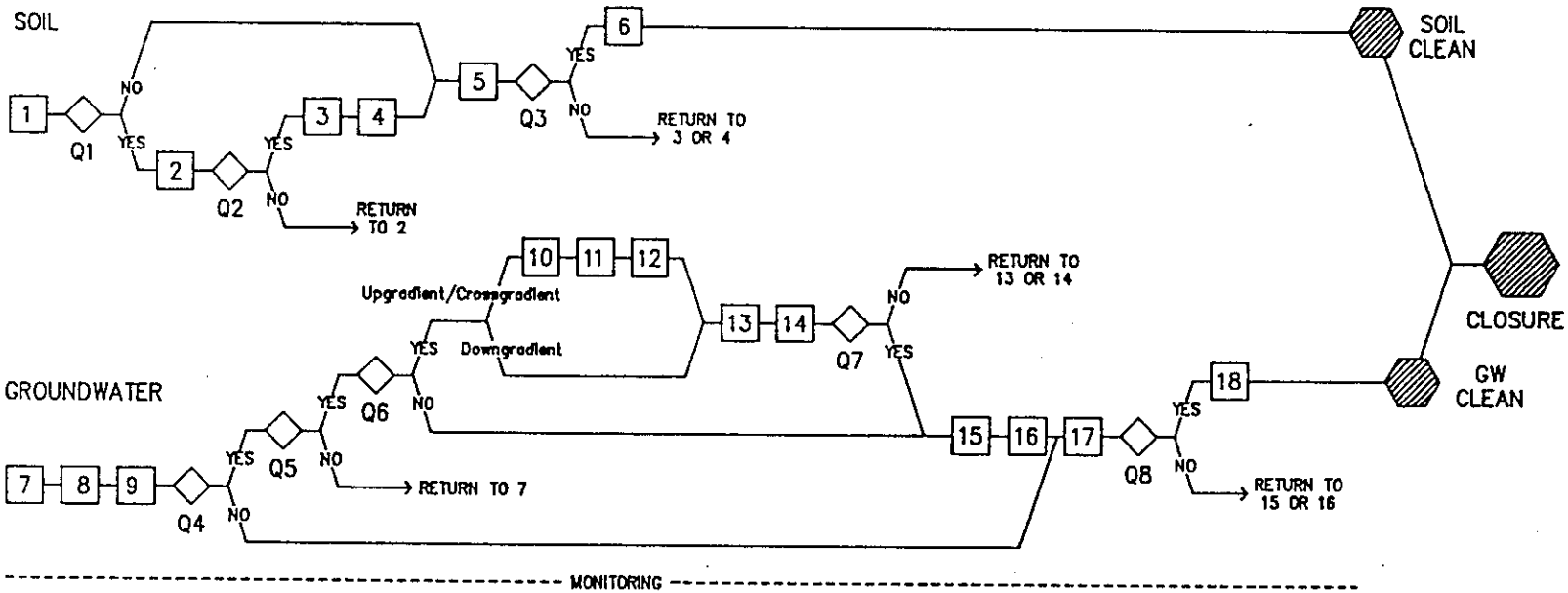
MW-1 ⊕ GROUNDWATER MONITORING WELL

PLOT PLAN

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental West

Scale	AS SHOWN
Prepared by	DEN/LQL
Checked by	RMB
Approved by	CRC
Project No.	88-44-369-20
Date	6-5-90
Drawing No.	2



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?

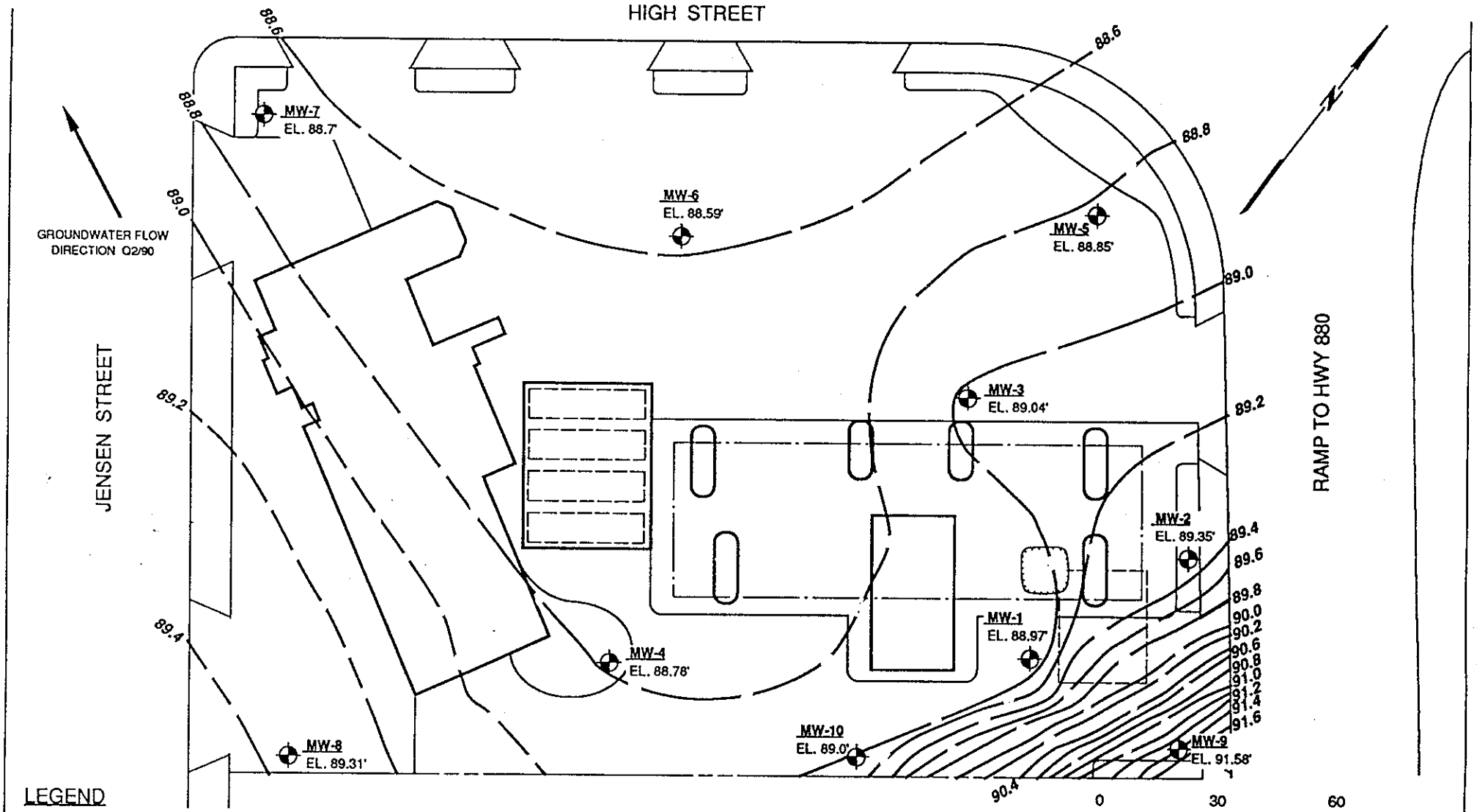
Q8: Is the environmental risk acceptably low for contaminants proposed to be left in groundwater?

CRITICAL PATH DIAGRAM

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental West

Scale	AS SHOWN
Project No.	88-44-369-20
Prepared by	DEN
Date	6/5/90
Checked by	RMB
Drawing No.	3
Approved by	CRC



LEGEND

GROUNDWATER CONTOUR (long dash where approximate, short dash where inferred)

MW-1 GROUNDWATER MONITORING WELL SHOWING GROUNDWATER ELEVATION

NOTE: GROUNDWATER ELEVATIONS GIVEN IN FEET ABOVE MEAN SEA LEVEL

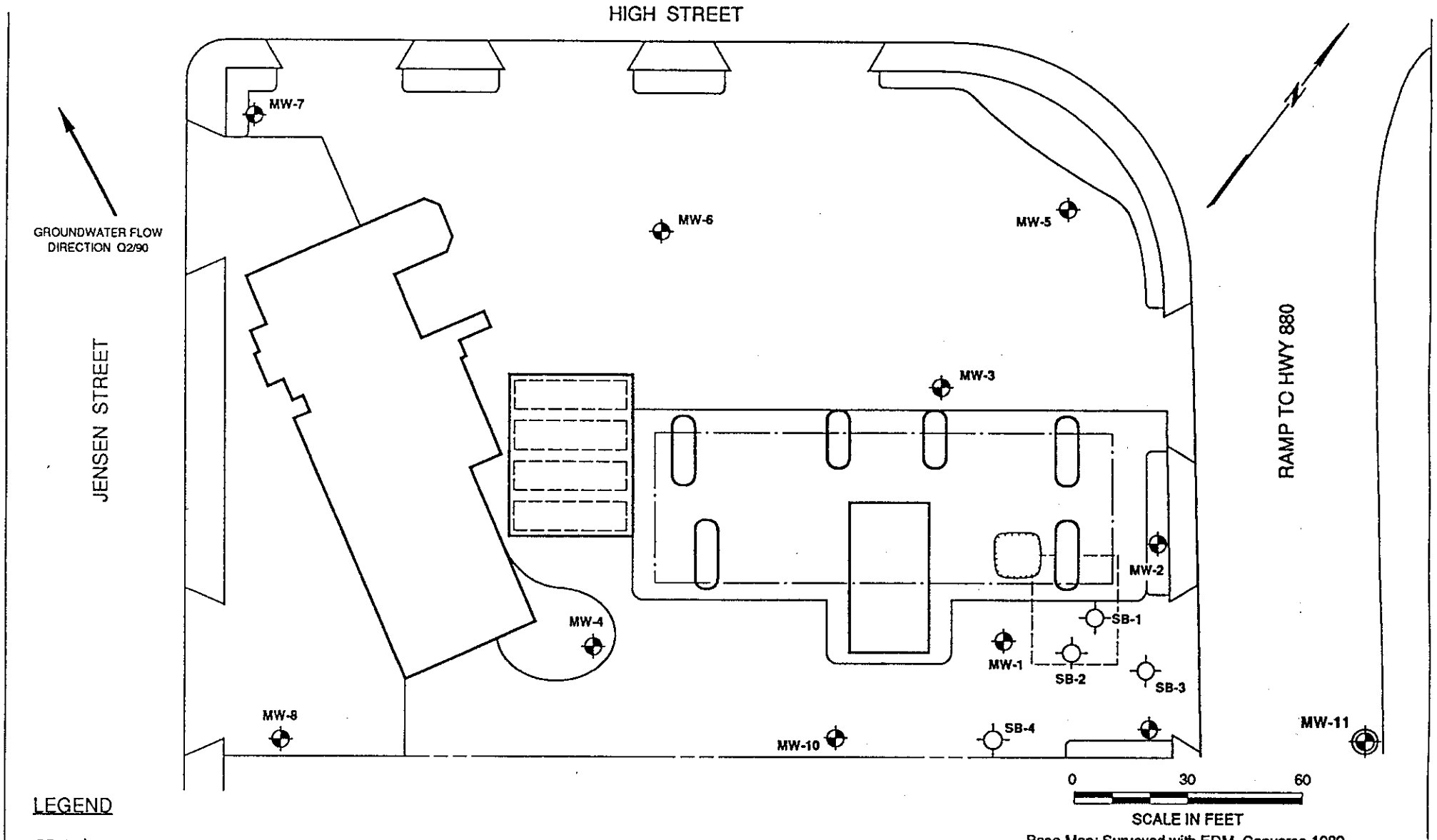
Base Map: Surveyed with EDM, Converse 1989.

GROUNDWATER CONTOUR MAP Q2/90

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental West

Scale: AS SHOWN	Project No.: 88-44-369-20
Prepared by: DEN/LQL	Date: 6-5-90
Checked by: RMB	Drawing No.: 4
Approved by: CRC	



Base Map: Surveyed with EDM, Converse 1989.

LEGEND

SB-1 — SOIL BORING (locations approximate)

MW-1 — GROUNDWATER MONITORING WELL

MW-11 — PROPOSED GROUNDWATER MONITORING WELL

PROPOSED GROUNDWATER MONITORING WELL

SHELL OIL COMPANY
630 High Street
Oakland, California

Converse Environmental West

Scale	AS SHOWN
Project No.	88-44-369-20
Prepared by	DEN/LQL
Date	6-5-90
Checked by	RMB
Drawing No.	5
Approved by	CRC

APPENDIX A

SITE DESCRIPTION

APPENDIX A

SITE DESCRIPTION

LOCATION

The property is located on the southeast corner of High Street and Jensen Street in Oakland, California. The site is approximately 240 feet long by 180 feet wide.

SETTING

The site is located within the East Bay Plain area of Alameda County. The site lies on Quaternary fluvial deposits, and possibly Quaternary Merritt Sand as well (Hickenbottom and Muir, 1988). The fluvial deposits are composed of unconsolidated, moderately sorted, moderately permeable fine sand, silt, and clayey silt with occasional thin beds of coarse sand (Helley et al., 1979). The fluvial deposits had their origin as fragmented and transported material derived from bedrock uplands and older unconsolidated sediments deposited by flowing water on inactive stream levees primarily during floods (Helley et al., 1988). The Merritt sand is composed of loose, well-sorted, fine-to medium-grained sand with subordinate silt derived chiefly by wind erosion and transport of stream sediments during low sea-level stands (Helley et al., 1979). Beneath the fluvial deposits and the Merritt sand lie unconsolidated older alluvial deposits total depth of approximately 700 feet.

The older alluvium is the major groundwater reservoir in the East Bay Plain area west of the Hayward Fault. The regional groundwater gradient is to the west-southwest toward San Francisco Bay. Recharge to groundwater reservoirs in the East Bay Plain area occurs mainly by infiltration of rain, seepage from streams, and subsurface flow from adjacent areas. There is probably a small amount of recharge from excess irrigation water, lawn and gardening watering, and leaking municipal sewer lines (Hickenbottom

and Muir, 1988). Groundwater pumpage from wells is, at the present time, probably the main element of groundwater discharge, although evapo/transpiration, groundwater discharge to streams, underflow to San Francisco Bay, and spring discharge are also contributing factors (Hickenbottom and Muir, 1988).

The quality of groundwater in the East Bay Plain is generally good. Total dissolved solids concentrations are generally in the range 300 to 1000 mg/l. Toxic materials have, however, been introduced into the shallow aquifers in the East Bay Plain in a number of locations. These toxic materials include petroleum products, lead and chromium, organic solvents such as acetone and benzene, and many others (Hickenbottom and Muir, 1988). In addition, salt-water intrusion has occurred on a limited basis into the Merritt Sand in the Oakland and Alameda areas (Hickenbottom and Muir, 1988).

Topographic maps of the area indicate that the site vicinity is nearly flat.

There are no major surface drainages in the area. The site is located approximately 1/4 mile east of the tidal canal separating Oakland from Alameda. Water from the tidal canal flows into and out of San Leandro Bay and Oakland Inner Harbor, both of which open into San Francisco Bay.

APPENDIX B

CHRONOLOGICAL SUMMARY

CHRONOLOGICAL SUMMARY

The following chronological summary is based on information provided to Converse Environmental West (CEW) by Shell Oil Company (Shell). CEW was not provided with certain information related to the construction, operational, and environmental history of the site. According to Shell, the following information is not available in Shell files: volume of contaminated soil removed at the time of tank removal, geometry of the excavation created during tank removal, if any, and date and volume of any possible releases at the site.

Date	Description of Activity
01/85	Re-modernization of gas station. Armor 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 Technical Services collected and analyzed (10) excavation soil samples. The inspector from the Alameda county Health Department specified sampling locations. Soil 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 int he area around sample no. 12 of February 3, 1989 sampling event. These soil sample contained less than 50 ppm TPH-d. Groundwater sample no. 3 from that area contained 1,800 ppm TPH-g and 200 ppm 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.
03/89	Shell transferred project to CEW.
03/20/89	CEW submitted Revised Work Plan to agencies.
04/26/89	CEW installed wells MW-1 to MW-4 and soil borings SB-1 and SB-2.
05/19/89	CEW developed wells MW-1 through MW-4.
05/25/89	CEW surveyed site and well head elevations (MW-1 through MW-4) to arbitrary
05/26/89	CEW sampled groundwater from wells MW-1 through MW-4.
08/15/89	CEW installed wells MW-5 through MW-8 and boring SB-3.
08/22/89	CEW surveyed wells MW-5 through MW-8 to arbitrary datum.

CHRONOLOGICAL SUMMARY (cont'd)

Date	Description of Activity
08/29/89	CEW sampled and developed wells MW-5 through MW-8.
10/17/89	Loma Prieta Earthquake struck.
11/15/89	CEW installed wells MW-9 and MW-10 and Boring SB-4.
11/22/89	CEW developed wells MW-9 and MW-10.
12/11/89	CEW sampled and surveyed wells MW-9 and MW-10.
01/31/90	CEW submitted Addendum to Quarterly Report Q4/89.
02/13,02/14, 02/15 & 02/20/90	CEW sampled and surveyed wells MW-1 through MW-10, performed slug tests on wells MW-5 through MW-9.
04/23/90 - 04/25/90	**CEW sampled wells MW-1 through MW-10. CEW applied for offsite well permit with the City of Oakland.**

Boldface items were conducted during Quarter 2, 1990.

APPENDIX C

LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS

NET NATIONAL ENVIRONMENTAL TESTING, INC.

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

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

Date: 05-03-90
NET Client Acct No: 18.02
NET Pacific Log No: 1700
Received: 04-25-90 1435

Client Reference Information

SHELL, 630 High Street; Project: 88-44-365-20

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

JS:rct
Enclosure(s)

Client No: 18.02
Client Name: Converse Consultants
NET Log No: 1700

Date: 05-03-90

Page: 3

Ref: SHELL, 630 High Street; Project: 88-44-365-20

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW-5 04-24-90 1500 51486	 MW-9 04-24-90 1630 51487	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			04-30-90	04-30-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	0.42	ND	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			04-30-90	04-30-90	
Benzene		0.5	5.6	ND	ug/L
Ethylbenzene		0.5	0.6	ND	ug/L
Toluene		0.5	1.0	ND	ug/L
Xylenes, total		0.5	4.1	ND	ug/L
PETROLEUM HYDROCARBONS			--	--	
EXTRACTABLE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE EXTRACTED			04-26-90	04-26-90	
DATE ANALYZED			04-27-90	04-27-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	0.16	ND	mg/L
as Motor Oil		0.05	ND	ND	mg/L

Client No: 18.02 Date: 05-03-90
Client Name: Converse Consultants
NET Log No: 1700 Page: 2

Ref: SHELL, 630 High Street; Project: 88-44-365-20

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW-7 04-24-90 0930 51484	MW-4 04-24-90 1035 51485	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	10	
DATE ANALYZED			04-30-90	05-01-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	ND	3.0	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	10	
DATE ANALYZED			04-30-90	05-01-90	
Benzene		0.5	ND	170	ug/L
Ethylbenzene		0.5	ND	6.7	ug/L
Toluene		0.5	ND	20	ug/L
Xylenes, total		0.5	ND	16	ug/L
PETROLEUM HYDROCARBONS			--	--	
EXTRACTABLE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE EXTRACTED			04-26-90	04-26-90	
DATE ANALYZED			04-27-90	04-27-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	ND	1.1	mg/L
as Motor Oil		0.05	ND	ND	mg/L

Client No: 18.02 Date: 05-03-90
Client Name: Converse Consultants
NET Log No: 1700 Page: 4

Ref: SHELL, 630 High Street; Project: 88-44-365-20

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results: MW-3 04-24-90 1700 51488	trip blank 04-18-90 51489	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			10	1	
DATE ANALYZED			05-01-90	04-30-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	2.6	ND	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			05-01-90	04-30-90	
Benzene		0.5	28	ND	ug/L
Ethylbenzene		0.5	7.0	ND	ug/L
Toluene		0.5	7.0	ND	ug/L
Xylenes, total		0.5	15	ND	ug/L
PETROLEUM HYDROCARBONS			--	--	
EXTRACTABLE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE EXTRACTED			04-26-90	04-25-90	
DATE ANALYZED			04-27-90	04-25-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	0.48	ND	mg/L
as Motor Oil		0.05	ND	ND	mg/L

Client No: 18.02 Date: 05-03-90
Client Name: Converse Consultants
NET Log No: 1700 Page: 6

Ref: SHELL, 630 High Street; Project: 88-44-365-20

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results MW-6 dup 04-23-90 1300 51492	 MW-8 04-23-90 1530 51493	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			04-30-90	04-30-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	0.15	0.18	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			04-30-90	04-30-90	
Benzene		0.5	ND	ND	ug/L
Ethylbenzene		0.5	ND	ND	ug/L
Toluene		0.5	ND	ND	ug/L
Xylenes, total		0.5	ND	ND	ug/L
PETROLEUM HYDROCARBONS			--	--	
EXTRACTABLE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE EXTRACTED			04-26-90	04-26-90	
DATE ANALYZED			04-27-90	04-27-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	1.3	ND	mg/L
as Motor Oil		0.05	ND	ND	mg/L

Client No: 18.02 Date: 05-03-90
Client Name: Converse Consultants
NET Log No: 1700 Page: 5

Ref: SHELL, 630 High Street; Project: 88-44-365-20

			Descriptor, Lab No. and Results		
			field blank 04-24-90	MW-6 04-23-90 1300	
Parameter	Method	Reporting Limit	51490	51491	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			04-30-90	04-30-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	ND	0.18	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			04-30-90	04-30-90	
Benzene		0.5	ND	ND	ug/L
Ethylbenzene		0.5	ND	ND	ug/L
Toluene		0.5	ND	ND	ug/L
Xylenes, total		0.5	ND	ND	ug/L
PETROLEUM HYDROCARBONS			--	--	
EXTRACTABLE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE EXTRACTED			04-26-90	04-26-90	
DATE ANALYZED			04-27-90	04-27-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	ND	1.2	mg/L
as Motor Oil		0.05	ND	ND	mg/L

Client No: 18.02 Date: 05-03-90
Client Name: Converse Consultants
NET Log No: 1700 Page: 7

Ref: SHELL, 630 High Street; Project: 88-44-365-20

			Descriptor, Lab No. and Results	
			trip blank 04-23-90 1530	
Parameter	Method	Reporting Limit	51494	Units
PETROLEUM HYDROCARBONS			--	
VOLATILE (WATER)			--	
DILUTION FACTOR *			1	
DATE ANALYZED			04-30-90	
METHOD GC FID/5030			--	
as Gasoline		0.05	ND	mg/L
METHOD 602			--	
DILUTION FACTOR *			1	
DATE ANALYZED			04-30-90	
Benzene		0.5	ND	ug/L
Ethylbenzene		0.5	ND	ug/L
Toluene		0.5	ND	ug/L
Xylenes, total		0.5	ND	ug/L
PETROLEUM HYDROCARBONS			--	
EXTRACTABLE (WATER)			--	
DILUTION FACTOR *			1	
DATE EXTRACTED			04-26-90	
DATE ANALYZED			04-27-90	
METHOD GC FID/3510			--	
as Diesel		0.05	ND	mg/L
as Motor Oil		0.05	ND	mg/L

Ref: SHELL, 630 High Street; Project: 88-44-365-20

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	99	ND	102	97	5
Benzene	0.5	ug/L	95	ND	97	100	3
Toluene	0.5	ug/L	98	ND	97	99	2

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	104	ND	106	99	7
Benzene	0.5	ug/L	91	ND	103	97	7
Toluene	0.5	ug/L	92	ND	99	96	3

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results colum indicates analyte not detected at the value following, which supercedes the listed reporting limit.
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

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

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

* Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated reporting limits by the dilution factor.

WBS # 204-5508-5801
AFE # 086672
Exp Code: 5440

1701-5

CONVERSE ENVIRONMENTAL WEST

CHAIN OF CUSTODY RECORD

PM: R.M.B.

PROJECT NO.: 88.44-369.20
SAMPLERS: (Signature) D. R. [signature]
PROJECT NAME / CROSS STREET: SHELL
630 HIGH ST.

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	TPH-GAS	BTEX	TPH-DIESEL	MOTOR OIL	LEAD-HOLD per client request 4/25/90	REMARKS
							ANALYSES					STANDARD TURN AROUND TIME
MW-6	4/23/90	1300		✓	40 ML/VOA's	3	✓	✓				" " " "
"	4/23/90	1300		✓	1-1 LITRE BOTTLES (AMBERS)	2			✓	✓	✓	" " " "
MW-6 DUP	4/23/90	1300		✓	40 ml/VOAs	3	✓	✓				" " " "
"		1300		✓	1-1 LITRE BOTTLES (AMBERS)	2			✓	✓	✓	" " " "
MW-8	4/23/90	1530		✓	40 mL/VOA's	3	✓	✓				" " " "
"	4/23/90	1530		✓	1 LITRE BOTTLES (AMBERS)	2			✓	✓	✓	" " " "
TRIP BLANK	4/23/90			✓	40 ML VOA's	1	✓	✓				" " " "
"	4/23/90			✓	1 LITRE AMBER BOTTLE	1			✓	✓	✓	" " " "

RELINQUISHED BY: (Signature) D. R. [signature]	DATE: 4/25/90 TIME: 13:15	RECEIVED BY: (Signartue) [signature]	RELINQUISHED BY: (Signature) [signature]	DATE: TIME:	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signartue)	RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signature)
RELINQUISHED BY COURIER: (Sign.)	DATE: TIME:	RECEIVED BY MOBILE LAB: (Sign.)	RELINQ. BY MOBILE LAB: (Signatue)	DATE: TIME:	RECEIVED BY COURIER: (Signature)
METHOD OF SHIPMENT		SHIPPED BY: (Signatue)	RECEIVED FOR LAB: (Signature) J Schwartz	DATE 4/25/90 TIME 1435	COURIER FROM AIRPORT: (Signature)

WIC # 204-5508-5901
AFE #: 086672
EXP Code: 5440

CONVERSE ENVIRONMENTAL WEST 1700

CHAIN OF CUSTODY RECORD

P.M. = R.M.B. 4/25/90 JK

PROJECT NO.: 88.44365.29
SAMPLERS: (Signature) D.I.B.

PROJECT NAME / CROSS STREET: 630 16TH ST SHELL OIL

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	ANALYSES: TPH-G	TPH-d/m.O.	BTEX	LEAD-Hold per chain JK 4/25/90	REMARKS
MW-7	4/24/90	0930		✓	40 ML VOAs	3	✓		✓		STANDARD TURN AROUND TIME
"	4/24/90	0930		✓	1 LITRE AMBER BOTTLES	3		✓		✓	
MW-4	4/24/90	1035		✓	40 ML VOA's	3	✓		✓		
"	4/24/90	1035		✓	1 LITRE AMBER BOTTLES	3		✓		✓	
MW-5	4/24/90	1500		✓	40 ML VOA's	3	✓		✓		
"	4/24/90	1500		✓	1 LITRE AMBER BOTTLES	3		✓		✓	
MW-9	4/24/90	1630		✓	40 ML VOA's	3	✓		✓		
"	4/24/90	1630		✓	1 LITRE AMBER BOTTLES	3		✓		✓	
MW-3	4/24/90	1700		✓	40 ML VOA's	3	✓		✓		
"	4/24/90	1700		✓	1 LITRE AMBER BOTTLES	3		✓		✓	
TRIP BLANK	4/18/90			✓	40 ML VOA	1	✓		✓		
"					1 LITRE AMBER BOTTLES	1		✓		✓	
Field Blank	↓				40 ML VOA	1	✓		✓		

do not lead run (add) that or hold 6

RELINQUISHED BY: (Signature) D.I.B.	DATE: 4/25/90 TIME: 13:15	RECEIVED BY: (Signature) Jeff Wickham	RELINQUISHED BY: (Signature) Jeff Wickham	DATE: TIME:	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signature)
RELINQUISHED BY COURIER: (Sign.)	DATE: TIME:	RECEIVED BY MOBILE LAB: (Sign.)	RELINQ. BY MOBILE LAB: (Signature)	DATE: TIME:	RECEIVED BY COURIER: (Signature)
METHOD OF SHIPMENT		SHIPPED BY: (Signature)	RECEIVED FOR LAB: (Signature) JSchwartz	DATE 4/25/90 TIME 1435	COURIER FROM AIRPORT: (Signature)

WIC # 207-5508-3801
AFE # 08667 2
EXP Code 5440

CONVERSE ENVIRONMENTAL WEST

1698 >4

CHAIN OF CUSTODY RECORD

P.M. = R. M. B.

PROJECT NO.: 88.44.369.76	PROJECT NAME / CROSS STREET: 630 HIGH ST. Shell oil						ANALYSES						
SAMPLERS: (Signature) D. R.													
STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	TPH-d	TPH-M.O.	LEA d-Hold pu dist to dk	4/25/90			REMARKS
Field Blank	4/24/90			✓	1 LITRE Amber Bottles.	1	✓	✓	✓				STANDARD TURN AROUND TIME

RELINQUISHED BY: (Signature) D. R. B.	DATE: 4/25/90 TIME: 13:00	RECEIVED BY: (Signartue)	RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signartue)	RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signature)
RELINQUISHED BY COURIER: (Sign.)	DATE: TIME:	RECEIVED BY MOBILE LAB: (Sign.)	RELINQ. BY MOBILE LAB: (Signatue)	DATE: TIME:	RECEIVED BY COURIER: (Signature)
METHOD OF SHIPMENT		SHIPPED BY: (Signatue)	RECEIVED FOR LAB: (Signature)	DATE: 4/25/90 TIME: 1435	COURIER FROM AIRPORT: (Signature)

NET NATIONAL ENVIRONMENTAL TESTING, INC.

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

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

Date: 05-07-90
NET Client Acct. No: 18.02
NET Pacific Log No: 1724
Received: 04-27-90 0800

Client Reference Information

SHELL, 630 High Street; Project: 88-44-369-20

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

Enclosure(s)

Client Acct: 18.02
Client Name: Converse Consultants
NET Log No: 1724

Date: 05-07-90
Page: 2

Ref: SHELL, 630 High Street; Project: 88-44-369-20

SAMPLE DESCRIPTION: MW-1 04-25-90 0730
LAB Job No: (-51602)

Parameter	Reporting Limit	Results	Units
PETROLEUM HYDROCARBONS		--	
VOLATILE (WATER)		--	
DILUTION FACTOR *		10	
DATE ANALYZED		05-03-90	
METHOD GC FID/5030		--	
as Gasoline	0.05	9.4	mg/L
METHOD 602		--	
DILUTION FACTOR *		10	
DATE ANALYZED		05-03-90	
Benzene	0.5	170	ug/L
Ethylbenzene	0.5	8.6	ug/L
Toluene	0.5	35	ug/L
Xylenes, total	0.5	390	ug/L
PETROLEUM HYDROCARBONS		--	
EXTRACTABLE (WATER)		--	
DILUTION FACTOR *		1	
DATE EXTRACTED		04-28-90	
DATE ANALYZED		04-28-90	
METHOD GC FID/3510		--	
as Diesel	0.05	3.8	mg/L
as Motor Oil	0.05	ND	mg/L

Ref: SHELL, 6300High Street; Project: 88-44-369-20

SAMPLE DESCRIPTION: MW-10 04-25-90 0745
LAB Job No: (-51603)

Parameter	Reporting Limit	Results	Units
PETROLEUM HYDROCARBONS		--	
VOLATILE (WATER)		--	
DILUTION FACTOR *		1	
DATE ANALYZED		05-01-90	
METHOD GC FID/5030		--	
as Gasoline	0.05	ND	mg/L
METHOD 602		--	
DILUTION FACTOR *		1	
DATE ANALYZED		05-01-90	
Benzene	0.5	ND	ug/L
Ethylbenzene	0.5	ND	ug/L
Toluene	0.5	ND	ug/L
Xylenes, total	0.5	ND	ug/L

Ref: SHELL, 630 High Street; Project: 88-44-369-20

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	104	ND	106	99	7
Benzene	0.5	ug/L	91	ND	103	97	7
Toluene	0.5	ug/L	92	ND	99	96	3

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	101	ND	92	93	2
Benzene	0.5	ug/L	94	ND	93	93	0
Toluene	0.5	ug/L	96	ND	92	94	1

QUALITY CONTROL RESULTS - TOTAL PETROLEUM HYDROCARBONS (water)

Parameter	Reporting Limits	Units	Blank Results	Lab No. Spike and Spike Replicate Results (% Recovery) (-51473S)	(-51473SR)	RPD
as Diesel	0.05	mg/L	ND	77	65	17

WIC # 204-5508-5801
AFE # 086672
Exp Code = 5440

(1724)

P.M. = R.M.B.

CONVERSE ENVIRONMENTAL WEST

CHAIN OF CUSTODY RECORD

PROJECT NO.: 88.44.369.20

PROJECT NAME / CROSS STREET: Shell Oil 630 High St.

SAMPLERS: (Signature) D. B.

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	ANALYSES TPH-G	TPH-D	BTEX	Lead	VOC per RCRA	REMARKS
MW-1	4/25/90	0730		✓	40 mL VOA's	3	✓		✓			STANDARD TURN AROUND TIME
MW-1	4/25/90	0730		✓	1 Litre Amber Bottles	3		✓		✓		4 4 4 4
MW-10	4/25/90	0745		✓	40 mL VOA's	3	✓		✓			4 4 4 4

+ Custody Seal Applied 4/26/90 7:00 p JB. custody seal intact 4/27

RELINQUISHED BY: (Signature)	DATE 4/26/90 TIME 3:45p	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE: TIME:	RECEIVED BY: (Signature)
RELINQUISHED BY COURIER: (Sign.)	DATE: TIME:	RECEIVED BY MOBILE LAB: (Sign.)	RELINQ. BY MOBILE LAB: (Signature)	DATE: TIME:	RECEIVED BY COURIER: (Signature)
METHOD OF SHIPMENT: Courier		SHIPPED BY: (Signature)	RECEIVED FOR LAB: (Signature)	DATE: 4-27-90 TIME: 0800	COURIER FROM AIRPORT: (Signature)

APPENDIX D

RAW DATA FROM FIELD MEASUREMENTS

ROBIN

CONVERSE ENVIRONMENTAL WEST

Well Sampling Summary

Project Name: 630 High St
Project Number: 88.44.369.20
Date: 4/23/90
Inspector: DS. ; T.S.

Well Number	Time	Total Depth	Depth to Water	Comments
MW-1	11:20	13.47' Ft.	10.34' Ft	STRONG PRODUCT ODOR: REMEASURED WELL SHALLOWER THEN PREVIOUSLY INDICATED
MW-2	11:17	19.42' Ft.	11.76' Ft.	~~Dont~~ NO SAMPLES ~~#~~ NEEDED
MW-3	11:29	17.39' Ft.	10.43' Ft.	
MW-4	11:00	18.59' Ft	10.65' Ft	SLIGHT PRODUCT ODOR STAND H2O W/IN WELL CASING ~2'
MW-5	11:35	17.39' Ft.	11.06	SLIGHT ODOR: REMEASURED WELL SHALLOWER THAN PREVIOUSLY INDICATED
MW-6	10:36	20.60' Ft.	9.97' Ft	
MW-7	10:46	19.55' Ft	8.94 Ft	SLIGHT Odor
MW-8	10:51	20.58' Ft.	7.83' Ft	STANDING H2O ~2" W/IN WELL CASING
MW-9	11:12	11.65' Ft	8.15 Ft	
MW-10	11:07	12.65' Ft.	10.00' Ft	WELL DEEPER THAN PREVIOUSLY NOTED

CONVERSE ENVIRONMENTAL WEST
DAILY REPORT - SHELL OIL CO.

Project: 630 High St Project No.: 88-44-3692.01 Project Manager: R.M.B.

Date: 4/25/90 Day: Wednesday

CONVERSE PERSONNEL

Name	Mobe Start	Mobe End	Arrive Site	Leave Site	Demobe Start	Demobe End
DAVE SWINTANSKI			0700	0920		
MICHELLE MASON			0700	0920		

SUBCONTRACTORS

Name	Mobe Start	Mobe End	Arrive Site	Leave Site	Demobe Start	Demobe End	Ticket Number

WORK ACCOMPLISHED

Wells/Borings Bored/Sampled:
Wells Installed:
Wells/Borings Surface Completed:
Wells/Borings Abandoned:
Wells Developed:
Wells Initially Sampled:
Wells Periodically Sampled: MW-1 & MW-10
Wells/Borings/Structures Surveyed:

Work Accomplished - Not Listed Above - Expanded Description:

Very Slow Recharge in MW-1 - only able to retrieve 3 VOA's. Well not recharged with in 80% limit

MW-1 Good & Recharged w/in 80% limit. Retrieved Full set of Samples.

Deviations From Standard Operating Procedures:

CONVERSE ENVIRONMENTAL WEST
DAILY REPORT - SHELL OIL CO.

Project: 630 High St. Project No.: 88-44-369.20 Project Manager: R.M.B.

Date: 4/24/90 Day: Tuesday

CONVERSE PERSONNEL

Name	Mobe Start	Mobe End	Arrive Site	Leave Site	Demobe Start	Demobe End
Dave Swietanski			0915	17:30		
Michelle Mason			0915	17:30		

SUBCONTRACTORS

Name	Mobe Start	Mobe End	Arrive Site	Leave Site	Demobe Start	Demobe End	Ticket Number

WORK ACCOMPLISHED

Wells/Borings Bored/Sampled:
Wells Installed:
Wells/Borings Surface Completed:
Wells/Borings Abandoned:
Wells Developed:
Wells Initially Sampled:
Wells Periodically Sampled: MW-7, MW-4, MW-3, MW-9, MW-5
Wells/Borings/Structures Surveyed:

Work Accomplished - Not Listed Above - Expanded Description:

Completed All Wells Except MW-10 & MW-1
Will Complete Sampling Wed 4/25

Deviations From Standard Operating Procedures:

CONVERSE ENVIRONMENTAL WEST
DAILY REPORT - SHELL OIL CO.

Project: 630 HIGH ST. Project No.: 89.44.369.20 Project Manager: ~~R.M.B~~ R. M. B.

Date: 4/23/90 Day: MONDAY

CONVERSE PERSONNEL

Name	Mobe Start	Mobe End	Arrive Site	Leave Site	Demobe Start	Demobe End
DAVE SWIETANSKI			1000	1600		
THOMAS SMITH			1000	1600		

SUBCONTRACTORS

Name	Mobe Start	Mobe End	Arrive Site	Leave Site	Demobe Start	Demobe End	Ticket Number

WORK ACCOMPLISHED

Wells/Borings Bored/Sampled:
Wells Installed:
Wells/Borings Surface Completed:
Wells/Borings Abandoned:
Wells Developed:
Wells Initially Sampled:
Wells Periodically Sampled: MW-6, MW-7 & MW-8
Wells/Borings/Structures Surveyed:

Work Accomplished - Not Listed Above - Expanded Description:

MEASURED D.T.W ~~on~~ FOR MW-1 THRU MW-10
SAMPLED MW-6 & MW-8 - PURGED MW-7
UNABLE TO ~~RECEIVED~~ SAMPLES FOR MW-7 DUE TO SLOW RECHARGE. RETRIEVED — WILL CONTINUE 4/24/90

Deviations From Standard Operating Procedures: