REPORT OF ACTIVITIES
QUARTER 4, 1990

SHELL OIL COMPANY SITE
500 40th STREET
OAKLAND, CALIFORNIA

Prepared for:

Shell Oil Company
1390 Willow Pass Road, Suite 900
Concord, California 94520

Prepared by:

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

December 28, 1990

CEW Project No. 88-44-361-20

TABLE OF CONTENTS

TABLE OF CONTENTS (cont'd)

LIST OF TABLES

LIST OF DRAWINGS

SECTION 1

INTRODUCTION

1.1 BACKGROUND AND OBJECTIVES

This report presents the results of investigative activities conducted by Converse Environmental West (CEW) during Quarter 4, 1990 (Q4/90), for the former Shell Oil Company (Shell) station (site) located at 500 40th Street in Oakland, California (Drawing 1). This report is prepared to fulfill the quarterly reporting requirements as specified in the Work Plan prepared by CEW (April, 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 northwest corner of 40th Street and Telegraph Avenue in Oakland, California (Drawing 2). The site was formerly operated as a retail motor vehicle fuel sales and automobile repair station. Presently, it is occupied by several non-industrial retail sale and service businesses. A Chronological Summary is presented in Appendix A. The site is approximately 145 feet long by 130 feet wide.

The purpose of the investigative activities is to provide additional data on subsurface conditions at the site in order to characterize the present lateral and vertical extent, and distribution, of existing petroleum hydrocarbon contamination resulting from the former operation of underground automobile fuel storage tanks at the site, and to assess the feasibility of applicable remedial technologies.

1.2 SCOPE OF ACTIVITIES

The work initiated and completed by CEW during Q4/90 consisted of the following activities:

- Sampling each well and analyzing the groundwater for total petroleum hydrocarbons as gasoline (TPH-g), as diesel (TPH-d), and benzene, toluene, ethylbenzene and xylenes (BTEX).

- Evaluating the findings from the field activities and preparing this Quarterly Report.

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 facility 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 numerous assumptions and limitations that are part of the process 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 Q4/90 followed the task descriptions of the CEW Work Plan (April, 1989) and the CEW protocols on file with the regulatory agencies of jurisdiction. The site activity summary is presented in Table 1.

2.1 GROUNDWATER SAMPLING AND ANALYSES

Groundwater samples were collected on November 16, 1990, from 5 onsite and 3 offsite wells, and samples were submitted to NET Pacific, Inc., a California-certified analytical laboratory located in Santa Rosa, California. Following the recommended analytical methods listed in Table 2, the samples were analyzed for TPH-g, TPH-d, and BTEX. Analytical data for the groundwater samples collected from the monitoring wells are summarized in Table 5. Analytical laboratory reports and chain-of-custody forms from this quarterly round of monitoring are provided in Appendix B.

2.2 GROUNDWATER MONITORING

During Q4/90, all wells were physically monitored for depth-to-water and observed for floating product. A summary of groundwater monitoring information is presented in Table 4.

SECTION 3

FINDINGS AND DISCUSSION

3.1 SOIL

No soil samples were taken during Q4/90. A summary of soil chemical analysis is presented in Table 3.

3.2 GROUNDWATER

3.2.1 Elevation and Gradient

Depth-to-water measurements ranged from 13.33 feet below grade surface (bgs) in well EW-1 to 9.92 feet bgs in well OMW-9 (Table 4). Groundwater flow appears to be trending to the west and southwest towards the San Francisco Bay, with an approximate gradient of 0.04 ft/ft (Drawing 3).

3.2.2 Results of Chemical Analyses

Groundwater analytical results made available during Q4/90 indicate no significant changes in the onsite groundwater quality (Table 5). Well MW-4 is sampled in semiannual cycle and was not sampled this quarter. Wells EW-1, MW-5 and MW-8, located along the site boundaries, contained no detectable chemical concentrations. Analytical results from this round of quarterly sampling have further confirmed the upgradient northeastern contaminant plume boundary, established in Q4/89.

In the offsite area, cross and downgradient from the site, all monitoring wells showed detectable chemical concentration levels. Water quality data from the offsite wells indicate that the contaminant plume is extended in the downgradient direction to the west. Offsite well OMW-6, located approximately 30 feet downgradient from the site, indicated that the dissolved petroleum hydrocarbon plume extends into 40th Street. Based on the available offsite soil and groundwater quality data, the possibility of offsite contamination source cannot presently be excluded.

SECTION 4

NEXT QUARTER ACTIVITIES

4.1 PROPOSED ACTIVITIES

Based on the information collected to date, no modifications to the Work Plan are proposed for Q1/91.

4.2 PROPOSED ACTIVITIES

The following activities will be conducted in Q1, 1991:

(1) Continue monitoring groundwater conditions.

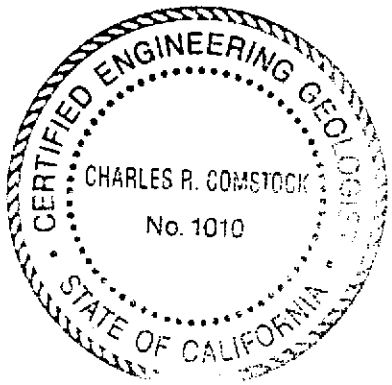
(2) Submit Q1/91 Report.

CERTIFICATION

This report of activities for the Shell Oil Company facility at 500 40th 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,



BOJAN GUSTINCIC
Project Geologist

CHARLES R. COMSTOCK
Technical Director

PRIMARY CONTACTS

Shell Oil Company Facility
500 40th Street
Oakland, California

Quarter 4, 1990

Regional Water Quality Control Board Representative:	Ms. Penny Silzer San Francisco Bay Regional Water Quality Control Board 1800 Harrison Street, Room 700 Oakland, California 94612
LIA Representative:	Mr. Rafat Shahid Alameda County Department of Health Services 80 Swan Way Oakland, California 94621
Shell Engineer:	Mr. Jack Brastad Shell Oil Company 1390 Willow Pass Road, Suite 900 Concord, California 94520
Converse Project Manager:	Mr. Bojan Gustincic Converse Environmental West 55 Hawthorne, Suite 500 San Francisco, California 94105
Registered Geologist in Charge:	Mr. Charles R. Comstock Converse Environmental West 55 Hawthorne Street, Suite 500 San Francisco, California 94105
Site Owner:	Shell Oil Company

BIBLIOGRAPHY

BIBLIOGRAPHY

Allen, B.A., 1989, Investigation and remediation fuel leak sites, guidelines for investigation and technical report preparation, Santa Clara Valley Water District, March.

California Regional Water Quality Control Board, San Francisco Bay Region, 1986, Water quality control plan, San Francisco Bay Basin Region (2), December.

California Regional Water Quality Control Board, 1988, Regional Board staff recommendations for initial evaluation and investigation of underground tanks, June 2, 1988.

California State Water Resources Control Board, 1985, California Administrative Code, Title 23 Waters, Chapter 3 Water Resources Control Board, Subchapter 16 Underground Tank Regulations, effective August 13, 1985.

_____, 1988, Leaking underground fuel tank field manual: guidelines for site assessment, cleanup, and underground storage tank closure, May 24, 1988.

_____, 1989, LUFT field manual revision, April 5, 1989.

Converse Environmental West, 1989, Work Plan, Shell Oil Company facility, 500 40th Street, Oakland, California, dated April, 1989.

_____, 1990, Report of Activities, Quarter 1, 1990, Shell Oil Company Facility, 500 40th Street, Oakland, California, March, 1990.

Helley, E.J., La Joie, K.R., Spangle, W.E., and Blair, M.L., 1979, Flatland deposits of the San Francisco Bay Region, California - their geology and engineering properties, and their importance to comprehensive planning, U.S. Geological Survey Professional Paper 943, 88 p.

Radbruch, Dorothy H., 1969, Areal and Engineering Geology of the Oakland East Quadrangle, California, U.S. Geological Survey, 1969.

TABLE 1. ACTIVITY SUMMARY - QUARTER 4, 1990

Shell Oil Company Site
500 40th Street
Oakland, California

	PERCENT COMPLETE			
	Quarter 4, 1990		Total to Date	
Activity	Onsite	Offsite	Onsite	Offsite
Soil Characterization	0	0	40	5
Groundwater Characterization (Dissolved Product)	0	0	35	10
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

NOTE:

NA Not Applicable

TABLE 2. RECOMMENDED MINIMUM VERIFICATION ANALYSES FOR UNDERGROUND TANK LEAKS

From: RWQCB Guidelines for Additional Fuel Tank Leaks (Revised August 10, 1990)

HYDROCARBON LEAK	SOIL ANALYSIS		WATER ANALYSIS	
Unknown Fuel	TPH-g	GCFID (5030)	TPH-g	GCFID (5030)
	TPH-d	GCFID (3550)	TPH-d	GCFID (3510)
	BTEX	8020 or 8240	BTEX	602, 624 or 8260
	TPH & BTEX	8260	BTEX	602, 624 or 8260
Leaded Gas	TPH-g	GCFID (5030)	TPH-g	GCFID (5030)
	BTEX	8020 or 8240	BTEX	602, 624 or 8260
	TPH & BTEX	8260	BTEX	602, 624 or 8260
	TOTAL LEAD	AA	TOTAL LEAD	AA
		OPTIONAL		
	TEL	DHS-LUFT	TEL	DHS-LUFT
	EDB	DHS-AB1803	EDB	DHS-AB1803
Unleaded Gas	TPH-g	GCFID (5030)	TPH-g	GCFID (5030)
	BTEX	8020 or 8240	BTEX	602, 624 or 8260
	TPH & BTEX	8260		
Diesel	TPH-d	GCFID (3550)	TPH-d	GCFID (3510)
	BTEX	8020 or 8240	BTEX	602, 624 or 8260
	TPH & BTEX	8260		
Jet Fuel	TPH-d	GCFID (3550)	TPH-d	GCFID (3510)
	BTEX	8020 or 8240	BTEX	602, 624 or 8260
	TPH & BTEX	8260		
Kerosene	TPH-d	GCFID (3550)	TPH-d	GCFID (3510)
	BTEX	8020 or 8240	BTEX	602, 624 or 8260
Fuel/Heating Oil	TPH-d	GCFID (3550)	TPH-d	GCFID (3510)
	BTEX	8020 or 8240	BTEX	602, 624 or 8260
Chlorinated Solvents	CL HC	8010 or 8240	CL HC	601 or 624
	BTEX	8020 or 8240	BTEX	602 or 624
	CL HC & BTEX	8260	CL HC & BTEX	8260
Non Chlorinated Solvents	TPH-d	GCFID (3550)	TPH-d	GCFID (3510)
	BTEX	8020 or 8240	BTEX	602 or 624
	TPH & BTEX	8260	TPH & BTEX	8260
Waste and Used Oil or Unknown	TPH-g	GCFID (5030)	TPH-g	5520 C&F
	TPH-d	GCFID (3550)	TPH-d	GCFID (3510)
	TPH & BTEX	8260		
	O & G	5520 D&F	O & G	5520 C&F
	BTEX	8020 or 8240	BTEX	602, 624 or 8260
	CL HC	8010 or 8240	CL HC	601 or 624
	ICAP or AA TO DETECT METALS:		Cd, Cr, Pb, Zn, Ni	
	METHOD 8270 FOR SOIL OR WATER TO DETECT:			
	PCB*		PCB*	
	PCP*		PCP*	
	PNA		PNA	
	CREOSOTE		CREOSOTE	

*If found analyze for dibenzofurans (PCBs) or dioxins (PCP)

TABLE 3. SOIL ANALYTICAL RESULTS (PPM)

Shell Oil Company Site
500 40th Street
Oakland, California

Boring No.	Sample Depth (ft. bgs)	TPH-g	TPH-d	TPH-mo	Benzene	Toluene	Ethyl-Benzene	Xylene	Total Lead
MW-2	5,10,15	<10	<10	<10	<0.025	0.028	<0.075	<0.075	0.4
MW-2	10	<10	<10	<10	<0.025	<0.025	<0.075	<0.075	1.0
MW-3	5,10,15	28	<10	<10	0.054	0.032	<0.075	0.099	<0.2
MW-3	5,10,15	<10	<10	<10	<0.025	<0.025	<0.075	<0.075	<0.2
MW-4	10	<10	<10	<10	<0.025	<0.025	<0.075	<0.075	<0.2
MW-4	5,10	<10	<10	<10	<0.025	<0.025	<0.075	<0.075	<0.2
MW-5	4	<10	<10	<10	<0.025	<0.025	<0.075	<0.075	12
MW-5	8	<10	<10	27	<0.025	<0.025	<0.075	<0.075	5.3
MW-5	12	<10	<10	18	<0.025	<0.025	<0.075	<0.075	3.3
MW-5	16	<10	<10	<10	<0.025	<0.025	<0.075	<0.075	5.7
OMW-6	5	<10	1	<10	<0.025	<0.025	<0.075	<0.075	4.3
OMW-6	10	18	17	<10	0.028	0.040	0.10	0.45	3.2
OMW-6	15	<10	<1	<10	<0.025	<0.025	<0.075	<0.075	3.6
OMW-9	5	<10	<1.0	<10	<0.025	<0.025	<0.075	<0.075	3.1
OMW-9	10	210	40	<10	0.064	0.46	1.1	6.3	2.6
OMW-9	15	11	<1.0	<10	<0.025	<0.025	<0.075	<0.075	4.3
OMW-9	20	<10	<1.0	<10	<0.025	<0.025	<0.075	<0.075	3.1
OMW-10	5	<1.0	<1.0	<10	<2.5	<2.5	<2.5	<2.5	5.5
OMW-10	10	<1.0	<1.0	<10	20	4.4	8.4	24	4.3
OMW-10	15	<1.0	<1.0	<10	<2.5	<2.5	<2.5	<2.5	6.9
MW-8	6	<1.0	<1.0	<10.0	<0.0025	<0.0025	<0.0025	<0.0025	5.4
MW-8	10	<1.0	<1.0	<10.0	<0.0025	<0.0025	<0.0025	<0.0025	5.4
MW-8	15	<1.0	<1.0	<10.0	<0.0025	0.0027	<0.0025	<0.0025	4.4
MW-8	20	<1.0	<1.0	<10.0	<0.0025	<0.0025	<0.0025	<0.0025	5.8
EW-1	6	<1.0	<1.0	21.0	<0.0025	<0.0025	<0.0025	0.0081	9.1
EW-1	10	110	4.4	<10.0	0.028	0.380	0.410	1.600	3.3
EW-1	15	<1.0	<1.0	<10.0	<0.0025	0.005	<0.0025	0.0029	3.0
EW-1	20	<1.0	<1.0	<10.0	<0.0025	<0.0025	<0.0025	<0.0025	4.8

TABLE 4. GROUNDWATER MONITORING INFORMATION

Shell Oil Company Site
500 40th Street
Oakland, California

Well No.	Date Monitored	Well Elevation (ft msl)	Depth to Water (ft bgs)	Water Table Elevation (ft msl)	Petroleum Odor In Water	Floating Product Thickness (inches)	Comments
EW-1	8/28/90	78.26	13.11	65.15	No	0.0	
EW-1	**11/16/90**		**13.33**	**64.93**	**No**	**0.0**	
MW-2	6/19/89	80.80	11.91	68.89	No	0.0	
MW-2	7/18/89		11.98	68.82	No	0.0	
MW-2	8/08/89		12.00	68.80	Yes	0.0	
MW-2	9/11/89		12.00	68.80	No	0.0	
MW-2	10/10/89		12.05	68.75	Yes	0.0	
MW-2	1/05/90		10.95	69.85	No	0.0	
MW-2	3/02/90		11.54	69.26	Yes	0.0	
MW-2	5/31/90		11.08	69.72	Yes	0.0	
MW-2	8/28/90		12.02	68.78	Yes	0.0	
MW-2	**11/16/90**		**12.81**	**67.99**	**Yes**	**0.0**	
MW-3	6/19/89	79.60	10.99	68.61	No	0.0	
MW-3	7/18/89		11.05	68.55	Yes	0.0	
MW-3	8/08/89		11.07	68.53	Yes	0.0	
MW-3	9/11/89		11.02	68.58	Yes	0.0	
MW-3	10/10/89		11.08	68.52	Yes	0.0	
MW-3	1/05/90		10.97	68.63	No	0.0	
MW-3	3/02/90		10.91	68.69	Yes	0.0	
MW-3	5/31/90		10.23	69.37	No	0.0	
MW-3	8/28/90		11.02	68.58	No	0.0	
MW-3	**11/16/90**		**11.17**	**68.43**	**No**	**0.0**	
MW-4	6/19/89	81.00	12.18	68.82	No	0.0	
MW-4	7/18/89		12.21	68.79	No	0.0	
MW-4	8/08/89		12.23	68.77	No	0.0	
MW-4	9/11/89		12.26	68.74	No	0.0	
MW-4	10/10/89		12.28	68.72	No	0.0	
MW-4	1/05/90		12.25	68.50	No	0.0	
MW-4	3/02/90		11.63	69.37	No	0.0	
MW-4	5/31/90		11.52	69.48	No	0.0	
MW-4	8/28/90		12.26	68.74	No	0.0	
MW-4	**11/16/90**		**12.40**	**68.60**	**No**	**0.0**	
MW-5	10/10/89	81.50	11.08	70.42	No	0.0	
MW-5	1/05/90		12.96	68.54	No	0.0	
MW-5	3/02/90		12.66	68.84	No	0.0	
MW-5	5/31/90		12.39	69.11	No	0.0	
MW-5	8/28/90		12.94	68.56	No	0.0	
MW-5	**11/16/90**		**13.05**	**68.45**	**No**	**0.0**	
MW-8	8/28/90	79.91	12.95	66.96	No	0.0	
MW-8	**11/16/90**		**13.05**	**66.86**	**No**	**0.0**	

TABLE 4 (cont'd). GROUNDWATER MONITORING INFORMATION

Shell Oil Company Site
500 40th Street
Oakland, California

Well No.	Date Monitored	Well Elevation (ft msl)	Depth to Water (ft bgs)	Water Table Elevation (ft msl)	Petroleum Odor In Water	Floating Product Thickness (inches)	Comments
OMW-6	1/05/90	77.90	10.23	67.67	No	0.0	
OMW-6	3/02/90		9.40	68.50	No	0.0	
OMW-6	6/1/90		9.81	68.09	Yes	0.0	
OMW-6	8/28/90		10.18	67.72	Yes	0.0	
OMW-6	**11/16/90**		**10.70**	**67.20**	**Yes**	**0.0**	
OMW-9	1/05/90	77.71	9.90	67.81	No	0.0	
OMW-9	3/04/90		9.20	68.51	Yes	0.0	
OMW-9	6/1/90		9.50	68.21	Yes	0.0	
OMW-9	8/28/90		9.88	67.83	No	0.0	
OMW-9	**11/16/90**		**9.92**	**67.79**	**Yes**	**0.0**	
OMW-10	1/05/90	77.91	9.92	67.99	No	0.0	
OMW-10	3/04/90		9.20	68.71	No	0.0	
OMW-10	6/1/90		9.42	68.49	Yes	0.0	
OMW-10	8/28/90		9.89	68.02	No	0.0	
OMW-10	**11/16/90**		**10.03**	**67.88**	**No**	**0.0**	

NOTES:

ft bgs feet below ground surface
Boldface indicates work completed this quarter.

TABLE 5. RESULTS OF GROUNDWATER CHEMICAL ANALYSES

Shell Oil Company Site
500 40th Street
Oakland, California

Well No.	Sample Date	Concentration (mg/l) TPH-g	TPH-d	Benzene	Toluene	Ethyl-Benzene	Xylenes	Lead
MW-2	06/20/89	0.8	<0.01	0.046	0.0068	0.0027	0.056	NA
MW-2	07/18/89	1.4	0.4	0.033	0.0056	0.024	0.073	0.003
MW-2	08/08/89	0.230	0.50	0.0045	<0.0005	<0.0015	0.011	NA
MW-2	09/11/89	0.50	0.31	0.019	0.0023	<0.0015	0.010	NA
MW-2	10/10/89	2.0	0.81	0.077	0.0084	0.024	0.150	NA
MW-2	01/05/90	2.0	0.56	0.038	0.0056	0.030	0.059	NA
MW-2	03/02/90	1.9	0.58	0.095	0.0005	0.083	0.200	NA
MW-2	05/31/90	4.1	0.57	0.170	<0.0005	0.100	0.33	NA
MW-2[1]	05/31/90	5.2	0.51	0.200	<0.0005	0.120	0.39	NA
MW-2	08/28/90	1.4	0.31	0.044	<0.0005	0.0029	0.067	NA
MW-2	**11/16/90**	**0.88**	**0.36**	**0.027**	**0.0019**	**0.034**	**0.005**	**NA**
MW-3	06/20/89	2.3	<0.1	0.18	0.15	0.054	0.800	NA
MW-3	07/18/89	1.5	9.1	0.085	0.034	0.010	0.120	0.002
MW-3	08/08/89	2.5	0.71	0.13	0.073	0.0035	0.330	NA
MW-3	09/11/89	1.9	0.23	0.18	0.074	0.0037	0.110	NA
MW-3	10/10/89	2.6	1.2	0.069	0.055	0.0063	0.300	NA
MW-3	01/05/90	2.7	0.76	0.051	0.041	0.028	0.070	NA
MW-3	03/02/90	2.3	0.57	0.23	0.8	0.055	0.230	NA
MW-3[1]	03/02/90	2.3	0.56	0.22	0.8	0.53	0.230	NA
MW-3	05/31/90	1.9	0.460	0.140	0.048	0.044	0.180	NA
MW-3	08/28/90	1.5	0.28	0.140	0.050	0.038	0.170	NA
MW-3[1]	08/28/90	1.5	0.26	0.140	0.04905	0.036	0.170	NA
MW-3	**11/16/90**	**5.1**	**1.0**	**0.140**	**0.076**	**0.042**	**0.240**	**NA**
MW-4	06/20/89	<0.05	<0.01	<0.0005	<0.0015	<0.0015	<0.0015	NA
MW-4	07/18/89	<0.05	<0.05	<0.0005	<0.0015	<0.0015	<0.0015	0.003
MW-4	08/08/89	<0.05	<0.05	<0.0005	<0.0005	<0.0015	<0.0015	NA
MW-4	09/11/89	<0.05	<0.05	<0.0005	<0.0005	<0.0015	<0.0015	NA
MW-4	10/10/89	<0.05	<0.05	<0.0005	<0.0005	<0.0015	<0.0015	NA
MW-4	01/05/90	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-4	03/02/90	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-4	05/31/90	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-4	NS							
MW-5	10/10/89	<0.05	<0.05	<0.0005	<0.0005	<0.0015	<0.0015	NA
MW-5	01/05/90	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-5	03/02/90	<0.05	0.11	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-5	05/31/90	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.005	NA
MW-5	08/28/90	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-5	**11/16/90**	**<0.05**	**<0.05**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**

TABLE 5 (cont'd). RESULTS OF GROUNDWATER CHEMICAL ANALYSES

Shell Oil Company Site
500 40th Street
Oakland, California

Well No.	Sample Date	Concentration (mg/l) TPH-g	TPH-d	Benzene	Toluene	Ethyl-benzene	Xylenes	Lead
OMW-6	01/05/90	22	6.5	1.4	1.8	0.56	1.500	NA
OMW-6	03/04/90	27	4.6	1.3	1.4	0.63	2.400	NA
OMW-6[1]	03/04/90	25	4.8	1.2	1.3	0.55	2.300	NA
OMW-6	06/01/90	23	4.6	1.3	0.79	0.44	2.400	NA
OMW-6	08/28/90	16	3.3	1.10	0.580	0.220	1.400	NA
OMW-6	**11/16/90**	**24**	**9.1**	**1.0**	**0.870**	**0.490**	**3.600**	**NA**
OMW-9	01/05/90	4.3	1.6	0.097	0.12	0.091	0.290	NA
OMW-9	03/04/90	2.6	1.0	0.058	0.024	0.0081	0.075	NA
OMW-9	06/01/90	2.9	0.49	0.085	0.020	0.013	0.085	NA
OMW-9	08/28/90	1.5	0.26	0.140	0.049	0.036	0.170	NA
OMW-9	**11/16/90**	**1.3**	**0.87**	**0.0092**	**0.014**	**0.0035**	**0.098**	**NA**
OMW-10	01/05/90	<0.05	0.20	0.034	0.0011	0.0043	0.013	NA
OMW-10	03/04/90	0.29	0.39	0.053	0.0015	0.0043	0.015	NA
OMW-10	06/01/90	0.73	0.30	0.100	0.0019	0.015	0.025	NA
OMW-10	08/28/90	0.36	0.36	0.064	0.0006	0.0022	0.0057	NA
OMW-10[2]	**11/16/90**	**<0.05**	**0.22**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**
MW-8	7/03/90	0.16	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-8	**11/16/90**	**<0.05**	**<0.05**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**NA**
EW-1	7/03/90	0.40	<0.05	0.0032	0.0009	0.0007	0.0040	NA
EW-1[1,2]	11/16/90	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	NA

NOTES:

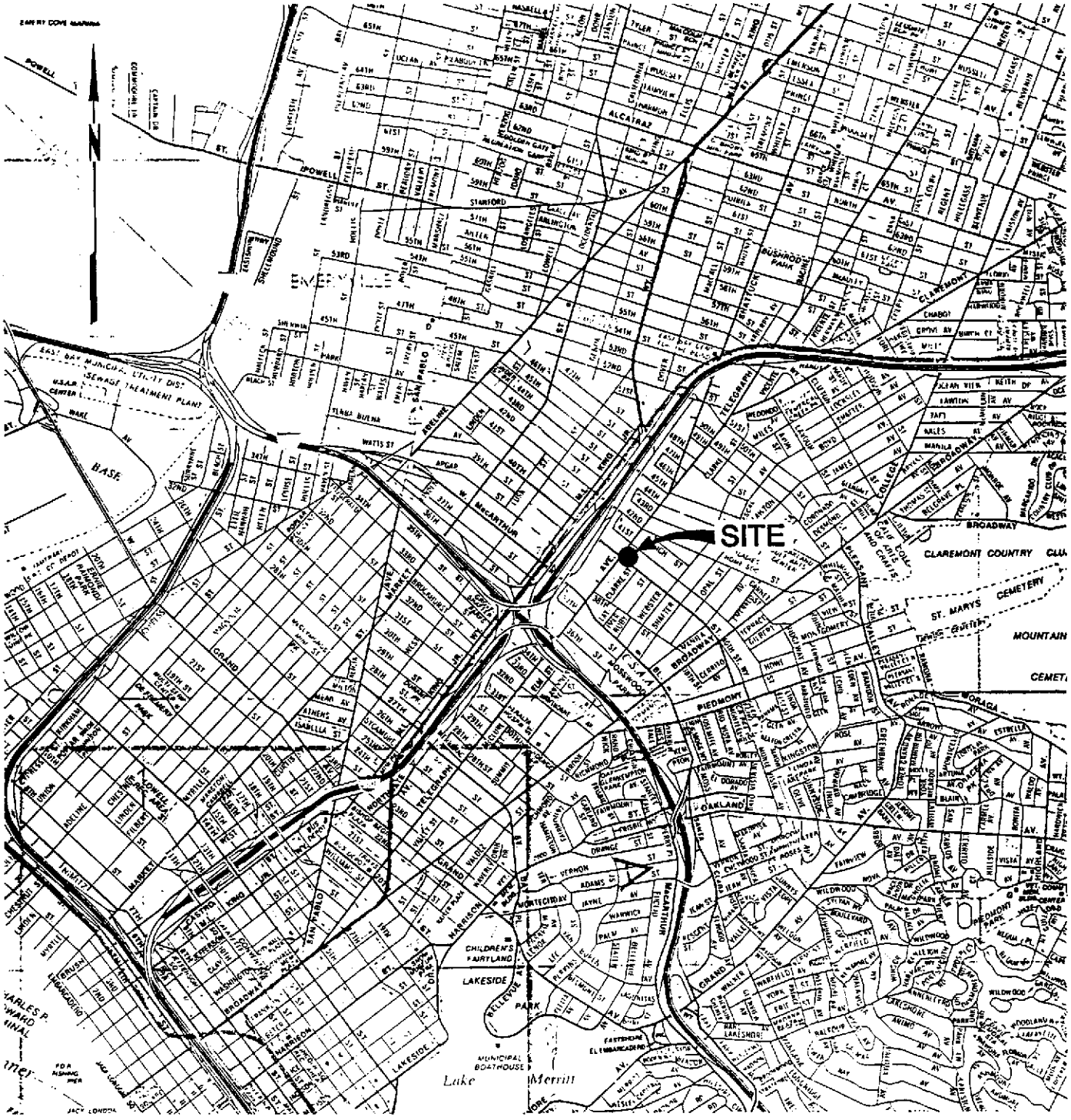
[1] duplicate sample
Boldface indicates work completed this quarter.
ppm part per million
TPH-g total petroleum hydrocarbons as gasoline (GCFID)
TPH-d total petroleum hydrocarbons as diesel (GCFID)
TPH-mo total petroleum hydrocarbons as motor oil (GCFID)
NA not analyzed
NS not sampled this quarter
[2] EW-1 and MW-10 showing the presence of TPH-mo (0.64 mg/L)

TABLE 6. SUMMARY OF GROUNDWATER MONITORING WELL INSTALLATIONS

Shell Oil Site
500 50th Street
Oakland, California

Well No.	Date Installed	Diameter Well Bore (in.)	Initial Water Table (ft. bgs)	Static Water Table (ft. MSL)	T.D. (ft. bgs)	Screen (ft. bgs)	Bentonite Seal (ft. bgs)	Grout Seal (ft.bgs)
MW-2	5/22/89	12	15.5	68.78	25	20.0-9.0	9.0-7.0	7.0-0
MW-3	5/23/89	12	15.3	68.58	21	19.0-9.5	9.5-8.0	8.0-0
MW-4	5/23/89	12	13.0	68.54	20	15.5-9.5	9.5-7.5	7.5-0
MW-5	9/19/89	12	18.5	68.56	20	20.0-10.0	9.0-8.0	8.0-0
OMW-6	10/16/89	12	16.0	67.72	20	10.5-20.0	9.0-8.0	8.0-0
OMW-9	11/13/89	12	NA	67.72	30	17.5-7.5	6.5-5.5	5.5-0
OMW-10	11/13/89	12	NA	68.02	20	16.0-6.0	5.0-4.0	4.0-0
MW-8	6/27/90	12	20	66.96	39	39.-19	18-16	16-0
EW-1	6/28/90	12	24'	65.15	39	38.5-24.5	23-20	20-0

DRAWINGS



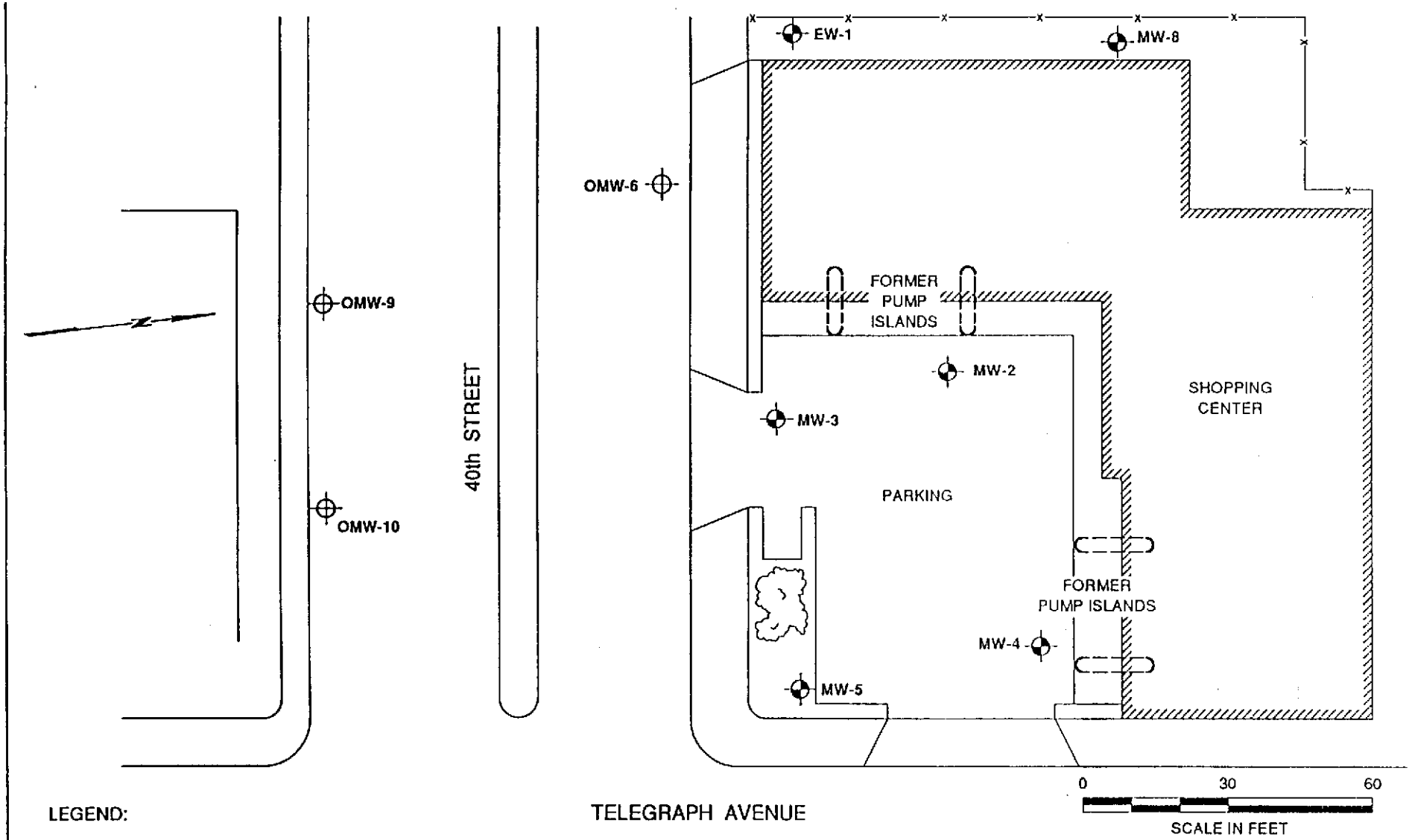
SOURCE: California State Automobile Association.

SITE LOCATION MAP

SHELL OIL COMPANY
500 40th Street
Oakland, California

Scale: AS SHOWN	Project No.: 88-44-361-20
Prepared by: KGC	Date: 9/30/90
Checked by: BG	Drawing No.: 1
Approved by: CRC	

Converse Environmental West



LEGEND:

SB-1 ○ SOIL BORING

MW-1 ⊕ GROUNDWATER MONITORING WELL

OMW-1 ⊕ OFFSITE GROUNDWATER MONITORING WELL

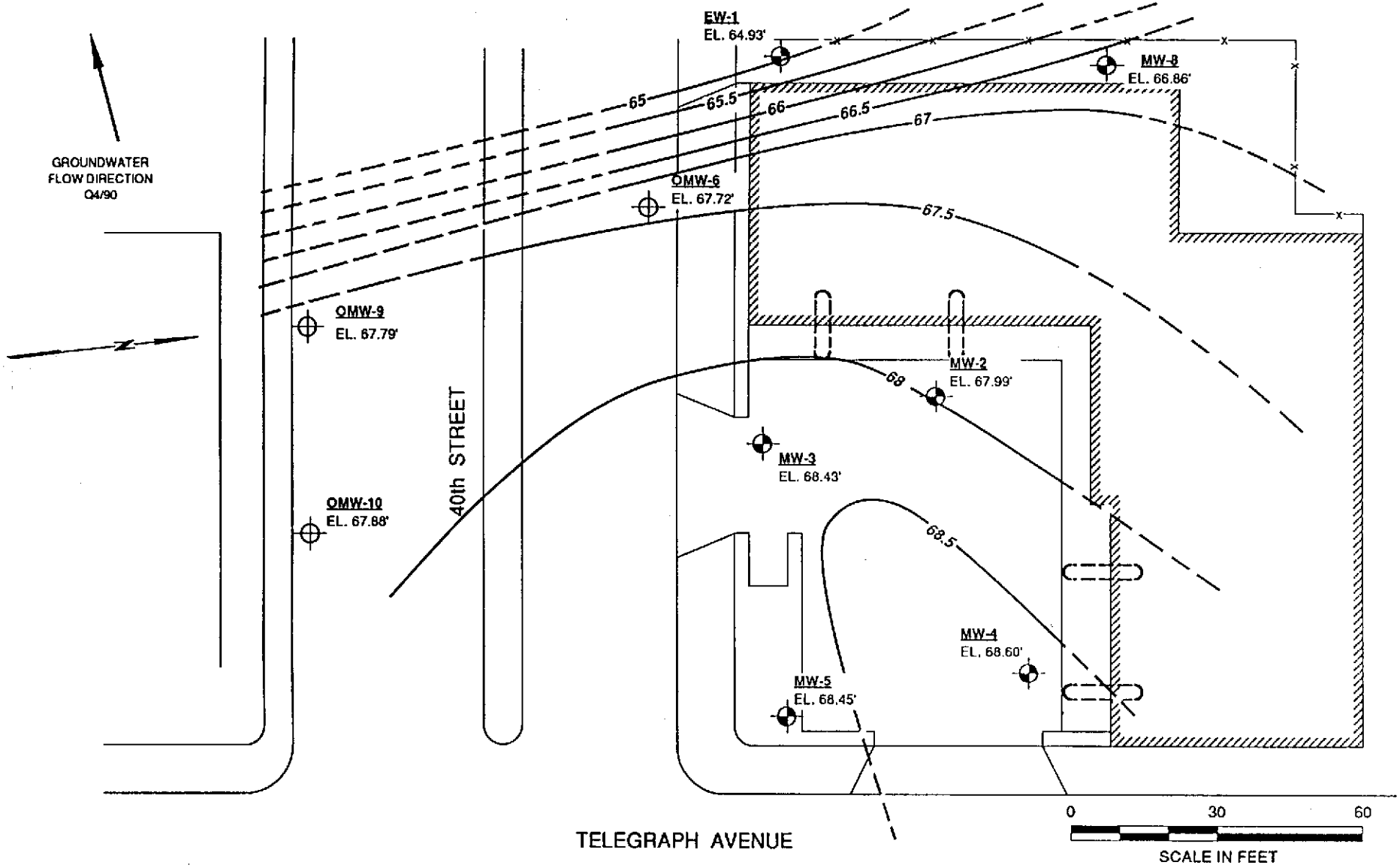
Base Map: Surveyed with Electronic Distance Meter by CEW, 1989

PLOT PLAN

SHELL OIL COMPANY
500 40th Street
Oakland, California

Converse Environmental West

Scale: AS SHOWN	Project No.: 88-44-361-20
Prepared by: CCH/CRB	Date: 12/7/90
Checked by: CCH	Drawing No.: 2
Approved by: BG	



Base Map: Surveyed with Electronic Distance Meter by CEW, 1989

GROUND WATER CONTOUR MAP Q4/90

SHELL OIL COMPANY
500 40th Street
Oakland, California

Converse Environmental West

Scale: AS SHOWN	Project No.: 88-44-361-20
Prepared by: CCH/CRB	Date: 12/7/90
Checked by: CCH	Drawing No.: 3
Approved by: BG	

APPENDIX A

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 facility. 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 facility.

Date	Description of Activity
7/82	IT installed 8 six inch diameter groundwater monitoring wells to 30 feet below ground surface (bgs) onsite. The wells were screened from 5 to 30 feet bgs. Combustible vapors were detected in the storm sewer system in the BART Station across the street.
7/82	IT Progress Report 1: Well installations and constructions were reported, and free product was noted in wells B-7 and B-8. Groundwater gradient was shown to be westward, towards the BART Station.
11/82	IT Progress Report 6: Groundwater gradient still towards well B-3. From September 1 to November 19, 1982, IT removed 35 pints of product from B-4. Well tops of casings (TOCs) were re-surveyed and groundwater gradient was confirmed toward B-3. Maximum product thickness was in B-4, at several inches.
12/82	IT Progress Report 7: Product thickness increased in B-3 in apparent response to rising water table. Product in B-4 remained at several inches.
1/83	IT Progress Report 8: Product in B-4 had diminished to film thickness.
2/83	IT Progress Report 9: Rainfall records were researched, and the relationship between rainfall, water table and product removed was charted by graph. Amount of product in B-4 appeared to vary inversely with water table; as water table rose with winter rains, the amount product in B-4 dropped. IT proposed that product was displaced downgradient as water table rose.
3/83	IT Progress Report 10: Vapor concentrations of TPH (expressed as percent lower explosive limit) were rising in wells B-1, B-2, B-3 and B-7. No product was measurable in B-4.
6/83	Rapid reappearance of product in well B-4, from negligible in May to 4+ feet by June 30 and 6.34 feet on July 15. Increase was also measured B-3, to a thickness of 0.66 feet in July. IT concluded that a reservoir of product existed in the tank backfill, and that as water table dropped in summer time this reservoir was allowed to escape by way of gravel lenses which were saturated at high water table seasons.
7/83	IT installed 8 inch diameter monitoring wells B-9 and B-10 to 20 feet bgs in native soils next to the tank backfill.
8/83	IT Progress Report 11: IT repeated the concept that product was released in surges through gravel lenses exposed to the water table during summer.

CHRONOLOGICAL SUMMARY (continued)

Date	Description of Activity
8/83	IT installed groundwater monitoring well B-11 and sand backfill in the southwest corner of the tank bed. No free-flowing product was encountered in this well.
9/83	IT drilled two 18 inch diameter borings to 30 feet bgs and completed same as 12 inch diameter recovery wells with screen intervals from 5 to 30 feet bgs. These wells, R-1 and R-2, were located near wells B-3 and B-4, directly west of the tank backfill.
10/83	IT purged and developed wells R-1 and R-2, holding a strong depression on the water table for 2 hours.
11/83	According to IT reference, the tanks were removed and, as part of this excavation wells R-1 and R-2 were also removed. No information was provided on tank excavation or associated soils/groundwater testing and reporting to regulatory agencies.
1/84	IT Progress Report 13: Wells B-3 and B-4 continued to contain measurable product, to thicknesses of 2 feet. In general, product thicknesses decreased during December and January. Product thicknesses also decreased after tank removal. Groundwater piezometric map showed a westward-trending, low area encompassing wells R-1, R-2, B-3 and B-4. This extended offsite, suggesting a paleodrainage which controlled product collection and migration offsite.
5/84	IT Report: The thicknesses of product in B-3 and B-4 measured from several inches to one foot during the period January to May 1984.
7/84	IT Report: Product thicknesses increased starting in mid-May in response to lowering water tables. This pattern was similar to the pattern observed in 1983.
8/84	IT Report: The thickness of product in B-3 remained one foot, while the amount of product in B-4 decreased. IT recommended looking for possible upgradient offsite sources.
9/84	IT Report: The thickness of product in B-4 started to increase (still at less than one inch) while the thickness of product in B-3 decreased (still on the order of one foot).
10/84	IT Report: New construction was noted.
1/85	IT Report: The thickness of product of B-3 had decreased to several inches and B-4 contained negligible measurable product. This pattern of decreasing product in the winter (high water table) months was consistent with that observed in the winters of 1982-83, and 1983-84.
2/85	IT Report: Significant measurable gasoline (1.64 feet) was discovered in B-8. The gasoline appeared degraded and "old". IT concluded that this gasoline could be from the same source as that contributing to observed in wells B-3 and B-4.
6/85	IT Report: Product thicknesses in B-3, B-4 and B-8 decreased from January to mid-May, with a dramatic decrease in B-8. IT repeated its interpretation that product thickness decreased as water tables rose and increased as water tables fell. IT further proposed that the product was trapped in permeable lenses, and migrated to different geographic areas as the water tables rose and fell.

CHRONOLOGICAL SUMMARY (continued)

Date	Description of Activity
12/85	IT Report: The thickness of product in B-3 increased to approximately 2 feet during the summer, showing the seasonal increase of prior years period. Simultaneously, no product was measured in B-8 after June 3, and product reappeared in B-2 in September and October. Product thickness in B-4 fluctuated at less than one foot thick during this period. IT recommended installing a recovery extraction trench along the west boundary of the property.
5/86	IT Quarterly Report: Product thickness decreased in wells B-3 and B-4 in response to seasonal rise in the water table.
6/86	IT requested permission to abandon B-6.
7/86	IT stated that Shell planned to remove the underground storage tanks in the near future.
8/86	IT Quarterly Report: IT noted seasonal decline in water table and negligible measurable product in wells B-2 and B-4, with approximately 2 feet of floating product in B-3.
9/86	A groundwater sample from B-3 contained volatile organics: 0.90 ppm; benzene: 0.32 ppm; toluene: 0.23 ppm; xylene: 0.16 ppm.
1/04/87(?)	A commercial shopping center building was erected on the property, covering wells B-2, B-6, B-7, B-9 and B-10. Wells B-1, B-3, B-4, B-5 and B-8 were covered by site parking and a rear driveway.
1/89	Shell transfers project to CEW.
4/07/89	Revised Work Plan submitted to RWQCB.
5/23/89	Monitoring wells MW-2, MW-3 and MW-4 installed, soil sampled.
6/20/89	Groundwater sampled, wells MW-2 through MW-4.
7/07/89	CEW issued Quarterly Report.
7/19/89	Groundwater sampled, wells MW-2 through MW-4.
8/01/89	Right-of-Entry Agreement sent to property owners of 518 40th Street.
8/08/89	Groundwater was sampled, wells MW-2 through MW-4.
9/11/89	Groundwater was sampled, wells MW-2 through MW-4.
9/19/89	CEW installed well MW-5; soils were sampled and analyzed.
10/10/89	Groundwater was sampled MW-2 through MW-5.
10/16/89	CEW installed well OMW-6; soils were sampled and analyzed.
10/17/89	CEW installed boring SB-1; soils sampled and analyzed; and bored OMW-9. During well drilling, Loma Prieta Earthquake struck. Oakland municipal services were severely disrupted.

CHRONOLOGICAL SUMMARY (continued)

Date	Description of Activity
10/21/89	OMW-9 pilot boring was sealed.
11/13/89	OMW-9 boring was reamed and the well installed. OMW-10 installed; soils sampled and analyzed. Proposed well OMW-8 boring attempted and abandoned; location was in sewer main backfill.
11/17/89	Discharge permit application for interim groundwater treatment system submitted to EBMUD.
12/01/89	OMW-6 was developed.
12/10/89	OMW-10 and OMW-9 were developed.
1/5/90	CEW sampled groundwater wells MW-2, MW-3, MW-4, MW-5, OMW-6, OMW-9 and OMW-10.
8/89-3/90	Ongoing unsuccessful attempts to gain right-of-entry for installation of extraction wells EW-11 and EW-12, as the commencement of onsite groundwater remediation. This process has continued without resolution since August, 1989.
2/15-20/90	Conducted underground utilities location survey in the west alley behind the building; survey was needed for the proposed groundwater monitoring well location selection.
3/2-3/4/90	CEW sampled groundwater wells MW-2, MW-3, MW-4, MW-5, OMW-6, OMW-9 and OMW-10.
3/22/90	Shell obtained the right-of-entry agreement from the owners of 518 40th Street.
5/31-6/1/90	CEW sampled groundwater wells MW-2, MW-3, MW-4, MW-5 OMW-6, OMW-9 and OMW-10.
6/27-28/90	CEW installed onsite wells MW-8 and EW-1.
7/03/90	CEW sampled groundwater from wells MW-8 and EW-1.
8/28-29/90	CEW sampled groundwater monitoring wells MW-2 through MW-5, OMW-6, OMW-9 and OMW-10.
11/16/90	**CEW sampled groundwater monitoring wells MW-2, MW-3, MW-5, MW-8, OMW-6, OMW-9, OMW-10 and extraction well EW-1.**

NOTE:

Bold indicates work completed this quarter.

APPENDIX B

ANALYTICAL LABORATORY REPORTS AND CHAIN-OF-CUSTODY FORMS

NATIONAL ENVIRONMENTAL TESTING, INC.

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

Bojan Gustincic
Converse Consultants
55 Hawthorne St, Ste 500
San Francisco, CA 94105

Date: 11-30-90
NET Client Acct No: 18.02
NET Pacific Log No: 5002
Received: 11-16-90 1809

Client Reference Information

SHELL, 500 40th Street/Telegraph Rd.; Project: 88-44-361-20

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)

NET Pacific, Inc.

Client No: 18.02 Date: 11-30-90
Client Name: Converse Consultants
NET Log No: 5002 Page: 2

Ref: SHELL, 500 40th Street/Telegraph Rd.; Project: 88-44-361-20

			Descriptor, Lab No. and Results		
			OMW-6 11-16-90 1245	EW-1 11-16-90 1255	
Parameter	Method	Reporting Limit	68823	68824	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			50	1	
DATE ANALYZED			11-27-90	11-27-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	24	ND	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			50	1	
DATE ANALYZED			11-27-90	11-27-90	
Benzene		0.5	1000	ND	ug/L
Ethylbenzene		0.5	490	ND	ug/L
Toluene		0.5	870	ND	ug/L
Xylenes, total		0.5	3600	ND	ug/L
PETROLEUM HYDROCARBONS			--	--	
EXTRACTABLE (WATER)			--	--	
DILUTION FACTOR *			2	1	
DATE EXTRACTED			11-23-90	11-23-90	
DATE ANALYZED			11-28-90	11-28-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	9.1	ND	mg/L
as Motor Oil		0.5	ND	0.64	mg/L

NET Pacific, Inc.

Client No: 18.02 Date: 11-30-90
Client Name: Converse Consultants
NET Log No: 5002 Page: 3

Ref: SHELL, 500 40th Street/Telegraph Rd.; Project: 88-44-361-20

			Descriptor, Lab No. and Results		
			901116 11-16-90 1300	MW-8 11-16-90 1305	
Parameter	Method	Reporting Limit	68825	68826	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			11-27-90	11-27-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	ND	ND	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			11-27-90	11-27-90	
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			11-23-90	11-23-90	
DATE ANALYZED			11-28-90	11-28-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	ND	ND	mg/L
as Motor Oil		0.5	0.59	ND	mg/L

NET

NET Pacific, Inc.

Client No: 18.02 Date: 11-30-90
Client Name: Converse Consultants
NET Log No: 5002 Page: 4

Ref: SHELL, 500 40th Street/Telegraph Rd.; Project: 88-44-361-20

			Descriptor, Lab No. and Results		
			MW-3 11-16-90 1315	MW-2 11-16-90 1330	
Parameter	Method	Reporting Limit	68827	68828	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			10	1	
DATE ANALYZED			11-28-90	11-27-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	5.1	0.88	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			10	1	
DATE ANALYZED			11-28-90	11-27-90	
Benzene		0.5	140	27	ug/L
Ethylbenzene		0.5	42	34	ug/L
Toluene		0.5	76	1.9	ug/L
Xylenes, total		0.5	240	5.0	ug/L
PETROLEUM HYDROCARBONS			--	--	
EXTRACTABLE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE EXTRACTED			11-23-90	11-23-90	
DATE ANALYZED			11-28-90	11-28-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	1.0	0.36	mg/L
as Motor Oil		0.5	ND	ND	mg/L

NET Pacific, Inc.

Client No: 18.02 Date: 11-30-90
Client Name: Converse Consultants
NET Log No: 5002 Page: 5

Ref: SHELL, 500 40th Street/Telegraph Rd.; Project: 88-44-361-20

			Descriptor, Lab No. and Results		
			MW-5 11-16-90 1340	OMW-9 11-16-90 1345	
Parameter	Method	Reporting Limit	68829	68830	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			11-27-90	11-27-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	ND	1.3	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			11-27-90	11-27-90	
Benzene		0.5	ND	9.2	ug/L
Ethylbenzene		0.5	ND	3.5	ug/L
Toluene		0.5	ND	14	ug/L
Xylenes, total		0.5	ND	98	ug/L
PETROLEUM HYDROCARBONS			--	--	
EXTRACTABLE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE EXTRACTED			11-23-90	11-23-90	
DATE ANALYZED			11-28-90	11-28-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	ND	0.37	mg/L
as Motor Oil		0.5	ND	ND	mg/L

NET Pacific, Inc.

Client No: 18.02 Date: 11-30-90
Client Name: Converse Consultants
NET Log No: 5002 Page: 6

Ref: SHELL, 500 40th Street/Telegraph Rd.; Project: 88-44-361-20

			Descriptor, Lab No. and Results		
			OMW-10 11-16-90 1355	field blank 11-16-90 1400	
Parameter	Method	Reporting Limit	68831	68832	Units
PETROLEUM HYDROCARBONS			--	--	
VOLATILE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			11-27-90	11-27-90	
METHOD GC FID/5030			--	--	
as Gasoline		0.05	ND	ND	mg/L
METHOD 602			--	--	
DILUTION FACTOR *			1	1	
DATE ANALYZED			11-27-90	11-27-90	
Benzene		0.5	ND	ND	ug/L
Ethylbenzene		0.5	ND	ND	ug/L
Toluene		0.5	ND	1.1	ug/L
Xylenes, total		0.5	ND	0.9	ug/L
PETROLEUM HYDROCARBONS			--	--	
EXTRACTABLE (WATER)			--	--	
DILUTION FACTOR *			1	1	
DATE EXTRACTED			11-23-90	11-23-90	
DATE ANALYZED			11-28-90	11-28-90	
METHOD GC FID/3510			--	--	
as Diesel		0.05	0.22	ND	mg/L
as Motor Oil		0.5	0.64	ND	mg/L

NET Pacific, Inc.

Client No: 18.02 Date: 11-30-90
Client Name: Converse Consultants
NET Log No: 5002 Page: 7

Ref: SHELL, 500 40th Street/Telegraph Rd.; Project: 88-44-361-20

Parameter	Method	Reporting Limit	Descriptor, Lab No. and Results trip blank 11-12-90 68833	Units
PETROLEUM HYDROCARBONS			--	
VOLATILE (WATER)			--	
DILUTION FACTOR *			1	
DATE ANALYZED			11-23-90	
METHOD GC FID/5030			--	
as Gasoline		0.05	ND	mg/L
METHOD 602			--	
DILUTION FACTOR *			1	
DATE ANALYZED			11-23-90	
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			11-23-90	
DATE ANALYZED			11-28-90	
METHOD GC FID/3510			--	
as Diesel		0.05	ND	mg/L
as Motor Oil		0.5	ND	mg/L

NET Pacific, Inc.

Client Acct: 18.02
Client Name: Converse Consultants
NET Log No: 5002

Date: 11-30-90
Page: 8

Ref: SHELL, 500 40th Street/Telegraph Rd.; Project: 88-44-361-20

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	97	ND	87	98	12
Benzene	0.5	ug/L	80	ND	88	100	13
Toluene	0.5	ug/L	88	ND	91	103	12
Gasoline	0.05	mg/L	97	ND	70	89	24
Benzene	0.5	ug/L	80	ND	71	92	26
Toluene	0.5	ug/L	88	ND	76	93	20
Gasoline	0.05	mg/L	101	ND	107	111	3.7
Benzene	0.5	ug/L	90	ND	104	108	3.8
Toluene	0.5	ug/L	96	ND	101	107	5.8
COMMENT: Blank Results were ND on other analytes tested.							
Diesel	0.05	mg/Kg	108	ND	38	36	1.5
Motor Oil	0.5	mg/Kg	108	ND	N/A	N/A	N/A

NET Pacific, Inc.

KEY TO ABBREVIATIONS and METHOD REFERENCES

<	:	Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
*	:	Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
ICVS	:	Initial Calibration Verification Standard (External Standard).
mean	:	Average; sum of measurements divided by number of measurements.
mg/Kg (ppm)	:	Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
mg/L	:	Concentration in units of milligrams of analyte per liter of sample.
mL/L/hr	:	Milliliters per liter per hour.
MPN/100 mL	:	Most probable number of bacteria per one hundred milliliters of sample.
N/A	:	Not applicable.
NA	:	Not analyzed.
ND	:	Not detected; the analyte concentration is less than applicable listed reporting limit.
NTU	:	Nephelometric turbidity units.
RPD	:	Relative percent difference, 100 [Value 1 - Value 2]/mean value.
SNA	:	Standard not available.
ug/Kg (ppb)	:	Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
ug/L	:	Concentration in units of micrograms of analyte per liter of sample.
umhos/cm	:	Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

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

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

SM: see "Standard Methods for the Examination of Water & Wastewater, 16th Edition, APHA, 1985.

WIC# 204-5508-4103
AFE # 086610
EXP CODE 5440

CONVERSE ENVIRONMENTAL WEST

CHAIN OF CUSTODY RECORD

PM: Bo G. (5002)

PROJECT NO.: 88-44-361-20
PROJECT NAME / CROSS STREET: 500 40th St @ SHELL TELEGRAPH RD.
SAMPLERS: (Signature) Michelle Mason

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	ANALYSES: TPH-G	BTEX	TPH-D				REMARKS
OMW-6	11/16/90	12:45		X	40 mL VOA	3	X	X					STANDARD TURNAROUND TIME
OMW-6	11/16/90	12:45		X	1 - Litre Amber	2			X				
EW-1	11/16/90	12:55		X	40 mL VOA	3	X	X					
EW-1	11/16/90	12:55		X	1 - Litre Amber	2			X				
901116	11/16/90	1:00		X	40 mL VOA	3	X	X					Detection Limits:
901116	11/16/90	1:00		X	1 - Litre Amber	2			X				
MW-8	11/16/90	1:05		X	40 mL VOA	3	X	X					TPH-G : 0.05 ppm
MW-8	11/16/90	1:05		X	1 - Litre Amber	2			X				BTEX : 0.0005 ppm
MW-3	11/16/90	1:15		X	40 mL VOA	4	X	X					TPH-D : 0.05 ppm
MW-3	11/16/90	1:15		X	1 - Litre Amber	3			X				
MW-2	11/16/90	1:30		X	40 mL VOA	3	X	X					
MW-2	11/16/90	1:30		X	1 - Litre Amber	2			X				

RELINQUISHED BY: (Signature) Michelle Mason	DATE: 11/16/90 TIME: 16:00	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE: 11/16 TIME: 1730 MDT 16:30
RECEIVED BY: (Signature)				
RELINQUISHED BY: (Signature)	DATE: 11/16/90 TIME: 1800	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)	DATE: 11-16-90 TIME: 1809
COURIER FROM AIRPORT: (Signature)				

WIC# 204-5508-4903
AFE# 086610
EXP CODE 5440
PM: Bo G (SOUZ)

CONVERSE ENVIRONMENTAL WEST

CHAIN OF CUSTODY RECORD

PROJECT NO.: 88-44-361-20
PROJECT NAME / CROSS STREET: 500 40th St. @ TELEGRAPH SHELL
SAMPLERS: (Signature) Michelle Nasr

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	ANALYSES: TPH-G	BTEX	TPH-D				REMARKS
MW-5	11/16/90	1:40		X	40mL VOA	3	X	X					STANDARD TURNAROUND TIME
MW-5	11/16/90	1:40		X	1-Litre Amber	2			X				
OMW-9	11/16/90	1:45		X	40 mL VOA	3	X	X					
OMW-9	11/16/90	1:45		X	1-Litre Amber	2			X				
OMW-10	11/16/90	1:55		X	40 mL VOA	3	X	X					
OMW-10	11/16/90	1:55		X	1-Litre Amber	2			X				Detection Limits:
FIELD BLANK	11/16/90	2:00			40 mL VOA	1	X	X					
FIELD BLANK	11/16/90	2:00			1-Litre Amber	1			X				TPH-G - 0.05 ppm
TRIP BLANK	11/16/90	11/12/90			40 mL VOA	1	X	X					BTEX 0.0005 ppm
TRIP BLANK	11/16/90	10/30/90			1-Litre Amber	1			X				TPH-D - 0.05 ppm

RELINQUISHED BY: (Signature) Michelle Nasr	DATE: 11/16/90 TIME: 16:09	RECEIVED BY: (Signartue) Jeff Nickle	RELINQUISHED BY: (Signature) Jeff Nickle	DATE: 11/16 TIME: 11730	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE: 11/16/90 TIME: 1800	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: 11-16-90 TIME: 1809	COURIER FROM AIRPORT: (Signature)