



**BP OIL**

BP Oil Company  
Environmental Resources Management  
Building 13, Suite N  
295 SW 41st Street  
Renton, Washington 98055-4931  
(206) 251-0667

August 16, 1995

Mr. Ed So  
California Regional Water Quality Control Board  
San Francisco Bay Region  
2101 Webster Street, Suite 500  
Oakland CA 94612

**RE: BP OIL FACILITY #11109  
4280 Foothill Blvd  
Oakland CA**

Dear Mr. So:

Attached please find our **GROUNDWATER MONITORING AND SAMPLING REPORT DATED June 5, 1995** for the above referenced facility. Activities for the next quarter include continued operation of the remediation system and groundwater monitoring.

If you should have any questions regarding this site, I may be reached at (206) 251-0689.

Respectfully,

Scott T. Hooton  
Environmental Resources Management  
Group Leader

STH:aa msword\ERM11109

cc: Mr. Barney Chan, Alameda County Health Care Services Agency  
1131 Harbour Bay Parkway, Room 250, Alameda CA 94502-6577

Mr. Mark Miller, Chevron U.S.A., 2410 Camino Ramon, San Ramon, CA 94583

Mr. Brady Nagle, Alisto Engineering Group, 1777 Oakland Blvd., Suite 200, Walnut Creek, CA 94596

Mr. Larry Silva, TOSCO Northwest, 601 Union Street, Suite 2500, Seattle WA 98101

Site File

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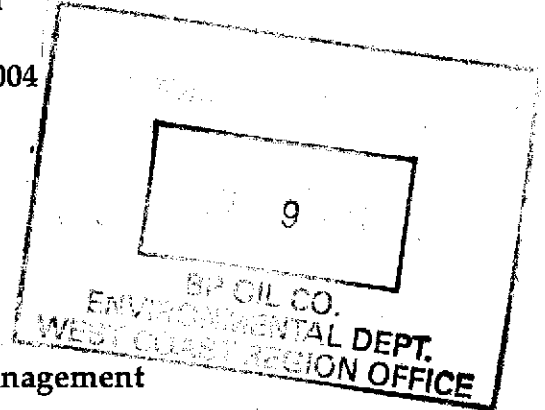
**GROUNDWATER MONITORING AND SAMPLING REPORT**

**BP Oil Company Service Station No. 11109  
4280 Foothill Boulevard  
Oakland, California**

**Project No. 10-014-03-004**

**Prepared for:**

**BP Oil Company  
Environmental Resources Management  
295 S.W. 41st Street  
Building 13, Suite N  
Renton, Washington**



**Prepared by:**

**Alisto Engineering Group  
1575 Treat Boulevard, Suite 201  
Walnut Creek, California**

**June 5, 1995**

**Brady Nagle  
Project Manager**

**Al Sevilla, P.E.  
Principal**



# GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11109  
4280 Foothill Boulevard  
Oakland, California

Project No. 10-014-03-004

June 5, 1995

## INTRODUCTION

This report presents the results and findings of the March 30, 1995 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11109, 4280 Foothill Boulevard, Oakland, California. A site vicinity map is shown in Figure 1.

## FIELD PROCEDURES

Field activities were performed in accordance with the procedures and guidelines of the Alameda County Health Care Services Agency and the California Regional Water Quality Control Board, San Francisco Bay Region.

Before purging and sampling, the groundwater level in each well was measured from a permanent mark on top of the casing to the nearest 0.01 foot using an electronic sounder. The depth to groundwater and top of casing elevation data were used to calculate the groundwater elevation in each well relative to mean sea level. The survey data and groundwater elevation measurements collected to date are presented in Table 1.

Depth to groundwater measurements for the Chevron U.S.A. service station, 4625 Foothill Boulevard, are presented in Table 2, and groundwater measurements for the Shell service station, 4411 Foothill Boulevard, are presented in Table 3.

Before sample collection, each well was purged of 3 casing volumes, while recording field readings of pH, temperature, electrical conductivity, and dissolved oxygen. Groundwater samples were collected for laboratory analysis by lowering a bottom-fill, disposable bailer to just below the water level in the well. The samples were transferred from the bailer into laboratory-supplied containers. The water sampling field survey forms are presented in Appendix A.



## **SAMPLING AND ANALYTICAL RESULTS**

The results of monitoring and laboratory analysis of the groundwater samples for this and previous quarters are summarized in Table 1. The potentiometric groundwater elevations as interpreted from the results of this monitoring event are shown in Figure 2. The results of groundwater analysis are shown in Figure 3. The laboratory report and chain of custody record are presented in Appendix B.



TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11109  
 4280 FOOTHILL BOULEVARD, OAKLAND, CALIFORNIA

ALJSTO PROJECT NO. 10-014

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/L)	TPH-D (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	TOG (ug/L)	HVOC (ug/L)	DO (ppm)	LAB
MW-1	01/31/90	38.19	15.41	0.00	22.78	--	--	--	--	--	--	--	--	--	--
MW-1	(c) 02/05/90	38.19	--	0.00	--	--	--	--	--	--	--	--	--	--	--
MW-2	02/05/90	41.22	21.91	0.00	19.31	1300	--	14	ND<1.0	9	13	--	--	--	SUP
MW-2	02/14/91	41.22	21.16	0.00	20.06	ND<50	ND<10000	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5000	51 (d)	--	SUP
MW-2	05/13/91	41.22	21.32	0.00	19.90	ND<50	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	6000	0.5 (e)	--	SUP
MW-2	07/24/91	41.22	22.92	0.00	18.30	--	--	--	--	--	--	--	--	--	--
MW-2	10/03/91	41.22	24.90	0.00	16.32	ND<50	ND<50	ND<0.3	0.8	ND<0.3	ND<0.3	ND<5000	0.7 (e)	--	SUP
MW-2	10/15/91	41.22	24.10	0.00	17.12	--	--	--	--	--	--	--	--	--	--
MW-2	12/04/91	41.22	INACCESSIBLE	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	12/16/91	41.22	23.95	0.00	17.27	--	--	--	--	--	--	--	--	--	--
MW-2	01/06/92	41.22	23.30	0.00	17.92	ND<50	ND<50	ND<0.3	ND<0.3	ND<0.3	ND<0.3	ND<5000	ND	--	ANA
MW-2	01/22/92	41.22	23.14	0.00	18.08	--	--	--	--	--	--	--	--	--	--
MW-2	01/28/92	41.22	22.99	0.00	18.23	--	--	--	--	--	--	--	--	--	--
MW-2	02/05/92	41.22	22.63	0.00	18.59	--	--	--	--	--	--	--	--	--	--
MW-2	02/12/92	41.22	22.04	0.00	19.18	--	--	--	--	--	--	--	--	--	--
MW-2	02/17/92	41.22	20.84	0.00	20.38	--	--	--	--	--	--	--	--	--	--
MW-2	04/03/92	41.22	18.29	0.00	22.93	--	--	--	--	--	--	--	--	--	--
MW-2	04/08/92	41.22	18.86	0.00	22.36	ND<50	63	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	ND	--	ANA
MW-2	04/14/92	41.22	19.45	0.00	21.77	--	--	--	--	--	--	--	--	--	--
MW-2	04/29/92	41.22	20.35	0.00	20.87	--	--	--	--	--	--	--	--	--	--
MW-2	05/07/92	41.22	20.84	0.00	20.38	--	--	--	--	--	--	--	--	--	--
MW-2	07/03/92	41.22	22.34	0.00	18.88	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-2	10/08/92	41.22	23.73	0.00	17.49	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-2	12/31/92	41.22	21.12	0.00	20.10	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-2	04/21/93	41.22	17.68	0.00	23.54	ND<50	ND<50 (f)	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	ND	--	PACE
MW-2	07/07/93	41.22	20.30	0.00	20.92	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	1.0 (e)	--	PACE
MW-2	09/21/93	41.22	21.93	0.00	19.29	ND<50	--	0.9	0.7	0.7	2.6	--	--	--	PACE
MW-2	12/17/93	41.22	21.48	--	19.74	--	--	--	--	--	--	--	--	--	--
MW-2	12/23/93	41.22	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	0.7	--	--	--	PACE
MW-2	04/07/94	41.22	20.25	--	20.97	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	5.9	PACE
MW-2	07/06/94	41.22	20.59	--	20.63	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	3.1	PACE
MW-2	10/07/94	41.22	22.04	--	19.18	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	2.8	PACE
MW-2	01/27/95	41.22	26.12	--	15.10	ND<50	440	ND<0.5	ND<0.5	ND<0.5	ND<1	ND<5000	--	4.8	ATI
MW-2	03/30/95	41.22	12.34	--	28.88	ND<50	--	ND<0.50	ND<0.50	ND<0.50	ND<1.0	--	--	7.2	ATI

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 BP OIL COMPANY SERVICE STATION NO. 11109  
 4280 FOOTHILL BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-014

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/L)	TPH-D (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	TOG (ug/L)	HVOC (ug/L)	DO (ppm)	LAB
MW-3	02/05/90	40.74	17.45	0.00	23.29	1400	--	15	ND<2.5	11	8	--	--	--	SUP
MW-3	02/14/91	40.74	18.52	0.00	22.22	320	--	8	ND<0.3	8	1	--	--	--	SUP
MW-3	05/13/91	40.74	19.32	0.00	21.42	640	--	13	ND<0.3	18	1	--	--	--	SUP
MW-3	07/24/91	40.74	20.69	0.00	20.05	--	--	--	--	--	--	--	--	--	--
MW-3	10/03/91	40.74	19.47	0.00	21.27	940	--	21	ND<0.3	23	2.1	--	--	--	SUP
MW-3	10/15/91	40.74	20.46	0.00	20.28	--	--	--	--	--	--	--	--	--	--
MW-3	12/04/91	40.74	18.29	0.00	22.45	--	--	--	--	--	--	--	--	--	--
MW-3	12/16/91	40.74	18.34	0.00	22.40	--	--	--	--	--	--	--	--	--	--
MW-3	01/06/92	40.74	18.50	0.00	22.24	580	--	6.1	1	6.1	7.1	--	--	--	ANA
MW-3	01/22/92	40.74	17.86	0.00	22.88	--	--	--	--	--	--	--	--	--	--
MW-3	01/28/92	40.74	15.84	0.00	24.90	--	--	--	--	--	--	--	--	--	--
MW-3	02/05/92	40.74	17.53	0.00	23.21	--	--	--	--	--	--	--	--	--	--
MW-3	02/12/92	40.74	17.15	0.00	23.59	--	--	--	--	--	--	--	--	--	--
MW-3	02/17/92	40.74	16.18	0.00	24.56	--	--	--	--	--	--	--	--	--	--
MW-3	04/03/92	40.74	14.80	0.00	25.94	--	--	--	--	--	--	--	--	--	--
MW-3	04/08/92	40.74	17.06	0.00	23.68	1100	--	30	4.6	32	11	--	--	--	ANA
MW-3	04/14/92	40.74	15.22	0.00	25.52	--	--	--	--	--	--	--	--	--	--
MW-3	04/29/92	40.74	15.90	0.00	24.84	--	--	--	--	--	--	--	--	--	--
MW-3	05/07/92	40.74	16.35	0.00	24.39	--	--	--	--	--	--	--	--	--	--
MW-3	07/03/92	40.74	17.74	0.00	23.00	1200	--	38	ND<2.5	24	ND<2.5	--	--	--	ANA
MW-3	10/08/92	40.74	19.06	0.00	21.68	1400	--	31	ND<0.5	25	13	--	--	--	ANA
MW-3	12/31/92	40.74	16.61	0.00	24.13	820	--	12	4.1	13	6.9	--	--	--	ANA
QC-1	(g) 12/31/92	40.74	--	--	--	960	--	11	3.6	10	3.8	--	--	--	ANA
MW-3	04/21/93	40.74	14.24	0.00	26.50	420	--	5.8	ND<0.5	3.9	1.4	--	--	--	PACE
QC-1	(g) 04/21/93	40.74	--	--	--	390	--	5.0	ND<0.5	3.7	1.5	--	--	--	PACE
MW-3	07/07/93	40.13	(h) 15.19	0.00	24.94	54	--	0.8	0.6	ND<0.5	ND<0.5	--	--	--	PACE
MW-3	08/21/93	40.13	16.58	0.00	23.55	540	--	7.9	0.9	4.7	2.4	--	--	--	PACE
MW-3	12/17/93	40.13	15.82	--	24.31	--	--	--	--	--	--	--	--	--	--
MW-3	12/23/93	40.13	--	--	--	500	--	9.8	1.5	3.3	2.1	--	--	--	PACE
QC-1	(g) 12/23/93	40.13	--	--	--	480	--	9.2	ND<0.5	5.4	5.3	--	--	--	PACE
MW-3	04/07/94	40.13	28.50	--	11.83	460	--	20	7.4	8.9	11	--	--	--	PACE
QC-1	(g) 04/07/94	40.13	--	--	--	480	--	20	7.7	9.0	11	--	--	--	PACE
MW-3	07/06/94	40.13	--	--	--	300	--	10	0.6	1.7	6.4	--	--	4.8	PACE
MW-3	10/07/94	40.13	27.65	(i) --	12.48	620	--	28	ND<0.5	2.2	12	--	--	4.4	PACE
MW-3	01/27/95	40.13	27.65	(i) --	12.48	--	--	--	--	--	--	--	--	--	--
MW-3	03/30/95	40.13	26.05	--	14.08	300	--	10	6.0	3.4	18	--	--	7.6	ATI

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ALISTO PROJECT NO. 10-014

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/L)	TPH-D (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	TOG (ug/L)	HVOC (ug/L)	DO (ppm)	LAB
MW-4	02/05/90	40.11	20.75	--	19.36	620	--	ND<0.5	9	ND<0.5	10	--	--	--	SUP
MW-4	02/14/91	40.11	21.73	--	18.38	180	--	ND<0.3	ND<0.3	0.4	2	--	--	--	SUP
MW-4	05/13/91	40.11	18.55	--	21.56	72	--	0.7	ND<0.3	ND<0.3	ND<0.3	--	--	--	SUP
MW-4	07/24/91	40.11	21.31	--	18.80	--	--	--	--	--	--	--	--	--	--
MW-4	10/03/91	40.11	22.57	--	17.54	57	--	ND<0.3	ND<0.3	ND<0.3	ND<0.3	--	--	--	SUP
MW-4	10/15/91	40.11	22.88	--	17.23	--	--	--	--	--	--	--	--	--	--
MW-4	12/04/91	40.11	22.54	--	17.57	--	--	--	--	--	--	--	--	--	--
MW-4	12/16/91	40.11	22.59	--	17.52	--	--	--	--	--	--	--	--	--	--
MW-4	01/06/92	40.11	22.00	--	18.11	480	--	0.8	3.2	1.9	7.7	--	--	--	ANA
MW-4	01/22/92	40.11	21.58	--	18.53	--	--	--	--	--	--	--	--	--	--
MW-4	01/28/92	40.11	21.42	--	18.69	--	--	--	--	--	--	--	--	--	--
MW-4	02/05/92	40.11	21.10	--	19.01	--	--	--	--	--	--	--	--	--	--
MW-4	02/12/92	40.11	20.74	--	19.37	--	--	--	--	--	--	--	--	--	--
MW-4	02/17/92	40.11	19.78	--	20.33	--	--	--	--	--	--	--	--	--	--
MW-4	04/03/92	40.11	16.80	--	23.31	--	--	--	--	--	--	--	--	--	--
MW-4	04/08/92	40.11	17.13	--	22.98	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-4	04/14/92	40.11	17.74	--	22.37	--	--	--	--	--	--	--	--	--	--
MW-4	04/29/92	40.11	18.56	--	21.55	--	--	--	--	--	--	--	--	--	--
MW-4	05/07/92	40.11	19.10	--	21.01	--	--	--	--	--	--	--	--	--	--
MW-4	07/03/92	40.11	20.71	--	19.40	ND<50	--	0.6	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-4	10/08/92	40.11	22.43	--	17.68	270	--	ND<0.5	2.1	2.5	3.2	--	--	--	ANA
MW-4	12/31/92	40.11	19.58	--	20.53	150	--	ND<0.5	ND<0.5	ND<0.5	1.3	--	--	--	ANA
MW-4	04/21/93	40.11	17.79	--	22.32	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
MW-4	07/07/93	40.11	18.44	--	21.67	160	--	1.2	5.4	3.8	19	--	--	--	PACE
MW-4	09/21/93	40.11	20.14	--	19.97	71	--	ND<0.5	1.9	ND<0.5	2.1	--	--	--	PACE
MW-4	12/17/93	40.11	19.90	--	20.31	--	--	--	--	--	--	--	--	--	--
MW-4	12/23/93	40.11	--	--	--	ND<50	--	3.1	1.6	0.8	3.8	--	--	--	PACE
MW-4	04/07/94	40.11	19.12	--	20.99	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	6.6	PACE
MW-4	07/06/94	40.11	19.90	--	20.21	62	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	4.1	PACE
MW-4	10/07/94	40.11	20.07	--	20.04	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	3.6	PACE
MW-4	01/27/95	40.11	13.72	--	26.39	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<1	--	--	2.7	ATI
MW-4	03/30/95	40.11	11.46	--	28.65	ND<50	--	ND<0.50	ND<0.50	ND<0.50	ND<1.0	--	--	8.3	ATI
MW-5	10/03/91	39.55	18.08	0.00	21.47	79000	--	13000	7400	1400	6200	--	--	--	SUP
MW-5	10/15/91	39.55	18.55	0.00	21.00	--	--	--	--	--	--	--	--	--	--
MW-5	12/04/91	39.55	18.44	0.13	21.21	--	--	--	--	--	--	--	--	--	--
MW-5	12/16/91	39.55	18.66	0.01	20.90	--	--	--	--	--	--	--	--	--	--
MW-5	01/08/92	39.55	19.12	0.11	20.51	--	--	--	--	--	--	--	--	--	--
MW-5	01/22/92	39.55	14.59	0.00	24.96	--	--	--	--	--	--	--	--	--	--
MW-5	01/28/92	39.55	15.25	0.00	24.30	--	--	--	--	--	--	--	--	--	--
MW-5	02/05/92	39.55	15.58	SHEEN	23.97	--	--	--	--	--	--	--	--	--	--
MW-5	02/12/92	39.55	15.54	0.01	24.02	--	--	--	--	--	--	--	--	--	--
MW-5	02/17/92	39.55	13.98	SHEEN	25.57	--	--	--	--	--	--	--	--	--	--
MW-5	04/03/92	39.55	13.63	0.04	25.85	--	--	--	--	--	--	--	--	--	--
MW-5	04/08/92	39.55	13.17	0.01	26.39	--	--	--	--	--	--	--	--	--	--
MW-5	04/14/92	39.55	13.45	0.01	28.11	--	--	--	--	--	--	--	--	--	--
MW-5	04/29/92	39.55	13.75	0.07	25.85	--	--	--	--	--	--	--	--	--	--
MW-5	05/07/92	39.55	16.15	0.04	23.43	--	--	--	--	--	--	--	--	--	--
MW-5	07/03/92	39.55	17.67	0.08	21.94	--	--	--	--	--	--	--	--	--	--
MW-5	09/01/92	39.55	17.83	0.50	22.10	--	--	--	--	--	--	--	--	--	--
MW-5	10/08/92	39.55	17.66	0.92	22.38	--	--	--	--	--	--	--	--	--	--
MW-5	12/31/92	39.55	15.20	SHEEN	24.35	--	--	--	--	--	--	--	--	--	--
MW-5	04/21/93	39.55	12.64	0.02	26.93	--	--	--	--	--	--	--	--	--	--
MW-5	07/07/93	39.14	12.68	0.82	27.08	--	--	--	--	--	--	--	--	--	--
MW-5	09/21/93	39.14	14.35	SHEEN	24.79	--	--	--	--	--	--	--	--	--	--
MW-5	12/17/93	39.14	12.61	0.41	26.84	--	--	--	--	--	--	--	--	--	--
MW-5	04/07/94	39.14	30.00	--	9.14	66000	--	3000	1700	250	6800	--	--	--	PACE
MW-5	07/06/94	39.14	--	--	--	29000	--	1900	330	63	2700	--	--	--	PACE
MW-5	10/07/94	39.14	28.70	(f)	10.44	250000	--	2600	660	830	5200	--	--	4.2	PACE
QC-1	(g)	39.14	--	--	--	45000	--	2900	540	260	2600	--	--	--	PACE
MW-5	01/27/95	39.14	28.70	(f)	10.44	--	--	--	--	--	--	--	--	--	--
MW-5	03/30/95	39.14	28.95	--	10.19	50000	--	7900	2600	520	6400	--	--	5.5	ATI
QC-1	(g)	39.14	--	--	--	43000	--	7900	2500	440	6200	--	--	--	ATI

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11109  
 4280 FOOTHILL BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-014

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION(a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/L)	TPH-D (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	TOG (ug/L)	HVOC (ug/L)	DO (ppm)	LAB
MW-6	10/03/91	41.59	20.73	0.00	20.86	ND<50	---	0.7	0.8	ND<0.3	1.3	---	---	---	SUP
MW-6	10/15/91	41.59	21.20	0.00	20.39	---	---	---	---	---	---	---	---	---	---
MW-6	12/04/91	41.59	21.26	0.00	20.33	---	---	---	---	---	---	---	---	---	---
MW-6	12/16/91	41.59	21.12	0.00	20.47	---	---	---	---	---	---	---	---	---	---
MW-6	01/08/92	41.59	20.29	0.00	21.30	ND<50	---	ND<0.5	ND<0.5	ND<0.5	1.6	---	---	---	ANA
MW-6	01/22/92	41.59	20.12	0.00	21.47	---	---	---	---	---	---	---	---	---	---
MW-6	01/28/92	41.59	20.20	0.00	21.39	---	---	---	---	---	---	---	---	---	---
MW-6	02/05/92	41.59	20.09	0.00	21.50	---	---	---	---	---	---	---	---	---	---
MW-6	02/12/92	41.59	19.15	0.00	22.44	---	---	---	---	---	---	---	---	---	---
MW-6	02/17/92	41.59	18.02	0.00	23.57	---	---	---	---	---	---	---	---	---	---
MW-6	04/03/92	41.59	16.62	0.00	24.97	---	---	---	---	---	---	---	---	---	---
MW-6	04/08/92	41.59	17.06	0.00	24.53	ND<50	---	0.6	ND<0.5	0.8	ND<0.5	---	---	---	ANA
MW-6	04/14/92	41.59	17.23	0.00	24.36	---	---	---	---	---	---	---	---	---	---
MW-6	04/29/92	41.59	18.12	0.00	23.47	---	---	---	---	---	---	---	---	---	---
MW-6	05/07/92	41.59	18.62	0.00	23.07	---	---	---	---	---	---	---	---	---	---
MW-6	07/03/92	41.59	19.71	0.00	21.88	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	ANA
MW-6	10/08/92	41.59	21.22	0.00	20.37	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	ANA
QC-1	(g) 10/08/92	41.59	21.22	0.00	20.37	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	ANA
MW-6	12/31/92	41.59	21.33	0.00	20.28	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	ANA
MW-6	04/21/93	41.59	18.45	0.00	25.14	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-6	07/07/93	41.59	18.68	0.00	22.91	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-6	09/21/93	41.59	19.64	0.00	21.95	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-6	12/17/93	41.59	21.08	---	20.51	---	---	---	---	---	---	---	---	---	---
MW-6	12/23/93	41.59	---	---	---	ND<50	---	ND<0.5	0.5	ND<0.5	0.6	---	---	---	PACE
MW-6	04/07/94	41.59	21.27	---	20.32	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	6.1	PACE
MW-6	07/06/94	41.59	19.81	---	21.78	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	4.0	PACE
QC-1	(g) 07/06/94	41.59	---	---	---	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-6	10/07/94	41.59	21.25	---	20.34	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	3.5	PACE
MW-6	01/27/95	41.59	12.39	---	29.20	ND<50	---	ND<0.5	ND<0.5	ND<0.5	ND<1	---	---	4.2	ATI
MW-6	03/30/95	41.59	11.34	---	30.25	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	6.1	ATI
MW-7	10/03/91	40.84	14.93	0.00	25.71	360	---	62	13	3.4	20	---	---	---	SUP
MW-7	10/15/91	40.84	15.16	0.00	25.48	---	---	---	---	---	---	---	---	---	---
MW-7	12/04/91	40.84	15.41	0.00	25.23	---	---	---	---	---	---	---	---	---	---
MW-7	12/16/91	40.84	15.21	0.00	25.43	---	---	---	---	---	---	---	---	---	---
MW-7	01/08/92	40.84	14.56	0.00	26.08	1100	---	170	ND<0.5	24	23	---	---	---	ANA
MW-7	01/22/92	40.84	14.63	0.00	26.01	---	---	---	---	---	---	---	---	---	---
MW-7	01/28/92	40.84	14.73	0.00	25.91	---	---	---	---	---	---	---	---	---	---
MW-7	02/05/92	40.84	14.58	0.00	26.06	---	---	---	---	---	---	---	---	---	---
MW-7	02/12/92	40.84	13.94	0.00	26.70	---	---	---	---	---	---	---	---	---	---
MW-7	02/17/92	40.84	13.10	0.00	27.54	---	---	---	---	---	---	---	---	---	---
MW-7	04/03/92	40.84	12.66	0.00	27.98	---	---	---	---	---	---	---	---	---	---
MW-7	04/08/92	40.84	12.77	0.00	27.87	750	---	150	ND<0.5	23	9.9	---	---	---	ANA
MW-7	04/14/92	40.84	13.02	0.00	27.62	---	---	---	---	---	---	---	---	---	---
MW-7	04/29/92	40.84	13.59	0.00	27.05	---	---	---	---	---	---	---	---	---	---
MW-7	05/07/92	40.84	13.95	0.00	26.69	---	---	---	---	---	---	---	---	---	---
MW-7	07/03/92	40.84	14.73	0.00	25.91	660	---	210	ND<2.5	33	8	---	---	---	ANA
MW-7	10/08/92	40.84	15.75	0.00	24.89	320	---	49	1.4	13	6.2	---	---	---	ANA
MW-7	12/31/92	40.84	13.57	0.00	27.07	900	---	100	ND<2.5	28	4.3	---	---	---	ANA
MW-7	04/21/93	40.84	14.56	0.00	26.08	510	---	83	1.2	10	5.8	---	---	---	PACE
MW-7	07/07/93	40.32	13.40	0.00	26.92	1100	---	180	2.0	27	4.0	---	---	---	PACE
QC-1	(g) 07/07/93	40.32	---	---	---	1100	---	170	1.9	29	2.8	---	---	---	PACE
MW-7	09/21/93	40.32	14.40	0.00	25.92	690	---	150	3.1	26	5.7	---	---	---	PACE
QC-1	(g) 09/21/93	40.32	---	---	---	640	---	140	1.7	23	2.4	---	---	---	PACE
MW-7	12/17/93	40.32	13.65	---	26.67	---	---	---	---	---	---	---	---	---	---
MW-7	12/23/93	40.32	---	---	---	250	---	64	1.2	9.0	1.8	---	---	---	PACE
MW-7	04/07/94	40.32	30.62	---	9.70	140	---	32	1.4	ND<0.5	ND<0.5	---	---	---	PACE
MW-7	07/06/94	40.32	18.88	---	23.44	410	---	94	1.3	10	3.5	---	---	4.4	PACE
MW-7	10/07/94	40.32	25.59	---	14.73	ND<50	---	9.2	ND<0.5	ND<0.5	ND<0.5	---	---	4.9	PACE
MW-7	01/27/95	40.32	9.82	---	30.50	810	---	570	3	60	17	---	---	0	ATI
QC-1	(g) 01/27/95	---	---	---	---	930	---	620	4	77	21	---	---	---	ATI
MW-7	03/30/95	40.32	9.15	---	31.17	180	---	85	0.53	2.0	ND<1.0	---	---	7.8	ATI



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 BP OIL COMPANY SERVICE STATION NO. 11109  
 4280 FOOTHILL BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-014

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/L)	TPH-D (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	TOG (ug/L)	HVOC (ug/L)	DO (ppm)	LAB
MW-8	10/03/91	38.18	22.37	0.00	15.81	ND<50	--	ND<0.3	0.6	ND<0.3	0.9	--	--	--	SUP
MW-8	10/15/91	38.18	22.70	0.00	15.48	--	--	--	--	--	--	--	--	--	--
MW-8	12/04/91	38.18	22.44	0.00	15.74	--	--	--	--	--	--	--	--	--	--
MW-8	12/16/91	38.18	22.47	0.00	15.71	--	--	--	--	--	--	--	--	--	--
MW-8	01/06/92	38.18	21.94	0.00	16.24	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-8	01/22/92	38.18	21.44	0.00	16.74	--	--	--	--	--	--	--	--	--	--
MW-8	01/28/92	38.18	21.20	0.00	16.98	--	--	--	--	--	--	--	--	--	--
MW-8	02/05/92	38.18	20.88	0.00	17.30	--	--	--	--	--	--	--	--	--	--
MW-8	02/12/92	38.18	20.54	0.00	17.64	--	--	--	--	--	--	--	--	--	--
MW-8	02/17/92	38.18	19.99	0.00	18.19	--	--	--	--	--	--	--	--	--	--
MW-8	04/03/92	38.18	16.75	0.00	21.43	--	--	--	--	--	--	--	--	--	--
MW-8	04/08/92	38.18	16.57	0.00	21.61	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-8	04/14/92	38.18	INACCESSIBLE	--	--	--	--	--	--	--	--	--	--	--	--
MW-8	04/29/92	38.18	18.61	0.00	19.57	--	--	--	--	--	--	--	--	--	--
MW-8	05/07/92	38.18	18.41	0.00	19.77	--	--	--	--	--	--	--	--	--	--
MW-8	07/03/92	38.18	20.35	0.00	17.83	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-8	(i) 10/08/92	38.18	21.74	0.00	16.44	--	--	--	--	--	--	--	--	--	--
MW-8	12/31/92	38.18	19.09	0.00	19.09	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-8	04/21/93	38.18	18.92	0.00	19.26	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
MW-8	07/07/93	38.18	17.76	0.00	20.42	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
MW-8	09/21/93	38.18	19.71	0.00	18.47	ND<50	--	2.9	2.2	2.2	7.1	--	--	--	PACE
MW-8	12/17/93	38.18	21.33	--	16.85	--	--	--	--	--	--	--	--	--	--
MW-8	12/23/93	38.18	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	0.6	--	--	--	PACE
MW-8	04/07/94	38.18	21.51	--	16.67	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	6.6	PACE
MW-8	07/06/94	38.18	17.41	--	20.77	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	4.4	PACE
MW-8	10/07/94	38.18	19.20	--	18.98	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	3.7	PACE
MW-8	01/27/95	38.18	12.25	--	25.93	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<1	--	--	2.9	ATI
MW-8	03/30/95	38.18	10.95	--	27.83	ND<50	--	ND<0.50	ND<0.50	ND<0.50	ND<1.0	--	--	8.3	ATI
MW-9	10/03/91	41.25	14.12	0.00	27.13	ND<50	--	ND<0.3	0.4	ND<0.3	ND<0.3	--	--	--	SUP
MW-9	10/15/91	41.25	14.27	0.00	28.98	--	--	--	--	--	--	--	--	--	--
MW-9	12/04/91	41.25	13.84	0.00	27.41	--	--	--	--	--	--	--	--	--	--
MW-9	12/16/91	41.25	14.18	0.00	27.07	--	--	--	--	--	--	--	--	--	--
MW-9	01/06/92	41.25	13.42	0.00	27.83	ND<50	--	ND<0.5	ND<0.5	ND<0.5	0.9	--	--	--	ANA
MW-9	01/22/92	41.25	13.75	0.00	27.50	--	--	--	--	--	--	--	--	--	--
MW-9	01/28/92	41.25	14.76	0.00	26.49	--	--	--	--	--	--	--	--	--	--
MW-9	02/05/92	41.25	13.38	0.00	27.87	--	--	--	--	--	--	--	--	--	--
MW-9	02/12/92	41.25	11.68	0.00	29.39	--	--	--	--	--	--	--	--	--	--
MW-9	02/17/92	41.25	10.78	0.00	30.47	--	--	--	--	--	--	--	--	--	--
MW-9	04/03/92	41.25	11.63	0.00	29.82	--	--	--	--	--	--	--	--	--	--
MW-9	04/08/92	41.25	12.25	0.00	29.00	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-9	04/14/92	41.25	12.32	0.00	28.93	--	--	--	--	--	--	--	--	--	--
MW-9	04/29/92	41.25	13.07	0.00	28.18	--	--	--	--	--	--	--	--	--	--
MW-9	05/07/92	41.25	14.43	0.00	26.82	--	--	--	--	--	--	--	--	--	--
MW-9	07/03/92	41.25	13.85	0.00	27.40	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-9	10/08/92	41.25	14.89	0.00	26.36	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-9	12/31/92	41.25	11.90	0.00	29.35	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
MW-9	04/21/93	41.25	13.88	0.00	27.57	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
MW-9	07/07/93	41.25	13.12	0.00	28.13	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
MW-9	09/21/93	41.25	14.00	0.00	27.25	ND<50	--	ND<0.5	ND<0.5	ND<0.5	0.9	--	--	--	PACE
MW-9	12/17/93	41.25	12.98	--	28.27	--	--	--	--	--	--	--	--	--	--
MW-9	12/23/93	41.25	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	0.9	--	--	--	PACE
MW-9	04/07/94	41.25	13.24	--	28.01	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	4.7	PACE
MW-9	07/06/94	41.25	13.77	--	27.48	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	3.9	PACE
MW-9	10/07/94	41.25	14.80	--	26.65	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	3.0	PACE
MW-9	01/27/95	41.25	8.47	--	32.78	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<1	--	--	2.5	ATI
MW-9	03/30/95	41.25	8.19	--	33.06	ND<50	--	ND<0.50	ND<0.50	ND<0.50	ND<1.0	--	--	8.4	ATI

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WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/L)	TPH-D (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	TOG (ug/L)	HVOC (ug/L)	DO (ppm)	LAB
QC-2	(k) 10/08/92	--	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
QC-2	(k) 12/31/92	--	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	ANA
QC-2	(k) 04/21/93	--	--	--	--	--	--	--	--	--	--	--	ND	--	PACE
QC-2	(k) 07/07/93	--	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	0.6	--	--	--	PACE
QC-2	(k) 09/21/93	--	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
QC-2	(k) 12/23/93	--	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
QC-2	(k) 04/07/94	--	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
QC-2	(k) 07/06/94	--	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
QC-2	(k) 10/07/94	--	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	PACE
QC-2	(k) 01/27/95	--	--	--	--	ND<50	--	ND<0.5	0.6	ND<0.5	ND<1	--	--	--	ATI
QC-2	(k) 03/30/95	--	--	--	--	ND<50	--	ND<0.50	ND<0.50	ND<0.50	ND<1.0	--	--	--	ATI

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
TOG	Total oil and grease
HVOC	Halogenated volatile organic compounds
DO	Dissolved oxygen
ug/L	Micrograms per liter
ppm	Parts per million
--	Not analyzed/measured/applicable
ND	Not detected above reported detection limit
SUP	Superior Analytical Laboratory
ANA	Anamatrix, Inc.
PACE	Pace, Inc.
ATI	Analytical Technologies, Inc.

NOTES:

- (a) Top of casing elevations surveyed in feet above mean sea level, relative to the NGVD (1929).
- (b) Groundwater elevations adjusted assuming a specific gravity of 0.75 for free product.
- (c) Well destroyed during tank removal in November 1990.
- (d) Methylene chloride.
- (e) 1,2-Dichloroethane.
- (f) Sample collected from MW-2 for TPH-D analysis received in laboratory 7 days after collected, sample exceeded EPA recommended holding time for TPH-D on a water matrix.
- (g) Blind duplicate.
- (h) Top of casing lowered.
- (i) Depth to top of pump.
- (j) Not sampled due to abandoned vehicle parked over well.
- (k) Travel blank.

EL010-014014-3-4.W02

TABLE 2 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING  
 CHEVRON U.S.A. PRODUCTS COMPANY SERVICE STATION NO. 9-0076  
 4625 FOOTHILL BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-014

WELL ID	DATE OF MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)
C-1	07/14/92	38.41	27.61	0.00	10.80
C-1	10/08/92	38.41	24.44	0.00	13.97
C-1	09/21/93	38.41	21.42	0.00	16.99
C-1	03/30/95	38.41	12.02	0.00	26.39
C-2	07/14/92	37.47	—	—	—
C-2	10/08/92	37.47	—	—	—
C-2	09/21/93	37.47	26.29	0.00	11.18
C-2	03/30/95	37.47	17.18	0.00	20.29
C-3	07/14/92	38.37	27.87	0.00	10.50
C-3	10/08/92	38.37	28.55	0.00	9.82
C-3	09/21/93	38.37	26.22	0.00	12.15
C-3	03/30/95	38.37	18.42	0.00	19.95
C-4	07/14/92	36.49	26.89	0.00	9.60
C-4	10/08/92	36.49	27.79	0.00	8.70
C-4	09/21/93	36.49	25.51	0.00	10.98
C-4	03/30/95	36.49	14.86	0.00	21.63
C-5	07/14/92	38.50	28	0.00	10.50
C-5	10/08/92	38.50	28.65	0.00	9.85
C-5	09/21/93	38.50	26.36	0.00	12.14
C-5	03/30/95	38.50	18.54	0.00	19.96
C-6	07/14/92	35.40	38.89	0.00	-3.49
C-6	10/08/92	35.40	38.67	0.00	-3.27
C-6	09/21/93	35.40	33.98	0.00	1.42
C-6	03/30/95	35.40	26.38	0.00	9.02
C-7	07/14/92	35.19	39.77	0.00	-4.58
C-7	10/08/92	35.19	39.14	0.00	-3.95
C-7	09/21/93	35.19	35.46	0.00	-0.27
C-7	03/30/95	35.19	27.60	0.00	7.59
C-8	07/14/92	34.68	39.02	0.00	-4.34
C-8	10/08/92	34.68	38.68	0.00	-4.00
C-8	09/21/93	34.68	35.30	0.00	-0.62
C-8	03/30/95	34.68	29.24	0.00	5.44

NOTES:

- (a) Top of casing elevations surveyed relative to 1929 NGVD.  
Measured in feet above mean sea level.
- (b) Groundwater elevations in feet above mean sea level.
- Not measured.

Source: Groundwater data collected by Groundwater Technology, Inc.

TABLE 3 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING  
SHELL SERVICE STATION  
4411 FOOTHILL BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-014

WELL ID	DATE OF MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)
S-1	03/30/95	38.31	6.09	0.00	32.22
S-2	03/30/95	38.79	7.86	0.00	30.93
S-3	03/30/95	37.33	7.06	0.00	30.27

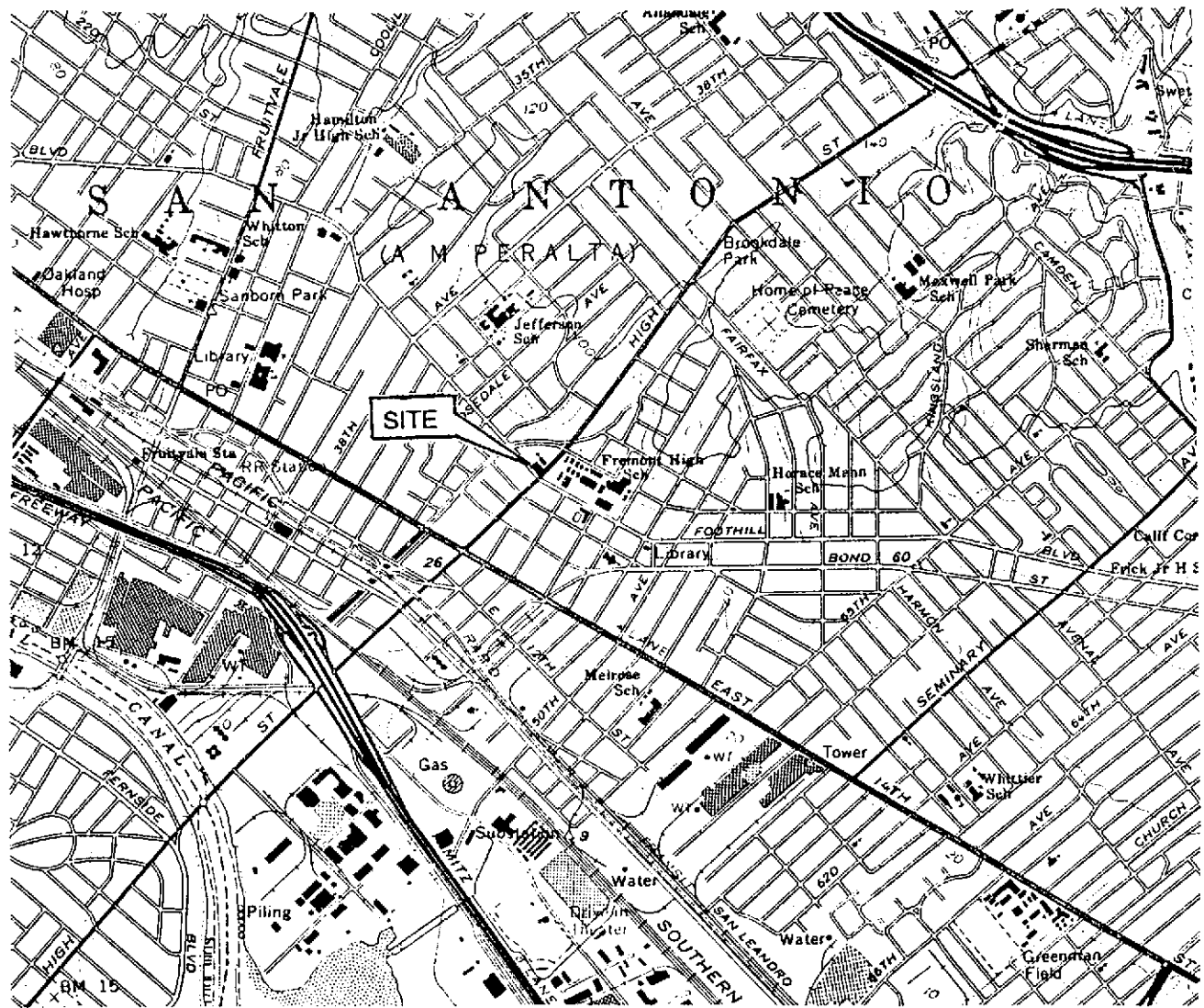
NOTES:

(a) Top of casing elevations surveyed relative to 1929 NGVD.  
Measured in feet above mean sea level.

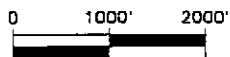
(b) Groundwater elevations in feet above mean sea level.

— Not measured.

Source: Groundwater data collected by Groundwater Technology, Inc.



SOURCE:  
 USGS MAP, OAKLAND EAST QUADRANGLE,  
 CALIFORNIA. 7.5 MINUTE SERIES. 1959.  
 PHOTOREVISED 1980.



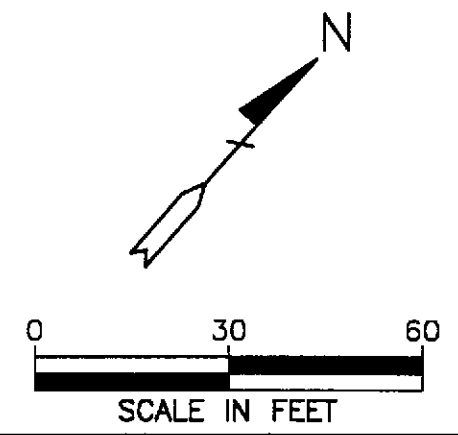
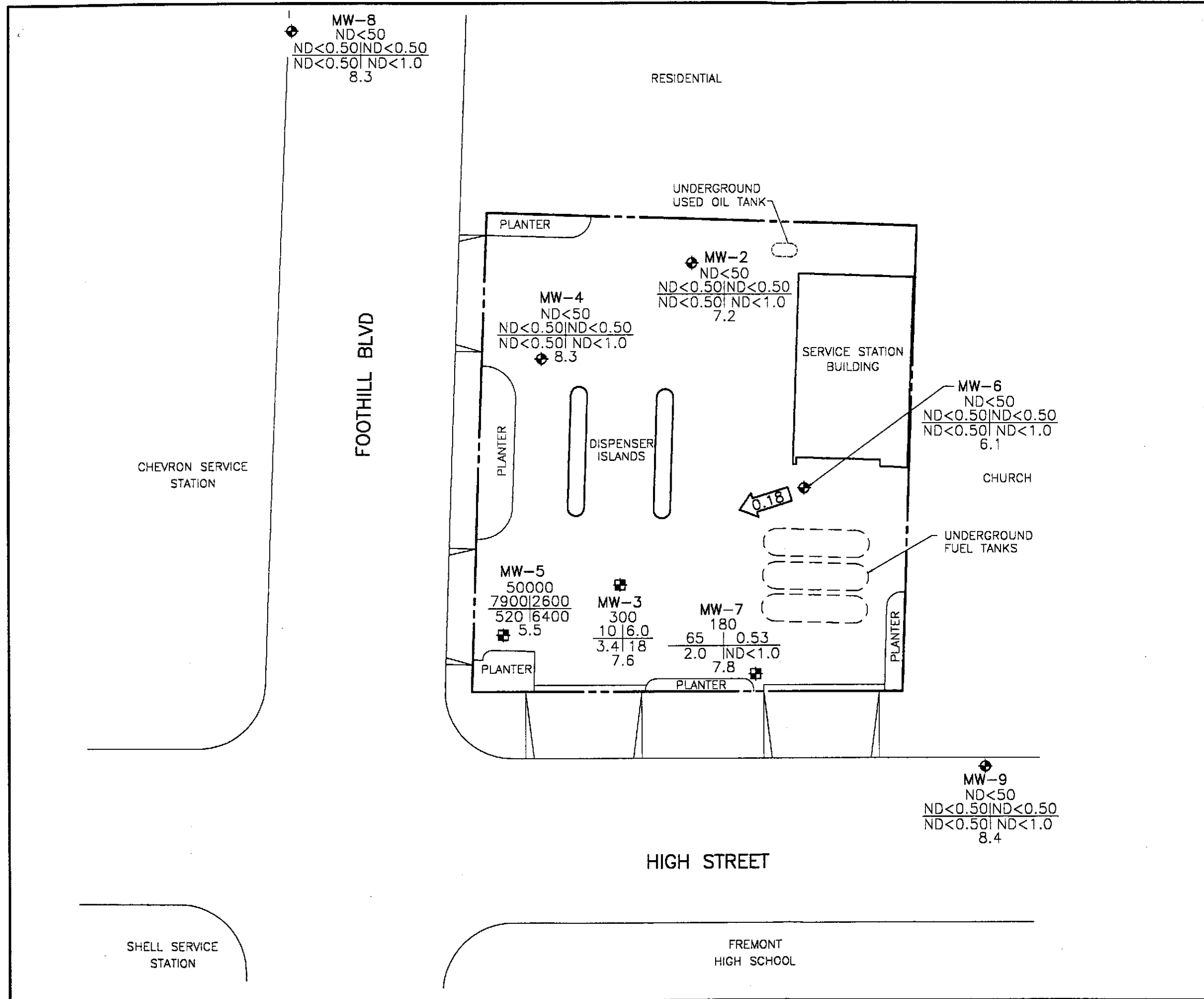
**FIGURE 1**  
**SITE VICINITY MAP**

BP OIL SERVICE STATION NO. 11109  
 4280 FOOTHILL BOULEVARD  
 OAKLAND, CALIFORNIA  
 PROJECT NO. 10-014



**ALISTO ENGINEERING GROUP**  
 WALNUT CREEK, CALIFORNIA





**LEGEND**

- ◆ GROUNDWATER MONITORING WELL
- ⊕ GROUNDWATER RECOVERY WELL
- TPH-G  
B | T  
E | X  
DO  
CONCENTRATION OF CONSTITUENTS IN MICROGRAMS PER LITER, EXCEPT DISSOLVED OXYGEN, WHICH IS IN PARTS PER MILLION
- TPH-G  
B  
T  
E  
X  
DO  
TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X TOTAL XYLENES
- DO DISSOLVED OXYGEN
- ND NOT DETECTED ABOVE REPORTED DETECTION LIMIT
- ←0.18→ CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

**FIGURE 3**  
**CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER**  
**MARCH 30, 1995**  
BP OIL SERVICE STATION NO. 11109  
4280 FOOTHILL BOULEVARD  
OAKLAND, CALIFORNIA  
PROJECT NO. 10-014

**APPENDIX A**  
**WATER SAMPLING FIELD SURVEY FORMS**



# ALISTO

## Field Report / Sampling Data Sheet

ENGINEERING  
GROUP

1777 OAKLAND BLVD, STE 200  
WALNUT CREEK CA 94596 (510) 295-1650 FAX 295-1823

Groundwater Sampling

Barometric pres. 76.5

Date: 3/30/95 Project No. 90-004-03-004

Day: M T W (Th) F Facility No. 11109

Temp. 74.3°F Address 4280 Foothill Blvd, Oakland CA

SAMPLER: DC

Well ID	SAMPLE #	WATER	time	Well ID	SAMPLE #	WATER/	time	Well ID	SAMPLE	WATER / time
MW-8	S-1	10.35	945	MW-7	S-6	9.15	1009			
MW-9	S-2	8.19	949	MW-3	S-7	26.05	1014			
MW-2	S-3	12.34	952	MW-5	S-8	28.95	1017			
MW-4	S-4	11.46	957							
MW-6	S-5	11.34	1001							

### FIELD INSTRUMENT CALIBRATION DATA

PH METER Hydarc 4.00  7.00  10.00  TIME 16:40 TEMPERATURE COMPENSATED  N  
 TURBIDI METER 5.0 NTU STANDARD OTHER ICM DO meter 0.50m 21 2 1027  
 CONDUCTIVITY METER Hydarc 10,000  OTHER         

Well ID	Depth to Water	Diam	Cap/Lock	Depth to prod.	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	EPA 601	TPH-G/BTEX	TPH Diesel	TOG 6520	Time/Sample
MW-8	10.35	2"	OK	Φ	Y (N)	2	1112	70.0	7.34	0.54	8.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.						4	1114	70.4	7.21	0.53		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
$21.74 - 10.35 = 11.39 \times .16 = 1.82 \times 3 = 5.47$						5.5	1116	71.0	7.14	0.51	8.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Purge Method: <input checked="" type="checkbox"/> Surface Pump <input type="checkbox"/> ODisp. Tube <input type="checkbox"/> OWinch <input type="checkbox"/> ODisp. Bailer(s) <input type="checkbox"/> OSys Port																
Comments:																

Well ID	Depth to Water	Diam	Cap/Lock	Depth to prod.	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	EPA 601	TPH-G/BTEX	TPH Diesel	TOG 6520	Time/Sample
MW-9	8.19	2"	OK	Φ	Y (N)	4	1127	70.2	7.45	0.43	7.4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.						8	1131	70.9	7.35	0.44		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
$29.31 - 8.19 = 21.12 \times .16 = 3.38 \times 3 = 10.14$						10.25	1135	71.3	7.55	0.49	8.4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Purge Method: <input checked="" type="checkbox"/> Surface Pump <input type="checkbox"/> ODisp. Tube <input type="checkbox"/> OWinch <input type="checkbox"/> ODisp. Bailer(s) <input type="checkbox"/> OSys Port																
Comments:																

Well ID	Depth to Water	Diam	Cap/Lock	Depth to prod.	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	EPA 601	TPH-G/BTEX	TPH Diesel	TOG 6520	Time/Sample
MW-2	12.34	2"	OK	Φ	Y (N)	3	1148	70.1	7.27	0.48	7.2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.						6	1152	68.9	7.23	0.45		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
$30.10 - 12.34 = 17.76 \times .16 = 2.84 \times 3 = 8.52$						8.75	1155	68.7	7.12	0.47	7.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Purge Method: <input checked="" type="checkbox"/> Surface Pump <input type="checkbox"/> ODisp. Tube <input type="checkbox"/> OWinch <input type="checkbox"/> ODisp. Bailer(s) <input type="checkbox"/> OSys Port																
Comments:																

# ALISTO

## Field Report / Sampling Data Sheet

ENGINEERING

Groundwater Sampling

Date: 3/30/95

Project No. 10-014-03-004

GROUP

Day: Thur

Station No. 11109

1777 OAKLAND BLVD, STE 200

Weather: Sunny

Address 4280 Foothill Blvd, Oakland CA

WALNUT CREEK CA 94596 (510) 295-1650 FAX 295-1823

SAMPLER: DC

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness	Gal.	Time	Temp *F	pH	E.C.	D.O.	
MW-4	11.46	4"	OK	Φ	Φ	15	1217	71.0	7.27	0.53	8.3	<input type="checkbox"/> EPA 601
Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.						30	dry	-	-	-		<input checked="" type="checkbox"/> TPH-G/BTEX <u>Her</u>
34.28 - 11.46 = 22.82 x .65 = 14.93 x 3 = 44.79						45						<input type="checkbox"/> TPH Diesel
Purge Method: <input type="checkbox"/> Surface Pump <input type="checkbox"/> Disp. Tube <input type="checkbox"/> Winch <input type="checkbox"/> Disp. Bail(er)s <input type="checkbox"/> Sys Port												<input type="checkbox"/> TOG 5520
Comments: <u>dry 19.5 GALLS; wait for 80% recovery</u>												Time Sampled
												<u>250 / 5-4</u>
MW-6	11.34	4"	replace	Φ	Φ	15	1245	73.6	7.73	0.67	8.3	<input type="checkbox"/> EPA 601
Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.						30	1315	68.7	6.69	0.57		<input checked="" type="checkbox"/> TPH-G/BTEX <u>Her</u>
34.28 - 11.34 = 22.94 x .65 = 14.91 x 3 = 44.73						45	1330	68.6	6.73	0.61	6.1	<input type="checkbox"/> TPH Diesel
Purge Method: <input checked="" type="checkbox"/> Surface Pump <input type="checkbox"/> Disp. Tube <input type="checkbox"/> Winch <input type="checkbox"/> Disp. Bail(er)s <input type="checkbox"/> Sys Port												<input type="checkbox"/> TOG 5520
Comments: <u>switched to hand bailer because pump was too slow</u>												Time Sampled
												<u>1335 / 3-5</u>
MW-7	9.15	6"	OK	Φ	Φ	initial	1344	72.9	7.38	0.62	7.8	<input type="checkbox"/> EPA 601
Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.												<input checked="" type="checkbox"/> TPH-G/BTEX <u>Her</u>
33.48												<input type="checkbox"/> TPH Diesel
Purge Method: <input type="checkbox"/> Surface Pump <input type="checkbox"/> Disp. Tube <input type="checkbox"/> Winch <input type="checkbox"/> Disp. Bail(er)s <input checked="" type="checkbox"/> Sys Port												<input type="checkbox"/> TOG 5520
Comments: <u>looks like a sheen is present</u>												Time Sampled
												<u>1347 / 5-6</u>
MW-3	26.05	4"	OK	Φ	Φ	initial	1355	71.8	6.93	0.65	7.6	<input type="checkbox"/> EPA 601
Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.												<input checked="" type="checkbox"/> TPH-G/BTEX <u>Her</u>
31.80												<input type="checkbox"/> TPH Diesel
Purge Method: <input type="checkbox"/> Surface Pump <input type="checkbox"/> Disp. Tube <input type="checkbox"/> Winch <input type="checkbox"/> Disp. Bail(er)s <input checked="" type="checkbox"/> Sys Port												<input type="checkbox"/> TOG 5520
Comments:												Time Sampled
												<u>1400 / 5-7</u>
MW-5	28.95	4"	OK	Φ	Φ	initial	1409	70.0	6.78	0.61	5.5	<input type="checkbox"/> EPA 601
Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.												<input checked="" type="checkbox"/> TPH-G/BTEX <u>Her</u>
Nm												<input type="checkbox"/> TPH Diesel
Purge Method: <input type="checkbox"/> Surface Pump <input type="checkbox"/> Disp. Tube <input type="checkbox"/> Winch <input type="checkbox"/> Disp. Bail(er)s <input checked="" type="checkbox"/> Sys Port												<input type="checkbox"/> TOG 5520
Comments: <u>DC-15 min mid well (5-9); strong odor</u>												Time Sampled
												<u>1415 / 5-8</u>

\* System is functioning

**APPENDIX B**

**LABORATORY REPORT AND CHAIN OF CUSTODY RECORD**



ATI I.D.: 503390

April 10, 1995

ALISTO ENGINEERING  
1777 OAKLAND BOULEVARD, SUITE 200  
WALNUT CREEK, CA 94596

Project Name: BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA  
Project # : G317837/10-014-03-004

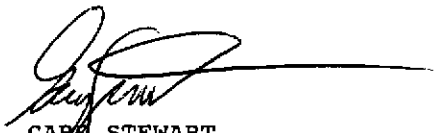
Attention: BILL HOWELL

Analytical Technologies, Inc. has received the following sample(s):

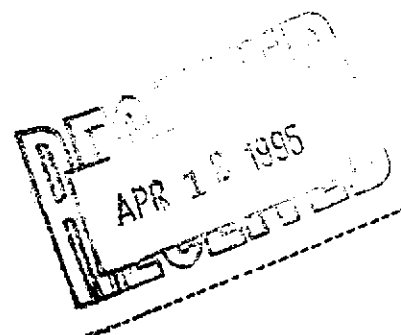
<u>Date Received</u>	<u>Quantity</u>	<u>Matrix</u>
March 31, 1995	10	WATER

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. If any flags appear next to the analytical data in this report, please see the attached list of flag definitions.

The results of these analyses and the quality control data are enclosed. Please note that the Sample Condition Upon Receipt Checklist is included at the end of this report.

  
GARY STEWART  
VOLATILES SUPERVISOR

  
ALAN J. KLEINSCHMIDT  
LABORATORY MANAGER



## SAMPLE CROSS REFERENCE

Client : ALISTO ENGINEERING  
 Project # : G317837/10-014-03-004  
 Project Name: BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

Report Date: April 10, 1995  
 ATI I.D. : 503390

ATI #	Client Description	Matrix	Date Collected
1	S-1	WATER	30-MAR-95
2	S-2	WATER	30-MAR-95
3	S-3	WATER	30-MAR-95
4	S-4	WATER	30-MAR-95
5	S-5	WATER	30-MAR-95
6	S-6	WATER	30-MAR-95
7	S-7	WATER	30-MAR-95
8	S-8	WATER	30-MAR-95
9	S-9	WATER	30-MAR-95
10	S-10	WATER	30-MAR-95

## ---TOTALS---

<u>Matrix</u>	<u># Samples</u>
WATER	10

ATI STANDARD DISPOSAL PRACTICE

The sample(s) from this project will be disposed of in twenty-one (21) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.



ANALYTICAL SCHEDULE

Client : ALISTO ENGINEERING  
Project # : G317837/10-014-03-004  
Project Name: BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

ATI I.D.: 503390

Analysis	Technique/Description
MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C7-C12/BTXE)	GC/FLAME ION./PHOTO IONIZATION DETECTOR

**GAS CHROMATOGRAPHY RESULTS**

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C7-C12/BTXE)  
 Client : ALISTO ENGINEERING ATI I.D. : 503390  
 Project # : G317837/10-014-03-004  
 Project Name: BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
1	S-1	WATER	30-MAR-95	N/A	05-APR-95	1.00
2	S-2	WATER	30-MAR-95	N/A	06-APR-95	1.00
3	S-3	WATER	30-MAR-95	N/A	06-APR-95	1.00

Parameter	Units	1	2	3		
BENZENE	UG/L	<0.50	<0.50	<0.50		
TOLUENE	UG/L	<0.50	<0.50	<0.50		
ETHYLBENZENE	UG/L	<0.50	<0.50	<0.50		
XYLENES (TOTAL)	UG/L	<1.0	<1.0	<1.0		
FUEL HYDROCARBONS	UG/L	<50	<50	<50		
HYDROCARBON RANGE		C6-C12	C6-C12	C6-C12		
HYDROCARBONS QUANTITATED USING		GASOLINE	GASOLINE	GASOLINE		
<b><u>SURROGATES</u></b>						
TRIFLUOROTOLUENE	%	90	94	91		



GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C7-C12/BTXE)  
 Client : ALISTO ENGINEERING ATI I.D. : 503390  
 Project # : G317837/10-014-03-004  
 Project Name: BP SITE #11109/4280 Foothill Blvd, Oakland CA

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
4	S-4	WATER	30-MAR-95	N/A	06-APR-95	1.00
5	S-5	WATER	30-MAR-95	N/A	06-APR-95	1.00
6	S-6	WATER	30-MAR-95	N/A	06-APR-95	1.00

Parameter	Units	4	5	6
BENZENE	UG/L	<0.50	<0.50	65
TOLUENE	UG/L	<0.50	<0.50	0.53
ETHYLBENZENE	UG/L	<0.50	<0.50	2.0
XYLENES (TOTAL)	UG/L	<1.0	<1.0	<1.0
FUEL HYDROCARBONS	UG/L	<50	<50	180
HYDROCARBON RANGE		C6-C12	C6-C12	C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE	GASOLINE	GASOLINE
<u>SURROGATES</u>				
TRIFLUOROTOLUENE	%	92	95	109





GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C7-C12/BTXE)  
 Client : ALISTO ENGINEERING ATI I.D. : 503390  
 Project # : G317837/10-014-03-004  
 Project Name: BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
7	S-7	WATER	30-MAR-95	N/A	06-APR-95	1.00
8	S-8	WATER	30-MAR-95	N/A	07-APR-94	100.00
9	S-9	WATER	30-MAR-95	N/A	06-APR-95	100.00

Parameter	Units	7	8	9
BENZENE	UG/L	10	7900	7900
TOLUENE	UG/L	6.0	2600	2500
ETHYLBENZENE	UG/L	3.4	520	440
XYLENES (TOTAL)	UG/L	18	6400	6200
FUEL HYDROCARBONS	UG/L	300	50000	43000
HYDROCARBON RANGE		C6-C12	C6-C12	C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE	GASOLINE	GASOLINE
<u>SURROGATES</u>				
TRIFLUOROTOLUENE	%	119	92	111

## GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C7-C12/BTXE)  
 Client : ALISTO ENGINEERING  
 Project # : G317837/10-014-03-004  
 Project Name: BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

ATI I.D. : 503390

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
10	S-10	WATER	30-MAR-95	N/A	06-APR-95	1.00
Parameter	Units	10				
BENZENE	UG/L	<0.50				
TOLUENE	UG/L	<0.50				
ETHYLBENZENE	UG/L	<0.50				
XYLENES (TOTAL)	UG/L	<1.0				
FUEL HYDROCARBONS	UG/L	<50				
HYDROCARBON RANGE		C6-C12				
HYDROCARBONS QUANTITATED USING		GASOLINE				
<u>SURROGATES</u>						
TRIFLUOROTOLUENE	%	99				

**GAS CHROMATOGRAPHY - QUALITY CONTROL**
**REAGENT BLANK**

Test	: MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)	ATI I.D.	: 503390
Blank I.D.	: 34946	Date Extracted:	N/A
Client	: ALISTO ENGINEERING	Date Analyzed :	05-APR-95
Project #	: G317837/10-014-03-004	Dil. Factor	: 1.00
Project Name:	BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA		

Parameters	Units	Results
BENZENE	UG/L	<0.50
TOLUENE	UG/L	<0.50
ETHYLBENZENE	UG/L	<0.50
XYLENES (TOTAL)	UG/L	<1.0
FUEL HYDROCARBONS	UG/L	<50
HYDROCARBON RANGE		C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE
<b>SURROGATES</b>		
TRIFLUOROTOLUENE	µ	95



GAS CHROMATOGRAPHY - QUALITY CONTROL

REAGENT BLANK

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)  
Blank I.D. : 34947  
Client : ALISTO ENGINEERING  
Project # : G317837/10-014-03-004  
Project Name: BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

ATI I.D. : 503390  
Date Extracted: N/A  
Date Analyzed : 06-APR-95  
Dil. Factor : 1.00

Parameters	Units	Results
BENZENE	UG/L	<0.50
TOLUENE	UG/L	<0.50
ETHYLBENZENE	UG/L	<0.50
XYLENES (TOTAL)	UG/L	<1.0
FUEL HYDROCARBONS	UG/L	<50
HYDROCARBON RANGE		C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE
<u>SURROGATES</u>		
TRIFLUOROTOLUENE	%	100

## GAS CHROMATOGRAPHY - QUALITY CONTROL

## REAGENT BLANK

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Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)  
Blank I.D. : 34948  
Client : ALISTO ENGINEERING  
Project # : G317837/10-014-03-004  
Project Name: BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

ATI I.D. : 503390  
Date Extracted: N/A  
Date Analyzed : 07-APR-95  
Dil. Factor : 1.00

Parameters	Units	Results
BENZENE	UG/L	<0.50
TOLUENE	UG/L	<0.50
ETHYLBENZENE	UG/L	<0.50
XYLENES (TOTAL)	UG/L	<1.0
FUEL HYDROCARBONS	UG/L	<50
HYDROCARBON RANGE		C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE
<u>SURROGATES</u>		
TRIFLUOROTOLUENE	%	98

**GAS CHROMATOGRAPHY - QUALITY CONTROL**
**MSMSD**

**Test** : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)  
**MSMSD #** : 74585  
**Client** : ALISTO ENGINEERING

**ATI I.D.** : 503390  
**Date Extracted:** N/A  
**Date Analyzed** : 06-APR-95  
**Sample Matrix** : WATER  
**REF I.D.** : 503390-01

**Project #** : G317837/10-014-03-004  
**Project Name:** BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

Parameters	Units	Sample Result	Conc Spike	Spiked Sample	% Rec	Dup Spike	Dup % Rec	RPD
BENZENE	UG/L	<0.50	5.0	5.2	104	5.2	104	0
TOLUENE	UG/L	<0.50	5.0	5.1	102	5.2	104	2

$\% \text{ Recovery} = (\text{Spike Sample Result} - \text{Sample Result}) * 100 / \text{Spike Concentration}$

$\text{RPD (Relative \% Difference)} = (\text{Spiked Sample Result} - \text{Duplicate Spike Result}) * 100 / \text{Average Result}$



GAS CHROMATOGRAPHY - QUALITY CONTROL

BLANK SPIKE

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)  
Blank Spike #: 55629  
Client : ALISTO ENGINEERING  
Project # : G317837/10-014-03-004  
Project Name : BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

ATI I.D. : 503390  
Date Extracted: N/A  
Date Analyzed : 05-APR-95  
Sample Matrix : WATER

Parameters	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
BENZENE	UG/L	<0.50	5.4	5.0	108
TOLUENE	UG/L	<0.50	5.3	5.0	106

% Recovery = (Spike Sample Result - Sample Result)\*100/Spike Concentration  
RPD (Relative % Difference) = (Spiked Sample - Blank Result)\*100/Average Result



GAS CHROMATOGRAPHY - QUALITY CONTROL

BLANK SPIKE

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTEX)  
Blank Spike #: 55630  
Client : ALISTO ENGINEERING  
Project # : G317837/10-014-03-004  
Project Name : BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

ATI I.D. : 503390  
Date Extracted: N/A  
Date Analyzed : 06-APR-95  
Sample Matrix : WATER

Parameters	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
BENZENE	UG/L	<0.50	5.2	5.0	104
TOLUENE	UG/L	<0.50	5.3	5.0	106

% Recovery = (Spike Sample Result - Sample Result)\*100/Spike Concentration  
RPD (Relative % Difference) = (Spiked Sample - Blank Result)\*100/Average Result





GAS CHROMATOGRAPHY - QUALITY CONTROL

BLANK SPIKE

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)  
 Blank Spike #: 55631  
 Client : ALISTO ENGINEERING  
 Project #: G317837/10-014-03-004  
 Project Name : BP SITE #11109/4280 FOOTHILL BLVD, OAKLAND CA

ATI I.D. : 503390  
 Date Extracted: N/A  
 Date Analyzed : 07-APR-95  
 Sample Matrix : WATER

Parameters	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
BENZENE	UG/L	<0.50	5.4	5.0	108
TOLUENE	UG/L	<0.50	5.5	5.0	110

% Recovery = (Spike Sample Result - Sample Result)\*100/Spike Concentration  
 RPD (Relative % Difference) = (Spiked Sample - Blank Result)\*100/Average Result

