



**BP OIL**

BP Oil Company  
Environmental Resources Management  
Building 13, Suite N  
295 SW 41st Street  
Renton, Washington 98055-4931  
(206) 251-0667  
Fax No: (206) 251-0736

December 16, 1996

Ms Eva Chu  
Alameda County Health Care Services Agency  
1131 Harbour Bay Parkway Room 250  
Oakland, CA 94502-6577

*Compare MW-1 data at bp  
w/ b-6 at Chevron site, across  
street.*

*B-6 ND for TPHg + BTEX,  
however, never quantified  
MTBE. Asked Phil Briggs  
at Chevron to do MTBE  
in well b-6 in future  
sampling events*

96 DEC 27 PM 3:04

ENVIRONMENTAL  
PROTECTION

*1/6/97*

**RE: BP OIL FACILITY #11104  
1716 Webster Street  
Alameda, CA**

Dear Ms Chu:

Attached please find our **GROUNDWATER MONITORING AND SAMPLING REPORT DATED SEPTEMBER 30, 1996** for the above referenced facility. Plans for the following quarter include additional groundwater monitoring. We plan to modify the groundwater monitoring regime at this site by sampling wells MW-2 through MW-5 on an annual basis.

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

Respectfully,

Scott T. Hooton  
Environmental Resources Management  
Corrective Action Manager

STH:sb msword\ERM11104

cc: Mr. Eddy So, CRWQCB, San Francisco Bay Region, 2101 Webster Street, Suite 500,  
Oakland, CA 94612

TOSCO Northwest Co., 601 Union Street, Suite 2500, Seattle, WA 98101

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

Site File

**GROUNDWATER MONITORING AND SAMPLING REPORT**

**BP Oil Company Service Station No. 11104  
1716 Webster Street  
Alameda, California**

**Project No. 10-155-06-001**

**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**

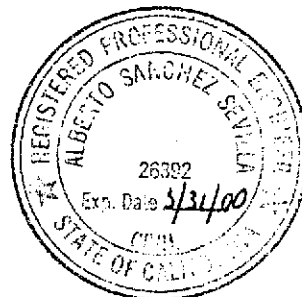
**September 30, 1996**

*Dale Swain for...*

**Dale Swain  
Project Manager**

*Al Sevilla*

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



# GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11104  
1716 Webster Street  
Alameda, California

Project No. 10-155-06-001

September 30, 1996

## INTRODUCTION

This report presents the results and findings of the August 9 and 12, 1996 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11104, 1716 Webster Street, Alameda, California. A site vicinity map is shown on 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 in reference to mean sea level. The survey data and groundwater elevation measurements collected to date are presented in Table 1.

Groundwater monitoring was performed on August 23, 1996 at the neighboring Chevron service station, 1802 Webster Street. The results are presented in Table 2.

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 on Figure 2. The results of groundwater analysis are shown on 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. 11104  
 1716 WEBSTER STREET, ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-155

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet) (a)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet) (b)	TPH-G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	TDS (mg/l)	DO (ppm)	LAB
MW-1	07/21/92	11.98	5.91	6.07	34000	7000	1700	2500	6900	---	---	---	---
MW-1	10/20/92	11.98	6.66	5.32	---	---	---	---	---	---	---	---	---
MW-1	03/05/93	11.98	4.56	7.42	---	---	---	---	---	---	---	---	---
MW-1	04/01/93	11.98	4.57	7.41	---	---	---	---	---	---	---	---	---
MW-1	07/09/93	11.98	5.25	6.73	77000	15000	1400	2100	7400	---	---	---	PACE
MW-1 (c)	07/09/93	11.98	---	---	79000	16000	1500	2200	7700	---	---	---	PACE
MW-1	10/08/93	11.98	6.01	5.97	42000	7100	270	2700	4700	---	---	---	PACE
MW-1	01/06/94	11.98	6.24	5.74	45000	12000	4300	3000	6700	---	---	---	PACE
MW-1	04/26/94	11.98	5.28	6.72	39000	6500	500	1800	1200	---	---	6.3	PACE
MW-1	07/25/94	11.98	5.60	6.38	38000	6300	240	1500	1100	---	---	1.7	PACE
MW-1	10/13/94	11.98	6.15	5.83	25000	6300	130	1300	830	---	---	2.3	PACE
MW-1 (c)	10/13/94	11.98	---	---	25000	7300	120	1200	740	---	---	---	PACE
MW-1	01/17/95	11.98	4.19	7.79	7800	3100	1100	460	850	---	---	7.9	ATI
MW-1 (c)	01/17/95	11.98	---	---	8400	3100	1200	470	1000	---	---	---	ATI
MW-1	03/31/95	11.98	4.48	7.50	37000	6700	6900	1200	4500	---	---	6.4	ATI
MW-1 (c)	03/31/95	11.98	---	---	40000	6900	7300	1300	5000	---	---	---	ATI
MW-1	05/01/95	11.98	4.39	7.59	---	---	---	---	---	---	---	---	---
MW-1	07/12/95	11.98	5.02	6.96	29000	7000	300	1500	3900	---	---	7.2	ATI
QC-1 (c)	07/12/95	---	---	---	29000	6600	380	1500	3900	---	---	---	ATI
MW-1	10/12/95	11.98	5.88	6.30	20000	3400	310	1100	3000	15000	---	6.3	ATI
QC-1 (c)	10/12/95	---	---	---	20000	3500	310	1100	3000	14000	---	---	ATI
MW-1	02/27/96	11.98	4.18	7.80	18000	4400	2900	860	2380	5500	472	7.9	SPL
MW-1	05/08/96	11.98	4.89	7.09	---	---	---	---	---	---	---	---	---
MW-1	05/09/96	11.98	---	---	14000	2300	1900	540	3340	2700	---	6.1	SPL
MW-1	08/09/96	11.98	5.13	6.85	---	---	---	---	---	---	---	---	---
MW-1	08/12/96	11.98	---	---	13000	2800	190	1300	3040	1800	---	7.1	SPL
MW-2	07/21/92	12.98	6.44	6.54	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---
MW-2	10/20/92	12.98	7.39	5.59	---	---	---	---	---	---	---	---	---
MW-2	03/05/93	12.98	4.91	8.07	---	---	---	---	---	---	---	---	---
MW-2	04/01/93	12.98	4.92	8.06	---	---	---	---	---	---	---	---	---
MW-2	07/09/93	12.98	5.60	7.38	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-2	10/08/93	12.98	6.50	6.48	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
QC-1 (c)	10/08/93	12.98	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-2	01/06/94	12.98	6.25	6.73	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-2	04/26/94	12.98	5.73	7.25	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	7.5	PACE
MW-2	07/25/94	12.98	6.07	6.91	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	2.4	PACE
MW-2	10/13/94	12.98	6.80	6.18	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	2.4	PACE
MW-2	01/17/95	12.98	5.10	7.88	---	---	---	---	---	---	---	---	---
MW-2	03/31/95	12.98	4.69	8.29	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	7.3	ATI
MW-2	05/01/95	12.98	5.23	7.75	---	---	---	---	---	---	---	---	---
MW-2	07/12/95	12.98	5.40	7.58	---	---	---	---	---	---	---	---	---
MW-2	10/12/95	12.98	6.06	6.92	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	6.9	ATI
MW-2	02/27/96	12.98	4.66	8.32	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	412	8.7	SPL
MW-2	05/08/96	12.98	5.28	7.70	---	---	---	---	---	---	---	---	---
MW-2	08/09/96	12.98	5.59	7.39	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	7.8	SPL

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11104  
 1716 WEBSTER STREET, ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-155

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	TPH-G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	TDS (mg/l)	DO (ppm)	LAB
MW-3 (d)	07/21/92	13.38	7.07	6.31	ND<50	0.95	ND<0.5	ND<0.5	ND<0.5	---	---	---	---
MW-3	10/20/92	13.38	8.06	5.32	---	---	---	---	---	---	---	---	---
MW-3	03/05/93	13.38	5.16	8.22	---	---	---	---	---	---	---	---	---
MW-3	04/01/93	13.38	5.25	8.13	---	---	---	---	---	---	---	---	---
MW-3	07/09/93	13.38	5.80	7.58	ND<50	0.6	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-3	10/08/93	13.38	7.17	6.21	ND<50	0.6	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-3	01/06/94	13.38	6.94	6.44	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-3	04/26/94	13.38	6.18	7.20	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	3.1 PACE
MW-3	07/25/94	13.38	6.67	6.71	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	2.2 PACE
MW-3	10/13/94	13.38	7.43	5.95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	2.1 PACE
MW-3	01/17/95	13.38	5.07	8.31	---	---	---	---	---	---	---	---	---
MW-3	03/31/95	13.38	4.03	9.35	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	---	6.6 ATI
MW-3	05/01/95	13.38	4.94	8.44	---	---	---	---	---	---	---	---	---
MW-3	07/12/95	13.38	5.80	7.58	---	---	---	---	---	---	---	---	---
MW-3	10/12/95	13.38	6.64	6.74	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	---	6.4 ATI
MW-3	02/27/96	13.38	4.75	8.63	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	316	---	8.5 SPL
MW-3	05/08/96	13.38	5.86	7.52	---	---	---	---	---	---	---	---	---
MW-3	08/09/96	13.38	5.70	7.68	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	---	7.9 SPL
MW-4	03/05/93	11.80	4.81	6.99	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---
MW-4	04/01/93	11.80	4.80	7.00	---	---	---	---	---	---	---	---	---
MW-4	07/09/93	11.80	5.54	6.26	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-4	10/08/93	11.80	6.28	5.52	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-4	01/06/94	11.80	5.82	5.98	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-4	04/26/94	11.80	5.50	6.30	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	7.4 PACE
MW-4	07/25/94	11.80	5.83	5.97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	7.2 PACE
MW-4	10/13/94	11.80	6.26	5.54	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	6.7 PACE
MW-4	01/17/95	11.80	4.19	7.61	---	---	---	---	---	---	---	---	---
MW-4	03/31/95	11.80	3.96	7.84	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	---	7.1 ATI
MW-4	05/01/95	11.80	4.49	7.31	---	---	---	---	---	---	---	---	---
MW-4	07/12/95	11.80	5.16	6.64	---	---	---	---	---	---	---	---	---
MW-4	10/12/95	11.80	5.80	6.00	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	---	6.9 ATI
MW-4	02/27/96	11.80	4.22	7.58	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	256	---	8.9 SPL
MW-4	05/08/96	11.80	5.00	6.80	---	---	---	---	---	---	---	---	---
MW-4	08/09/96	11.80	5.13	6.67	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	---	8.5 SPL

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11104  
 1716 WEBSTER STREET, ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-155

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (Feet)	TPH-G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	TDS (mg/l)	DO (ppm)	LAB
MW-5	04/01/93	11.62	4.77	6.85	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	---
MW-5	07/09/93	11.62	5.40	6.22	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-5	10/08/93	11.62	5.87	5.75	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-5	01/06/94	11.62	5.75	5.87	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-5	04/26/94	11.62	5.49	6.13	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	7.1	PACE
MW-5	07/25/94	11.62	5.69	5.93	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	6.6	PACE
MW-5	10/13/94	11.62	6.03	5.59	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	3.0	PACE
MW-5	01/17/95	11.62	4.74	6.88	---	---	---	---	---	---	---	---	---
MW-5	03/31/95	11.62	4.58	7.04	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	7.1	ATI
MW-5	05/01/95	11.62	4.79	6.83	---	---	---	---	---	---	---	---	---
MW-5	07/12/95	11.62	5.32	6.30	---	---	---	---	---	---	---	---	---
MW-5	10/12/95	11.62	5.70	5.92	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	6.7	ATI
MW-5 (e)	02/27/96	11.62	---	---	---	---	---	---	---	---	---	---	---
MW-5	05/08/96	11.62	4.91	6.71	---	---	---	---	---	---	---	---	---
MW-5	08/09/96	11.62	5.01	6.61	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	---	7.7	SPL
RW-1	01/06/94	11.84	5.59	6.25	23000	3800	210	840	2100	---	---	---	PACE
QC-1 (c)	01/06/94	---	---	---	24000	3700	210	830	2000	---	---	---	PACE
RW-1	04/26/94	11.84	5.21	6.63	24000	3500	120	800	1700	---	---	6.4	PACE
QC-1 (c)	04/26/94	---	---	---	22000	3300	110	700	1700	---	---	---	PACE
RW-1	07/25/94	11.84	5.52	6.32	31000	4800	290	1100	1700	---	---	5.5	PACE
QC-1 (c)	07/25/94	---	---	---	28000	4400	240	960	1400	---	---	---	PACE
RW-1	10/13/94	11.84	6.05	5.79	20000	4200	46	990	440	---	---	6.8	PACE
RW-1	01/17/95	11.84	4.02	7.82	9600	1500	65	300	2700	---	---	7.7	ATI
RW-1	03/31/95	11.84	3.81	8.03	16000	1500	780	370	2000	---	---	7.8	ATI
RW-1	05/01/95	11.84	4.21	7.63	---	---	---	---	---	---	---	---	---
RW-1	07/12/95	11.84	4.93	6.91	22000	3700	150	950	2800	---	---	7.2	ATI
RW-1	10/12/95	11.84	5.46	6.38	30000	1600	1500	1700	8500	4300	---	7.0	ATI
RW-1	02/27/96	11.84	4.00	7.84	1800	30	24	41	440	52	194	7.7	SPL
QC-1 (c)	02/27/96	---	---	---	1600	30	23	38	420	50	---	---	SPL
RW-1	05/08/96	11.84	4.65	7.19	---	---	---	---	---	---	---	---	---
RW-1	05/09/96	11.84	---	---	3200	19	19	97	800	ND<50	---	7.1	SPL
QC-1 (c)	05/09/96	---	---	---	2900	15	15	78	700	ND<50	---	---	SPL
RW-1	08/09/96	11.84	4.96	6.88	---	---	---	---	---	---	---	---	---
RW-1	08/12/96	11.84	---	---	6900	210	270	390	1920	ND<100	---	7.9	SPL
QC-1 (c)	08/12/96	---	---	---	8200	270	330	450	2330	ND<100	---	---	SPL

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING  
 BP OIL COMPANY SERVICE STATION NO. 11104  
 1716 WEBSTER STREET, ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-155

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	MTBE (ug/l)	TDS (mg/l)	DO (ppm)	LAB
QC-2	(f) 07/09/93	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
QC-2	(f) 10/08/93	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
QC-2	(f) 01/06/94	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
QC-2	(f) 04/26/94	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
QC-2	(f) 07/25/94	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
QC-2	(f) 10/13/94	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
QC-2	(f) 01/17/95	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1	---	---	---	ATI
QC-2	(f) 03/31/95	---	---	---	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	---	ATI
QC-2	(f) 07/12/95	---	---	---	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	---	ATI
QC-2	(f) 10/12/95	---	---	---	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	---	ATI
QC-2	(f) 02/27/96	---	---	---	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	---	---	SPL
QC-2	(f) 05/09/96	---	---	---	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	---	---	SPL

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
MTBE	Methyl tert butyl ether
TDS	Total dissolved solids
DO	Dissolved oxygen
ug/l	Micrograms per liter
mg/l	Milligrams per liter
ppm	Parts per million
---	Not applicable/analyzed/measured
ND	Not detected above reported detection limit
PACE	Pace, Inc.
ATI	Analytical Technologies, Inc.
SPL	Southern Petroleum Laboratories

NOTES:

- (a) Top of casing elevations surveyed in reference to USGS benchmark (14.108 feet above mean sea level) at northwest corner of Webster Street and Pacific Avenue.
- (b) Groundwater elevations in feet above mean sea level.
- (c) Blind duplicate.
- (d) Sample also analyzed for cadmium, nickel, chromium, lead, and zinc. None were detected above the reported detection limit.
- (e) Well inaccessible.
- (f) Travel blank.

F:\10-155\155-6-1.WQ2

TABLE 2 - SUMMARY OF RESULTS OF GROUNDWATER MONITORING  
 CHEVRON STATION 9-0290  
 1802 WEBSTER STREET, ALAMEDA, CALIFORNIA

ALISTO PROJECT NO. 10-155

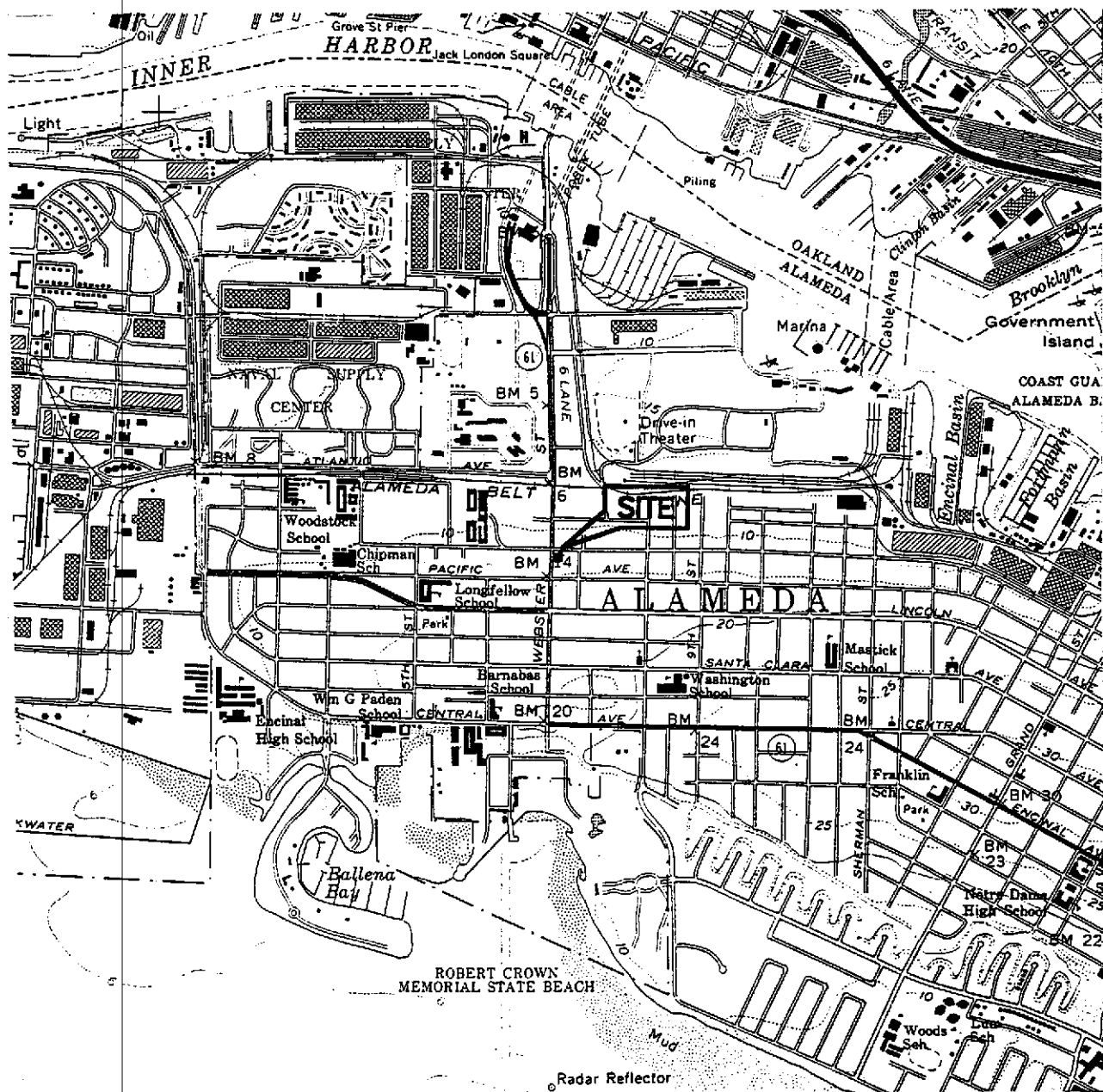
WELL ID	DATE OF MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)
A-1	05/01/95	11.56	5.80	0.60	6.21
A-1	05/08/96	11.56	5.49	0.28	6.28
A-1	08/23/96	11.56	6.43	0.22	5.30
B-1	02/15/95	12.12	5.37	0.00	6.75
B-1	05/01/95	12.12	5.12	0.00	7.00
B-1	05/08/96	12.12	4.80	0.00	7.32
B-1	08/23/96	12.12	5.54	0.00	6.58
B-5	02/15/95	10.18	4.15	0.00	6.03
B-5	05/01/95	10.18	4.43	0.00	5.75
B-5	05/08/96	10.18	4.40	0.00	5.78
B-5	08/23/96	10.18	4.99	0.00	5.19
B-6	02/15/95	11.97	4.70	0.00	7.27
B-6	05/01/95	11.97	5.03	0.00	6.94
B-6	05/08/96	11.97	5.23	0.00	6.74
B-6	08/23/96	11.97	6.05	0.00	5.92
B-7	02/15/95	10.54	4.22	0.00	6.32
B-7	05/01/95	10.54	4.50	0.00	6.04
B-7	08/23/96	--	--	--	--
B-8	02/15/95	11.99	4.72	0.00	7.27
B-8	05/01/95	11.99	5.00	0.00	6.99
B-8	08/23/96	--	--	--	--
B-9	02/15/95	10.70	3.61	0.00	7.09
B-9	05/01/95	10.70	4.29	0.00	6.41
B-9	08/23/96	--	--	--	--
B-10	05/08/96	11.42	5.55	0.00	5.87
B-10	08/23/96	11.42	6.19	0.00	5.23
B-11	05/08/96	11.98	5.00	0.00	6.98
B-11	08/23/96	11.98	5.61	0.00	6.37
B-12	05/08/96	11.16	5.08	0.00	6.08
B-12	08/23/96	11.16	5.65	0.00	5.51
B-13	05/08/96	11.17	4.97	0.00	6.20
B-13	08/23/96	11.17	5.63	0.00	5.54

NOTES:

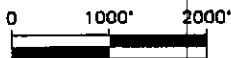
- (a) Top of casing elevations surveyed relative to 1929 NGVD.  
Measured in feet above mean sea level.
- (b) Groundwater elevations assuming a specific gravity of 0.75 for separate-phase product.
- Not measured.

Source: Groundwater data collected by Blaine Tech Services, Inc.





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



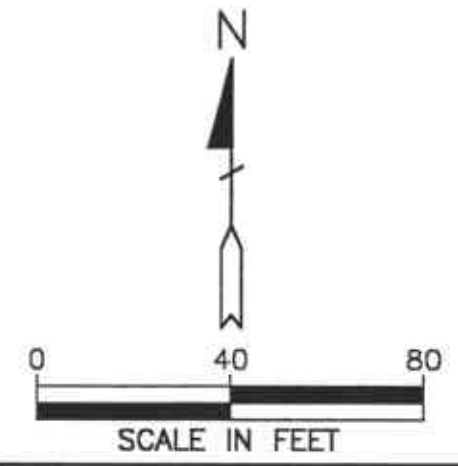
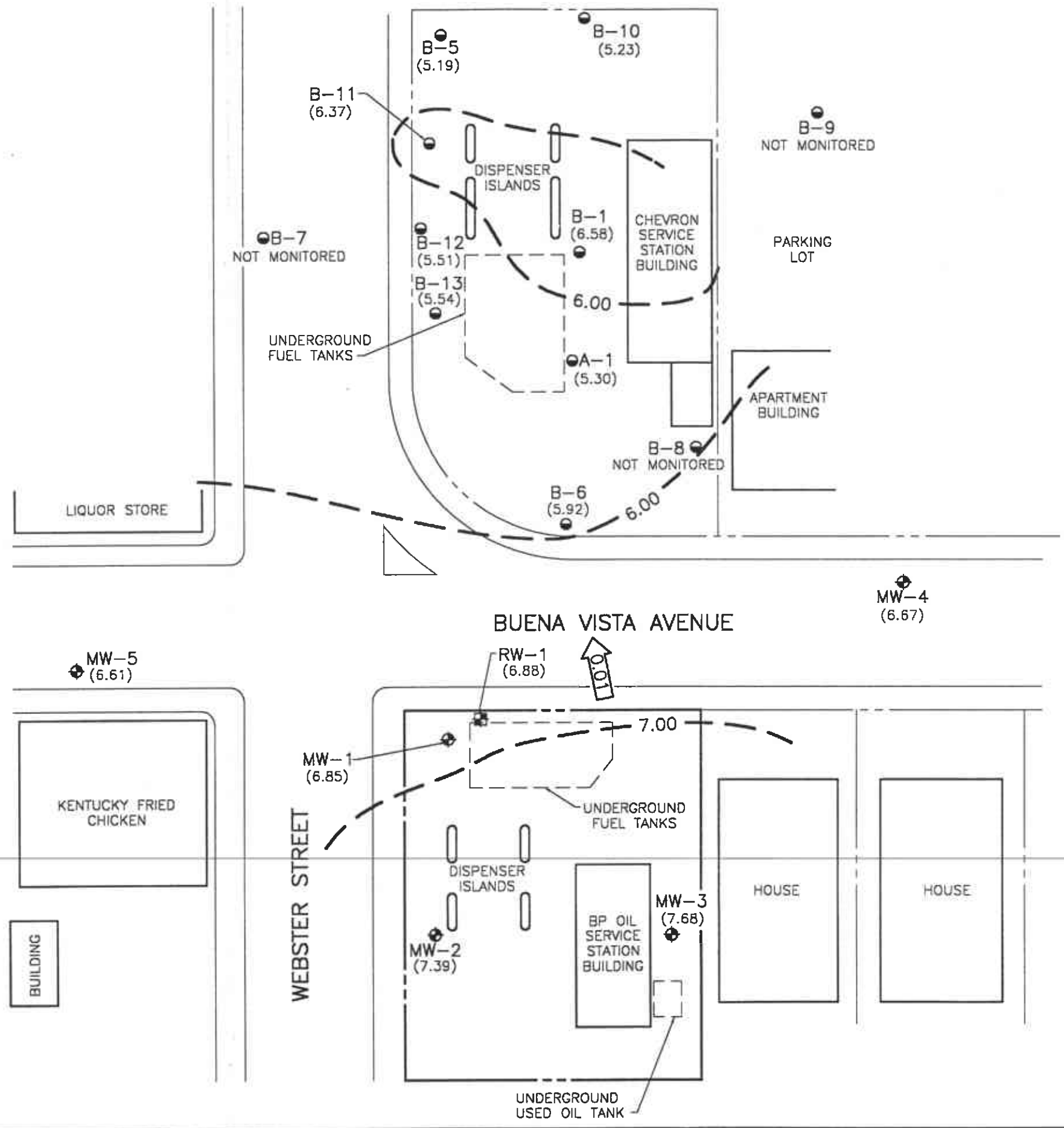
### FIGURE 1

#### SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11104  
 1716 WEBSTER STREET  
 ALAMEDA, CALIFORNIA  
 PROJECT NO. 10-155

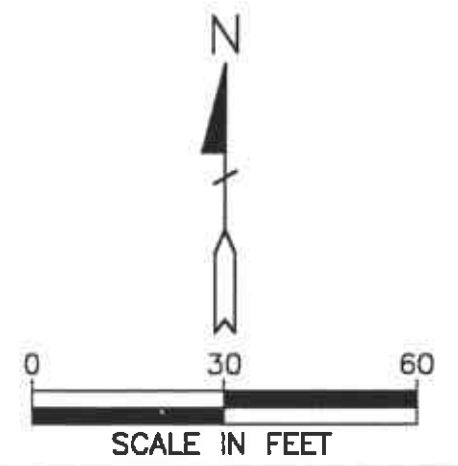
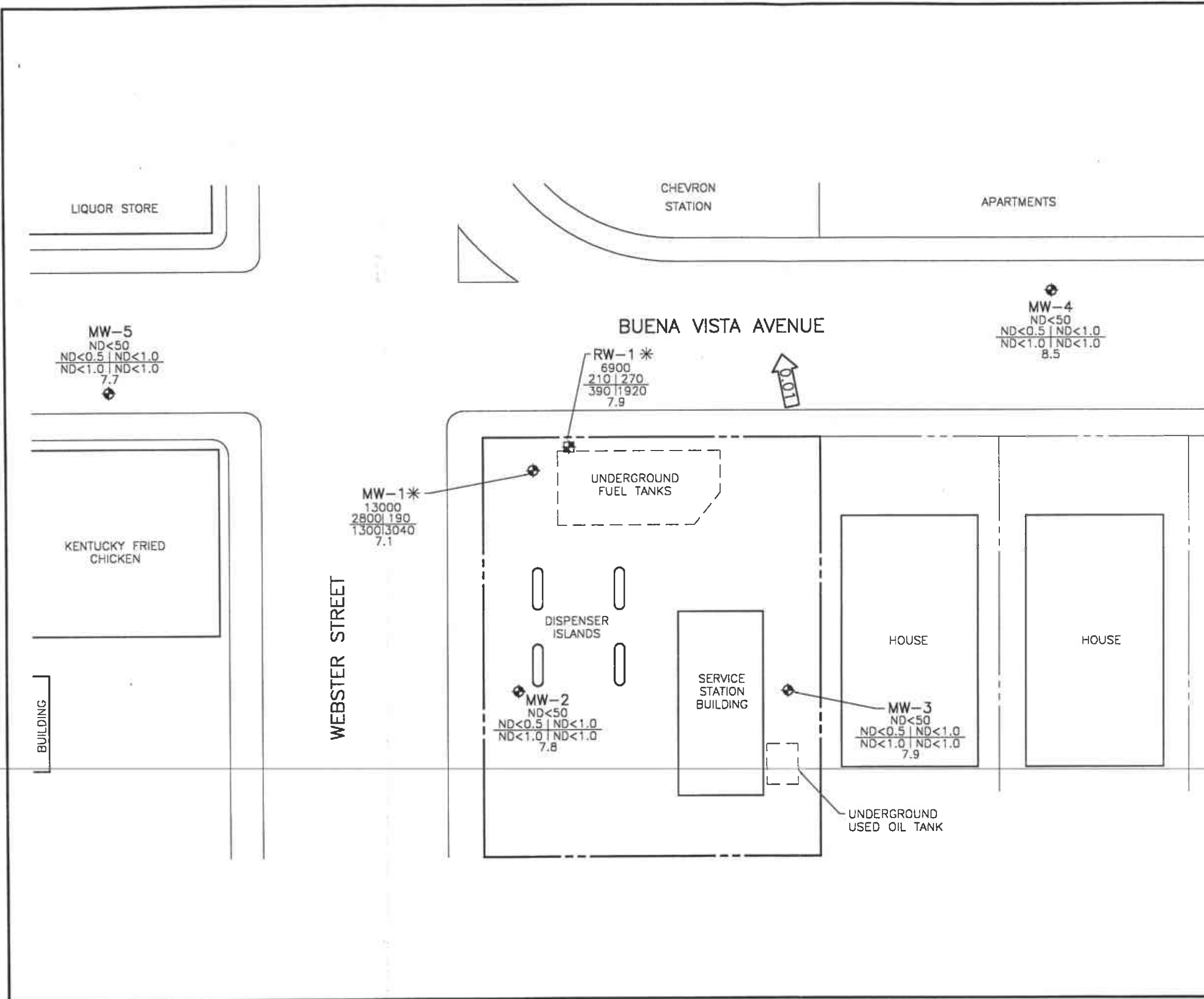


**ALISTO ENGINEERING GROUP**  
 WALNUT CREEK, CALIFORNIA



- LEGEND**
- ◆ BP OIL GROUNDWATER MONITORING WELL
  - ⊠ GROUNDWATER RECOVERY WELL
  - CHEVRON GROUNDWATER MONITORING WELL
  - (6.88) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
  - - - 7.00 - - - GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL-1.00 FOOT)
  - ← 0.01 ← CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

**FIGURE 2**  
**POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP**  
**AUGUST 9, 1996**  
 BP OIL SERVICE STATION NO. 11104  
 1716 WEBSTER STREET  
 ALAMEDA, CALIFORNIA  
 PROJECT NO. 10-155



- LEGEND**
- ◆ GROUNDWATER MONITORING WELL
  - ⊕ GROUNDWATER RECOVERY WELL
  - TPH-G  
B | T  
E | X  
DO
  - TPH-G  
TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
  - B  
BENZENE
  - T  
TOLUENE
  - E  
ETHYLBENZENE
  - X  
TOTAL XYLENES
  - DO  
DISSOLVED OXYGEN
  - ND  
NOT DETECTED ABOVE REPORTED DETECTION LIMIT
  - ← 0.01  
CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT
  - \*  
SAMPLED ON AUGUST 12, 1996

**FIGURE 3**  
**CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER**  
**AUGUST 9, 1996**  
 BP OIL SERVICE STATION NO. 11104  
 1716 WEBSTER STREET  
 ALAMEDA, CALIFORNIA  
 PROJECT NO. 10-155

**APPENDIX A**

**WATER SAMPLING FIELD SURVEY FORMS**

# ALISTO

## Field Report / Sampling Data Sheet

ENGINEERING

GROUP

1575 TREAT BOULEVARD, SUITE 201

WALNUT CREEK CA 94598 (510) 295-1650 FAX 295-1823

Project No.

10-155-05-004<sup>06-001</sup>

Address

1716 Webster St.

Contract No.

G602065

Station No.

BP 11104

Date:

8/9/96

Day:

MTWTFE

City:

Alameda

Sampler:

LB

### DEPTH TO GROUNDWATER SUMMARY

WELL ID	SAMPLE ID	WELL DIAM	TOTAL DEPTH	DEPTH TO WATER	PRODUCT THICKNESS	TIME SAMPLED	COMMENTS:
MW-1	S-5	2"	16.88	5.13	Ø	1022	
MW-2	S-1	1"	15.84	5.59	↓	1010	SEMI IN OCTOBER
MW-3	S-2	1"	16.60	5.70	↓	1014	SEMI IN OCTOBER
MW-4	S-3	1"	14.80	5.13	↓	1016	SEMI IN OCTOBER
MW-5	S-4	1"	~20'	5.01	↓	1019	SEMI IN OCTOBER
RW-1	S-6	6"	21.61	4.96	↓	1025	QC-1 (S-7) from this well

### FIELD INSTRUMENT CALIBRATION DATA

pH METER Agua check 4.00 4 7.00 7 10.00 10 TEMPERATURE COMPENSATED Y N TIME 0956 WEATHER clear

D.O. METER Agua check ZERO d.O. SOLUTION Ø BAROMETRIC PRESSURE 760 TEMP 66

CONDUCTIVITY METER Agua check 10,000 TURBIDITY METER \_\_\_\_\_ 5.0 NTU OTHER \_\_\_\_\_

Well ID	Depth to Water	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
MW-2	5.59	2"	OK	Ø	Y <u>Ø</u>	2	1042	65.4	6.97	627 µS	7.6	<input type="checkbox"/> EPA 601 _____
Total Depth - Water Level=						3		64.7	6.82	636 µS		<input checked="" type="checkbox"/> TPH-G/BTEX <u>ACU</u>
$15.84 - 5.59 = 10.25 \times .16 = 1.64 \times 3 = 4.92$						5	1055	64.3	6.77	644 µS	7.8	<input type="checkbox"/> TPH Diesel _____
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												<input type="checkbox"/> TOG 5520 _____
Comments:												TIME/SAMPLE ID
												1100

Well ID	Depth to Water	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
MW-1	5.13	2"	OK	Ø	Y <u>Ø</u>	2	1110	64.9	6.87	642 µS	5.9	<input type="checkbox"/> EPA 601 _____
Total Depth - Water Level=						4		64.3	6.69	622 µS		<input checked="" type="checkbox"/> TPH-G/BTEX <u>HCL</u>
$16.88 - 5.13 = 11.75 \times .16 = 1.88 \times 3 = 5.64$						6	1118	64.0	6.63	618 µS	7.1	<input type="checkbox"/> TPH Diesel _____
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												<input type="checkbox"/> TOG 5520 _____
Comments:												TIME/SAMPLE ID
												1121

# ALISTO

## Field Report / Sampling Data Sheet

ENGINEERING

GROUP

1575 TREAT BOULEVARD, SUITE 201  
WALNUT CREEK CA 94598 (510) 295-1650 FAX 295-1823

Project No.

10-155-05-004 <sup>06-001</sup>

Address

1716 Webster St.

Contract No.

G602065

Station No.

BP 11104

Sampler:

Date:

8/9/96 - 8/12/96

Day:

MTWTF

City:

Alameda

Well ID	Depth to Water	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
MW-4	5.13	2"	OK	Ø	Y (N)	2	1133	66.3	6.81	412 µs	8.2	
Total Depth - Water Level=						x Well Vol. Factor=	x#vol. to Purge	PurgeVol.				
14.80 - 5.13 = 9.67						1.6 = 1.55	3 = 4.65	4	65.5	6.70	312 µs	
						5	1142	65.0	6.62	384 µs	8.5	
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments:												

<input type="radio"/> EPA 601	_____
<input checked="" type="radio"/> TPH-G/BTEX	HCL
<input type="radio"/> TPH Diesel	_____
<input type="radio"/> TOG 5520	_____
TIME/SAMPLE ID	1150

Well ID	Depth to Water	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
MW-5	5.01	2"	OK	Ø	Y (N)	2	1257	67.1	7.11	501 µs	7.3	
Total Depth - Water Level=						x Well Vol. Factor=	x#vol. to Purge	PurgeVol.				
20 - 5.01 = 14.99						1.6 = 2.40	3 = 7.20	4	65.9	6.82	462 µs	
						7.5	1310	65.4	6.70	455 µs	7.7	
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments:												

<input type="radio"/> EPA 601	_____
<input checked="" type="radio"/> TPH-G/BTEX	HCL
<input type="radio"/> TPH Diesel	_____
<input type="radio"/> TOG 5520	_____
TIME/SAMPLE ID	1315

Well ID	Depth to Water	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
MW-3	5.70	2"	OK	Ø	Y (N)	2	1221	65.6	6.62	422 µs	7.7	
Total Depth - Water Level=						x Well Vol. Factor=	x#vol. to Purge	PurgeVol.				
16.60 - 5.70 = 10.90						1.6 = 1.74	3 = 5.22	4	65.0	6.52	410 µs	
						5.5	1230	64.3	6.44	403 µs	7.9	
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments:												

<input type="radio"/> EPA 601	_____
<input checked="" type="radio"/> TPH-G/BTEX	HCL
<input type="radio"/> TPH Diesel	_____
<input type="radio"/> TOG 5520	_____
TIME/SAMPLE ID	1233 8/12/96

Well ID	Depth to Water	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
RW-1	4.96	8"	OK	Ø	Y (N)	25	1242	66.2	7.11	300 µs	7.0	
Total Depth - Water Level=						x Well Vol. Factor=	x#vol. to Purge	PurgeVol.				
21.61 - 4.96 = 16.65						1.47 = 24.48	3 = 73.43	47	65.0	6.82	300 µs	
						73.5	1309	64.4	6.77	294 µs	7.9	
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) OSys Port												
Comments: AC-1 (5-7) from this well												

<input type="radio"/> EPA 601	_____
<input checked="" type="radio"/> TPH-G/BTEX	HCL
<input type="radio"/> TPH Diesel	_____
<input type="radio"/> TOG 5520	_____
TIME/SAMPLE ID	1315 8/12/96

MW-4 & RW-1 Resampled on 8/12/96  
Due to glassware breakage

**APPENDIX B**

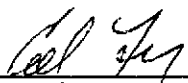
**LABORATORY REPORT AND CHAIN OF CUSTODY RECORD**



Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 96-08-769

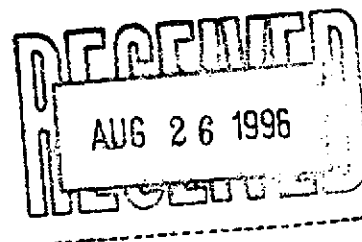
Approved for Release by:

  
\_\_\_\_\_  
Ed Fry, Project Manager

  
\_\_\_\_\_  
Date:

Greg Grandits  
Laboratory Director

Idelis Williams  
Quality Assurance Officer







Certificate of Analysis No. H9-9608769-01

BP Oil Company  
295 SW 41st St, Bldg 13, Ste N  
Renton, WA 98055  
ATTN: Scott Hooton

P.O.#  
G797392, COC#077652  
DATE: 08/21/96

PROJECT: BP Oil #11104  
SITE: Alameda, CA  
SAMPLED BY: Alisto Engineering  
SAMPLE ID: S-1

PROJECT NO: 10-155-06/001  
MATRIX: WATER  
DATE SAMPLED: 08/09/96  
DATE RECEIVED: 08/16/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	10 P	µg/L
Benzene	ND	0.5 P	µg/L
Toluene	ND	1.0 P	µg/L
Ethylbenzene	ND	1.0 P	µg/L
Total Xylene	ND	1.0 P	µg/L

Surrogate % Recovery  
 1,4-Difluorobenzene 83  
 4-Bromofluorobenzene 100

METHOD 8020\*\*\*  
 Analyzed by: YN  
 Date: 08/18/96

Total Petroleum Hydrocarbons-Gasoline ND 0.05 P mg/L

Surrogate % Recovery  
 1,4-Difluorobenzene 113  
 4-Bromofluorobenzene 83

CA LUFT - Gasoline  
 Analyzed by: YN  
 Date: 08/18/96 03:27:00

ND - Not detected. (P) - Practical Quantitation Limit

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA  
 \*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.  
 \*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.  
 SPL California License # 1903



Certificate of Analysis No. H9-9608769-02

BP Oil Company
295 SW 41st St, Bldg 13, Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.#
G797392, COC#077652
DATE: 08/21/96

PROJECT: BP Oil #11104
SITE: Alameda, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-2

PROJECT NO: 10-155-06/001
MATRIX: WATER
DATE SAMPLED: 08/09/96
DATE RECEIVED: 08/16/96

ANALYTICAL DATA

Table with 5 columns: PARAMETER, RESULTS, DETECTION LIMIT, UNITS. Rows include MTBE, Benzene, Toluene, Ethylbenzene, Total Xylene.

Table with 2 columns: Surrogate, % Recovery. Rows include 1,4-Difluorobenzene, 4-Bromofluorobenzene.

METHOD 8020\*\*\*

Analyzed by: YN
Date: 08/18/96

Table with 5 columns: PARAMETER, RESULTS, DETECTION LIMIT, UNITS. Row: Total Petroleum Hydrocarbons-Gasoline.

Table with 2 columns: Surrogate, % Recovery. Rows include 1,4-Difluorobenzene, 4-Bromofluorobenzene.

CA LUFT - Gasoline
Analyzed by: YN
Date: 08/18/96 03:56:00

ND - Not detected. (P) - Practical Quantitation Limit

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
\*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
\*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance. SPL California License # 1903



Certificate of Analysis No. H9-9608769-03

BP Oil Company
295 SW 41st St, Bldg 13, Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.#
G797392, COC#077652
DATE: 08/21/96

PROJECT: BP Oil #11104
SITE: Alameda, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-155-06/001
MATRIX: WATER
DATE SAMPLED: 08/09/96
DATE RECEIVED: 08/16/96

ANALYTICAL DATA

Table with 5 columns: PARAMETER, RESULTS, DETECTION LIMIT, UNITS. Rows include MTBE, Benzene, Toluene, Ethylbenzene, Total Xylene.

Surrogate % Recovery
1,4-Difluorobenzene 83
4-Bromofluorobenzene 100
METHOD 8020\*\*\*
Analyzed by: YN
Date: 08/18/96

Total Petroleum Hydrocarbons-Gasoline ND 0.05 P mg/L

Surrogate % Recovery
1,4-Difluorobenzene 113
4-Bromofluorobenzene 83
CA LUFT - Gasoline
Analyzed by: YN
Date: 08/18/96 05:24:00

ND - Not detected. (P) - Practical Quantitation Limit

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
\*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
\*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance. SPL California License # 1903



Certificate of Analysis No. H9-9608769-04

BP Oil Company
295 SW 41st St, Bldg 13, Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.#
G797392, COC#077652
DATE: 08/21/96

PROJECT: BP Oil #11104
SITE: Alameda, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-4

PROJECT NO: 10-155-06/001
MATRIX: WATER
DATE SAMPLED: 08/09/96
DATE RECEIVED: 08/16/96

ANALYTICAL DATA

Table with 5 columns: PARAMETER, RESULTS, DETECTION LIMIT, UNITS. Rows include MTBE, Benzene, Toluene, Ethylbenzene, Total Xylene.

Surrogate % Recovery
1,4-Difluorobenzene 80
4-Bromofluorobenzene 97

METHOD 8020\*\*\*
Analyzed by: YN
Date: 08/18/96

Total Petroleum Hydrocarbons-Gasoline ND 0.05 P mg/L

Surrogate % Recovery
1,4-Difluorobenzene 110
4-Bromofluorobenzene 83

CA LUFT - Gasoline
Analyzed by: YN
Date: 08/18/96 05:53:00

ND - Not detected. (P) - Practical Quantitation Limit

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
\*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
\*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL California License # 1903



Certificate of Analysis No. H9-9608769-05

BP Oil Company  
295 SW 41st St, Bldg 13, Ste N  
Renton, WA 98055  
ATTN: Scott Hooton

P.O.#  
G797392, COC#077652  
DATE: 08/21/96

PROJECT: BP Oil #11104  
SITE: Alameda, CA  
SAMPLED BY: Alisto Engineering  
SAMPLE ID: S-5

PROJECT NO: 10-155-06/001  
MATRIX: WATER  
DATE SAMPLED: 08/12/96  
DATE RECEIVED: 08/16/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	1800	250 P	µg/L
Benzene	2800	12 P	µg/L
Toluene	190	25 P	µg/L
Ethylbenzene	1300	25 P	µg/L
Total Xylene	3040	25 P	µg/L

Surrogate

% Recovery

1,4-Difluorobenzene  
4-Bromofluorobenzene

108  
109

METHOD 8020\*\*\*

Analyzed by: YN

Date: 08/18/96

Total Petroleum Hydrocarbons-Gasoline

13

1.2 P

mg/L

Surrogate

% Recovery

1,4-Difluorobenzene  
4-Bromofluorobenzene

147  
112

CA LUFT - Gasoline

Analyzed by: YN

Date: 08/18/96 06:23:00

(P) - Practical Quantitation Limit

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA  
\*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.  
\*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.  
SPL California License # 1903



Certificate of Analysis No. H9-9608769-06

BP Oil Company
295 SW 41st St, Bldg 13, Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.#
G797392, COC#077652
DATE: 08/21/96

PROJECT: BP Oil #11104
SITE: Alameda, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-6

PROJECT NO: 10-155-06/001
MATRIX: WATER
DATE SAMPLED: 08/12/96
DATE RECEIVED: 08/16/96

ANALYTICAL DATA

Table with 5 columns: PARAMETER, RESULTS, DETECTION LIMIT, UNITS. Rows include MTBE, Benzene, Toluene, Ethylbenzene, Total Xylene.

Surrogate % Recovery
1,4-Difluorobenzene 90
4-Bromofluorobenzene 110

METHOD 8020\*\*\*
Analyzed by: YN
Date: 08/18/96

Total Petroleum Hydrocarbons-Gasoline 6.9 0.5 P mg/L

Surrogate % Recovery
1,4-Difluorobenzene 113
4-Bromofluorobenzene 107

CA LUFT - Gasoline
Analyzed by: YN
Date: 08/18/96 06:52:00

ND - Not detected. (P) - Practical Quantitation Limit

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
\*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
\*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance
with EPA guidelines for quality assurance.
SPL California License # 1903



Certificate of Analysis No. H9-9608769-07

BP Oil Company
295 SW 41st St, Bldg 13, Ste N
Renton, WA 98055
ATTN: Scott Hooton

P.O.#
G797392, COC#077652
DATE: 08/21/96

PROJECT: BP Oil #11104
SITE: Alameda, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-7

PROJECT NO: 10-155-06/001
MATRIX: WATER
DATE SAMPLED: 08/12/96
DATE RECEIVED: 08/16/96

ANALYTICAL DATA

Table with 5 columns: PARAMETER, RESULTS, DETECTION LIMIT, UNITS. Rows include MTBE, Benzene, Toluene, Ethylbenzene, Total Xylene.

Surrogate % Recovery
1,4-Difluorobenzene 93
4-Bromofluorobenzene 110

METHOD 8020\*\*\*
Analyzed by: YN
Date: 08/18/96

Total Petroleum Hydrocarbons-Gasoline 8.2 0.5 P mg/L

Surrogate % Recovery
1,4-Difluorobenzene 113
4-Bromofluorobenzene 127

CA LUFT - Gasoline
Analyzed by: YN
Date: 08/18/96 07:21:00

ND - Not detected. (P) - Practical Quantitation Limit

Notes: \*Ref: Methods for Chemical Analysis of Water and Wastes, 1983, EPA
\*\*Ref: Standard Methods for Examination of Water & Wastewater, 18th ed.
\*\*\*Ref: Test Methods for Evaluating Solid Waste, EPA SW846, 3rd Ed.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance. SPL California License # 1903

***QUALITY CONTROL  
DOCUMENTATION***





Matrix: Aqueous  
Units: µg/L

Batch Id: HP\_J960818105800

LABORATORY CONTROL SAMPLE

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	50	100	20 - 110
Benzene	ND	50	46	92.0	62 - 121
Toluene	ND	50	48	96.0	66 - 136
EthylBenzene	ND	50	50	100	70 - 136
O Xylene	ND	50	55	110	74 - 134
M & P Xylene	ND	100	110	110	77 - 140

M A T R I X S P I K E S

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
			MTBE	ND	20	24	120	24	120
BENZENE	ND	20	20	100	20	100	0	25	39 - 150
TOLUENE	ND	20	21	105	20	100	4.88	26	56 - 134
ETHYLBENZENE	ND	20	19	95.0	19	95.0	0	38	61 - 128
O XYLENE	ND	20	21	105	20	100	4.88	29	40 - 130
M & P XYLENE	ND	40	42	105	40	100	4.88	20	43 - 152

Analyst: YN

Sequence Date: 08/18/96

SPL ID of sample spiked: 9608769-01A

Sample File ID: J\_H6703.TX0

Method Blank File ID:

Blank Spike File ID: J\_H6694.TX0

Matrix Spike File ID: J\_H6698.TX0

Matrix Spike Duplicate File ID: J\_H6699.TX0

\* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

% Recovery = [ ( <1> - <2> ) / <3> ] x 100

LCS % Recovery = ( <1> / <3> ) x 100

Relative Percent Difference = | (<4> - <5> ) / [ (<4> + <5> ) x 0.5 ] x 100

(\*\*) = Source: SPL-Houston Historical Data (4th Q '95)

(\*\*\*) = Source: SPL-Houston Historical Data (4th Q '95)

SAMPLES IN BATCH(SPL ID):

9608769-01A 9608769-02A 9608626-13A 9608626-06A  
 9608769-03A 9608769-04A 9608769-05A 9608769-06A  
 9608769-07A 9608706-01A 9608768-01A 9608768-02A  
 9608768-06A 9608768-07A 9608768-04A 9608768-05A  
 9608768-03A 9608768-08A



Matrix: Aqueous  
Units: mg/L

Batch Id: HP\_J960818115500

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
	Blank Result <2>		Result <1>	Recovery ‡	
Petroleum Hydrocarbons-Gas	ND	1.00	0.81	81.0	50 - 150

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike		Matrix Spike Duplicate		MS/MSD Relative % Difference	QC Limits(***) (Advisory)	
			Result <1>	Recovery <4>	Result <1>	Recovery <5>		RPD Max.	Recovery Range
PETROLEUM HYDROCARBONS-GAS	ND	0.9	0.99	110	0.97	108	1.83	50	50 - 150

Analyst: YN

Sequence Date: 08/18/96

SPL ID of sample spiked: 9608769-02A

Sample File ID: JJH6704.TX0

Method Blank File ID:

Blank Spike File ID: JJH6696.TX0

Matrix Spike File ID: JJH6700.TX0

Matrix Spike Duplicate File ID: JJH6701.TX0

\* = Values Outside QC Range

NC = Not Calculated (Sample exceeds spike by factor of 4 or more)

ND = Not Detected/Below Detection Limit

‡ Recovery =  $[( <1> - <2> ) / <3> ] \times 100$

LCS % Recovery =  $( <1> / <3> ) \times 100$

Relative Percent Difference =  $| [ <4> - <5> ] / [ ( <4> + <5> ) \times 0.5 ] \times 100$

(\*\*) = Source: Temporary Limits

(\*\*\*) = Source: Temporary Limits

SAMPLES IN BATCH(SPL ID):

9608769-01A 9608769-02A 9608626-13A 9608769-03A  
 9608769-04A 9608769-05A 9608769-06A 9608769-07A  
 9608706-01A 9608756-01A 9608768-01A 9608768-02A  
 9608768-06A 9608768-07A 9608768-04A 9608768-05A  
 9608768-03A 9608768-08A

***CHAIN OF CUSTODY***  
***AND***  
***SAMPLE RECEIPT CHECKLIST***



96-08-769

cx  
1/17

# CHAIN OF CUSTODY

No. 077652

Page 1 of 1

CONSULTANT'S NAME <b>Alisto Engineering</b>		ADDRESS <b>1575 Treat Blvd #201 W. C.</b>		CITY <b>C</b>	STATE <b>G</b>	ZIP CODE <b>94598</b>
BP SITE NUMBER <b>1104</b>	BP CORNER ADDRESS/CITY <b>Alameda</b>			CONSULTANT PROJECT NUMBER <b>10-155-06/001</b>		
CONSULTANT PROJECT MANAGER <b>Brady Nagle</b>		PHONE NUMBER <b>(510) 295-1650</b>	FAX NUMBER <b>295-1823</b>		CONSULTANT CONTRACT NUMBER <b>6797392</b>	
BP CONTACT <b>Scott Hooton</b>	BP ADDRESS <b>Kenton, WA</b>		PHONE NUMBER <b>-</b>	FAX NO. <b>-</b>		
LAB CONTACT <b>SPL</b>	LABORATORY ADDRESS <b>Texas</b>		PHONE NUMBER <b>-</b>	FAX NO. <b>-</b>		
SAMPLED BY (Please Print Name) <b>Larry Buenavente</b>		SAMPLED BY (Signature) <i>[Signature]</i>		SHIPMENT DATE <b>8-15-96</b>		SHIPMENT METHOD <b>FedEx</b>

TAT:  24 Hours  48 Hours  1 Week  Standard 2 Weeks

ANALYSIS REQUIRED

AIRBILL NUMBER: **8286605074**

SAMPLE DESCRIPTION	COLLECTION DATE	MATRIX SOIL/WATER	CONTAINERS		PRESERVATIVE	LAB SAMPLE #	TPH-61 BTXE	MTBE	H <sub>2</sub> O	COMMENTS
	COLLECTION TIME		NO.	TYPE (VOL.)	LAB					
S-1	8/9/96	W	3	HL			X	X		
S-2	↓	↓	↓	↓			↓	↓		
S-3	↓	↓	↓	↓			↓	↓		
S-4	↓	↓	↓	↓			↓	↓		
S-5	8/12/96	↓	↓	↓			↓	↓		
S-6	↓	↓	↓	↓			↓	↓		
S-7	↓	↓	↓	↓			↓	↓		

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	ADDITIONAL COMMENTS
<i>[Signature]</i>	8/15/96	0800	Patricia Lyster	8/15/96	0803	30 CROE, in tank
Patricia Lyster	8/15/96		S. West	8/16/96	0915	


# SPL Houston Environmental Laboratory

## Sample Login Checklist

Date: 8-16-96	Time: 0915
---------------	------------

SPL Sample ID:  96-08-769
---------------------------------

		<u>Yes</u>	<u>No</u>
1	Chain-of-Custody (COC) form is present.	✓	
2	COC is properly completed.	✓	
3	If no, Non-Conformance Worksheet has been completed.		
4	Custody seals are present on the shipping container.	✓	
5	If yes, custody seals are intact.	✓	
6	All samples are tagged or labeled.	✓	
7	If no, Non-Conformance Worksheet has been completed.		
8	Sample containers arrived intact	✓	
9	Temperature of samples upon arrival:	3° C	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #)	8284665074
		Other:	
11	Method of sample disposal:	SPL Disposal	✓
		HOLD	
		Return to Client	

Name: 	Date: 8-16-96
---	---------------

BP EXPLORATION & OIL, INC.  
 ENVIRONMENTAL REMEDIATION MANAGEMENT  
 DATA REVIEW CHECKLIST

BP Site Number: 11104  
 ERM Contact: 6797392  
 Sampling Date: 8/15  
 Matrix Description: groundwater  
 Date Final Report Received: 8/26/96  
 Laboratory & Location: SPL - TX

	Yes	No	NA
1. Is BP contract release number consistent with analytical report?	<u>X</u>	_____	_____
2. Was report submitted within the specified timeframe?	<u>X</u>	_____	_____
3. Does report agree with the COC?	<u>X</u>	_____	_____
4. Are units consistent with the given matrix?	<u>X</u>	_____	_____
5. Were any target analytes/compounds detected in blanks (ie. trip or equipment)?	_____	_____	<u>X</u>
6. Are duplicate water samples within ___%?	<u>X</u>	_____	_____
7. Are holding times met?	<u>X</u>	_____	_____
8. Are surrogates within limits using laboratory criteria?	<u>X</u>	_____	_____
9. Are MS/MSD acceptable using laboratory criteria?	<u>X</u>	_____	_____
10. Are LCS results acceptable using laboratory criteria?	<u>X</u>	_____	_____

Notes/Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Data Validation Completed by (print): Bill Howey  
 (signature): [Signature]  
 Date: 8/25/96