

GROUNDWATER MONITORING AND SAMPLING REPORT

**BP Oil Company Service Station No. 11105
3519 Castro Valley Boulevard
Castro Valley, California**

Project No. 10-138-09-002

MAR 11 1997

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March 6, 1997

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INTRODUCTION

This report presents the results and findings of the January 20, 1997 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11105, 3519 Castro Valley Boulevard, Castro Valley, 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.

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.

Groundwater monitoring was performed concurrently at the neighboring Xtra Oil Company service station, 3495 Castro Valley Boulevard. The results are presented in Table 2.

SAMPLING AND ANALYTICAL RESULTS

The results of monitoring and laboratory analysis of the groundwater samples collected during 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 laboratory 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. 11105
 3519 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

ALISTO PROJECT NO. 10-138

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)	DO (ppm)	LAB
ESE-1 (c)	10/05/92	177.69	11.22	166.47	2100	370	150	17	110	---	---	---
ESE-1D (d)	10/05/92	---	---	---	2300	370	160	16	110	---	---	---
ESE-1	04/01/93	177.69	8.79	168.90	5900	1500	410	110	390	---	---	PACE
ESE-1	06/29/93	177.69	10.34	167.35	7600	2900	390	130	460	---	---	PACE
ESE-1	09/23/93	177.69	10.91	166.78	2000	490	40	20	56	---	---	PACE
QC-1 (d)	09/23/93	---	---	---	1500	420	39	19	56	---	---	PACE
ESE-1	12/10/93	177.69	9.93	167.76	1800	480	42	19	66	---	3.2	PACE
QC-1 (d)	12/10/93	---	---	---	1500	380	38	17	55	---	---	PACE
ESE-1	02/17/94	177.69	9.64	168.05	1900	380	48	24	80	---	---	PACE
QC-1 (d)	02/17/94	---	---	---	2200	430	42	19	65	---	---	PACE
ESE-1	08/08/94	177.69	11.72	165.97	2100	450	46	16	50	---	5.1	PACE
ESE-1	10/12/94	177.69	10.48	167.21	760	240	16	51	39	---	3.5	PACE
ESE-1	01/19/95	177.69	7.77	169.92	840	600	120	22	58	---	8.0	ATI
ESE-1	05/02/95	177.69	8.69	169.00	2000	640	67	24	98	---	8.5	ATI
ESE-1	07/28/95	177.69	10.12	167.57	190	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	7.9	ATI
ESE-1	11/17/95	177.69	10.57	167.12	200	3.4	ND<1.0	1.0	ND<2.0	600	7.7	ATI
ESE-1	02/07/96	177.69	7.41	170.28	750	370	23	21	64	680	2.5	SPL
ESE-1	04/23/96	177.69	9.12	168.57	310	100	ND<1	ND<1	ND<1	1500	6.3	SPL
ESE-1	07/09/96	177.69	10.12	167.57	730	230	74	13	63	750	2.9	SPL
ESE-1	10/10/96	177.69	10.80	166.89	420	26	1.6	7.3	12.0	430	7.4	SPL
ESE-1	01/20/97	177.69	8.52	169.17	660	290	4.2	13	36	---	5.9	SPL
ESE-2	10/05/92	178.23	11.68	166.55	300	5.4	16	3.9	45	---	---	---
ESE-2	04/01/93	178.23	9.17	169.06	240	27	ND<0.5	17	2.6	---	---	PACE
ESE-2	06/29/93	178.23	10.88	167.35	1700	260	24	110	23	---	---	PACE
QC-1 (d)	06/29/93	---	---	---	1300	240	17	110	25	---	---	PACE
ESE-2	09/23/93	178.23	11.56	166.67	240	3.1	0.5	0.6	2.5	---	---	PACE
ESE-2	12/10/93	178.23	10.48	167.75	250	2.4	2.4	1.5	11	---	2.6	PACE
ESE-2	02/17/94	178.23	10.06	168.17	900	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
ESE-2	08/08/94	178.23	11.11	167.12	750	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	5.1	PACE
ESE-2	10/12/94	178.23	11.31	166.92	1700	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	3.6	PACE
ESE-2	01/19/95	178.23	8.25	169.98	300	2	0.9	0.7	1	---	8.1	ATI
ESE-2	05/02/95	178.23	9.21	169.02	1200	4.0	ND<2.5	ND<2.5	ND<5.0	---	8.4	ATI
ESE-2	07/28/95	178.23	10.64	167.59	2000	ND<2.5	ND<2.5	ND<2.5	ND<5.0	---	7.7	ATI
ESE-2	11/17/95	178.23	11.13	167.10	3600	ND<25	ND<25	ND<25	ND<50	12000	7.4	ATI
QC-1 (d)	11/17/95	---	---	---	3400	ND<25	ND<25	ND<25	ND<50	12000	---	ATI
ESE-2	02/07/96	178.23	7.94	170.29	450	ND<0.5	ND<1	ND<1	ND<1	2300	1.8	SPL
ESE-2	04/23/96	178.23	9.73	168.50	260	0.9	ND<1	ND<1	ND<1	8600	7.2	SPL
ESE-2	07/09/96	178.23	10.70	167.53	780	ND<2.5	ND<5	ND<5	ND<5	13393	3.0	SPL
ESE-2	10/10/96	178.23	11.39	166.84	2900	ND<0.5	ND<1.0	ND<1.0	ND<1.0	12000	7.0	SPL
ESE-2	01/20/97	178.23	9.04	169.19	ND<250	ND<2.5	ND<5.0	ND<5.0	ND<5.0	---	6.2	SPL

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 BP OIL COMPANY SERVICE STATION NO. 11105
 3519 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

ALISTO PROJECT NO. 10-138

WELL ID	DATE OF SAMPLING/MONITORING	CASING ELEVATION (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)	DO (ppm)	LAB
ESE-3	10/05/92	178.20	10.58	167.62	430	57	31	3.6	34	---	---	---
ESE-3	04/01/93	178.20	8.14	170.06	2400	460	220	74	210	---	---	PACE
ESE-3	06/29/93	178.20	9.72	168.48	280	56	14	15	13	---	---	PACE
ESE-3	09/23/93	178.20	10.46	167.74	72	13	3.5	1.7	4.1	---	---	PACE
ESE-3	12/10/93	178.20	9.30	168.90	270	71	32	6.1	33	---	2.7	PACE
ESE-3	02/17/94	178.20	8.97	169.23	520	140	10	20	33	---	---	PACE
ESE-3	08/08/94	178.20	10.02	168.18	ND<50	8.8	1.6	1.6	2.3	---	6.2	PACE
ESE-3	10/12/94	178.20	10.32	167.88	470	190	6.4	15	18	---	3.5	PACE
ESE-3	01/19/95	178.20	7.40	170.80	330	260	27	21	20	---	6.7	ATI
ESE-3	05/02/95	178.20	8.26	169.94	530	180	30	23	44	---	8.6	ATI
ESE-3	07/28/95	178.20	9.54	168.66	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	8.8	ATI
ESE-3	11/17/95	178.20	10.04	168.16	ND<50	1.7	ND<0.50	ND<0.50	ND<1.0	ND<5.0	7.3	ATI
ESE-3	02/07/96	178.20	7.08	171.12	ND<50	8.6	ND<1	ND<1	ND<1	ND<10	3.9	SPL
ESE-3	04/23/96	178.20	8.79	169.41	ND<50	7.6	ND<1	ND<1	ND<1	65	6.9	SPL
ESE-3	07/09/96	178.20	10.09	168.11	ND<50	12	2.6	2.0	3.9	26	3.4	SPL
ESE-3	10/10/96	178.20	10.48	167.72	---	---	---	---	---	---	---	---
ESE-3	10/11/96	178.20	---	---	260	140	ND<1.0	ND<1.0	2.6	ND<10	7.2	SPL
ESE-3	01/20/97	178.20	8.65	169.55	ND<50	1.5	1.7	ND<1.0	ND<1.0	14	9.7	SPL
ESE-4	10/05/92	177.73	10.33	167.40	98	7.2	1.3	1.1	6.1	---	---	---
ESE-4	04/01/93	177.73	7.88	169.85	550	93	20	23	33	---	---	PACE
ESE-4	06/29/93	177.66	(e) 8.33	169.33	150	23	0.6	5.4	0.5	---	---	PACE
ESE-4	09/23/93	177.66	10.05	167.61	110	14	1.7	3.2	4.6	---	---	PACE
ESE-4	12/10/93	177.66	8.95	168.71	110	21	7.2	4.2	10	---	2.8	PACE
ESE-4	02/17/94	177.66	8.65	169.01	210	26	1.2	4.7	11	---	---	PACE
ESE-4	08/08/94	177.66	9.76	167.90	76	9.6	ND<0.5	2.0	ND<0.5	---	7.0	PACE
ESE-4	10/12/94	177.66	9.62	168.04	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	3.2	PACE
ESE-4	01/19/95	177.66	6.97	170.69	140	56	14	24	23	---	6.9	ATI
ESE-4	05/02/95	177.66	7.85	169.81	130	21	2.8	8.6	8.2	---	9.1	ATI
ESE-4	07/28/95	177.66	9.20	168.46	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	8.1	ATI
ESE-4	11/17/95	177.66	9.68	167.98	ND<50	ND<0.50	0.60	ND<0.50	ND<1.0	18	5.7	ATI
ESE-4	02/07/96	177.66	6.59	171.07	100	2.6	ND<1	1.6	4.1	42	2.0	SPL
ESE-4	04/23/96	177.66	8.30	169.36	160	37	15	16	31	43	5.4	SPL
ESE-4	07/09/96	177.66	9.21	168.45	60	17	1.5	6.8	11.6	27	3.9	SPL
ESE-4	10/10/96	177.66	9.97	167.69	---	---	---	---	---	---	---	---
ESE-4	10/11/96	177.66	---	---	ND<50	ND<0.50	ND<1.0	ND<1.0	ND<1.0	18	5.5	SPL
ESE-4	01/20/97	177.66	7.68	169.98	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<1.0	130	4.9	SPL

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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)	DO (ppm)	LAB
ESE-5	10/05/92	176.08	9.22	166.86	1300	200	3.8	1.2	18	---	---	---
ESE-5	04/01/93	176.08	7.02	169.06	13000	2200	26	730	1000	---	---	PACE
QC-1 (d)	04/01/93	---	---	---	13000	2500	25	740	1100	---	---	PACE
ESE-5	06/29/93	176.08	10.21	165.87	7600	1500	9.3	170	100	---	---	PACE
ESE-5	09/23/93	176.08	10.64	165.44	560	19	1.2	0.9	1.8	---	---	PACE
ESE-5	12/10/93	176.08	9.42	166.66	1700	300	3.0	76	110	---	2.5	PACE
ESE-5	02/07/94	176.08	9.35	166.73	3500	640	7.8	90	130	---	---	PACE
ESE-5	08/08/94	176.08	8.76	167.32	2600	210	4.6	9.4	4.4	---	5.8	PACE
QC-1 (d)	08/08/94	---	---	---	2500	230	4.6	13	4.8	---	---	PACE
ESE-5	10/12/94	176.08	8.95	167.13	5600	560	9.5	75	21	---	3.6	PACE
QC-1 (d)	10/12/94	---	---	---	6000	550	10	78	22	---	---	PACE
ESE-5	01/19/95	176.08	5.40	170.68	1900	620	ND<5	95	15	---	7.6	ATI
QC-1 (d)	01/19/95	---	---	---	1600	620	ND<5	93	17	---	---	ATI
ESE-5	05/02/95	176.08	6.48	169.60	5700	1100	ND<10	180	58	---	8.2	ATI
QC-1 (d)	05/02/95	---	---	---	5300	1100	ND<10	180	58	---	---	ATI
ESE-5	07/28/95	176.08	7.97	168.11	520	15	ND<0.50	1.7	1.3	---	8.2	ATI
QC-1 (d)	07/28/95	---	---	---	460	7.2	ND<0.50	1.9	1.5	---	---	ATI
ESE-5	11/17/95	176.08	8.39	167.69	850	39	1.8	7.6	2.7	24	6.3	ATI
ESE-5	02/07/96	176.08	4.71	171.37	4100	670	6.0	190	140	ND<50	1.5	SPL
ESE-5	04/23/96	176.08	7.35	168.73	3000	570	ND<5	79	100	84	6.5	SPL
ESE-5	07/09/96	176.08	9.40	166.68	620	150	1.7	9.3	6.4	25	3.7	SPL
ESE-5	10/10/96	176.08	9.04	167.04	1100	29	ND<5.0	ND<5.0	ND<5.0	ND<50	6.3	SPL
QC-1 (d)	10/10/96	---	---	---	1100	31	ND<5.0	ND<5.0	ND<5.0	ND<50	---	SPL
ESE-5	01/20/97	176.08	5.82	170.26	2100	980	ND<25	280	80	ND<250	5.4	SPL
QC-1 (d)	01/20/97	---	---	---	2700	910	8.8	280	84	80	---	SPL
MW-6	07/28/95	179.24	10.00	169.24	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	8.1	ATI
MW-6	11/17/95	179.24	10.44	168.80	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	6.8	ATI
MW-6	02/07/96	179.24	7.68	171.56	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	2.4	SPL
MW-6	04/23/96	179.24	9.33	169.91	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	6.6	SPL
MW-6	07/09/96	179.24	10.10	169.14	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	2.7	SPL
MW-6	10/10/96	179.24	11.00	168.24	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	6.9	SPL
MW-6	01/20/97	179.24	8.70	170.54	ND<50	ND<0.5	ND<1.0	ND<1.0	ND<1.0	ND<10	5.5	SPL
MW-7	07/28/95	176.55	9.25	167.30	ND<50	0.54 (f)	0.54	ND<0.50	ND<1.0	---	7.1	ATI
MW-7	11/17/95	176.55	9.73	166.82	1100	ND<10	ND<10	ND<10	ND<20	4000	6.3	ATI
MW-7	02/07/96	176.55	6.48	170.07	610	ND<0.5	ND<1	ND<1	ND<1	2500	4.1	SPL
QC-1 (d)	02/07/96	---	---	---	280	ND<0.5	ND<1	ND<1	ND<1	2600	---	SPL
MW-7	04/23/96	176.55	8.37	168.18	110	ND<0.5	ND<1	ND<1	ND<1	3500	6.4	SPL
QC-1 (d)	04/23/96	---	---	---	230	ND<0.5	ND<1	ND<1	ND<1	3500	---	SPL
MW-7	07/09/96	176.55	9.24	167.31	230	ND<0.5	ND<1	ND<1	ND<1	4296	3.1	SPL
QC-1 (d)	07/09/96	---	---	---	220	ND<0.5	ND<1	ND<1	ND<1	4400	---	SPL
MW-7	10/10/96	176.55	10.05	166.50	---	---	---	---	---	---	---	---
MW-7	10/11/96	176.55	---	---	1600	ND<0.5	ND<1.0	ND<1.0	ND<1.0	---	6.9	SPL
MW-7	01/20/97	176.55	7.51	169.04	ND<50	0.63	1.0	ND<1.0	ND<1.0	---	5.7	SPL

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ALISTO PROJECT NO. 10-138

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (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)	DO (ppm)	LAB
MW-8	07/28/95	176.34	7.80	168.54	1100	ND<2.5	ND<2.5	ND<2.5	ND<5.0	---	7.2	ATI
MW-8	11/17/95	176.34	8.29	168.05	8300	75	5.3	670	240	140	7.0	ATI
MW-8	02/07/96	176.34	4.99	171.35	2300	33	ND<10	190	216	ND<100	1.7	SPL
MW-8	04/23/96	176.34	6.09	170.25	2000	390	ND<20	150	26	ND<250	6.7	SPL
MW-8 (g)	07/09/96	---	---	---	---	---	---	---	---	---	---	---
QC-2 (h)	04/01/93	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (h)	06/29/93	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (h)	09/23/93	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (h)	12/10/93	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (h)	02/17/94	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (h)	08/08/94	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (h)	10/12/94	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	PACE
QC-2 (h)	01/19/95	---	---	---	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<1	---	---	ATI
QC-2 (h)	05/02/95	---	---	---	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	ATI
QC-2 (h)	07/28/95	---	---	---	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	---	ATI
QC-2 (h)	11/17/95	---	---	---	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<5.0	---	ATI
QC-2 (h)	02/07/96	---	---	---	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	---	SPL
QC-2 (h)	04/23/96	---	---	---	ND<50	ND<0.5	ND<1	ND<1	ND<1	ND<10	---	SPL
QC-2 (h)	07/09/96	---	---	---	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
 DO Dissolved oxygen
 ug/l Micrograms per liter
 ppm Parts per million
 ND Not detected above reported detection limit
 --- Not applicable/available/measured/analyzed
 PACE Pace, Inc.
 ATI Analytical Technologies, Inc.
 SPL Southern Petroleum Laboratories

NOTES:

(a) Top of casing elevations surveyed relative to mean sea level.
 (b) Groundwater elevations in feet relative to mean sea level.
 (c) Additional analysis of the sample collected from ESE-1 on 10/5/92 detected 96 ug/l total petroleum hydrocarbons as diesel and 1.8 ug/l 1,2-dichloroethane.
 (d) Blind duplicate.
 (e) Top of casing lowered by 0.07 foot after the monitoring event on 4/01/93.
 (f) Sample result may be falsely elevated due to matrix interference.
 (g) Well destroyed.
 (h) Travel blank.

E:\010-138\138-9-2.WQ2

TABLE 2 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
 XTRA OIL COMPANY SERVICE STATION
 3495 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

ALISTO PROJECT NO. 10-138

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (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)
MW-1	08/19/91	177.24	9.31	167.93	48	47	13	8.4	0.99	29
MW-1	09/17/91	177.24	9.50	167.74	39	19	4.9	4.1	1.2	5.9
MW-1	10/10/91	177.24	9.70	167.54	28	19	4.1	4.7	1.0	4.8
MW-1	11/25/91	177.24	9.41	167.83	170	36	5.6	5.6	1.6	8.4
MW-1	12/23/91	177.24	9.65	167.59	78	34	9.3	7.3	0.54	13
MW-1	01/14/92	177.24	8.57	168.67	39	19	7.3	8.7	1.3	8.9
MW-1	05/27/92	177.24	8.59	168.65	120	11	8.8	16	2.3	15
MW-1	11/13/92	177.24	9.13	168.11	120	4.4	5.8	10	2.1	13
MW-1	02/23/93	177.24	7.34	169.90	100	14	4.5	11	2.1	12
MW-1	05/18/93	177.24	8.12	169.12	92	30	4.0	11	2.5	15
MW-1	08/30/93	177.24	8.78	168.46	77	9.4	6.4	11	2.2	12
MW-1	11/24/93	177.24	8.74	168.50	66	8.2	8.3	8.9	2.0	11
MW-1	02/28/94	177.24	7.44	169.80	90	110	11	9.6	2.1	9.9
MW-1	05/19/94	177.24	8.05	169.19	---	---	---	---	---	---
MW-1	08/22/94	177.24	8.67	168.57	---	---	---	---	---	---
MW-1	11/18/94	177.24	7.14	170.10	---	---	---	---	---	---
MW-1	02/23/95	177.24	7.72	169.52	---	---	---	---	---	---
MW-1	05/02/95	177.24	6.96	170.28	---	---	---	---	---	---
MW-1	07/28/95	177.24	8.27	168.97	---	---	---	---	---	---
MW-1	10/26/95	177.24	8.45	168.79	---	---	---	---	---	---
MW-1	01/29/96	177.24	6.17	171.07	---	---	---	---	---	---
MW-1	02/07/96	177.24	6.09	171.15	---	---	---	---	---	---
MW-1	04/23/96	177.24	7.47	169.77	---	---	---	---	---	---
MW-1	07/09/96	177.24	8.16	169.08	---	---	---	---	---	---
MW-1	01/20/97	177.24	7.12	170.12	---	---	---	---	---	---
MW-2	08/19/91	176.30	9.60	166.70	69	19	26	22	2.1	18
MW-2	09/17/91	176.30	10.23	166.07	74	56	10	11	1.4	8.1
MW-2	10/10/91	176.30	10.39	165.91	85	360	21	25	2.1	14
MW-2	11/25/91	176.30	9.81	166.49	230	130	11	9.7	1.4	9.7
MW-2	12/23/91	176.30	10.39	165.91	2100	700	36	130	79	560
MW-2	01/14/92	176.30	8.97	167.33	59	1600	17	14	1.8	15
MW-2	05/27/95	176.30	9.31	166.99	89	130	18	19	1.7	14
MW-2	11/13/92	176.30	8.70	167.60	79	8.2	10	13	1.4	8.6
MW-2	02/23/93	176.30	6.39	169.91	76	7.0	12	17	1.6	9.6
MW-2	05/18/93	176.30	7.73	168.57	67	44	9.2	12	1.4	9.3
MW-2	08/30/93	176.30	8.64	167.66	110	110	11	14	1.8	11
MW-2	11/24/93	176.30	8.47	167.83	12	79	13	17	2.5	17
MW-2	02/28/94	176.30	6.99	169.31	91	13	13	16	1.5	9.0
MW-2	05/19/94	176.30	7.70	168.60	---	---	---	---	---	---
MW-2	08/22/94	176.30	8.59	167.71	---	---	---	---	---	---
MW-2	11/18/94	176.30	6.92	169.38	---	---	---	---	---	---
MW-2	02/23/95	176.30	7.51	168.79	---	---	---	---	---	---
MW-2	05/02/95	176.30	6.79	169.51	---	---	---	---	---	---
MW-2	07/28/95	176.30	7.99	168.31	---	---	---	---	---	---
MW-2	10/26/95	176.30	8.21	168.09	---	---	---	---	---	---
MW-2	01/29/96	176.30	5.16	171.14	---	---	---	---	---	---
MW-2	02/07/96	176.30	5.70	170.60	---	---	---	---	---	---
MW-2 (c)	04/23/96	176.30	---	---	---	---	---	---	---	---

TABLE 2 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
 XTRA OIL COMPANY SERVICE STATION
 3495 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

ALISTO PROJECT NO. 10-138

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (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)
MW-3	08/19/91	178.07	8.95	169.12	170	150	82	31	4.4	22
MW-3	09/17/91	178.07	9.20	168.87	180	140	47	25	2.6	15
MW-3	10/10/91	178.07	9.43	168.64	140	39	57	31	2.2	14
MW-3	11/25/91	178.07	9.19	168.88	150	74	65	31	3.4	18
MW-3	12/23/91	178.07	9.37	168.70	740	540	30	61	31	180
MW-3	01/14/92	178.07	8.24	169.83	130	270	76	30	3.4	21
MW-3	05/27/92	178.07	8.45	169.62	370	27	91	57	3.0	21
MW-3	11/13/92	178.07	7.86	170.21	140	4.7	38	24	2.0	12
MW-3	02/23/93	178.07	8.01	170.06	110	8.1	31	18	1.9	11
MW-3	05/18/93	178.07	7.12	170.95	130	7.2	36	21	2.1	12
MW-3	08/30/93	178.07	7.64	170.43	130	32	36	21	1.9	8.2
MW-3	11/24/93	178.07	7.55	170.52	160	24	48	26	2.2	12
MW-3	02/28/94	178.07	6.68	171.39	110	210	36	21	1.9	11
MW-3	05/19/94	178.07	7.15	170.92	---	---	---	---	---	---
MW-3	08/22/94	178.07	7.65	170.42	---	---	---	---	---	---
MW-3	11/18/94	178.07	6.05	172.02	---	---	---	---	---	---
MW-3	02/23/95	178.07	7.24	170.83	---	---	---	---	---	---
MW-3	05/02/95	178.07	6.50	171.57	---	---	---	---	---	---
MW-3	07/28/95	178.07	7.80	170.27	---	---	---	---	---	---
MW-3	10/26/95	178.07	7.72	170.35	---	---	---	---	---	---
MW-3	01/29/96	178.07	5.77	172.30	---	---	---	---	---	---
MW-3	02/07/96	178.07	5.05	173.02	---	---	---	---	---	---
MW-3	04/23/96	178.07	6.81	171.26	---	---	---	---	---	---
MW-3	07/09/96	178.07	7.61	170.46	---	---	---	---	---	---
MW-3	01/20/97	178.07	6.35	171.72	---	---	---	---	---	---

ABBREVIATIONS:

TPH-G Total petroleum hydrocarbons as gasoline
 TPH-D Total petroleum hydrocarbons as diesel
 B Benzene
 T Toluene
 E Ethylbenzene
 X Total xylenes
 ug/l Micrograms per liter
 --- Not available

NOTES:

- (a) Top of casing elevations relative to mean sea level.
- (b) Groundwater elevations in feet above mean sea level.
- (c) Well destroyed February 7, 1996.

E:\010-138\138\JOINT.WQ2



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

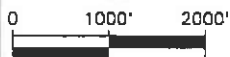


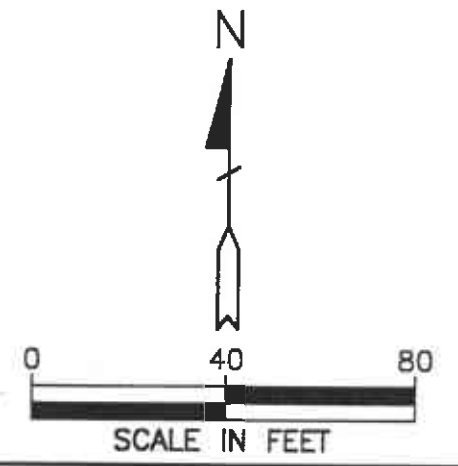
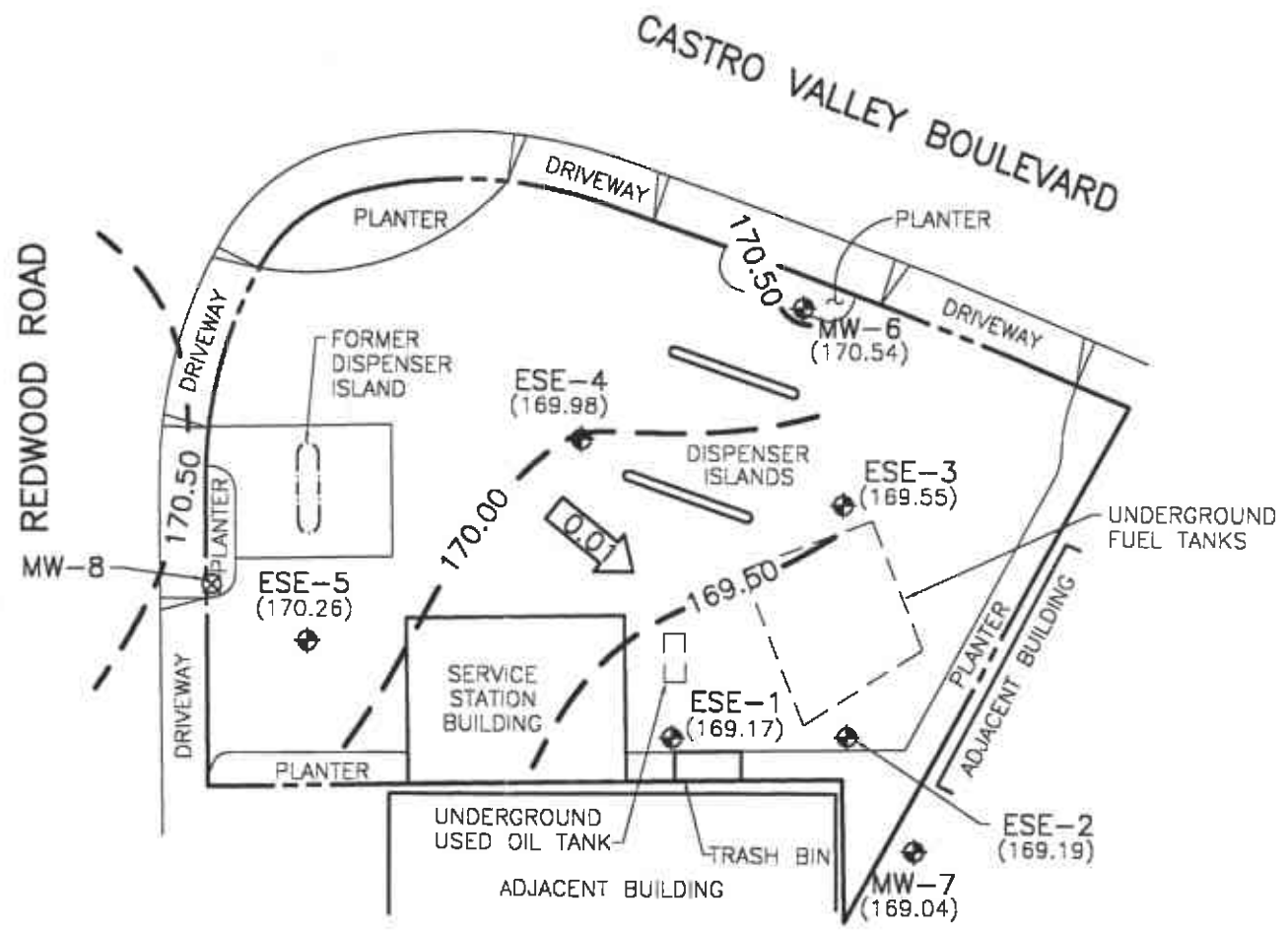
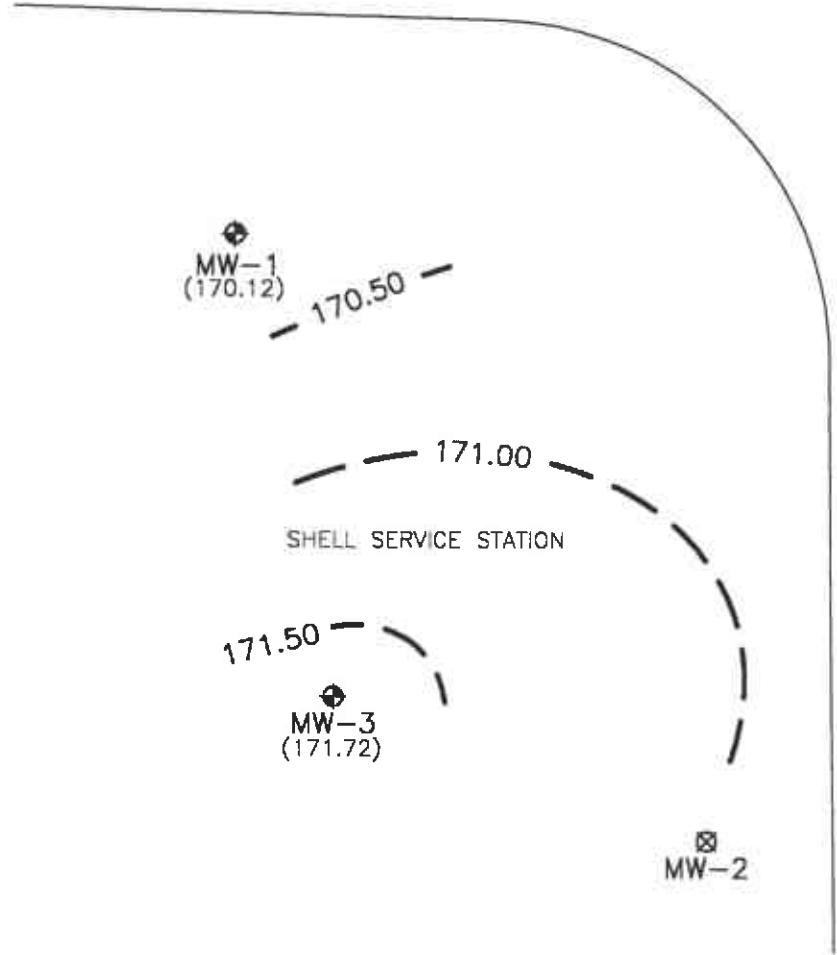
FIGURE 1 SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11105
3519 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

PROJECT NO. 10-138



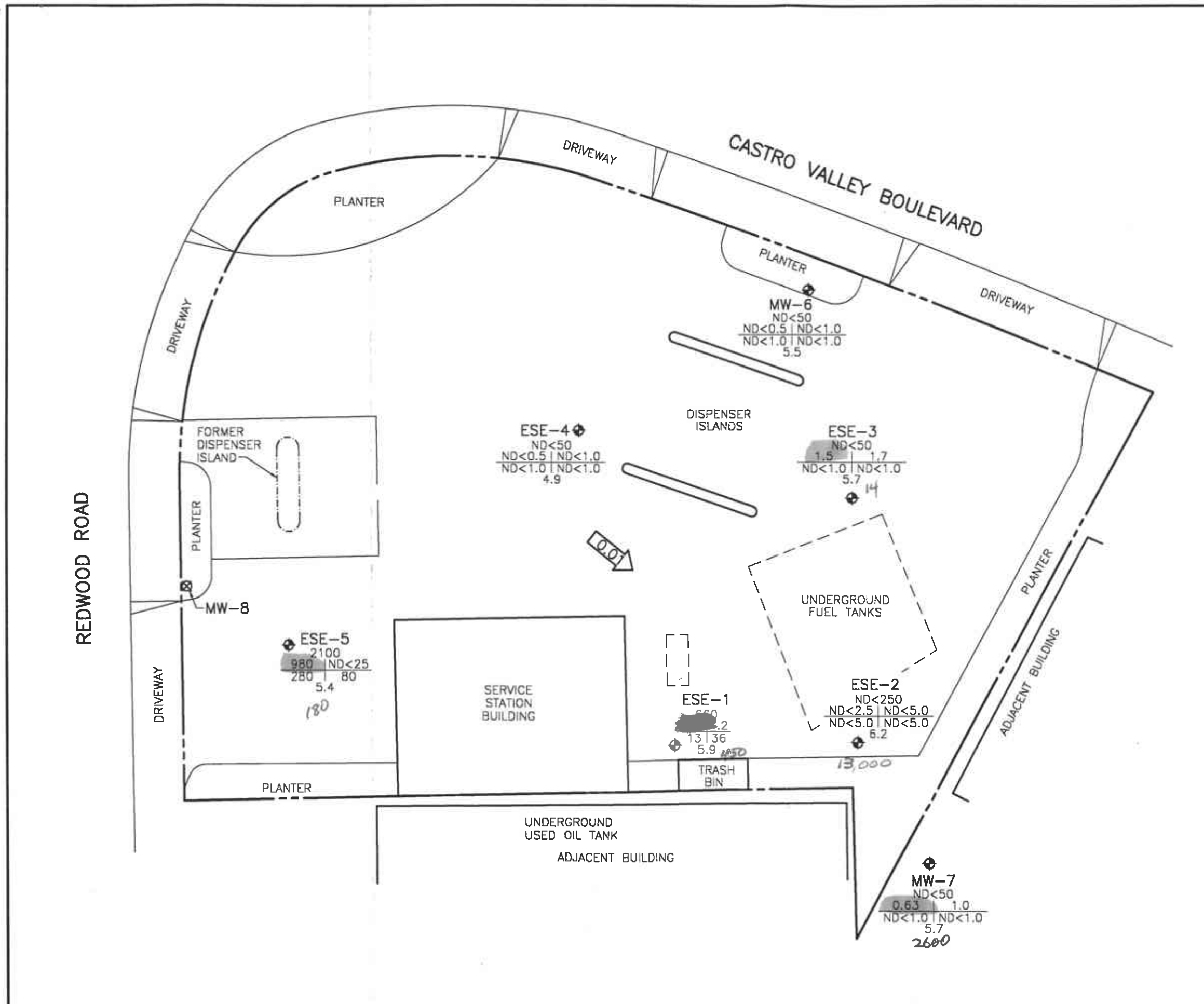
ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA



- LEGEND**
- ◆ GROUNDWATER MONITORING WELL
 - ⊗ DESTROYED WELL
 - (169.98) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
 - 170.00 - GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL - 0.50 FOOT)
 - ← 0.01 → CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 2
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP
JANUARY 20, 1997
 BP OIL SERVICE STATION NO. 11105
 3519 CASTRO VALLEY BOULEVARD
 CASTRO VALLEY, CALIFORNIA
 PROJECT NO. 10-138

107380-ILLINOIS 2-28-87 DSM 1-41



LEGEND

- ◆ GROUNDWATER MONITORING WELL
- ⊗ DESTROYED WELL
- TPH-G CONCENTRATION OF CONSTITUENTS IN MICROGRAMS PER LITER, EXCEPT DISSOLVED OXYGEN, WHICH IS IN PARTS PER MILLION
- B | T BENZENE | TOLUENE
- E | X ETHYLBENZENE | TOTAL XYLENES
- DO DISSOLVED OXYGEN
- ND NOT DETECTED ABOVE REPORTED DETECTION LIMIT
- ← 0.01 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3
CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER
JANUARY 20, 1997
 BP OIL SERVICE STATION NO. 11105
 3519 CASTRO VALLEY BOULEVARD
 CASTRO VALLEY, CALIFORNIA
 PROJECT NO. 10-138

10138E-01.DWG 2-7-97 1-20

APPENDIX A
WATER SAMPLING FIELD SURVEY FORMS

ALISTO

Field Report / Sampling Data Sheet

ENGINEERING

GROUP

1575 TREAT BOULEVARD, SUITE 201

Project No. 10-138-09-002 Date: 11/20/97

Address 3515 Castro Valley Blvd Day: MTWTHF

Contract No. G797425 City: Castro Valley

Station No. BP 11105 Sampler: LCB

DEPTH TO GROUNDWATER SUMMARY

WELL ID	SAMPLE ID	WELL DIAM	TOTAL DEPTH	DEPTH TO WATER	PRODUCT THICKNESS	TIME MONITORED	COMMENTS: JOINT
ESE-1	S-3	7"	30.00	8.52	∅	0930	
ESE-2	S-5	↓	30.00	9.04	↓	0938	
ESE-3	S-2	↓	30.00	8.65	↓	0943	
ESE-4	S-6	↓	25.00	7.68	↓	0942	
ESE-5	S-7	↓	24.00	5.82	↓	0946	ac-1 (S-8) From this well
MW-6	S-1	↓	29.43	8.70	↓	0920	
MW-7	S-4	↓	19.85	7.51	↓	0935	
MW-8	HT	—	—	—	—	—	destroyed

FIELD INSTRUMENT CALIBRATION DATA

pH METER Icm 4.00 4 7.00 7 10.00 10 TEMPERATURE COMPENSATED N TIME 0950

D.O. METER Icm ZERO d.O. SOLUTION _____ BAROMETRIC PRESSURE 760 TEMP 62 WEATHER cloudy

CONDUCTIVITY METER Icm 10,000 _____ TURBIDITY METER _____ 5.0 NTU _____ OTHER X

LEAK DETECTOR OPERATION: _____ ALARM MODE X NON ALARM MODE _____

Well ID	Depth to Water	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
MW-6	8.70	2"	OK	∅	Y <input checked="" type="radio"/>	3	1007	66.3	7.90	439µs	5.2	<input type="radio"/> EPA 601
Total Depth - Water Level= x Well Vol. Factor= x#Vol. to Purge PurgeVol.						6		67.2	7.82	443µs		<input checked="" type="radio"/> TPH-G/BTEX <u>HCL</u>
$29.43 - 8.70 = 20.73 \times .16 = 3.32 \times 3 = 9.96$						10	1015	67.6	7.74	447µs	5.5	<input type="radio"/> TPH Diesel _____
Purge Method: <input checked="" type="checkbox"/> Surface Pump <input type="checkbox"/> Disp. Tube <input type="checkbox"/> Winch <input type="checkbox"/> Disp. Bailer(s) <input type="checkbox"/> Sys Port												<input type="radio"/> TOG 5520 _____
Comments:												TIME/SAMPLE ID
												1019
ESE-3	8.65	2"	OK	∅	Y <input checked="" type="radio"/>	3	1030	65.4	8.11	471µs	6.0	<input type="radio"/> EPA 601
Total Depth - Water Level= x Well Vol. Factor= x#Vol. to Purge PurgeVol.						7		66.3	7.84	456µs		<input checked="" type="radio"/> TPH-G/BTEX <u>HCL</u>
$30.00 - 8.65 = 21.35 \times .16 = 3.42 \times 5 = 10.26$						11	1039	66.9	7.79	463µs	5.7	<input type="radio"/> TPH Diesel _____
Purge Method: <input checked="" type="checkbox"/> Surface Pump <input type="checkbox"/> Disp. Tube <input type="checkbox"/> Winch <input type="checkbox"/> Disp. Bailer(s) <input type="checkbox"/> Sys Port												<input type="radio"/> TOG 5520 _____
Comments:												TIME/SAMPLE ID
												1042

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. 10-138-09-002

Date: 1/20/97

Address 3515 Castro Valley Blvd

Day: T W TH F

Contract No. G797425

City: Castro Valley

Station No. BP 11105

Sampler: CW

Well ID	Depth to Water	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.	
ESE-1	8.52	2"	OK	Ø	Y <input checked="" type="radio"/>	4	1053	65.3	7.44	483µs	5.3	<input type="radio"/> EPA 601
Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.						8		66.4	7.21	499µs		<input checked="" type="radio"/> TPH-G/BTEX HCL
30.00 - 8.52 = 21.48 X .16 = 3.44 X 3 = 10.32						11	1107	66.9	7.17	507µs	5.9	<input type="radio"/> TPH Diesel
Purge Method: <input checked="" type="radio"/> Surface Pump ODisp. Tube OWinch ODisp. Bailor(s) ___ OSys Port												<input type="radio"/> TOG 5520
Comments:												TIME/SAMPLE ID
												1105
MW-7	7.51	2"	OK	Ø	Y <input checked="" type="radio"/>	2	1210	66.4	7.61	461µs	5.4	<input type="radio"/> EPA 601
Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.						4		67.6	7.42	492µs		<input checked="" type="radio"/> TPH-G/BTEX HCL
19.85 - 7.51 = 12.34 X .16 = 1.97 X 3 = 5.91						6	1219	67.2	7.33	500µs	5.7	<input type="radio"/> TPH Diesel
Purge Method: <input checked="" type="radio"/> Surface Pump ODisp. Tube OWinch ODisp. Bailor(s) ___ OSys Port												<input type="radio"/> TOG 5520
Comments:												TIME/SAMPLE ID
												1216
ESE-2	9.04	2"	Kepland	Ø	Y <input checked="" type="radio"/>	3	1237	65.6	7.39	449µs	5.9	<input type="radio"/> EPA 601
Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.						7		66.3	7.22	471µs		<input checked="" type="radio"/> TPH-G/BTEX HCL
30.00 - 9.04 = 20.96 X .16 = 3.35 X 3 = 10.05						10.5	1246	66.6	7.16	477µs	6.7	<input type="radio"/> TPH Diesel
Purge Method: <input checked="" type="radio"/> Surface Pump ODisp. Tube OWinch ODisp. Bailor(s) ___ OSys Port												<input type="radio"/> TOG 5520
Comments:												TIME/SAMPLE ID
												1250
ESE-4	7.68	2"	OK	Ø	Y <input checked="" type="radio"/>	3	1301	66.4	7.59	481µs	4.7	<input type="radio"/> EPA 601
Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.						6		67.3	7.42	506µs		<input checked="" type="radio"/> TPH-G/BTEX HCL
25.00 - 7.68 = 17.32 X .16 = 2.77 X 3 = 8.31						9	1311	67.6	7.39	515µs	4.9	<input type="radio"/> TPH Diesel
Purge Method: <input checked="" type="radio"/> Surface Pump ODisp. Tube OWinch ODisp. Bailor(s) ___ OSys Port												<input type="radio"/> TOG 5520
Comments:												TIME/SAMPLE ID
												1315
ESE-5	5.82	2"	OK	Ø	Y <input checked="" type="radio"/>	3	1330	67.1	7.41	604µs	5.0	<input type="radio"/> EPA 601
Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.						6		67.9	7.34	624µs		<input checked="" type="radio"/> TPH-G/BTEX HCL
24.00 - 5.82 = 18.18 X .16 = 2.91 X 3 = 8.73						9	1340	67.0	7.26	633µs	5.4	<input type="radio"/> TPH Diesel
Purge Method: <input checked="" type="radio"/> Surface Pump ODisp. Tube OWinch ODisp. Bailor(s) ___ OSys Port												<input type="radio"/> TOG 5520
Comments: DC-1 (S-8) From this well												TIME/SAMPLE ID
												1344

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD



HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

January 30, 1997

Ms. Patricia Yeltan
Alisto Engineering
1575 Treat Boulevard
Walnut Creek, CA 94598

The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on January 22, 1997. The samples were assigned to Certificate of Analysis No. 9701809 and analyzed for all parameters as listed on the chain of custody.

There were no analytical problems encountered with this group of samples and all quality control data was within acceptance limits.

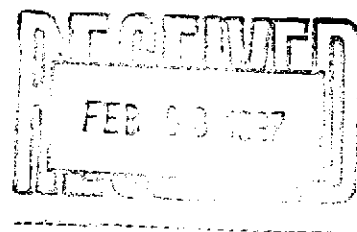
If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Work Order Number during any inquiries.

Again, SPL is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Southern Petroleum Laboratories

A handwritten signature in cursive script, appearing to read 'Ed Fry', is written over a horizontal line.

Ed Fry
Project Manager





HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

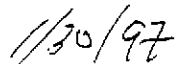
SOUTHERN PETROLEUM LABORATORIES, INC.

Certificate of Analysis Number: 97-01-809

Approved for Release by:



Ed Fry, Project Manager



Date:

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

The attached analytical data package may not be reproduced except in full without the express written approval of this laboratory.



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701809-01

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

P.O.#
 G-797425 , COC#083214
 DATE: 01/30/97

PROJECT: BP Oil #11105
 SITE: Castro Valley, CA
 SAMPLED BY: Alisto Engineering
 SAMPLE ID: S-1

PROJECT NO: 10-138-09-2
 MATRIX: WATER
 DATE SAMPLED: 01/20/97
 DATE RECEIVED: 01/22/97

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	90
4-Bromofluorobenzene	93

METHOD 8020***
 Analyzed by: fab
 Date: 01/25/97

Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L
---------------------------------------	----	--------	------

Surrogate	% Recovery
1,4-Difluorobenzene	97
4-Bromofluorobenzene	103

CA LUFT - Gasoline
 Analyzed by: fab
 Date: 01/25/97 08:11:00

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



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701809-02

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

P.O.#
 G-797425 , COC#083214
 DATE: 01/30/97

PROJECT: BP Oil #11105
 SITE: Castro Valley, CA
 SAMPLED BY: Alisto Engineering
 SAMPLE ID: S-2

PROJECT NO: 10-138-09-2
 MATRIX: WATER
 DATE SAMPLED: 01/20/97
 DATE RECEIVED: 01/22/97

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT		UNITS
MTBE	14	10 P		µg/L
Benzene	1.5	0.5 P		µg/L
Toluene	1.7	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	90			
4-Bromofluorobenzene	90			
METHOD 8020***				
Analyzed by: fab				
Date: 01/26/97				
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P		mg/L
Surrogate	% Recovery			
1,4-Difluorobenzene	97			
4-Bromofluorobenzene	100			
CA LUFT - Gasoline				
Analyzed by: fab				
Date: 01/26/97 07:41:00				

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

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



HOUSTON LABORATORY

8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9701809-03

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

P.O.#
G-797425 , COC#083214
DATE: 01/30/97

PROJECT: BP Oil #11105
SITE: Castro Valley, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-138-09-2
MATRIX: WATER
DATE SAMPLED: 01/20/97
DATE RECEIVED: 01/22/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	450	10 P	µg/L
Benzene	290	0.5 P	µg/L
Toluene	4.2	1.0 P	µg/L
Ethylbenzene	13	1.0 P	µg/L
Total Xylene	36	1.0 P	µg/L

Surrogate	% Recovery
1,4-Difluorobenzene	107
4-Bromofluorobenzene	87

METHOD 8020***

Analyzed by: fab
Date: 01/26/97

Total Petroleum Hydrocarbons-Gasoline	0.66	0.05 P	mg/L
---------------------------------------	------	--------	------

Surrogate	% Recovery
1,4-Difluorobenzene	100
4-Bromofluorobenzene	97

CA LUFT - Gasoline
Analyzed by: fab
Date: 01/26/97 08:09:00

(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



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701809-04

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

P.O.#
 G-797425, COC#083214
 DATE: 01/30/97

PROJECT: BP Oil #11105
 SITE: Castro Valley, CA
 SAMPLED BY: Alisto Engineering
 SAMPLE ID: S-4

PROJECT NO: 10-138-09-2
 MATRIX: WATER
 DATE SAMPLED: 01/20/97
 DATE RECEIVED: 01/22/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	2600	100 P	µg/L
Benzene	0.63	0.5 P	µg/L
Toluene	1.0	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 93
 4-Bromofluorobenzene 90

METHOD 8020***
 Analyzed by: fab
 Date: 01/26/97

Total Petroleum Hydrocarbons-Gasoline ND 0.05 P mg/L

Surrogate % Recovery
 1,4-Difluorobenzene 97
 4-Bromofluorobenzene 103

CA LUFT - Gasoline
 Analyzed by: fab
 Date: 01/26/97 08:38:00

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

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. H9-9701809-05

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

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

P.O.#
G-797425, COC#083214
DATE: 01/30/97

PROJECT: BP Oil #11105
SITE: Castro Valley, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-5

PROJECT NO: 10-138-09-2
MATRIX: WATER
DATE SAMPLED: 01/20/97
DATE RECEIVED: 01/22/97

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 93
METHOD 8020***
Analyzed by: fab
Date: 01/26/97

Total Petroleum Hydrocarbons-Gasoline ND 0.25 P mg/L

Surrogate % Recovery
1,4-Difluorobenzene 100
4-Bromofluorobenzene 100
CA LUFT - Gasoline
Analyzed by: fab
Date: 01/26/97 09:06:00

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

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



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701809-06

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

P.O.#
 G-797425 , COC#083214
 DATE: 01/30/97

PROJECT: BP Oil #11105
 SITE: Castro Valley, CA
 SAMPLED BY: Alisto Engineering
 SAMPLE ID: S-6

PROJECT NO: 10-138-09-2
 MATRIX: WATER
 DATE SAMPLED: 01/20/97
 DATE RECEIVED: 01/22/97

ANALYTICAL DATA				
PARAMETER	RESULTS	DETECTION LIMIT	UNITS	
MTBE	130	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		97		
4-Bromofluorobenzene		83		
METHOD 8020***				
Analyzed by: fab				
Date: 01/26/97				
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L	
Surrogate		% Recovery		
1,4-Difluorobenzene		97		
4-Bromofluorobenzene		100		
CA LUFT - Gasoline				
Analyzed by: fab				
Date: 01/26/97 09:34:00				

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

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. H9-9701809-07

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

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

P.O.#
G-797425, COC#083214
DATE: 01/30/97

PROJECT: BP Oil #11105
SITE: Castro Valley, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-7

PROJECT NO: 10-138-09-2
MATRIX: WATER
DATE SAMPLED: 01/20/97
DATE RECEIVED: 01/22/97

ANALYTICAL DATA

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

Surrogate % Recovery
1,4-Difluorobenzene 96
4-Bromofluorobenzene 87

METHOD 8020***

Analyzed by: fab
Date: 01/26/97

Total Petroleum Hydrocarbons-Gasoline 2.1 1.2 P mg/L

Surrogate % Recovery
1,4-Difluorobenzene 97
4-Bromofluorobenzene 92

CA LUFT - Gasoline
Analyzed by: VHZ
Date: 01/27/97 08:06:00

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



HOUSTON LABORATORY
 8880 INTERCHANGE DRIVE
 HOUSTON, TEXAS 77054
 PHONE (713) 660-0901

Certificate of Analysis No. H9-9701809-08

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

P.O.#
 G-797425 , COC#083214
 DATE: 01/30/97

PROJECT: BP Oil #11105
 SITE: Castro Valley, CA
 SAMPLED BY: Alisto Engineering
 SAMPLE ID: S-8

PROJECT NO: 10-138-09-2
 MATRIX: WATER
 DATE SAMPLED: 01/20/97
 DATE RECEIVED: 01/22/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	180	50 P	µg/L
Benzene	910	2.5 P	µg/L
Toluene	8.8	5.0 P	µg/L
Ethylbenzene	280	5.0 P	µg/L
Total Xylene	84	5.0 P	µg/L

Surrogate	% Recovery
1,4-Difluorobenzene	107
4-Bromofluorobenzene	80

METHOD 8020***
 Analyzed by: fab
 Date: 01/28/97

Total Petroleum Hydrocarbons-Gasoline	2.7	2.5 P	mg/L
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Surrogate	% Recovery
1,4-Difluorobenzene	100
4-Bromofluorobenzene	93

CA LUFT - Gasoline
 Analyzed by: VHZ
 Date: 01/27/97 08:35:00

(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

QUALITY CONTROL

DOCUMENTATION



AMOUNT CONC. RECOVERY
ADDED MEASURED

METHOD 8020*** BATCH#:HP_N970125145800
WORK ORDER: 9701809-01A CLIENT SAMPLE ID:S-1

1,4-Difluorobenzene	30	27	90	70- 131
4-Bromofluorobenzene	30	28	93	43- 135

METHOD 8020*** BATCH#:HP_N970125145800
WORK ORDER: 9701809-02A CLIENT SAMPLE ID:S-2

1,4-Difluorobenzene	30	27	90	70- 131
4-Bromofluorobenzene	30	27	90	43- 135

METHOD 8020*** BATCH#:HP_N970125145800
WORK ORDER: 9701809-03A CLIENT SAMPLE ID:S-3

1,4-Difluorobenzene	30	32	107	70- 131
4-Bromofluorobenzene	30	26	87	43- 135

METHOD 8020*** BATCH#:HP_N970125145800
WORK ORDER: 9701809-04A CLIENT SAMPLE ID:S-4

1,4-Difluorobenzene	30	28	93	70- 131
4-Bromofluorobenzene	30	27	90	43- 135

METHOD 8020*** BATCH#:HP_N970125145800
WORK ORDER: 9701809-05A CLIENT SAMPLE ID:S-5

1,4-Difluorobenzene	30	28.0000	93	70- 131
4-Bromofluorobenzene	30	28.0000	93	43- 135

METHOD 8020*** BATCH#:HP_N970125145800
WORK ORDER: 9701809-06A CLIENT SAMPLE ID:S-6

1,4-Difluorobenzene	30	29	97	70- 131
4-Bromofluorobenzene	30	25	83	43- 135

METHOD 8020*** BATCH#:HP_N970125145800
WORK ORDER: 9701809-07A CLIENT SAMPLE ID:S-7

1,4-Difluorobenzene	30	28.8000	96	70- 131
4-Bromofluorobenzene	30	26.0000	87	43- 135

METHOD 8020*** BATCH#:HP_N970125145800
WORK ORDER: 9701809-08A CLIENT SAMPLE ID:S-8

1,4-Difluorobenzene	30	28.0000	93	70- 131
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AMOUNT CONC. RECOVERY
ADDED MEASURED

LIMITS

4-Bromofluorobenzene	30	26.0000	87	43-	135
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METHOD 8020A ***

BATCH#:HP_N970125145800

WORK ORDER: Method Blank

CLIENT SAMPLE ID:

1,4-Difluorobenzene	30	27	26.5	74-	131
4-Bromofluorobenzene	30	29	28.5	43-	135

METHOD 8020A ***

BATCH#:HP_N970125145800

WORK ORDER: Matrix Spike

CLIENT SAMPLE ID:9701744-02A

1,4-DIFLUOROENZENE	30	29	97	70-	131
4-BROMOFLUROENZENE	30	29	97	43-	135

METHOD 8020A ***

BATCH#:HP_N970125145800

WORK ORDER: Matrix Spike Dup.

CLIENT SAMPLE ID:9701744-02A

1,4-Difluorobenzene	30	29	97	70-	131
4-Bromofluorobenzene	30	29	97	43-	135

Modified 8015 - Gasoline

BATCH#:HP_N970125155500

WORK ORDER: 9701809-01A

CLIENT SAMPLE ID:S-1

4-Bromofluorobenzene	30	31	103	52-	152
1,4-Difluorobenzene	30	29	97	54-	137

CA LUFT - Gasoline

BATCH#:HP_N970125155500

WORK ORDER: 9701809-02A

CLIENT SAMPLE ID:S-2

1,4-Difluorobenzene	30	29	97	50-	150
4-Bromofluorobenzene	30	30	100	50-	150

CA LUFT - Gasoline

BATCH#:HP_N970125155500

WORK ORDER: 9701809-03A

CLIENT SAMPLE ID:S-3

1,4-Difluorobenzene	30	30	100	50-	150
4-Bromofluorobenzene	30	29	97	50-	150

CA LUFT - Gasoline

BATCH#:HP_N970125155500

WORK ORDER: 9701809-04A

CLIENT SAMPLE ID:S-4

1,4-Difluorobenzene	30	29	97	50-	150
4-Bromofluorobenzene	30	31	103	50-	150



01/30/97 11:49:30

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
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CA LUFT - Gasoline

BATCH#:HP_N970125155500

WORK ORDER: 9701809-05A

CLIENT SAMPLE ID:S-5

1,4-Difluorobenzene	30	30.0000	100	50- 150
4-Bromofluorobenzene	30	30.0000	100	50- 150

CA LUFT - Gasoline

BATCH#:HP_N970125155500

WORK ORDER: 9701809-06A

CLIENT SAMPLE ID:S-6

1,4-Difluorobenzene	30	29	97	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

Modified 8015 - Gasoline

BATCH#:HP_N970125155500

WORK ORDER: Method Blank

CLIENT SAMPLE ID:

4-Bromofluorobenzene	30	31	31.3	52- 152
1,4-Difluorobenzene	30	29	29.0	54- 137

Modified 8015 - Gasoline

BATCH#:HP_N970125155500

WORK ORDER: Matrix Spike

CLIENT SAMPLE ID:9701809-01A

4-Bromofluorobenzene	30	31	103	52- 152
1,4-Difluorobenzene	30	30	100	54- 137

Modified 8015 - Gasoline

BATCH#:HP_N970125155500

WORK ORDER: Matrix Spike Dup.

CLIENT SAMPLE ID:9701809-01A

4-Bromofluorobenzene	30	31	103	52- 152
1,4-Difluorobenzene	30	30	100	54- 137

METHOD 8020***

BATCH#:HP_N970126155500

WORK ORDER: Method Blank

CLIENT SAMPLE ID:

4-Bromofluorobenzene	30	27	26.6	43- 135
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METHOD 8020***

BATCH#:HP_N970126155500

WORK ORDER: Matrix Spike Dup.

CLIENT SAMPLE ID:9701881-02A

1,4-Difluorobenzene	30	28	93	70- 131
4-Bromofluorobenzene	30	27	90	43- 135

CA LUFT - Gasoline

BATCH#:HP_N970126233200

WORK ORDER: 9701809-07A

CLIENT SAMPLE ID:S-7

1,4-Difluorobenzene	30	29.2000	97	50- 150
4-Bromofluorobenzene	30	27.6000	92	50- 150



01/30/97 11:49:30

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 660-0901

AMOUNT CONC. RECOVERY
ADDED MEASURED

CA LUFT - Gasoline
WORK ORDER: 9701809-08A

BATCH#:HP_N970126233200
CLIENT SAMPLE ID:S-8

1,4-Difluorobenzene	30	30.0000	100	50- 150
4-Bromofluorobenzene	30	28.0000	93	50- 150

CA LUFT - Gasoline
WORK ORDER: Method Blank

BATCH#:HP_N970126233200
CLIENT SAMPLE ID:

1,4-Difluorobenzene	30	30	29.6	50- 150
4-Bromofluorobenzene	30	30	29.8	50- 150

CA LUFT - Gasoline
WORK ORDER: Matrix Spike

BATCH#:HP_N970126233200
CLIENT SAMPLE ID:9701881-03A

1,4-Difluorobenzene	30	30	100	50- 150
4-Bromofluorobenzene	30	31	103	50- 150

CA LUFT - Gasoline
WORK ORDER: Matrix Spike Dup.

BATCH#:HP_N970126233200
CLIENT SAMPLE ID:9701881-03A

1,4-Difluorobenzene	30	30	100	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

CA LUFT - Gasoline
WORK ORDER: Method Blank

BATCH#:HP_N970127232600
CLIENT SAMPLE ID:

1,4-Difluorobenzene	30	29	28.9	50- 150
4-Bromofluorobenzene	30	30	29.5	50- 150

CA LUFT - Gasoline
WORK ORDER: Matrix Spike

BATCH#:HP_N970127232600
CLIENT SAMPLE ID:9701881-05A

1,4-Difluorobenzene	30	30	100	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

CA LUFT - Gasoline
WORK ORDER: Matrix Spike Dup.

BATCH#:HP_N970127232600
CLIENT SAMPLE ID:9701881-05A

1,4-Difluorobenzene	30	30	100	50- 150
4-Bromofluorobenzene	30	30	100	50- 150

METHOD 8020***
WORK ORDER: 9701809-08A

BATCH#:HP_N970128043500
CLIENT SAMPLE ID:S-8

1,4-Difluorobenzene	30	32.0000	107	70- 131
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SURROGATE RECOVERY SUMMARY

01/30/97 11:49:30

HOUSTON LABORATORY

8880 INTERCHANGE DRIVE

HOUSTON, TEXAS 77054

PHONE (713) 680-0901

AMOUNT ADDED	CONC. MEASURED	RECOVERY	LIMITS
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4-Bromofluorobenzene	30	24.0000	80	43- 135
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METHOD 8020***

BATCH#:HP_N970128043500

WORK ORDER: Method Blank

CLIENT SAMPLE ID:

1,4-Difluorobenzene	30	27	26.9	70- 131
4-Bromofluorobenzene	30	27	26.9	43- 135

METHOD 8020***

BATCH#:HP_N970128043500

WORK ORDER: LCS

CLIENT SAMPLE ID:

1,4-Difluorobenzene	30	29	96.7	70- 131
4-Bromofluorobenzene	30	28	93.3	43- 135

METHOD 8020***

BATCH#:HP_N970128043500

WORK ORDER: Matrix Spike

CLIENT SAMPLE ID:9701881-04A

1,4-DIFLUOROBENZENE	30	28	93	70- 131
4-BROMOFLUOROBENZENE	30	27	90	43- 135

METHOD 8020***

BATCH#:HP_N970128043500

WORK ORDER: Matrix Spike Dup.

CLIENT SAMPLE ID:9701881-04A

1,4-Difluorobenzene	30	28	93	70- 131
4-Bromofluorobenzene	30	27	90	43- 135

< = Recovery outside of control limits

* = Methods for Chemical Analysis of Water & Wastes,1983,EPA

** = Standard Methods for Examination of Water & Wastewater,17th

*** = Test Methods for Evaluating Solid Waste,EPA SW846,3rd



SPL BATCH QUALITY CONTROL REPORT **
BTEX & MTBE - Soil

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Soil
Units: µg/Kg

Batch Id: HP_J970126120300

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	49	98.0	64 - 126
Benzene	ND	50	39	78.0	66 - 123
Toluene	ND	50	43	86.0	74 - 125
EthylBenzene	ND	50	47	94.0	84 - 125
O Xylene	ND	50	47	94.0	76 - 137
M & P Xylene	ND	100	93	93.0	81 - 131

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
			MTBE	ND	20	29	145	31	155
BENZENE	ND	20	22	110	21	105	4.65	33	47 - 143
TOLUENE	ND	20	21	105	20	100	4.88	35	46 - 149
ETHYLBENZENE	ND	20	22	110	21	105	4.65	40	32 - 151
O XYLENE	ND	20	21	105	20	100	4.88	24	35 - 143
M & P XYLENE	ND	40	43	108	41	102	5.71	38	25 - 139

Analyst: LJ

Sequence Date: 01/26/97

SPL ID of sample spiked: 9701850-09A

Sample File ID: J_A7379.TX0

Method Blank File ID:

Blank Spike File ID: J_A7366.TX0

Matrix Spike File ID: J_A7374.TX0

Matrix Spike Duplicate File ID: J_A7375.TX0

* = Values Outside QC Range. * = Data outside Method Specification limits.

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: SPL-Houston Historical Data (4th Q '95)

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

SAMPLES IN BATCH(SPL ID):

9701850-09A 9701700-05A 9701690-04A 9701805-01A
9701805-03A 9701805-04A 9701805-06A 9701805-09A
9701930-01A 9701850-06A 9701850-13A



* SPL BATCH QUALITY CONTROL REPORT **
METHOD 8020/602

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: µg/L

Batch Id: HP_N970125145800

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	63 - 120
Benzene	ND	50	46	92.0	62 - 121
Toluene	ND	50	50	100	66 - 136
EthylBenzene	ND	50	52	104	70 - 136
O Xylene	ND	50	53	106	74 - 134
M & P Xylene	ND	100	96	96.0	77 - 140

MATRIX SPIKES

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	140	20	160	NC	170	NC	NC	20	39 - 150
BENZENE	7.4	20	28	103	29	108	4.74	25	39 - 150
TOLUENE	ND	20	21	102	21	102	0	26	56 - 134
ETHYLBENZENE	2.1	20	24	110	25	114	3.57	38	61 - 128
O XYLENE	3.0	20	25	110	26	115	4.44	29	40 - 130
M & P XYLENE	1.7	40	42	101	44	106	4.83	20	43 - 152

Analyst: fab

Sequence Date: 01/25/97

SPL ID of sample spiked: 9701744-02A

Sample File ID: N_A7827.TX0

Method Blank File ID:

Blank Spike File ID: N_A7818.TX0

Matrix Spike File ID: N_A7821.TX0

Matrix Spike Duplicate File ID: N_A7822.TX0

* = Values Outside QC Range. * = Data outside Method Specification limits.

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 (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID):

9701843-04A 9701744-06A 9701744-05A 9701744-01A
 9701744-03A 9701744-04A 9701809-02A 9701809-03A
 9701809-04A 9701809-05A 9701809-06A 9701809-04A
 9701809-05A 9701809-07A 9701809-08A 9701843-05A
 9701744-02A 9701809-01A



Matrix: Aqueous
Units: µg/L

Batch Id: HP_N970128043500

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
MTBE	ND	50	43	86.0	20 - 110
Benzene	ND	50	38	76.0	62 - 121
Toluene	ND	50	40	80.0	66 - 136
EthylBenzene	ND	50	43	86.0	70 - 136
O Xylene	ND	50	44	88.0	74 - 134
M & P Xylene	ND	100	78	78.0	77 - 140

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
			MTBE	ND	20	19			
BENZENE	ND	20	16	80.0	16	80.0	0	25	39 - 150
TOLUENE	ND	20	17	85.0	16	80.0	6.06	26	56 - 134
ETHYLBENZENE	ND	20	17	85.0	18	90.0	5.71	38	61 - 128
O XYLENE	ND	20	18	90.0	19	95.0	5.41	29	40 - 130
M & P XYLENE	ND	40	33	82.5	34	85.0	2.99	20	43 - 152

Analyst: VMZ

Sequence Date: 01/27/97

SPL ID of sample spiked: 9701881-04A

Sample File ID: N_A7904.TX0

Method Blank File ID:

Blank Spike File ID: N_A7895.TX0

Matrix Spike File ID: N_A7899.TX0

Matrix Spike Duplicate File ID: N_A7900.TX0

* = Values Outside QC Range. * = Data outside Method Specification limits.

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 (3rd Q '96)

SAMPLES IN BATCH(SPL ID):

9701881-08A 9701881-09A 9701881-10A 9701881-11A
 9701881-12A 9701A04-01A 9701815-01A 9701881-09A
 9701881-10A 9701881-13A 9701809-08A 9701881-14A
 9701881-15A 9701881-16A 9701944-01A



* SPL BATCH QUALITY CONTROL REPORT **
Modified 8015 - Gasoline

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: mg/L

Batch Id: HP_N970125155500

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike		QC Limits(**) (Mandatory) % Recovery Range
			Result <1>	Recovery %	
Gasoline Petr. Hydrocarbon	ND	1.0	1.12	112	56 - 130

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
			GASOLINE PETR. HYDROCARBON	ND	0.9	1.01		112	1.00

Analyst: fab

Sequence Date: 01/25/97

SPL ID of sample spiked: 9701809-01A

Sample File ID: NNA7828.TX0

Method Blank File ID:

Blank Spike File ID: NNA7820.TX0

Matrix Spike File ID: NNA7823.TX0

Matrix Spike Duplicate File ID: NNA7824.TX0

* = Values Outside QC Range. * = Data outside Method Specification limits.

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 (3rd Q '95)

(***) = Source: SPL-Houston Historical Data (3rd Q '95)

SAMPLES IN BATCH(SPL ID):

9701810-01A 9701809-02A 9701809-03A 9701809-04A
9701809-05A 9701809-06A 9701809-01A



* SPL BATCH QUALITY CONTROL REPORT **
CA LUFT

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Matrix: Aqueous
Units: mg/L

Batch Id: HP_N970126233200

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 ‡	
Petroleum Hydrocarbons-Gas	ND	1.0	1.2	120	50 - 150

MATRIX SPIKES

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
PETROLEUM HYDROCARBONS-GAS	ND	0.9	0.97	108	0.94	104	3.77	50	50 - 150

Analyst: fab

Sequence Date: 01/26/97

SPL ID of sample spiked: 9701881-03A

Sample File ID: NNA7866.TX0

Method Blank File ID:

Blank Spike File ID: NNA7859.TX0

Matrix Spike File ID: NNA7862.TX0

Matrix Spike Duplicate File ID: NNA7863.TX0

* = Values Outside QC Range. * = Data outside Method Specification limits.

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):

9701881-06A 9701881-07A 9701881-08A 9701815-07A
9701815-06A 9701815-05A 9701815-04A 9701815-02A
9701815-03A 9701809-07A 9701809-08A

CHAIN OF CUSTODY
AND
SAMPLE RECEIPT CHECKLIST



97018001

CHAIN OF CUSTODY

No. 083214 Page 1 of 1
ZIP CODE 94564

CONSULTANT'S NAME Alisto Engineering		ADDRESS 1575 Trent Blvd #201		CITY W.C.	STATE Ca	ZIP CODE 94564
BP SITE NUMBER 1105	BP CORNER ADDRESS/CITY Castro Valley, Ca			CONSULTANT PROJECT NUMBER 10-138-9-2		CONSULTANT CONTRACT NUMBER 6797425
CONSULTANT PROJECT MANAGER Brady Nagle		PHONE NUMBER (510) 295-1650	FAX NUMBER 295-1823		CONSULTANT CONTRACT NUMBER 6797425	
BP CONTACT Scott Hooton		BP ADDRESS Kenton, WA	PHONE NUMBER		FAX NO.	
LAB CONTACT SPL		LABORATORY ADDRESS Texas	PHONE NUMBER		FAX NO.	
SAMPLED BY (Please Print Name) Larry Buenvenida		SAMPLED BY (Signature) <i>[Signature]</i>		SHIPMENT DATE 1-21-97	SHIPMENT METHOD FedEx	

TAT: 24 Hours 48 Hours 1 Week Standard 2 Weeks

ANALYSIS REQUIRED AIRBILL NUMBER **3848469881**

SAMPLE DESCRIPTION	COLLECTION DATE	MATRIX SOIL/WATER	CONTAINERS		PRESERVATIVE	LAB SAMPLE #	PH-C	PH-E	PH-S	PH-T	PH-W	PH-X	PH-Y	PH-Z	COMMENTS
	COLLECTION TIME		NO.	TYPE (VOL.)											
S-1	1/20/97	W	3	4cl			X	X							
S-2															
S-3															
S-4															
S-5															
S-6															
S-7															
S-8															

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	ADDITIONAL COMMENTS
<i>[Signature]</i>	1/20/97		<i>[Signature]</i>	1-21-97	3:40	
<i>[Signature]</i>	1-21-97	3:40	<i>[Signature]</i>	1/21/97	1000	

SPL Houston Environmental Laboratory

Sample Login Checklist

Date: <i>1/22/97</i>	Time: <i>1230</i>
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SPL Sample ID:

9701809

		Yes	No
1	Chain-of-Custody (COC) form is present.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	COC is properly completed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	If no, Non-Conformance Worksheet has been completed.	<input type="checkbox"/>	<input type="checkbox"/>
4	Custody seals are present on the shipping container.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5	If yes, custody seals are intact.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6	All samples are tagged or labeled.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	If no, Non-Conformance Worksheet has been completed.	<input type="checkbox"/>	<input type="checkbox"/>
8	Sample containers arrived intact	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9	Temperature of samples upon arrival:	<i>3C</i>	
10	Method of sample delivery to SPL:	SPL Delivery	
		Client Delivery	
		FedEx Delivery (airbill #) <i>3898449981</i>	
		Other:	
11	Method of sample disposal:	SPL Disposal <input checked="" type="checkbox"/>	
		HOLD	
		Return to Client	

Name: <i>Arthur Esteban</i>	Date: <i>1/22/97</i>
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**BP EXPLORATION & OIL, INC.
ENVIRONMENTAL REMEDIATION MANAGEMENT
DATA REVIEW CHECKLIST**

BP Site Number: BP11105
 ERM Contact: Scott Horton
 Sampling Date: 1/20/97
 Matrix Description: Water
 Date Final Report Received: 2/3/97
 Laboratory & Location: SP4, Houston

	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 (i.e., trip or equipment)?	_____	_____	<u>X</u>
6. Are duplicate water samples within <u>30</u> %?	<u>X</u>	_____	_____
7. Are holding times met?	<u>Y</u>	_____	_____
8. Are surrogates within limits using laboratory criteria?	<u>X</u>	_____	_____
9. Are MS/MSD acceptable using laboratory criteria?	<u>(see below)</u>	_____	_____
10. Are LCS results acceptable using laboratory criteria?	<u>X</u>	_____	_____

Notes: MS/MSD recovery could not be calculated for MTBE

Data Validation Completed by (print): Brady Nagle
 (signature): [Signature]
 Date: 2/27/97

Calculation of RPD
for BP Oil QA/QC Program
BP Oil Station No. 11105 01/20/97 Event

Analytical Data	TPH-G	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
Primary Sample	2100	980	ND<25	280	80	ND<250
QC-1 Duplicate	2700	910	8.8	280	84	180
Sample Mean	2400	945	17	280	82	215
RPD	-25.00%	7.41%	95.86%	0.00%	-4.88%	32.56%
Significant Result?	NO	NO	YES	NO	NO	YES

Notes:

- (1) Significance is defined as an RPD greater than 30% (or less than -30).
- (2) "A negative" RPD will result if the value of the Primary Sample Result is smaller than QC-1.
The determination of Significant Result is not affected by sign of RPD.