BP OIL

ENVIRONMENTAL PROTECTION
97 FEB 18 PM 4:08

February 14, 1997

Mr. Scott Seery
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Room 250
Alameda, CA 94502

RE: BP OIL FACILITY #11105
3515 Castro Valley Blvd
Castro Valley, CA

Attached please find our **GROUNDWATER MONITORING AND SAMPLING REPORT DATED December 19, 1996** for the above referenced facility. Plans for the following quarter include additional groundwater monitoring. Groundwater monitoring performed concurrently at the neighboring Xtra Oil Company service station, 3495 Castro Valley Boulevard, was not performed during this event due to construction at the site.

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\ERM11105

cc: Mr. Eddy So, CRWQCB, San Francisco Bay Region, 2101 Webster Street, Suite 200, Oakland, CA 94612 (without attachment)

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

Mr. Azim Shakoori, Castro Valley Chevron, 3519 Castro Valley Blvd, Castro Valley, CA 94546

TOSCO Northwest CO, 601 Union Street, Suite 2500, Seattle, WA 98101

Site File

GROUNDWATER MONITORING AND SAMPLING REPORT

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

Project No. 10-138-09-001

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

December 19, 1996

Brady Nagle
Project Manager

Al Sevilla, P.E.
Principal

GROUNDWATER MONITORING AND SAMPLING REPORT

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

Project No. 10-138-09-001

December 19, 1996

INTRODUCTION

This report presents the results and findings of the October 10 and 11, 1996 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.

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 (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-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-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	[redacted]	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	[redacted]	7.0	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 (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-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-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	[redacted]	5.5	SPL

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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)	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
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-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	[redacted]	6.9	SPL
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	---	---	---	---	---	---	---	---	---	---	---

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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 (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
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:\0\10-138\138-9-1.WQ2

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

N

0 1000' 2000'

FIGURE 1

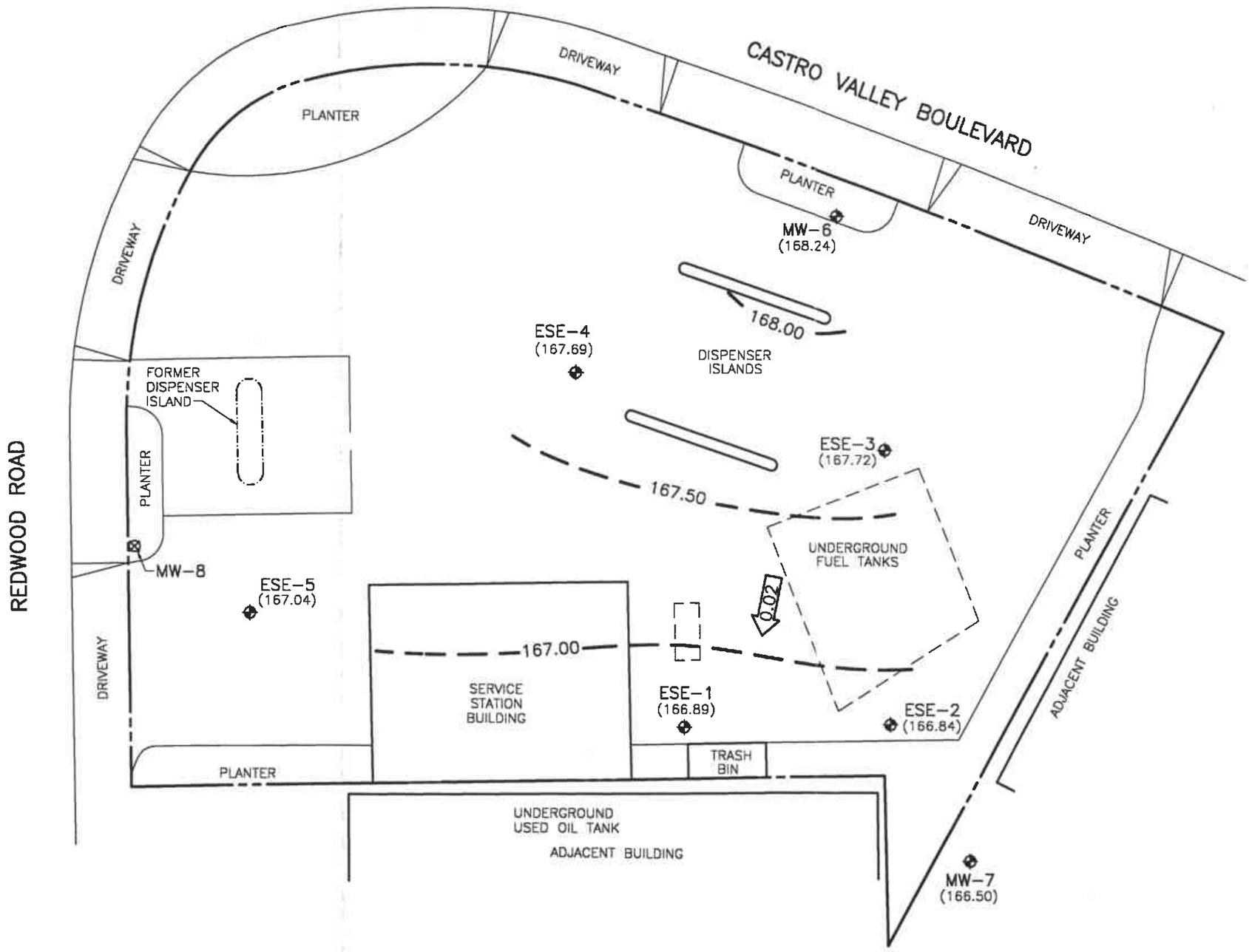
SITE VICINITY MAP

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

PROJECT NO. 10-138

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10138B---DWG 10-12-93 MAP 1=1



N

0 20 40

SCALE IN FEET

LEGEND

- ◆ GROUNDWATER MONITORING WELL
- ⊠ DESTROYED WELL
- (166.69) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 167.00 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL–0.50 FOOT)
- 0.02 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

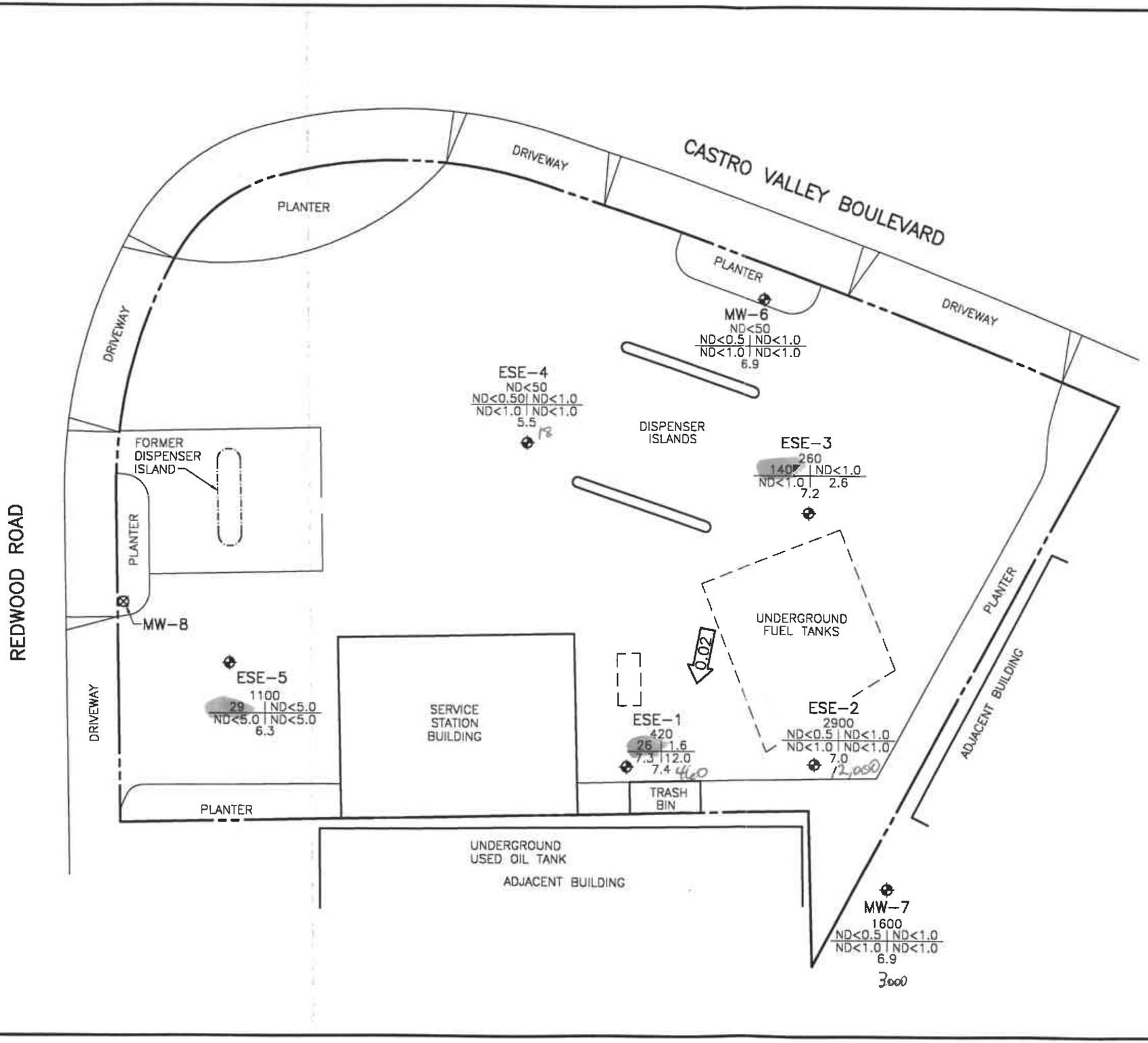
OCTOBER 10, 1996

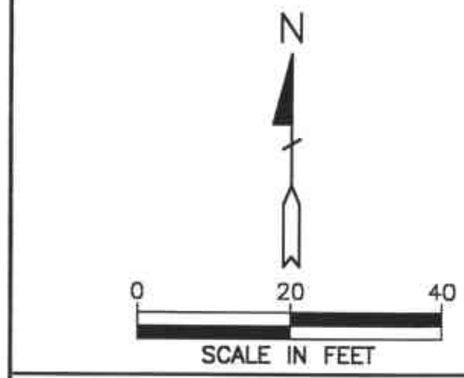
BP OIL SERVICE STATION NO. 11105
3519 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

PROJECT NO. 10–138

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

101380-1.DWG 12-9-96 DDM 1=20





LEGEND

⊕	GROUNDWATER MONITORING WELL
⊠	DESTROYED WELL
TPH-G / B | T / E | X / DO	CONCENTRATION OF CONSTITUENTS IN MICROGRAMS PER LITER, EXCEPT DISSOLVED OXYGEN, WHICH IS IN PARTS PER MILLION
MTBE / 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
0.02	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

OCTOBER 10 – 11, 1996

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

PROJECT NO. 10-138

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10136-7.DWG 12-12-96 DRW 1=20

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

ALISTO

Field Report / Sampling Data Sheet

ENGINEERING GROUP
1575 TREAT BOULEVARD, SUITE 201

Project No. 10-138-09-001 Date: 10/10/96 & 10/11/96
Address 3515 Castro Valley Blvd Day: M T W (TH) F
Contract No. G797425 City: Castro Valley
Station No. BP 11105 Sampler: WB

DEPTH TO GROUNDWATER SUMMARY

WELL ID	SAMPLE ID	WELL DIAM	TOTAL DEPTH	DEPTH TO WATER	PRODUCT THICKNESS	TIME MONITORED	COMMENTS:
ESE-1	S-3	2"	30.00	10.80	Ø	1010	
ESE-2	S-5	"	30.00	11.39	"	1018	
ESE-3	S-2	"	30.00	10.48	"	1006	Resampled well 10/11/96 because of improper Preserve
ESE-4	S-6	"	25.00	9.97	"	1022	"
ESE-5	S-7	"	24.00	9.04	"	1024	QC-1 (S-8) From this well
MW-6	S-1	"	29.43	11.00	"	1003	
MW-7	S-4	↓	19.85	10.05	↓	1015	Resampled well 10/11/96 because of improper Preserve
MW-8	—	—	—	—	—	—	Well has been Destroyed

FIELD INSTRUMENT CALIBRATION DATA

pH METER Icm 4.00 4 7.00 7 10.00 10 TEMPERATURE COMPENSATED (Y) N TIME 1030

D.O. METER Icm ZERO d.O. SOLUTION 0 BAROMETRIC PRESSURE 760 TEMP 62 WEATHER clear

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

LEAK DETECTOR OPERATION: ALARM MODE _____ NON ALARM MODE X

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-6	11.00	2"	OK	Ø	Y (N)	3	1042	67.4	8.11	417 µS	6.3
Total Depth - Water Level=	x Well Vol. Factor=	x#Vol. to Purge	PurgeVol.			6		66.3	7.92	429 µS	
29.43-11.00 = 18.43 x .16 =	2.95 x 3 =		8.85			9	1050	65.4	7.83	433 µS	6.9
Purge Method: (S)Surface Pump O Disp.Tube O Winch O Disp. Bailer(s) ___ O Sys Port											
Comments:											

O EPA 601 _____
(X) TPH-G/BTEX Acl
O TPH Diesel ____
O TOG 5520 ___
TIME/SAMPLE ID
1055

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
ESE-3	10.48	2"	OK	Ø	Y (N)	3	1103	66.6	7.63	422 µS	6.4
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			6		65.3	7.39	437 µS	
30.00 - 10.48 =	19.52 x .16 =	3.12 x 3 =	9.36			9.5	1110	65.0	7.30	444 µS	7.2
Purge Method: (S)Surface Pump O Disp.Tube O Winch O Disp. Bailer(s) ___ O Sys Port											
Comments:											

O EPA 601 _____
(X) TPH-G/BTEX Acl
O TPH Diesel ____
O TOG 5520 ___
TIME/SAMPLE ID
1113

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. 10-138-09-001 Date: 10/10/96 & 10/11/96
Address 3515 Castro Valley Blvd Day: M T W (Th) F
Contract No. G797425 City: Castro Valley
Station No. BP 11105 Sampler: CB

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
ESE-1	10.80	2"	OK	Ø	Y (N)	3	1124	67.4	7.19	470 µS	6.8
						6		66.3	7.06	442 µS	
						9.5	1133	65.9	7.01	437 µS	7.4

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
30.00 - 10.80 = 19.20 x .16 = 3.07 x 3 = 9.21
Purge Method: (Surface Pump) ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

O EPA 601___ X TPH-G/BTEX HCl O TPH Diesel___ O TOG 5520___
TIME/SAMPLE ID: 1136

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-7	10.05	2"	OK	Ø	Y (N)	2	1245	66.6	7.26	501 µS	6.6
						3		66.2	7.14	472 µS	
						5	1252	65.4	7.09	463 µS	6.9

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
19.85 - 10.05 = 9.80 x .16 = 1.57 x 3 = 4.71
Purge Method: (Surface Pump) ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

O EPA 601___ X TPH-G/BTEX HCl O TPH Diesel___ O TOG 5520___
TIME/SAMPLE ID: 1256

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
ESE-2	11.39	2"	OK	Ø	Y (N)	3	1302	67.3	7.11	512 µS	6.5
						6		66.3	7.03	472 µS	
						9	1310	66.0	6.92	468 µS	7.0

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
30.00 - 11.39 = 18.61 x .16 = 2.98 x 3 = 8.94
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

O EPA 601___ X TPH-G/BTEX HCl O TPH Diesel___ O TOG 5520___
TIME/SAMPLE ID: 1317

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
ESE-4	9.97	2"	OK	Ø	Y (N)	3	1322	67.7	7.30	476 µS	4.2
						5		66.7	7.21	452 µS	
						7.5	1330	66.3	7.14	447 µS	5.5

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
25.00 - 9.97 = 15.03 x .16 = 2.40 x 3 = 7.20
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments:

O EPA 601___ X TPH-G/BTEX HCl O TPH Diesel___ O TOG 5520___
TIME/SAMPLE ID: 1333

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
ESE-5	9.04	2"	OK	Ø	Y (N)	3	1345	67.6	7.11	622 µS	5.8
						5		66.4	6.90	603 µS	
						7.5	1355	66.2	6.83	592 µS	6.3

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
24.00 - 9.04 = 14.96 x .16 = 2.39 x 3 = 7.17
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port
Comments: QC-1 (5-8) From this WPM

O EPA 601___ X TPH-G/BTEX HCl O TPH Diesel___ O TOG 5520___
TIME/SAMPLE ID: 1400

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

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

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 96-10-911

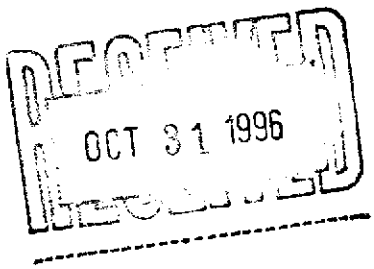
Approved for Release by:

Ed Fry, Project Manager

Date: 10/29/96

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer



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

Certificate of Analysis No. H9-9610911-01

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

P.O.# G797425,COC#082720
DATE: 10/24/96

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

PROJECT NO: 10-138-09/001
MATRIX: WATER
DATE SAMPLED: 10/10/96
DATE RECEIVED: 10/15/96

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	97
4-Bromofluorobenzene	100

METHOD 8020***
Analyzed by: YN/
Date: 10/22/96

Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L

Surrogate	% Recovery
1,4-Difluorobenzene	83
4-Bromofluorobenzene	70

CA LUFT - Gasoline
Analyzed by: YN/
Date: 10/22/96 11:58:00

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. H9-9610911-02

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

P.O.# G797425,COC#082720
DATE: 10/24/96

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

PROJECT NO: 10-138-09/001
MATRIX: WATER
DATE SAMPLED: 10/11/96
DATE RECEIVED: 10/15/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	10 P	µg/L
Benzene	140	0.5 P	µg/L
Toluene	ND	1.0 P	µg/L
Ethylbenzene	ND	1.0 P	µg/L
Total Xylene	2.6	1.0 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	107		
4-Bromofluorobenzene	97		
METHOD 8020***			
Analyzed by: YN/			
Date: 10/23/96			
Total Petroleum Hydrocarbons-Gasoline	0.26	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	90		
4-Bromofluorobenzene	70		
CA LUFT - Gasoline			
Analyzed by: YN/			
Date: 10/23/96 12:26:00			

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. H9-9610911-03

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

P.O.# G797425,COC#082720
DATE: 10/24/96

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

PROJECT NO: 10-138-09/001
MATRIX: WATER
DATE SAMPLED: 10/10/96
DATE RECEIVED: 10/15/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	430	10 P	µg/L
Benzene	26	0.5 P	µg/L
Toluene	1.6	1.0 P	µg/L
Ethylbenzene	7.3	1.0 P	µg/L
Total Xylene	12.0	1.0 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	97		
METHOD 8020***			
Analyzed by: YN/			
Date: 10/23/96			
Total Petroleum Hydrocarbons-Gasoline	0.42	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	83		
4-Bromofluorobenzene	70		
CA LUFT - Gasoline			
Analyzed by: YN/			
Date: 10/23/96 12:54:00			

(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. H9-9610911-04

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

P.O.# G797425,COC#082720
DATE: 10/24/96

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

PROJECT NO: 10-138-09/001
MATRIX: WATER
DATE SAMPLED: 10/11/96
DATE RECEIVED: 10/15/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	3000	500 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	100		
4-Bromofluorobenzene	97		
METHOD 8020***			
Analyzed by: WK			
Date: 10/23/96			
Total Petroleum Hydrocarbons-Gasoline	1.6	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	73		
CA LUFT - Gasoline			
Analyzed by: YN/			
Date: 10/23/96 01:22:00			

(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. H9-9610911-05

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

P.O.# G797425,COC#082720
DATE: 10/24/96

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

PROJECT NO: 10-138-09/001
MATRIX: WATER
DATE SAMPLED: 10/10/96
DATE RECEIVED: 10/15/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	12000	500 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	100		
4-Bromofluorobenzene	100		
METHOD 8020***			
Analyzed by: WK			
Date: 10/23/96			
Total Petroleum Hydrocarbons-Gasoline	2.9	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	83		
4-Bromofluorobenzene	73		
CA LUFT - Gasoline			
Analyzed by: YN/			
Date: 10/23/96 01:50:00			

(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. H9-9610911-06

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

P.O.# G797425,COC#082720
DATE: 10/24/96

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

PROJECT NO: 10-138-09/001
MATRIX: WATER
DATE SAMPLED: 10/11/96
DATE RECEIVED: 10/15/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	18	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	90		
METHOD 8020***			
Analyzed by: WK			
Date: 10/23/96			
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	70		
CA LUFT - Gasoline			
Analyzed by: YN/			
Date: 10/23/96 02:18:00			

(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. H9-9610911-07

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

P.O.# G797425,COC#082720
DATE: 10/24/96

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

PROJECT NO: 10-138-09/001
MATRIX: WATER
DATE SAMPLED: 10/10/96
DATE RECEIVED: 10/15/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	50 P	µg/L
Benzene	29	2.5 P	µg/L
Toluene	ND	5.0 P	µg/L
Ethylbenzene	ND	5.0 P	µg/L
Total Xylene	ND	5.0 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: YN/			
Date: 10/23/96			
Total Petroleum Hydrocarbons-Gasoline	1.1	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	67		
CA LUFT - Gasoline			
Analyzed by: YN/			
Date: 10/23/96 02:46:00			

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. H9-9610911-08

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

P.O.# G797425,COC#082720
DATE: 10/24/96

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

PROJECT NO: 10-138-09/001
MATRIX: WATER
DATE SAMPLED: 10/10/96
DATE RECEIVED: 10/15/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	50 P	µg/L
Benzene	31	2.5 P	µg/L
Toluene	ND	5.0 P	µg/L
Ethylbenzene	ND	5.0 P	µg/L
Total Xylene	ND	5.0 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: YN/			
Date: 10/23/96			
Total Petroleum Hydrocarbons-Gasoline	1.1	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	87		
4-Bromofluorobenzene	73		
CA LUFT - Gasoline			
Analyzed by: YN/			
Date: 10/23/96 03:14:00			

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

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

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_N961022071700

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
MTBE	ND	50	45	90.0	20 - 110
Benzene	ND	50	49	98.0	62 - 121
Toluene	ND	50	51	102	66 - 136
EthylBenzene	ND	50	46	92.0	70 - 136
O Xylene	ND	50	48	96.0	74 - 134
M & P Xylene	ND	100	97	97.0	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike Result <1>	Matrix Spike Recovery <4>	Matrix Spike Duplicate Result <1>	Matrix Spike Duplicate Recovery <5>	MS/MSD Relative % Difference	QC Limits(***) (Advisory) RPD Max.	QC Limits(***) (Advisory) Recovery Range
MTBE	ND	20	20	100	20	100	0	20	39 - 150
BENZENE	ND	20	20	100	20	100	0	25	39 - 150
TOLUENE	ND	20	19	95.0	18	90.0	5.41	26	56 - 134
ETHYLBENZENE	ND	20	19	95.0	19	95.0	0	38	61 - 128
O XYLENE	ND	20	20	100	20	100	0	29	40 - 130
M & P XYLENE	ND	40	40	100	39	97.5	2.53	20	43 - 152

Analyst: YN/
Sequence Date: 10/22/96
SPL ID of sample spiked: 9610911-01A
Sample File ID: N_J6903.TX0
Method Blank File ID:
Blank Spike File ID: N_J6892.TX0
Matrix Spike File ID: N_J6898.TX0
Matrix Spike Duplicate File ID: N_J6899.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 (3rd Q '96)

SAMPLES IN BATCH(SPL ID): 9610911-01A 9610911-02A 9610911-03A 9610911-04A 9610911-05A 9610911-07A 9610911-08A 9610660-02A 9610660-03A 9610919-12A 9610919-10A 9610919-09A 9610919-11A 9610A19-01A

HOUSTON LABORATORY
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HOUSTON, TEXAS 77054
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** SPL BATCH QUALITY CONTROL REPORT **

METHOD 8020/602

Matrix: Aqueous

Units: µg/L

Batch Id: VARE961023041200

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
MTBE	ND	50.0	42	84.0	63 - 120
Benzene	ND	50.0	45	90.0	62 - 121
Toluene	ND	50.0	45	90.0	66 - 136
EthylBenzene	ND	50.0	48	96.0	70 - 136
O Xylene	ND	50.0	51	102	74 - 134
M & P Xylene	ND	100.0	99	99.0	77 - 140

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike Result <1>	Matrix Spike Recovery <4>	Matrix Spike Duplicate Result <1>	Matrix Spike Duplicate Recovery <5>	MS/MSD Relative % Difference	QC Limits(***) (Advisory) RPD Max.	QC Limits(***) (Advisory) Recovery Range
MTBE	1.2	20.0	18	84.0	17	79.0	6.13	20	39 - 150
BENZENE	ND	20.0	17	85.0	17	85.0	0	25	39 - 150
TOLUENE	ND	20.0	16	80.0	16	80.0	0	26	56 - 134
ETHYLBENZENE	ND	20.0	17	85.0	16	80.0	6.06	38	61 - 128
O XYLENE	ND	20.0	18	90.0	17	85.0	5.71	29	40 - 130
M & P XYLENE	ND	40.0	36	90.0	36	90.0	0	20	43 - 152

Analyst: WK

Sequence Date: 10/23/96

SPL ID of sample spiked: 9610A84-01A

Sample File ID: E_J6552.TX0

Method Blank File ID:

Blank Spike File ID: E_J6545.TX0

Matrix Spike File ID: E_J6548.TX0

Matrix Spike Duplicate File ID: E_J6549.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 (3rd Q '95)

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

SAMPLES IN BATCH(SPL ID):

9610A83-03A 9610A83-04A 9610B70-02A 9610B70-03A
9610B70-01A 9610B70-04A 9610911-06A 9610911-04A
9610911-05A 9610A84-02A 9610A84-01A 9610A83-01A
9610A83-02A

HOUSTON LABORATORY
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HOUSTON, TEXAS 77054
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** SPL BATCH QUALITY CONTROL REPORT **
CA LUPT

Matrix: Aqueous
Units: mg/L

Batch Id: HP_N961022084200

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
Petroleum Hydrocarbons-Gas	ND	1.00	0.94	94.0	50 - 150

MATRIX SPIKES

SPIKE COMPOUNDS	Sample Results <2>	Spike Added <3>	Matrix Spike Result <1>	Matrix Spike Recovery <4>	Matrix Spike Duplicate Result <1>	Matrix Spike Duplicate Recovery <5>	MS/MSD Relative % Difference	QC Limits(***) (Advisory) RPD Max.	QC Limits(***) (Advisory) Recovery Range
PETROLEUM HYDROCARBONS-GAS	0.26	0.9	1.24	109	1.22	107	1.85	50	50 - 150

Analyst: YN/
Sequence Date: 10/22/96
SPL ID of sample spiked: 9610911-02A
Sample File ID: NNJ6904.TX0
Method Blank File ID:
Blank Spike File ID: NNJ6895.TX0
Matrix Spike File ID: NNJ6900.TX0
Matrix Spike Duplicate File ID: NNJ6901.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: Temporary Limits
(***) = Source: Temporary Limits

SAMPLES IN BATCH(SPL ID):

9610911-04A 9610911-05A 9610911-06A 9610911-07A
9610911-08A 9610660-02A 9610660-03A 9610919-12A
9610919-10A 9610919-09A 9610919-11A 9610A19-01A
9610911-01A 9610911-02A 9610911-03A

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

96-10-911

CHAIN OF CUSTODY

No. 082720 Page 1 of 1

CONSULTANT'S NAME	ADDRESS	CITY	STATE	ZIP CODE
Alisto Engineering	1575 Treat Blvd #201	W.C.	Ca	

BP SITE NUMBER	BP CORNER ADDRESS/CITY	CONSULTANT PROJECT NUMBER
11105	Castro Valley, Ca	10-138-09/001

CONSULTANT PROJECT MANAGER	PHONE NUMBER	FAX NUMBER	CONSULTANT CONTRACT NUMBER
Brady Nagle	(510) 295-1650	295-1823	6797425

BP CONTACT	BP ADDRESS	PHONE NUMBER	FAX NO.
Scott Hooton	Renton, WA	—	—

LAB CONTACT	LABORATORY ADDRESS	PHONE NUMBER	FAX NO.
SPL	Texas	—	—

SAMPLED BY (Please Print Name)	SAMPLED BY (Signature)	SHIPMENT DATE	SHIPMENT METHOD
Larry Buenaventura	[signature]	10-14-96	Fed Ex

TAT: ☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☒ Standard 2 Weeks

ANALYSIS REQUIRED

AIRBILL NUMBER: 9404778924

SAMPLE DESCRIPTION	COLLECTION DATE / COLLECTION TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	TPH-G/BTEX	PNA 8015 MOD								COMMENTS
S-1	10/10/96	W	3	HCL		X	1								
S-2	10/11/96	↓	↓	↓		↓	1								
S-3	10/10/96	↓	↓	↓		↓	1								
S-4	10/11/96	↓	↓	↓		↓	1								
S-5	10/10/96	↓	↓	↓		↓	1								
S-6	10/11/96	↓	↓	↓		↓	1								
S-7	10/10/96	↓	↓	↓		↓	1								
S-8	10/10/96	↓	↓	↓		↓	1								

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	ADDITIONAL COMMENTS
[signature]	10/14/96	0800	Patricia Lyetton	10/14/96	0800	2°C
Patricia Lyetton	10/14/96	1400	Don Carter	10-15-96	0930	

CLV-16722
PKG/50

Distribution: White - Original (with Data); Yellow - BP; Pink - Lab; Blue - Consultant Field Staff

SPL Houston Environmental Laboratory

Sample Login Checklist

Date:	Time:
10-15-9le	09:30

SPL Sample ID:
9le-10-911

			Yes	No
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:		2° C	
10	Method of sample delivery to SPL:	SPL Delivery		
		Client Delivery		
		FedEx Delivery (airbill #)	940477892 4	
		Other:		
11	Method of sample disposal:	SPL Disposal	—	
		HOLD		
		Return to Client		

Name:	Date:
Misty Angel Faul	10-15-9le

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

BP Site Number: 11105
ERM Contact: Scott Horton
Sampling Date: 10/10 & 11/96
Matrix Desription: water
Date Final Report Received: 10/31/96
Laboratory & Location: SPL, Houston

	Yes	No	NA
1. Is BP contract release number consistent with analytical report?	X		
2. Was report submitted within the specified timeframe?	X		
3. Does report agree with the COC?	X		
4. Are units consistent with the given matrix?	X		
5. Were any target analytes/compounds detected in blanks (ie. trip or equipment)?			X
6. Are duplicate water samples within 30%?	X		
7. Are holding times met?	X		
8. Are surrogates within limits using laboratory criteria?	X		
9. Are MS/MSD acceptable using laboratory criteria?	+		
10. Are LCS results acceptable using laboratory criteria?	X		

Notes/Comments: _____

Data Validation Completed by (print): Brady Nagle
(signature): [signature]
Date: 12/16/96