PE
SID 11108

BP OIL

BP Oil Company
Environmental Remediation Management
295 SW 41st Street
Renton, Washington 98055-4931
(425) 251-0667
Fax No: (425) 251-0736

April 1, 1998

Alameda County Health Care Services Agency
Attention Ms. Jennifer Eberle - Hazardous Materials Specialist
1131 Harbor Bay Parkway, STE 250
Alameda, CA 94502-6577

RE: Former BP Oil Site No. 11102
100 McArthur Boulevard (at Oakland)
Oakland, CA

Dear Ms. Eberle:

Enclosed find the 12 February 1998 Groundwater Monitoring and Sampling Report prepared on behalf of BP by Alisto Engineering Group.

We plan to continue semi-annual sampling at this time per Alameda County Health Care Services Agency correspondence dated 22 October 1996.

Please give me a call at (425) 251-0689 if you have any questions or comments.

Sincerely,

Scott Hooton
Environmental Remediation Management
BP Exploration & Oil, Inc.

attachment

cc: site file
Brady Nagle - AEG
Tina Berry - Tosco (w/attachment)

GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11102
100 MacArthur Boulevard
Oakland, California

Project No. 10-076-07-001

Prepared for:

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

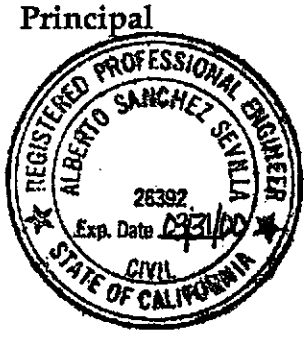
Prepared by:

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

February 12, 1998

Brady Nagle
Project Manager

Al Sevilla, P.E.
Principal



GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11102
100 MacArthur Boulevard
Oakland, California

Project No. 10-076-07-001

February 12, 1998

INTRODUCTION

This report presents the results and findings of the December 12, 1997 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11102, 100 MacArthur Boulevard, Oakland, 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 for this and previous quarters are summarized in Table 1. The potentiometric groundwater elevations as interpreted from the results of this monitoring event are shown on Figure 2. The results of groundwater analysis are shown on Figure 3. The laboratory report and chain of custody record are presented in Appendix B.

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-076

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)	TOG (ug/l)	1,1-DCA (ug/l)	1,2-DCA (ug/l)	VOC (ug/l)	MTBE (ug/l)	DO (ppm)	LAB
MW-1	11/04/89	90.20	13.21	76.99	ND<500	ND<50	3.4	0.6	ND<0.3	ND<0.3	ND<5000	--	0.9	--	--	--	SAL
MW-1	11/11/89	90.20	13.32	76.88	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	04/03/90	90.20	12.46	77.74	820	--	64	1.9	23	34	--	--	--	--	--	--	ANA
MW-1	07/30/90	90.20	12.92	77.28	190	ND<50	11	ND<5.0	ND<5.0	ND<5.0	ND<5000	--	ND	--	--	--	ANA
MW-1	11/20/90	90.20	14.08	76.12	50	79	2.4	ND<0.3	ND<0.3	ND<0.3	ND<5000	--	4.0	--	--	--	SAL
MW-1	03/01/91	90.20	13.61	76.59	ND<100	ND<1000	0.9	ND<0.3	ND<0.3	0.3	14000	--	ND	--	--	--	SAL
MW-1	08/19/91	90.20	15.74	74.46	370	ND<50	35	0.73	6.4	5.6	ND<5000	--	1.4	--	--	--	SEQ
MW-1	11/13/91	90.20	14.08	76.12	60	ND<50	0.68	ND<0.3	ND<0.3	ND<0.3	ND<5000	--	1.0	--	--	--	SEQ
MW-1	02/24/92	90.20	12.52	77.68	140	100	3.9	0.66	1.2	3.8	ND<5000	--	1.7	--	--	--	SEQ
MW-1	05/19/92	90.20	11.80	78.40	4200	910	440	21	250	37	ND<5000	--	ND	--	--	--	SEQ
MW-1	08/17/92	90.20	12.01	78.19	4000	560	350	14	150	17	ND<5000	--	ND	--	--	--	SEQ
MW-1	07/22/92	90.20	12.42	77.78	4000	--	ND<5.0	19	210	61	--	--	--	--	--	--	ANA
MW-1	08/14/92	90.20	12.75	77.45	2400	1700	330	20	150	47	ND<5000	--	ND<2.5	--	--	--	SEQ
MW-1	11/11/92	90.20	13.69	76.51	260	82	30	3.4	7.6	6.8	ND<5000	--	ND<2.5	--	--	--	ANA
MW-1	06/07/93	90.20	10.93	79.27	3400	440	93	11	21	7.6	--	6.2	0.9	--	--	--	PACE
QC-1 (c)	06/07/93	--	--	--	3700	--	120	12	26	9.5	--	--	--	--	--	--	PACE
MW-1	12/02/93	90.20	12.72	77.48	1100	120	8.3	3.6	0.6	1.5	ND<5000	2.6	1.8	--	--	--	PACE
MW-1	06/22/94	90.20	11.81	78.39	2100	ND<50	32	3.8	2.2	17	ND<5000	2.3	3.3	--	4000 (d)	3.2	PACE
QC-1 (c)	06/22/94	--	--	--	2100	--	30	3.2	2.0	15	--	--	--	--	2000 (d)	--	PACE
MW-1	01/10/95	90.20	10.97	79.23	ND<500	420	120	ND<5	ND<5	ND<10	--	ND<1	1	--	--	3.9	ATI
QC-1 (c)	01/10/95	--	--	--	ND<500	--	120	ND<5	5	ND<10	--	--	--	--	--	--	ATI
MW-1	06/21/95	90.20	9.38	80.82	4700	1300	16	ND<5.0	ND<5.0	ND<10	2900	2.0	0.38	0.60 (e)	--	6.7	ATI
QC-1 (c)	06/21/95	--	--	--	3600	--	ND<13	ND<5.0	ND<5.0	ND<10	--	--	--	--	--	--	ATI
MW-1	12/27/95	90.20	11.55	78.65	430	2100	ND<2.5	ND<2.5	ND<2.5	ND<5.0	640	0.67	ND<0.20	--	1200	8.3	ATI
MW-1	06/13/96	90.20	9.28	80.92	3200	920	51	ND<12	ND<12	ND<12	2000	--	--	--	4000	8.3	SPL
MW-1	12/04/96	90.20	11.91	78.29	1400	280	6.2	ND<5	ND<5	ND<5	2000	ND<5.0	ND<5.0	6.0 (f)	2600	8.7	SPL
MW-1	06/10/97	90.20	8.97	81.23	7900	1700	12	ND<10	ND<10	ND<10	ND<5	ND<250	ND<250	ND	15000	8.0	SPL
QC-1 (c)	06/10/97	--	--	--	7700	--	14	ND<25	ND<25	ND<25	--	--	--	--	13000	--	SPL
MW-1	12/12/97	90.20	11.37	78.83	440	760	8.8	ND<1.0	2.6	9.4	1200	ND<1.0	ND<1.0	ND	6700	5.5	SPL
MW-2	11/04/89	87.91	15.84	72.07	ND<500	--	6.5	ND<0.3	ND<0.3	ND<0.3	--	--	--	--	--	--	SAL
MW-2	11/11/89	87.91	14.75	73.16	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	04/03/90	87.91	15.25	72.66	ND<500	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	ANA
MW-2	07/30/90	87.91	15.59	72.32	61	--	6.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	ANA
MW-2	11/20/90	87.91	17.81	70.10	ND<50	--	0.3	ND<0.3	ND<0.3	ND<0.3	--	--	--	--	--	--	SAL
MW-2	03/01/91	87.91	17.11	70.80	ND<100	--	0.4	ND<0.3	ND<0.3	ND<0.3	--	--	4.0	--	--	--	SAL
MW-2	08/19/91	87.91	17.97	69.94	ND<30	--	ND<0.3	ND<0.3	ND<0.3	ND<0.3	--	--	--	--	--	--	SEQ
MW-2	11/13/91	87.91	16.76	71.15	38	--	0.32	ND<0.3	ND<0.3	ND<0.3	--	--	--	--	--	--	SEQ
MW-2	02/24/92	87.91	15.07	72.84	ND<50	--	ND<0.5	ND<0.5	ND<0.5	0.58	--	--	16	--	--	--	SEQ
MW-2	05/19/92	87.91	14.70	73.21	ND<50	--	0.55	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	SEQ
MW-2	07/22/92	87.91	15.60	72.31	90	--	1.3	0.6	0.9	1.9	--	--	--	--	--	--	ANA
MW-2	08/14/92	87.91	15.88	72.03	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	11/11/92	87.91	16.19	71.72	52	--	2.8	ND<0.5	ND<0.5	0.9	--	--	--	--	--	--	ANA
QC-1 (c)	11/11/92	--	--	--	65	--	3.2	ND<0.5	ND<0.5	1.0	--	--	--	--	--	--	ANA
MW-2	06/07/93	87.91	14.42	73.49	1200	--	14	2.8	1.9	1.7	--	--	--	--	--	--	PACE
MW-2	12/02/93	87.91	14.94	72.97	790	--	3.4	0.5	10	ND<0.5	--	--	--	--	3700 (d)	--	PACE
QC-1 (c)	12/02/93	--	--	--	2100	--	32	3.8	2.2	17.00	--	2.3	--	--	3700 (d)	--	PACE
MW-2	06/22/94	87.91	14.25	73.66	110	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	120 (d)	3.9	PACE
MW-2	01/10/95	87.91	13.64	74.27	ND<50	--	ND<0.5	ND<0.5	0.6	1	--	--	--	--	--	4.3	ATI
MW-2	06/21/95	87.91	11.66	76.25	4700	--	ND<10	ND<10	ND<10	ND<20	--	--	--	--	--	7.8	ATI
MW-2	12/27/95	87.91	13.11	74.80	6100	--	ND<25	ND<25	ND<25	ND<50	--	--	--	--	20000	6.7	ATI
QC-1 (c)	12/27/95	--	--	--	6300	--	ND<25	ND<25	ND<25	ND<50	--	--	--	--	19000	--	ATI
MW-2	06/13/96	87.91	10.88	77.05	8300	--	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	--	--	--	13000	8.5	SPL
QC-1 (c)	06/13/96	--	--	--	8700	--	ND<5	ND<5	ND<5	ND<5	--	--	--	--	13000	--	SPL
MW-2	12/04/96	87.91	13.03	74.88	5900	--	ND<2.5	ND<5	ND<5	ND<5	--	--	--	--	11000	8.3	SPL
QC-1 (c)	12/04/96	--	--	--	5900	--	ND<2.5	ND<5	ND<5	ND<5	--	--	--	--	11000	--	SPL
MW-2	06/10/97	87.91	10.04	77.87	ND<50	--	ND<0.5	ND<1.0	ND<1.0	ND<1.0	--	--	--	--	ND<10	5.8	SPL
MW-2	12/12/97	87.91	12.44	75.47	ND<50	--	ND<0.5	ND<1.0	ND<1.0	ND<1.0	--	--	--	--	ND<10	5.7	SPL

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-076

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)	TOG (ug/l)	1,1-DCA (ug/l)	1,2-DCA (ug/l)	VOC (ug/l)	MTBE (ug/l)	DO (ppm)	LAB
MW-3	11/04/89	87.02	15.40	71.62	ND<500	—	ND<0.3	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	—	—	SAL
MW-3	11/11/89	87.02	14.10	72.92	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-3	04/03/90	87.02	13.90	73.12	ND<100	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	—	ANA
MW-3	07/30/90	87.02	13.77	73.25	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	—	—	—	—	—	ANA
MW-3	11/20/90	87.02	14.67	72.35	ND<50	—	0.3	0.8	0.4	1.5	—	—	—	—	—	—	SAL
MW-3	03/01/91	87.02	15.22	71.80	ND<100	—	0.4	ND<0.3	ND<0.3	ND<0.3	—	—	ND	—	—	—	SAL
MW-3	08/19/91	87.02	13.15	73.87	ND<30	—	ND<0.3	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	—	—	SEQ
MW-3	11/13/91	87.02	15.66	71.36	ND<30	—	ND<0.3	ND<0.3	ND<0.3	ND<0.3	—	—	—	—	—	—	SEQ
MW-3	02/24/92	87.02	15.01	72.01	ND<50	—	0.65	1.4	0.66	4.4	—	—	ND	—	—	—	SEQ
MW-3	05/19/92	87.02	15.52	71.50	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	—	SEQ
MW-3	07/22/92	87.02	15.63	71.39	ND<50	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<5000	—	ND<0.50	—	—	—	ANA
MW-3	08/14/92	87.02	13.57	73.45	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-3	11/11/92	87.02	14.13	72.89	ND<50	—	ND<0.5	0.7	ND<0.5	1.3	—	—	—	—	—	—	ANA
MW-3	06/07/93	87.02	12.13	74.89	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	—	PACE
MW-3	12/02/93	87.02	13.29	73.73	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	—	PACE
MW-3	06/22/94	87.02	12.78	74.24	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	2.9	PACE
MW-3	01/10/95	87.02	12.01	75.01	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<1	—	—	1	—	—	3.8	ATI
MW-3	06/21/95	87.02	11.57	75.45	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	—	—	—	—	—	7.4	ATI
MW-3	12/27/95	87.02	13.47	73.55	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	—	—	—	—	5.7	7.3	ATI
MW-3	06/13/96	87.02	11.22	75.80	80	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	ND<10	6.8	SPL
MW-3	12/04/96	87.02	13.28	73.74	ND<50	—	ND<0.5	ND<1	ND<1	ND<1	—	—	—	—	ND<10	6.7	SPL
MW-3	06/10/97	87.02	10.22	76.80	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	—	—	—	—	ND<10	6.1	SPL
MW-3	12/12/97	87.02	12.61	-12.61	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	—	—	—	—	ND<10	5.6	SPL
QC-1 (c)	12/12/97	—	—	—	ND<50	—	ND<0.5	ND<1.0	ND<1.0	ND<1.0	—	—	—	—	ND<10	—	SPL
QC-2 (g)	11/11/92	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	—	ANA
QC-2 (g)	06/07/93	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	—	PACE
QC-2 (g)	12/02/93	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	—	PACE
QC-2 (g)	06/22/94	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	—	—	PACE
QC-2 (g)	01/10/95	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<1	—	—	—	—	—	—	ATI
QC-2 (g)	06/21/95	—	—	—	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	—	—	—	—	—	—	ATI
QC-2 (g)	12/27/95	—	—	—	ND<50	—	ND<0.50	ND<0.50	ND<0.50	ND<1.0	—	—	—	—	ND<5.0	—	ATI
QC-2 (g)	06/13/96	—	—	—	ND<50	—	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	—	—	—	ND<10	—	SPL

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
TOG	Total oil and grease
1,1-DCA	1,1-Dichloroethane
1,2-DCA	1,2-Dichloroethane
VOC	Volatile organic compounds
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 analyzed/measured/applicable
SAL	Superior Analytical Laboratory
ANA	Anametrix, Inc.
SEQ	Sequoia Analytical Laboratory
PACE	Pace, Inc.
ATI	Analytical Technologies, Inc.
SPL	Southern Petroleum Laboratories

NOTES:

(a) Top of casing elevations surveyed to the nearest 0.01 foot above mean sea level.

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

(c) Blind duplicate.

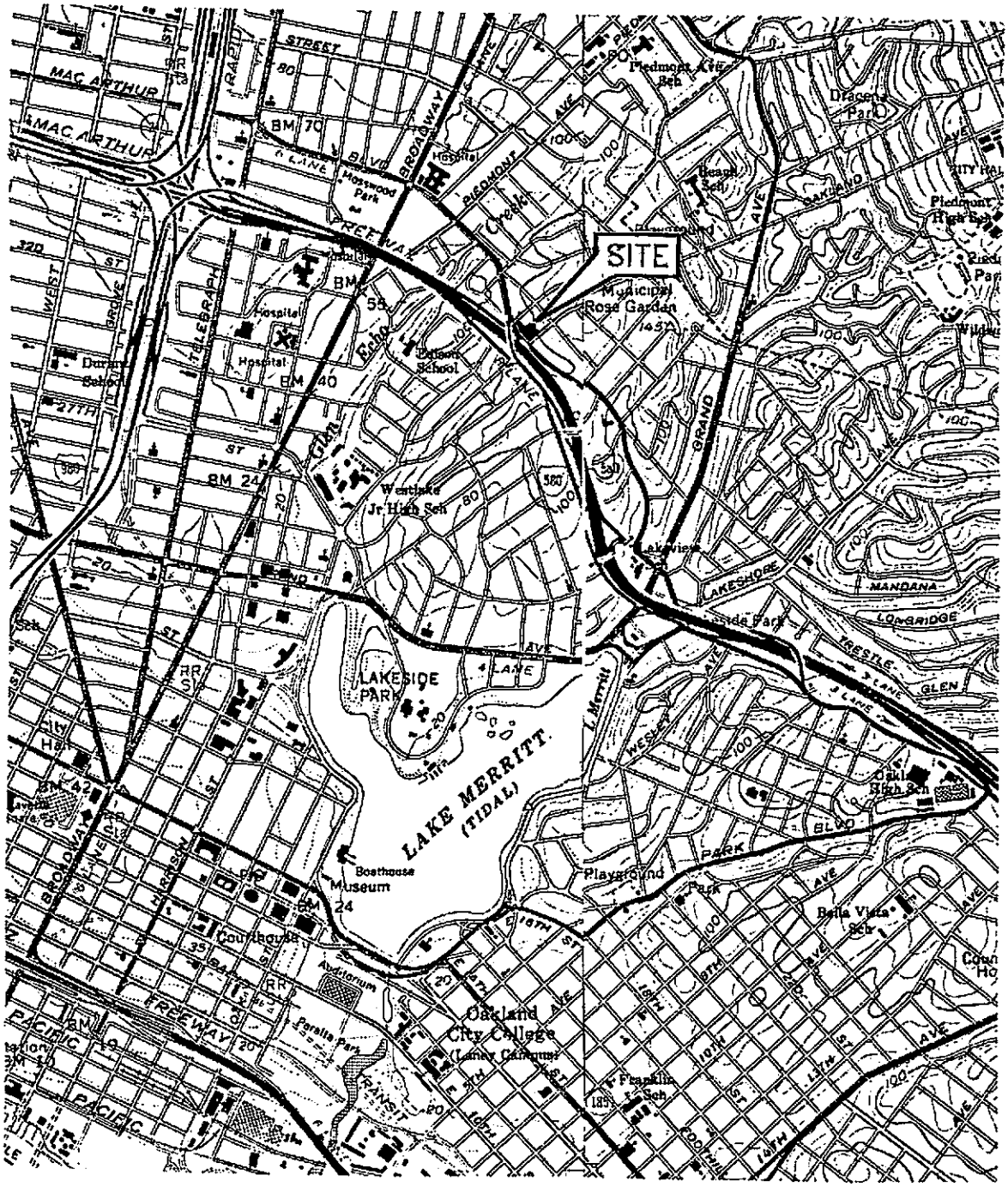
(d) A copy of the documentation for this data is included in Appendix C of Alisto report 10-076-06-002.

(e) Tetrachloroethene.

(f) Trans-1,2-Dichloroethene

(g) Travel blank.

F:\0\10-076\076-7-1.WQ2



SOURCE:
USGS MAP, OAKLAND EAST & WEST QUADRANGLES, CALIFORNIA. 7.5 MINUTE SERIES. 1959. PHOTOREVISED 1980.

N

0 1000' 2000'

FIGURE 1

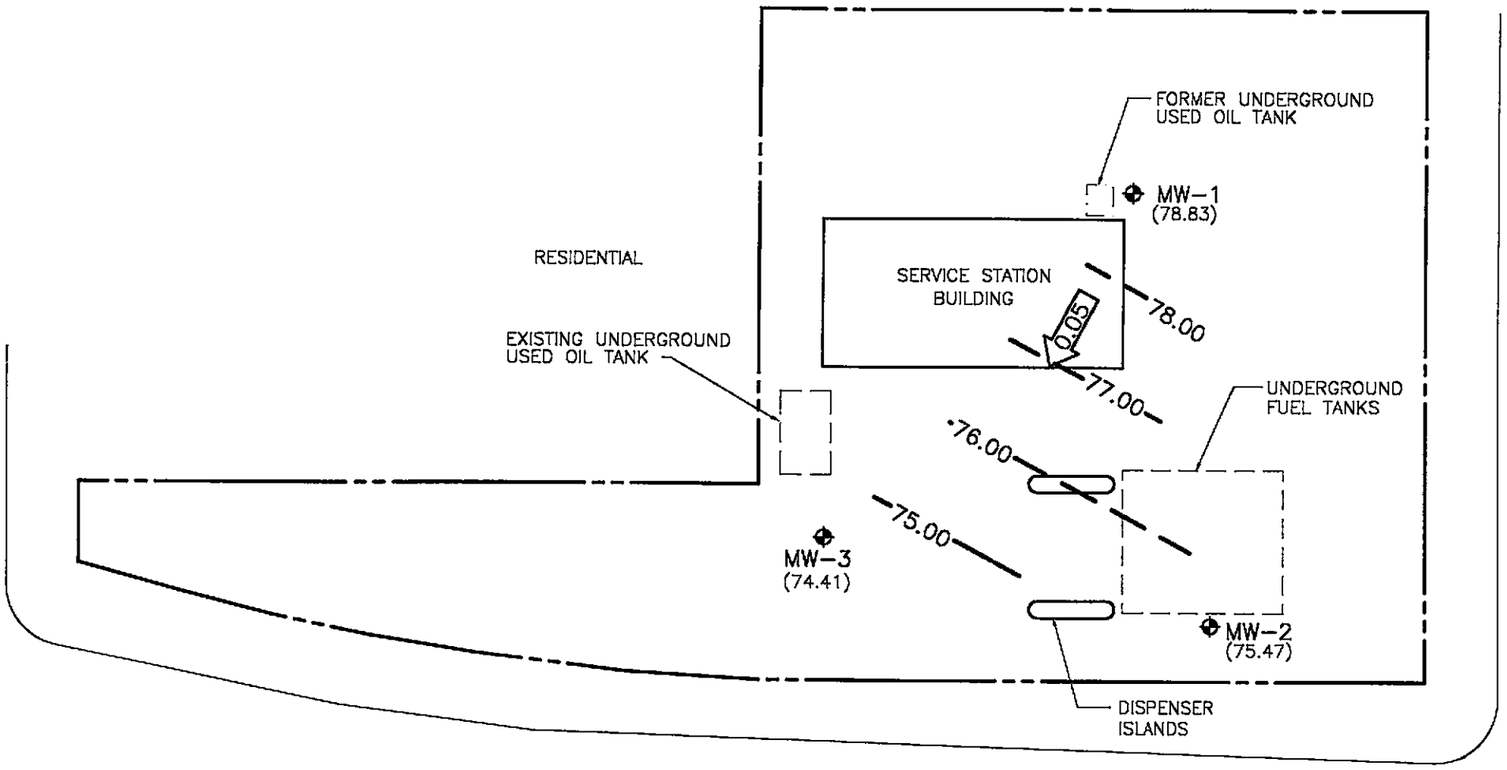
SITE VICINITY MAP

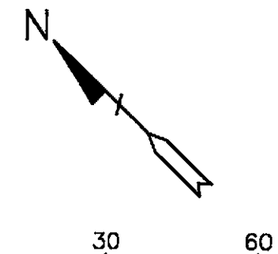
BP OIL SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. 10-076

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10076S---DWG 7-16-93 KH 1=1





LEGEND

- ◆ GROUNDWATER MONITORING WELL
- (78.83) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 78.00 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL—1.00 FOOT)
- 0.05 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

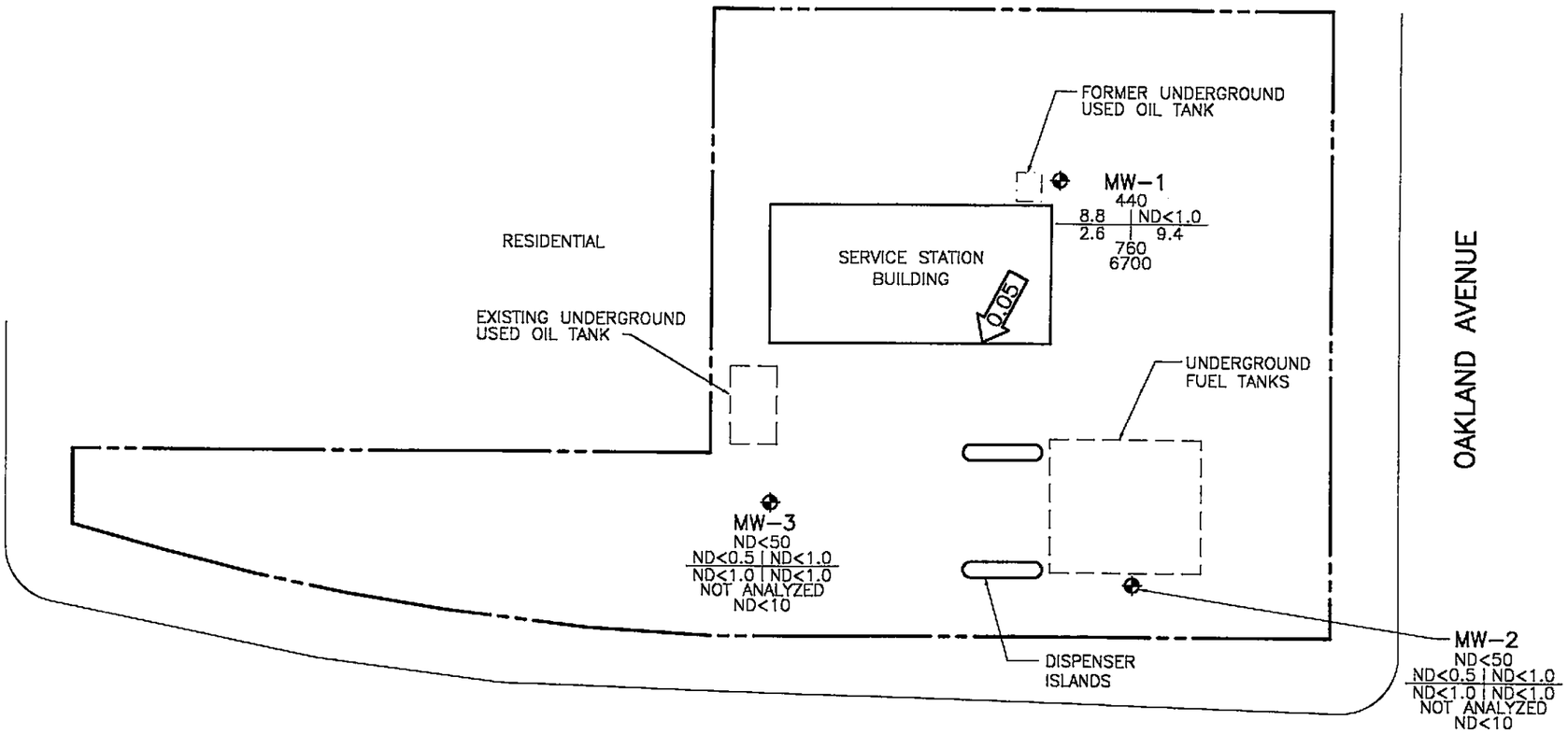
DECEMBER 12, 1997

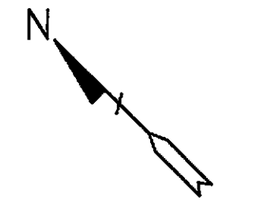
BP OIL SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. 10—076

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10076D-1.DWG 1-2-98 TAH 1=30





LEGEND

◆	GROUNDWATER MONITORING WELL
TPH-G / B | T / E | X / TPH-D / MTBE	CONCENTRATION OF CONSTITUENTS IN MICROGRAMS PER LITER
TPH-G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
TPH-D	TOTAL PETROLEUM HYDROCARBONS AS DIESEL
MTBE	METHYL TERT BUTYL ETHER
ND	NOT DETECTED ABOVE REPORTED DETECTION LIMIT
0.05	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

DECEMBER 12, 1997

BP OIL SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. 10-076

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10076E-Y.DWG 1-2-98 TAH 1=30

APPENDIX A

WATER SAMPLING FIELD SURVEY FORMS

ALISTO

Field Report / Sampling Data Sheet

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

Project No. 10-076-07-001 Date: 12/12/97
Address 100 MacArthur Blvd Day: M T W TH(F)
Contract No. H176916 City: Oakland
Station No. BP 11102 / Sampler: LwB

DEPTH TO GROUNDWATER SUMMARY

WELL ID	SAMPLE ID	WELL DIAM	TOTAL DEPTH	DEPTH TO WATER	PRODUCT THICKNESS	TIME MONITORED	COMMENTS:
MW-1	S-3	4"	23.20	11.37	∅	1349	ANALYSIS / TPH-D,TOG,HVOC
MW-2	S-2	4"	24.80	12.44	↓	1342	
MW-3	S-1	4"	23.60	12.61	↓	1337	QC-1 (S-4) From this well.

FIELD INSTRUMENT CALIBRATION DATA

pH METER Ion 4.00 4 7.00 7 10.00 10 TEMPERATURE COMPENSATED (Y) N TIME 1357 WEATHER Cloudy
D.O. METER Ion ZERO d.O. SOLUTION _____ BAROMETRIC PRESSURE 760 TEMP 62
CONDUCTIVITY METER Ion 10,000 _____ TURBIDITY METER _____ 5.0 NTU _____ OTHER X
LEAK DETECTOR : _____ ALARM MODE X NON ALARM MODE

Well ID	Depth to Wate	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.
MW-3	12.61	4"	OK	∅	Y (N)	7	1410	61.2	7.63	1.07 ms	5.6
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			14		61.7	7.52	1.17 ms	
23.60 - 12.61 = 10.99	X .65 = 7.14	X3 = 21.42				22	1422	62.1	7.51	1.17 ms	5.6
Purge Method: (Surface Pump) ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port											
Comments:											

EPA 601 ____
(TPH-G/BTEX)
TPH Diesel ____
TOG 5520 ____
TIME/SAMPLE ID: 1430

Well ID	Depth to Wate	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.
MW-2	12.44	4"	OK	∅	Y (N)	8	1439	59.9		1.26	5.4
Total Depth - Water Level=	x Well Vol. Factor=	x#Vol. to Purge	PurgeVol.			16		60.7		1.31	
24.80 - 12.44 = 12.36	X .65 = 8.03	X3 = 24.09				25	1451	61.1		1.27	5.7
Purge Method: (Surface Pump) ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port											
Comments:											

EPA 601 ____
(TPH-G/BTEX)
TPH Diesel ____
TOG 5520 ____
TIME/SAMPLE ID: 1500

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. 10-076-07-001 Date: 12/12/97
Address 100 MacArthur Blvd Day: M T W TH F
Contract No. H176916 City: Oakland
Station No. BP 11102 Sampler: LWB

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.
MW-1	11.37	4"	OIL	Ø	Y (N)	8	1515	58.7	7.71	1.37ms	5.1
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			16		59.9	7.47	1.47ms	
23.20 - 11.37 = 11.83	X .65 = 7.691	X3 = 23.07				24	1528	61.0	7.39	1.49ms	5.5
Purge Method: ⊗Surface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port											
Comments:											

Ø EPA 601_____
Ø TPH-G/BTEX___
Ø TPH Diesel_____
Ø TOG 5520 ___

TIME/SAMPLE ID
1535

PAGE_____ OF_____

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

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

December 30, 1997

Mr. Scott Hooton
BP OIL COMPANY
295 SW 41st St, Bldg 13, Ste N
Renton, WA 98055

The following report contains analytical results for the samples received at Southern Petroleum Laboratories (SPL) on December 18,1997. The samples were assigned to Certificate of Analysis No.(s) 9712966 and analyzed for all parameters as listed on the chain of custody.

Any data flag or quality control exception associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s).

If you have any questions or comments pertaining to this data report, please do not hesitate to contact me. Please reference the above Certificate of Analysis No. 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

James P. Adams
Project Manager

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

Southern Petroleum Laboratories, Inc.

Certificate of Analysis Number: 97-12-966

Approved for Release by:

James P. Adams, Client Services Manager

Date: 12/31/97

Greg Grandits
Laboratory Director

Idelis Williams
Quality Assurance Officer

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

****SUMMARY REPORT*****

12/30/97

Company: BP Oil Company
Site: Oakland, CA
Project No: 10-076-07/001
Project: #11102, N/A

ANALYTICAL DATA
NOTE: ND - Not Detected

SPL ID MATRIX	CLIENT ID DATE SAMPLED	BENZENE	TOLUENE	ETHYLBENZ.	XYLENE	TPH-G PQL	TPH-D	LEAD	MTBE
9712966-01 WATER	S-1 12/12/97					ND 0.05mg/L			
9712966-02 WATER	S-2 12/12/97					ND 0.05mg/L			
9712966-03 WATER	S-3 12/12/97					0.44 0.05mg/L	0.76 0.2mg/L		
9712966-04 WATER	S-4 12/12/97					ND 0.05mg/L			

TPH-G - California LUFT Manual for Gasoline
TPH-D - California LUFT Manual for Diesel

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

Certificate of Analysis No. H9-9712966-01

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

P.O.# H176916 , COC#070711
DATE: 12/30/97

PROJECT: #11102, N/A
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-1

PROJECT NO: 10-076-07/001
MATRIX: WATER
DATE SAMPLED: 12/12/97
DATE RECEIVED: 12/18/97

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	97		
4-Bromofluorobenzene	90		
Method 8020A***			
Analyzed by: DN			
Date: 12/24/97			
Gasoline Range Organics	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	97		
4-Bromofluorobenzene	83		
California LUFT Manual for Gasoline			
Analyzed by: DN			
Date: 12/24/97 10:36:00			

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. H9-9712966-02

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

P.O.# H176916 , COC#070711
DATE: 12/30/97

PROJECT: #11102, N/A
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-2

PROJECT NO: 10-076-07/001
MATRIX: WATER
DATE SAMPLED: 12/12/97
DATE RECEIVED: 12/18/97

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	97		
4-Bromofluorobenzene	93		
Method 8020A***			
Analyzed by: DN			
Date: 12/24/97			
Gasoline Range Organics	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	100		
4-Bromofluorobenzene	83		
California LUFT Manual for Gasoline			
Analyzed by: DN			
Date: 12/24/97 11:04:00			

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. H9-9712966-03

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

P.O.# H176916 , COC#070711
DATE: 12/30/97

PROJECT: #11102, N/A
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-076-07/001
MATRIX: WATER
DATE SAMPLED: 12/12/97
DATE RECEIVED: 12/18/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	6700	250 P	µg/L
Benzene	8.8	0.5 P	µg/L
Toluene	ND	1.0 P	µg/L
Ethylbenzene	2.6	1.0 P	µg/L
Total Xylene	9.4	1.0 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	113		
4-Bromofluorobenzene	97		
Method 8020A***			
Analyzed by: LJ			
Date: 12/26/97			
Gasoline Range Organics	0.44	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	153MI		
4-Bromofluorobenzene	97		
California LUFT Manual for Gasoline			
Analyzed by: DN			
Date: 12/24/97 11:31:00			
Diesel Range Organics	0.76	0.2 P	mg/L

(P) - Practical Quantitation Limit ND - Not detected.
MI - Matrix interference.

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.

COMMENTS: Sample contains petroleum hydrocarbons from C10-C24 that do not resemble a diesel pattern.(c10-C24) RR

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. H9-9712966-03

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

P.O.# H176916 , COC#070711
DATE: 12/30/97

PROJECT: #11102, N/A
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-076-07/001
MATRIX: WATER
DATE SAMPLED: 12/12/97
DATE RECEIVED: 12/18/97

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
Surrogate	**% Recovery**		
n-Pentacosane	78		
California LUFT Manual for Diesel Analyzed by: RR Date: 12/22/97 08:42:00			
California TPH-D Extraction Method 3510B *** Analyzed by: PC Date: 12/19/97 08:00:00	12/19/97		
Hydrocarbons by Gravimetry Method 5520 B & F ** Analyzed by: FM Date: 12/23/97 13:00:00	1.2	0.5	mg/L

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.

COMMENTS: Sample contains petroleum hydrocarbons from C10-C24 that do not resemble a diesel pattern.(c10-C24) RR

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. H9-9712966-03

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

P.O.# H176916 , COC#070711
12/30/97

PROJECT: #11102, N/A
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-076-07/001
MATRIX: WATER
DATE SAMPLED: 12/12/97
DATE RECEIVED: 12/18/97

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	1.0	µg/L
Chloromethane	ND	1.0	µg/L
Vinyl chloride	ND	1.0	µg/L
Bromomethane	ND	1.0	µg/L
Chloroethane	ND	1.0	µg/L
Trichlorofluoromethane	ND	1.0	µg/L
1,1-Dichloroethene	ND	1.0	µg/L
Methylene chloride	ND	1.0	µg/L
Trans-1,2-Dichloroethene	ND	1.0	µg/L
1,1-Dichloroethane	ND	1.0	µg/L
Chloroform	ND	1.0	µg/L
1,1,1-Trichloroethane	ND	1.0	µg/L
Carbon tetrachloride	ND	1.0	µg/L
1,2-Dichloroethane	ND	1.0	µg/L
2-Chloroethylvinyl ether	ND	1.0	µg/L
Trichloroethene	ND	1.0	µg/L
1,2-Dichloropropane	ND	1.0	µg/L
Bromodichloromethane	ND	1.0	µg/L
cis-1,3-Dichloropropene	ND	1.0	µg/L
trans-1,3-Dichloropropene	ND	1.0	µg/L
1,1,2-Trichloroethane	ND	1.0	µg/L
Tetrachloroethene	ND	1.0	µg/L
Dibromochloromethane	ND	1.0	µg/L
Chlorobenzene	ND	1.0	µg/L
Bromoform	ND	1.0	µg/L
1,1,2,2-Tetrachloroethane	ND	1.0	µg/L
1,3-Dichlorobenzene	ND	1.0	µg/L
1,4-Dichlorobenzene	ND	1.0	µg/L
1,2-Dichlorobenzene	ND	1.0	µg/L

METHOD: 601, Halogenated Volatile Organics

(continued on next page)

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

Certificate of Analysis No. H9-9712966-03

BP Oil Company

SAMPLE ID: S-3

SURROGATES	% RECOVERY
Fluorobenzene	103

ANALYZED BY: RL DATE/TIME: 12/20/97 06:55:00
METHOD: 601, Halogenated Volatile Organics
NOTES: * - Practical Quantitation Limit ND - Not Detected
NA - Not Analyzed

COMMENTS:

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. H9-9712966-04

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

P.O.# H176916 , COC#070711
DATE: 12/30/97

PROJECT: #11102, N/A
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-4

PROJECT NO: 10-076-07/001
MATRIX: WATER
DATE SAMPLED: 12/12/97
DATE RECEIVED: 12/18/97

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	97		
4-Bromofluorobenzene	90		
Method 8020A***			
Analyzed by: DN			
Date: 12/24/97			
Gasoline Range Organics	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	103		
4-Bromofluorobenzene	83		
California LUFT Manual for Gasoline			
Analyzed by: DN			
Date: 12/24/97 07:24:00			

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

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

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

QUALITY CONTROL

DOCUMENTATION

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

** SPL BATCH QUALITY CONTROL REPORT **

METHOD 8020/602

Matrix: Aqueous

Batch Id: HP_U971224135400

Units: µg/L

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	50	100	72 - 128
Benzene	ND	50	41	82.0	61 - 119
Toluene	ND	50	41	82.0	65 - 125
EthylBenzene	ND	50	41	82.0	70 - 118
O Xylene	ND	50	42	84.0	72 - 117
M & P Xylene	ND	100	85	85.0	72 - 116

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	24	120	24	120	0	20	39 - 150
BENZENE	ND	20	23	115	23	115	0	21	32 - 164
TOLUENE	ND	20	23	115	22	110	4.44	20	38 - 159
ETHYLBENZENE	ND	20	23	115	22	110	4.44	19	52 - 142
O XYLENE	ND	20	23	115	22	110	4.44	18	53 - 143
M & P XYLENE	ND	40	47	118	45	112	5.22	17	53 - 144

Analyst: DN

Sequence Date: 12/24/97

SPL ID of sample spiked: 9712966-04A

Sample File ID: U_L4137.TX0

Method Blank File ID:

Blank Spike File ID: U_L4129.TX0

Matrix Spike File ID: U_L4132.TX0

Matrix Spike Duplicate File ID: U_L4133.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 (1st Q '97)

(***) = Source: SPL-Houston Historical Data (1st Q '97)

SAMPLES IN BATCH(SPL ID): 9712963-09A 9712963-05A 9712966-01A 9712966-02A 9712966-03A 9712973-03A 9712973-04A 9712973-05A 9712973-06A 9712966-04A

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

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_0971226045300

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	41	82.0	72 - 128
Benzene	ND	50	42	84.0	61 - 119
Toluene	ND	50	42	84.0	65 - 125
EthylBenzene	ND	50	42	84.0	70 - 118
O Xylene	ND	50	43	86.0	72 - 117
M & P Xylene	ND	100	82	82.0	72 - 116

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	3500	20	3400	NC	3500	NC	NC	20	39 - 150
BENZENE	45	20	53	40.0	58	65.0	47.6 *	21	32 - 164
TOLUENE	46	20	52	30.0 *	48	10.0 *	100 *	20	38 - 159
ETHYLBENZENE	2.5	20	18	77.5	16	67.5	13.8	19	52 - 142
O XYLENE	9.6	20	24	72.0	24	72.0	0	18	53 - 143
M & P XYLENE	10	40	38	70.0	36	65.0	7.41	17	53 - 144

Analyst: LJ
Sequence Date: 12/26/97
SPL ID of sample spiked: 9712B39-02A
Sample File ID: 00L4132.TX0
Method Blank File ID:
Blank Spike File ID: 00L4126.TX0
Matrix Spike File ID: 00L4127.TX0
Matrix Spike Duplicate File ID: 00L4128.TX0

* = Values Outside QC Range Due To Matrix Interference
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 (1st Q '97)
(***) = Source: SPL-Houston Historical Data (1st Q '97)

SAMPLES IN BATCH(SPL ID):

9712A02-06A 9712A43-08A 9712981-23A 9712A43-04A
9712A43-07A 9712966-03A 9712928-03A 9712878-01A
9712878-02A 9712928-02A 9712A68-01A 9712B17-05A
9712B17-06A 9712B39-05A 9712B39-02A 9712928-02A
9712B39-03A 9712B39-04A

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

** SPL BATCH QUALITY CONTROL REPORT **

California LUFT Manual for Gasoline

Matrix: Aqueous

Batch Id: HP_U971224132600

Units: mg/L

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
Gasoline Range Organics	ND	1.0	0.93	93.0	64 - 131

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
GASOLINE RANGE ORGANICS	ND	0.90	0.87	96.7	0.89	98.9	2.25	36	36 - 160

Analyst: DN

Sequence Date: 12/24/97

SPL ID of sample spiked: 9712963-03A

Sample File ID: UUL4138.TX0

Method Blank File ID:

Blank Spike File ID: UUL4130.TX0

Matrix Spike File ID: UUL4134.TX0

Matrix Spike Duplicate File ID: UUL4135.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 (1st Q '97)

(***) = Source: SPL-Houston Historical Data (1st Q '97)

SAMPLES IN BATCH(SPL ID):

9712963-02A 9712963-09A 9712963-05A 9712963-04A
9712966-01A 9712966-02A 9712966-03A 9712973-03A
9712973-04A 9712973-05A 9712973-06A 9712966-04A
9712963-03A 9712963-06A

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

** SPL BATCH QUALITY CONTROL REPORT **

State of Tennessee Method for Diesel

Matrix: Aqueous

Units: mg/L

Batch Id: HP_V971219022600

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
Diesel	ND	5.0	5.2	104	53 - 148

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
DIESEL	0.40	5.0	4.6	84.0	4.8	88.0	4.65	39	21 - 175

Analyst: RR

Sequence Date: 12/19/97

SPL ID of sample spiked: 9712972-02B

Sample File ID: V_L3113.TX0

Method Blank File ID:

Blank Spike File ID: VVL3058.TX0

Matrix Spike File ID: V_L3081.TX0

Matrix Spike Duplicate File ID: V_L3082.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 Historical Limits 1st Qtr'97 and 4th Qtr'97

(***) = Source: SPL Historical Limits 1st Qtr.'97 and 4th Qtr.'97

SAMPLES IN BATCH(SPL ID):

9712972-05B 9712972-07B 9712972-08B 9712972-09B
9712966-03B 9712879-01B 9712879-02B 9712785-01D
9712785-02D 9712785-03D 9712785-04D 9712785-08D
9712785-07D 9712785-05D 9712511-06B 9712972-02B
9712972-01B 9712972-03B 9712972-04B

** SPL BATCH QUALITY CONTROL REPORT **
METHOD 601/8010

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_X971220043600

LABORATORY CONTROL SAMPLE

SPIKE COMPOUNDS	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
Dichlorodifluoromethane	ND	20	22	110	1 - 200
Chloromethane	ND	20	21	105	1 - 193
Vinyl chloride	ND	20	21	105	28 - 163
Bromomethane	ND	20	21	105	1 - 144
Chloroethane	ND	20	20	100	46 - 137
Trichlorofluoromethane	ND	20	21	105	21 - 156
1,1-Dichloroethene	ND	20	21	105	28 - 167
Methylene chloride	ND	20	20	100	25 - 162
Trans-1,2-Dichloroethene	ND	20	20	100	38 - 155
1,1-Dichloroethane	ND	20	20	100	34 - 132
Chloroform	ND	20	19	95.0	49 - 133
1,1,1-Trichloroethane	ND	20	21	105	41 - 138
Carbon tetrachloride	ND	20	21	105	43 - 143
1,2-Dichloroethane	ND	20	21	105	51 - 147
2-Chloroethylvinyl ether	ND	20	20	100	14 - 186
Trichloroethene	ND	20	20	100	35 - 146
1,2-Dichloropropane	ND	20	20	100	44 - 156
Bromodichloromethane	ND	20	20	100	42 - 172
cis-1,3-Dichloropropene	ND	20	21	105	22 - 178
trans-1,3-Dichloropropene	ND	20	20	100	33 - 178
1,1,2-Trichloroethane	ND	20	20	100	39 - 136
Tetrachloroethene	ND	20	20	100	26 - 162
Dibromochloromethane	ND	20	20	100	24 - 191
Chlorobenzene	ND	20	24	120	38 - 150
Bromoform	ND	20	21	105	13 - 159
1,1,2,2-Tetrachloroethane	ND	20	20	100	8 - 184
1,3-Dichlorobenzene	ND	20	20	100	7 - 187
1,4-Dichlorobenzene	ND	20	21	105	42 - 143
1,2-Dichlorobenzene	ND	20	20	100	1 - 208

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
DICHLORODIFLUOROMETHANE	ND	20	18	90.0	18	90.0	0	48	1 - 200
CHLOROMETHANE	ND	20	17	85.0	16	80.0	6.06	29	1 - 193
VINYL CHLORIDE	ND	20	17	85.0	17	85.0	0	44	28 - 163
BROMOMETHANE	ND	20	18	90.0	18	90.0	0	52	1 - 144
CHLOROETHANE	ND	20	18	90.0	18	90.0	0	42	46 - 137

** SPL BATCH QUALITY CONTROL REPORT **
METHOD 601/8010

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_X971220043600

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
TRICHLOROFLUOROMETHANE	ND	20	18	90.0	17	85.0	5.71	38	21 - 156
1,1-DICHLOROETHENE	ND	20	18	90.0	18	90.0	0	42	28 - 167
METHYLENE CHLORIDE	ND	20	17	85.0	17	85.0	0	32	25 - 162
TRANS-1,2-DICHLOROETHENE	ND	20	17	85.0	17	85.0	0	31	38 - 155
1,1-DICHLOROETHANE	ND	20	18	90.0	18	90.0	0	50	47 - 132
CHLOROFORM	ND	20	17	85.0	17	85.0	0	40	49 - 133
1,1,1-TRICHLOROETHANE	ND	20	18	90.0	17	85.0	5.71	27	41 - 138
CARBON TETRACHLORIDE	ND	20	17	85.0	18	90.0	5.71	32	43 - 143
1,2-DICHLOROETHANE	ND	20	18	90.0	19	95.0	5.41	50	51 - 147
2-CHLOROETHYLVINYL ETHER	ND	20	0	0 *	0	0 *	0	20	14 - 186
TRICHLOROETHENE	ND	20	16	80.0	17	85.0	6.06	29	35 - 146
1,2-DICHLOROPROPANE	ND	20	19	95.0	19	95.0	0	41	44 - 156
BROMODICHLOROMETHANE	ND	20	17	85.0	18	90.0	5.71	38	42 - 172
CIS-1,3-DICHLOROPROPENE	ND	20	18	90.0	18	90.0	0	34	22 - 178
TRANS-1,3-DICHLOROPROPENE	ND	20	18	90.0	18	90.0	0	47	33 - 178
1,1,2-TRICHLOROETHANE	ND	20	18	90.0	18	90.0	0	43	39 - 136
TETRACHLOROETHENE	ND	20	18	90.0	17	85.0	5.71	38	26 - 162
DIBROMOCHLOROMETHANE	ND	20	17	85.0	17	85.0	0	41	24 - 191
CHLOROBENZENE	ND	20	21	105	22	110	4.65	50	38 - 150
BROMOFORM	ND	20	19	95.0	18	90.0	5.41	49	13 - 159
1,1,2,2-TETRACHLOROETHANE	ND	20	21	105	21	105	0	50	8 - 184
1,3-DICHLOROBENZENE	ND	20	17	85.0	17	85.0	0	36	7 - 187
1,4-DICHLOROBENZENE	ND	20	17	85.0	17	85.0	0	12	42 - 143
1,2-DICHLOROBENZENE	ND	20	17	85.0	17	85.0	0	12	1 - 208

Analyst: RL
Sequence Date: 12/20/97
SPL ID of sample spiked: 9712966-03D
Sample File ID: XXL3105.TX0
Method Blank File ID:
Blank Spike File ID: XXL3093.TX0
Matrix Spike File ID: XXL3102.TX0
Matrix Spike Duplicate File ID: XXL3103.TX0

* = Values Outside QC Range Due To Matrix Interference
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: 601, Table 2
(***) = Source: SPL Historical Limits 1st Quarter'97

SAMPLES IN BATCH(SPL ID):

9712728-03A 9712728-04A 9712728-06A 9712728-07A
9712728-08A 9712728-09A 9712728-10A 9712728-11A
9712728-12A 9712728-13A 9712728-14A 9712728-15A
9712728-16A 9712728-17A 9712966-03D 9712728-01A
9712728-02A

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

** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/23/97
Analyzed on: 12/23/97
Analyst: FM

This sample was randomly selected for use in the SPL quality control program. Samples chosen are fortified with a known concentration in duplicate. The results are as follows:

Hydrocarbons by Gravimetry
Method 5520 B & F **

SPL Sample ID Number	Method Blank mg/L	Sample Result mg/L	Spike Added mg/L	Matrix Spike Result mg/L	Matrix Spike Recovery %	Matrix Spike Duplicate Result mg/L	Matrix Spike Duplicate Recovery %	RPD (%)	QC LIMITS (Advisory) RPD Max	QC LIMITS (Advisory) % REC
BLANK	ND	ND	40	37.1	92.8	37.5	93.8	1.1	7.9	84 -108

971223FM -9712929

Samples in batch:

9712878-03D 9712879-02F 9712966-03C 9712B11-01B

COMMENTS:

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

9712966

CHAIN OF CUSTODY

No. 070711 Page 1 of 1

CONSULTANT'S NAME	ADDRESS	CITY	STATE	ZIP CODE
Alisto Engineering	1575 Treat Blvd #201	W.C.	CA	94598

BP SITE NUMBER	BP CORNER ADDRESS/CITY	CONSULTANT PROJECT NUMBER
1102	Oakland, CA	10-076-07/001

CONSULTANT PROJECT MANAGER	PHONE NUMBER	FAX NUMBER	CONSULTANT CONTRACT NUMBER
Grady Nagle	(510) 295-1650	295-1823	H176916

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 Buenviaje		12/16/97	Fed EX

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

AIRBILL NUMBER 384847922

ANALYSIS REQUIRED

SAMPLE DESCRIPTION	COLLECTION DATE / COLLECTION TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	TPH-GAS	MTBE	TOG (5520)	TPH-D	HVOCs	COMMENTS
S-1	12/12/97	W	3	Hcl		X	X				
S-2	↓	↓	3	↓		↓	↓				
S-3	↓	↓	8	↓		↓	↓	X	X	X	
S-4	↓	↓	3	↓		↓	↓		PHJR 12-18-97		

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Patricia Hooton	12/15/97		Patricia Hooton	12/16/97	0830
Patricia Hooton	12/16/97		[signature]	12/16/97	1000

ADDITIONAL COMMENTS 30°C

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: 12-18-97	Time: 1435

SPL Sample ID: 9712966

			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:		3° C	
10	Method of sample delivery to SPL:	SPL Delivery		
		Client Delivery		
		FedEx Delivery (airbill #)	388471922	
		Other:		
11	Method of sample disposal:	SPL Disposal	✓	
		HOLD		
		Return to Client		

Name:	Date: 12-18-97

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

BP Site Number:	11102
ERM Contact:	H176916
Sampling Date:	12/12/97
Matrix Description:	Water
Date Final Report Received:	01/12/98
Laboratory & Location:	SPL, Houston, Texas

		Yes	No	N/A
1.	Is BP contract release number consistent with analytical report?	X		
2.	Was report submitted within the specified time frame?	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 (i.e., 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?	See Below		
9.	Are MS/MSD acceptable using laboratory criteria?	See Below		
10.	Are LCS results acceptable using laboratory criteria?	X		

Analysis of one of the two surrogates (1,4-Difluorobenzene) during TPH-G analysis of S-3 was outside quality control limits due to matrix interference; the quality control for that method specifies that only one of two surrogate should be within the specified recovery range.

MS/MSD recovery and relative % difference for toluene and MS/MSD relative % difference for benzene values outside QC range due to matrix interference. MS/MSD recovery and relative % difference for MTBE not calculated due to sample exceeding spike by a factor of 4 or more. MS/MSD limits are advisory only; as stated in SW-846, Section 8.7 to 8.8, if the MS/MSD results fall outside the advisable ranges, a laboratory control samples (LCS) must be analyzed and fall within those ranges. LCS results are within quality control limits.

Data Validation Completed by: Brady Nagle

(signature): Brady Nagle

Date: 2/10/98