BP OIL

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

March 3, 1997

Ms. Jennifer Eberle
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway Room 250
Oakland CA 94612

RE: BP OIL FACILITY #11102
100 MacArthur Blvd
Oakland CA

Dear Ms. Eberle:

Attached please find our **GROUNDWATER MONITORING AND SAMPLING REPORT DATED January 13, 1997** for the above referenced facility. Plans for the site include semi-annual groundwater monitoring.

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

Respectfully,

Scott T. Hooton
Environmental Resources Management
Corrective Action Manager

STH:sb msword\ERM11102

cc: Mr. Richard Hiett, CRWQCB, San Francisco Bay Region, 2101 Webster Street, Suite 500 Oakland CA 94612 (without attachment)

Mr. Brady Nagle, Alisto Engineering Group, 1575 Treat Blvd., Suite 201, Walnut Creek, CA 94598

Site File

GROUNDWATER MONITORING AND SAMPLING REPORT

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

Project No. 10-076-06-001

Prepared for:

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

Prepared by:

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

January 13, 1997

William Howell
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. 10-076-06-001

January 13, 1997

INTRODUCTION

This report presents the results and findings of the December 4, 1996 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	32823.00	90.20	13.32	76.88	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	32968.00	90.20	12.46	77.74	820	--	64	1.9	23	34	--	--	--	--	--	--	ANA
MW-1	33084.00	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	33197.00	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	33298.00	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	33469.00	90.20	15.74	74.46	370	ND<50	35	0.73	6.4	6.6	ND<5000	--	1.4	--	--	--	SEQ
MW-1	33555.00	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	33658.00	90.20	12.52	77.68	140	100	3.9	0.66	1.2	3.8	ND<5000	--	1.7	--	--	--	SEQ
MW-1	33743.00	90.20	11.80	78.40	4200	910	440	21	250	37	ND<5000	--	ND	--	--	--	SEQ
MW-1	33772.00	90.20	12.01	78.19	4000	560	350	14	150	17	ND<5000	--	ND	--	--	--	SEQ
MW-1	33807.00	90.20	12.42	77.78	4000	--	ND<5.0	19	210	61	--	--	--	--	--	--	ANA
MW-1	33830.00	90.20	12.75	77.45	2400	1700	330	20	150	47	ND<5000	--	ND<2.5	--	--	--	SEQ
MW-1	33919.00	90.20	13.69	76.51	260	92	30	3.4	7.6	6.8	ND<5000	--	ND<2.5	--	--	--	ANA
MW-1	34127.00	90.20	10.93	79.27	3400	440	98	11	21	7.6	--	6.2	0.9	--	--	--	PACE
QC-1 (c)	34127.00	--	--	--	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	--	--	3.2	PACE
QC-1 (c)	06/22/94	--	--	--	2100	--	30	3.2	2.0	15	--	--	--	--	--	--	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 (d)	--	6.7	ATI
QC-1 (c)	06/21/95	--	--	--	3800	--	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	6.3	ATI
MW-1	06/13/96	90.20	9.28	80.92	3200	920	51	ND<12	ND<12	ND<12	2000	--	--	--	4000	6.3	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 (e)	2600	6.7	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	32823.00	87.91	14.75	73.16	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	32968.00	87.91	15.25	72.66	ND<500	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	ANA
MW-2	33084.00	87.91	15.59	72.32	61	--	6.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	ANA
MW-2	33197.00	87.91	17.81	70.10	ND<50	--	0.3	ND<0.3	ND<0.3	ND<0.3	--	--	--	--	--	--	SAL
MW-2	33298.00	87.91	17.11	70.80	ND<100	--	0.4	ND<0.3	ND<0.3	ND<0.3	--	--	4.0	--	--	--	SAL
MW-2	33469.00	87.91	17.97	69.94	ND<30	--	ND<0.3	ND<0.3	ND<0.3	ND<0.3	--	--	--	--	--	--	SEQ
MW-2	33555.00	87.91	16.76	71.15	38	--	0.32	ND<0.3	ND<0.3	ND<0.3	--	--	--	--	--	--	SEQ
MW-2	33658.00	87.91	15.07	72.84	ND<50	--	ND<0.5	ND<0.5	ND<0.5	0.58	--	--	16	--	--	--	SEQ
MW-2	33743.00	87.91	14.70	73.21	ND<50	--	0.55	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	SEQ
MW-2	33807.00	87.91	15.60	72.31	90	--	1.3	0.6	0.9	1.9	--	--	--	--	--	--	ANA
MW-2	33830.00	87.91	15.88	72.03	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	33919.00	87.91	16.19	71.72	52	--	2.8	ND<0.5	ND<0.5	0.9	--	--	--	--	--	--	ANA
QC-1 (c)	33919.00	--	--	--	55	--	3.2	ND<0.5	ND<0.5	1.0	--	--	--	--	--	--	ANA
MW-2	34127.00	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	--	--	--	--	--	--	PACE
QC-1 (c)	12/02/93	--	--	--	2100	--	32	3.8	2.2	17.00	--	2.3	--	--	--	--	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	--	--	--	--	--	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	10.86	77.05	8300	--	ND<2.5	ND<2.5	ND<2.5	ND<2.5	--	--	--	--	13000	6.5	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	6.3	SPL
QC-1 (c)	12/04/96	--	--	--	5900	--	ND<2.5	ND<5	ND<5	ND<5	--	--	--	--	11000	--	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	32823.00	87.02	14.10	72.92	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	32966.00	87.02	13.90	73.12	ND<100	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	ANA
MW-3	33084.00	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	33197.00	87.02	14.67	72.35	ND<50	--	0.3	0.8	0.4	1.5	--	--	--	--	--	--	SAL
MW-3	33298.00	87.02	15.22	71.80	ND<100	--	0.4	ND<0.3	ND<0.3	ND<0.3	--	--	ND	--	--	--	SAL
MW-3	33469.00	87.02	13.15	73.87	ND<30	--	ND<0.3	ND<0.3	ND<0.3	ND<0.3	--	--	--	--	--	--	SEQ
MW-3	33555.00	87.02	15.66	71.36	ND<30	--	ND<0.3	ND<0.3	ND<0.3	ND<0.3	--	--	--	--	--	--	SEQ
MW-3	33658.00	87.02	15.01	72.01	ND<50	--	0.65	1.4	0.66	4.4	--	--	ND	--	--	--	SEQ
MW-3	33743.00	87.02	15.52	71.50	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	SEQ
MW-3	33807.00	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	33830.00	87.02	13.57	73.45	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	33919.00	87.02	14.13	72.89	ND<50	--	ND<0.5	0.7	ND<0.5	1.3	--	--	--	--	--	--	ANA
MW-3	34127.00	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	60	--	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
QC-2 (f)	33919.00	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	ANA
QC-2 (f)	34127.00	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	PACE
QC-2 (f)	12/02/93	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	PACE
QC-2 (f)	06/22/94	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	--	--	--	--	--	PACE
QC-2 (f)	01/10/95	--	--	--	ND<50	--	ND<0.5	ND<0.5	ND<0.5	ND<1	--	--	--	--	--	--	ATI
QC-2 (f)	06/21/95	--	--	--	ND<50	--	ND<0.50	ND<0.50	ND<0.50	ND<1.0	--	--	--	--	--	--	ATI
QC-2 (f)	12/27/95	--	--	--	ND<50	--	ND<0.50	ND<0.50	ND<0.50	ND<1.0	--	--	--	--	ND<5.0	--	ATI
QC-2 (f)	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.

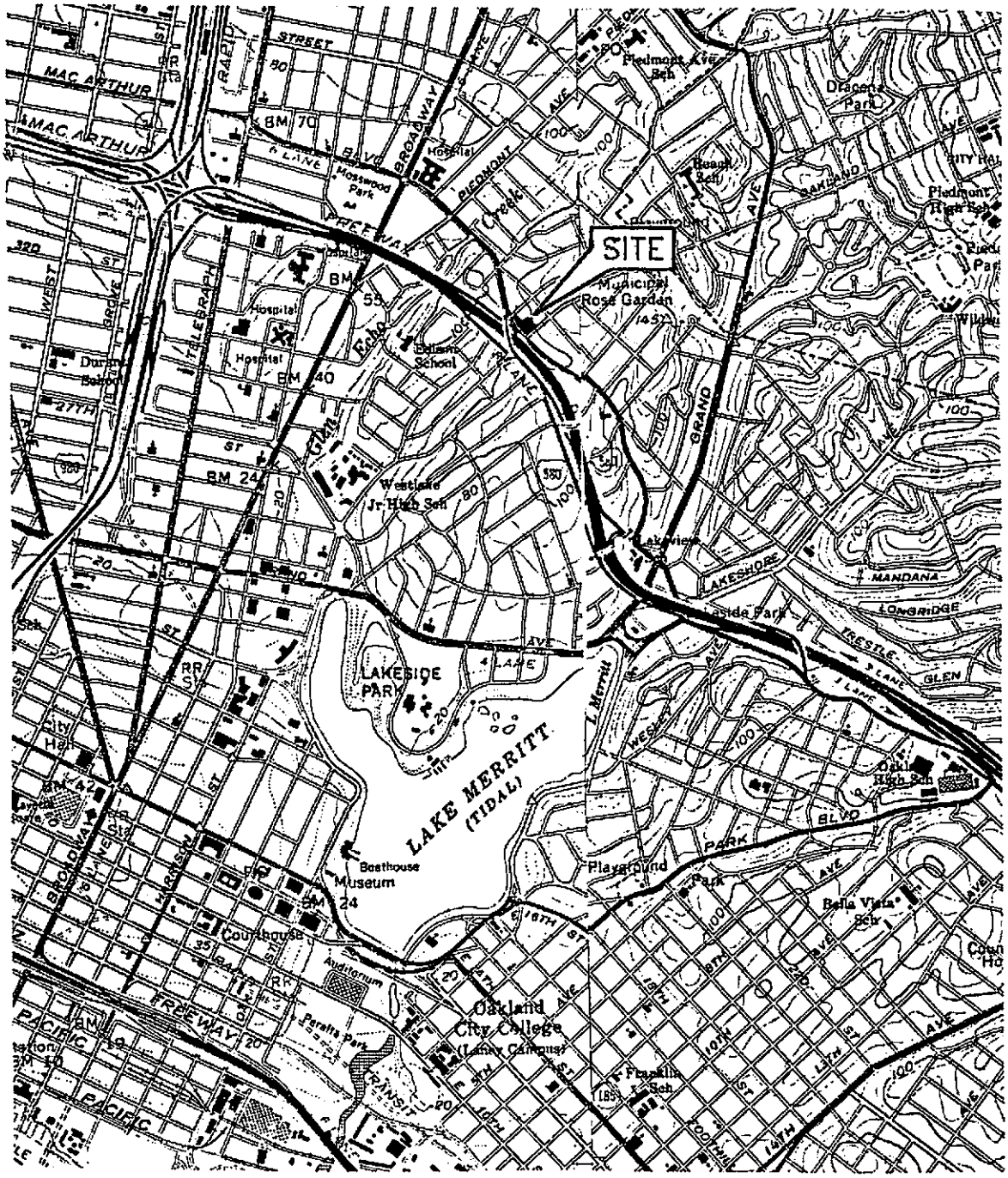
(c) Blind duplicate.

(d) Tetrachloroethene.

(e) Trans-1,2-Dichloroethene

(f) Travel blank.

E:\0\10-076-6-1.WQ2



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

N

0 1000' 2000'

FIGURE 1

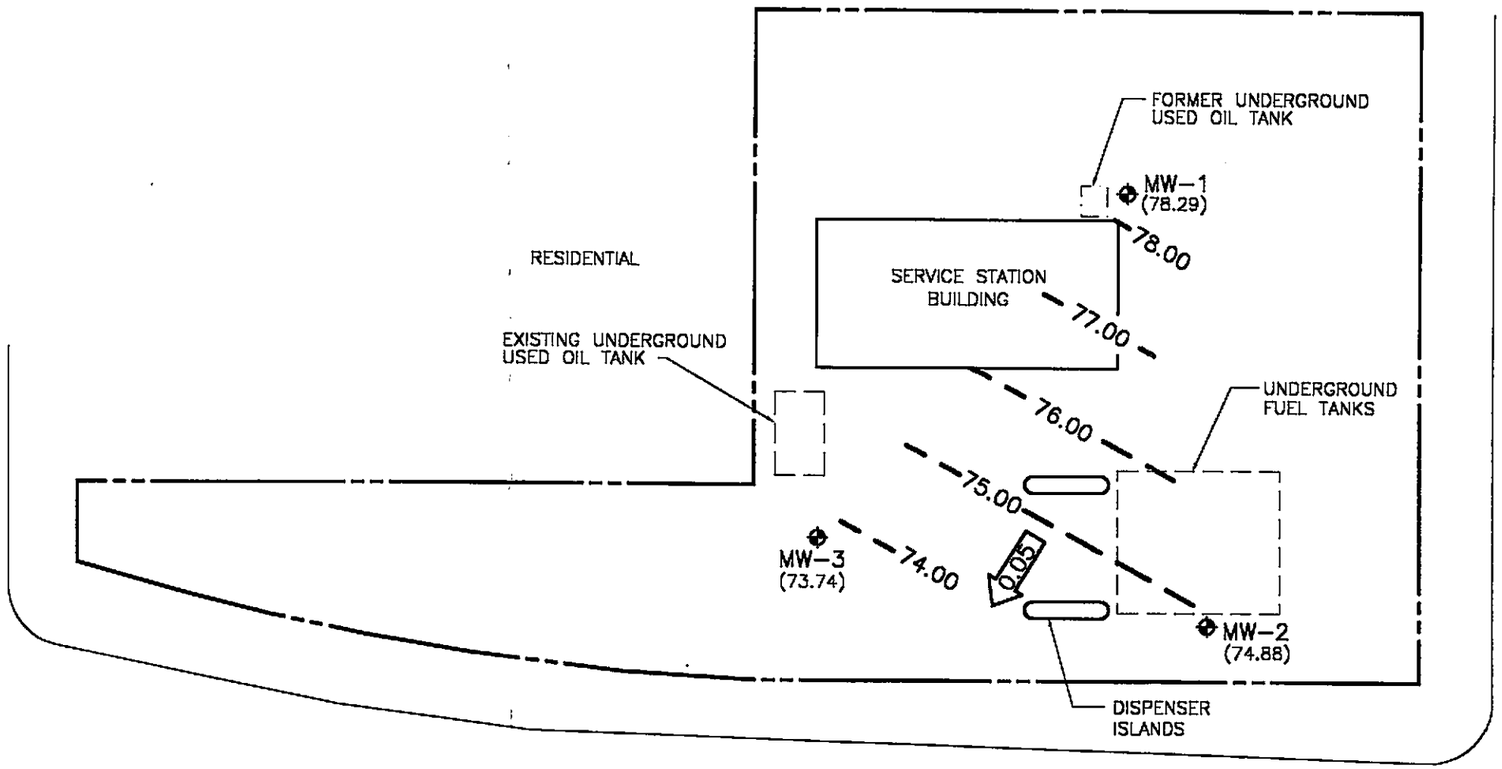
SITE VICINITY MAP

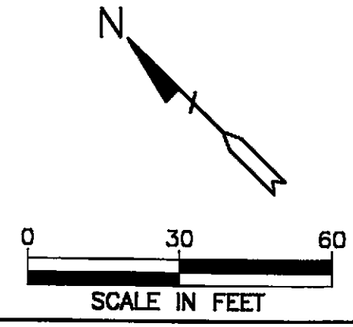
BP OIL SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. 10-076

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

100788—.DWG 7-16-93 KH 1=1





LEGEND

- ◆ GROUNDWATER MONITORING WELL
- (73.74) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 74.00 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

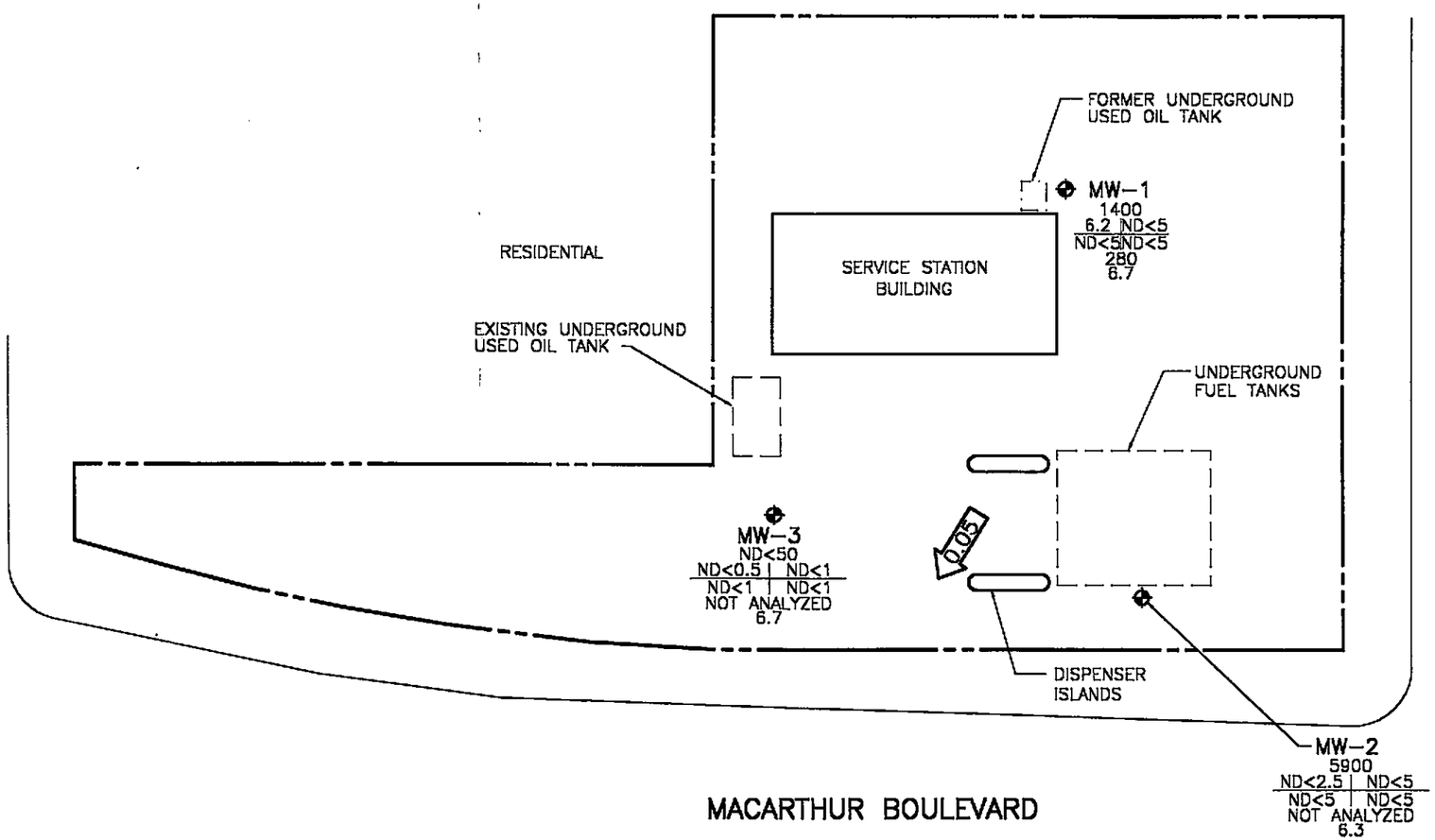
DECEMBER 4, 1996

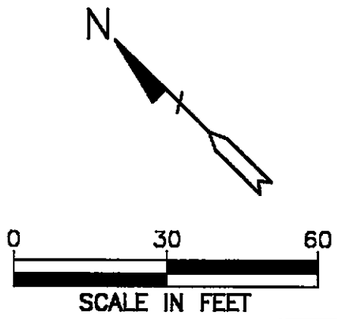
BP OIL SERVICE STATION NO. 11102
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

PROJECT NO. 10–076

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

100760-1.DWG 12-31-96 1:30





LEGEND

◆	GROUNDWATER MONITORING WELL
TPH-G / B | T / E | X / TPH-D / DO	CONCENTRATION OF CONSTITUENTS IN MICROGRAMS PER LITER, EXCEPT DISSOLVED OXYGEN, WHICH IS IN PARTS PER MILLION
TPH-G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
TPH-D	TOTAL PETROLEUM HYDROCARBONS AS DIESEL
DO	DISSOLVED OXYGEN
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 4, 1996

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

PROJECT NO. 10-076

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10076E-1.DWG 12-31-96 DDM 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. 10-076-06-001 Date: 12/4/96
Address 100 MacArthur Blvd Day: M T W TH F
Contract No. G797420 City: Oakland
Station No. BP 11102 Sampler: CS

DEPTH TO GROUNDWATER SUMMARY

WELL ID	SAMPLE ID	WELL DIAM	TOTAL DEPTH	DEPTH TO WATER	PRODUCT THICKNESS	TIME MONITORED	COMMENTS: Semi=June/Dec
MW-1	S-2	4"	23.20	11.91	∅	1013	Semi-June/Dec
MW-2	S-3	4"	24.80	13.03		1015	Semi-June/Dec QC-1 (S-4) From this well
MW-3	S-1	4"	23.60	13.28	↓	1010	Semi-June/Dec

FIELD INSTRUMENT CALIBRATION DATA

pH METER Ion 4.00 4 7.00 7 10.00 10 TEMPERATURE COMPENSATED (Y) N TIME 1000 WEATHER Clear
D.O. METER Ion ZERO d.O. SOLUTION 0 BAROMETRIC PRESSURE 760 TEMP 61
CONDUCTIVITY METER Ion 10,000 TURBIDITY METER 5.0 NTU OTHER X
LEAK DETECTOR : ALARM MODE X NON ALARM MODE

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.
MW-3	13.28	4"	OK	∅	Y (N)	7	1031	66.2	7.36	1.22 ms	6.4
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			14		65.4	7.21	1.10 ms	
23.60-13.28 = 10.32 X .65 = 6.71 X 3	20.13					21	1045	65.1	7.14	1.03 ms	6.7

Purge Method: (S)Surface Pump ODisp.Tube OWinch ODisp. Baller(s)___ OSys Port
Comments:

EPA 601___ TPH-G/BTEX HCl TPH Diesel___ TOG 5520___
TIME/SAMPLE ID: 1050

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Iridescence	Gal.	Time	Temp *F	pH	E.C.	D.O.
MW-2	13.03	4"	(Locked)	∅	Y (N)	7	1056	66.6	7.31	1.40 ms	6.7
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			15		65.8	7.14	1.29 ms	
24.80-13.03=11.77 X .65 = 7.65 X 3 =	22.95					23	1110	65.9	7.06	1.21 ms	6.3

Purge Method: (S)Surface Pump ODisp.Tube OWinch ODisp. Baller(s)___ OSys Port
Comments: QC-1 (S-4) From this well

EPA 601___ TPH-G/BTEX HCl TPH Diesel___ TOG 5520___
TIME/SAMPLE ID: 1115

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. 10-076-06-001 Date: 12/4/96
Address 100 MacArthur Blvd Day: M T (W) TH F
Contract No. G797420 City: Oakland
Station No. BP 11102 Sampler: LB

Well ID	Depth to Wate	Diam	Cap/Lock	Product Dept	Iridescence	Gal.	Time	Temp °F	pH	E.C.	D.O.
MW-1	11.91	4"	OK	Ø	Y (N)	7	1122	67.1	7.39	1.33ms	6.4
Total Depth - Water Level=	x Well Vol. Factor=	x#vol. to Purge	PurgeVol.			14		66.6	7.20	1.14ms	
23.20 - 11.91 = 11.29 X .65 = 7.34 X 3 = 22						22.5	1140	65.8	7.17	1.08ms	6.7
Purge Method: (X) Surface Pump ODisp.Tube OWinch ODisp. Bailer(s)___ OSys Port											
Comments:											

Ø EPA 601 HCl
Ø TPH-G/BTEX HCl
Ø TPH Diesel HCl
Ø TOG 5520 HCl
TIME/SAMPLE ID

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.

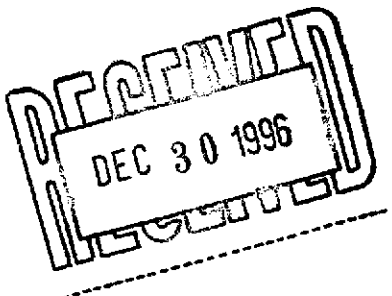
Certificate of Analysis Number: 96-12-324

Approved for Release by:

Ed Fry, Project Manager — Date: 12/17/96

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. H9-9612324-01

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

P.O.# G797420, COC#078791
DATE: 12/16/96

PROJECT: BP Oil #11102
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-1

PROJECT NO: 10-076-6-1
MATRIX: WATER
DATE SAMPLED: 12/04/96
DATE RECEIVED: 12/06/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	ND	10 P	µg/L
Benzene	ND	0.5 P	µg/L
Toluene	ND	1 P	µg/L
Ethylbenzene	ND	1 P	µg/L
Total Xylene	ND	1 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	107		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: AA			
Date: 12/12/96			
Total Petroleum Hydrocarbons-Gasoline	ND	0.05 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	107		
4-Bromofluorobenzene	103		
CA LUFT - Gasoline			
Analyzed by: AA			
Date: 12/12/96 02:07:00			

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. H9-9612324-02

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

P.O.# G797420, COC#078791
DATE: 12/16/96

PROJECT: BP Oil #11102
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-2

PROJECT NO: 10-076-6-1
MATRIX: WATER
DATE SAMPLED: 12/04/96
DATE RECEIVED: 12/06/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	2600	100 P	µg/L
Benzene	6.2	2.5 P	µg/L
Toluene	ND	5 P	µg/L
Ethylbenzene	ND	5 P	µg/L
Total Xylene	ND	5 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	120		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: LJ			
Date: 12/13/96			
Total Petroleum Hydrocarbons-Gasoline	1.4	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	107		
4-Bromofluorobenzene	120		
CA LUFT - Gasoline			
Analyzed by: LJ			
Date: 12/13/96 08:13:00			
Diesel Range Organics	0.28	0.05 P	
Surrogate	**% Recovery**		
o-Terphenyl	110		
2-Fluorobiphenyl	79		
California LUFT Manual			
Analyzed by: RR			
Date: 12/12/96 09:04:00			

(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. H9-9612324-02

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

P.O.# G797420, COC#078791
DATE: 12/16/96

PROJECT: BP Oil #11102
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-2

PROJECT NO: 10-076-6-1
MATRIX: WATER
DATE SAMPLED: 12/04/96
DATE RECEIVED: 12/06/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
California TPH-D Extraction METHOD 3510B *** Analyzed by: JN Date: 12/09/96 10:00:00	12/09/96		
Hydrocarbons by Gravimetry Method 5520 B & F ** Analyzed by: DR Date: 12/11/96 10:00:00	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.

QUALITY ASSURANCE: These analyses are performed in accordance with EPA guidelines for quality assurance.
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 660-0901

Certificate of Analysis No. H9-9612324-02

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

P.O.# G797420, COC#078791
12/16/96

PROJECT: BP Oil #11102
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-2

PROJECT NO: 10-076-6-1
MATRIX: WATER
DATE SAMPLED: 12/04/96
DATE RECEIVED: 12/06/96

ANALYTICAL DATA

PARAMETER	RESULTS	PQL*	UNITS
Dichlorodifluoromethane	ND	5.0	µg/L
Chloromethane	ND	5.0	µg/L
Vinyl chloride	ND	5.0	µg/L
Bromomethane	ND	5.0	µg/L
Chloroethane	ND	5.0	µg/L
Trichlorofluoromethane	ND	5.0	µg/L
1,1-Dichloroethene	ND	5.0	µg/L
Methylene chloride	ND	5.0	µg/L
Trans-1,2-Dichloroethene	6.0	5.0	µg/L
1,1-Dichloroethane	ND	5.0	µg/L
Chloroform	ND	5.0	µg/L
1,1,1-Trichloroethane	ND	5.0	µg/L
Carbon tetrachloride	ND	5.0	µg/L
1,2-Dichloroethane	ND	5.0	µg/L
2-Chloroethylvinyl ether	ND	5.0	µg/L
Trichloroethene	ND	5.0	µg/L
1,2-Dichloropropane	ND	5.0	µg/L
Bromodichloromethane	ND	5.0	µg/L
cis-1,3-Dichloropropene	ND	5.0	µg/L
trans-1,3-Dichloropropene	ND	5.0	µg/L
1,1,2-Trichloroethane	ND	5.0	µg/L
Tetrachloroethene	ND	5.0	µg/L
Dibromochloromethane	ND	5.0	µg/L
Chlorobenzene	ND	5.0	µg/L
Bromoform	ND	5.0	µg/L
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L
1,3-Dichlorobenzene	ND	5.0	µg/L
1,4-Dichlorobenzene	ND	5.0	µg/L
1,2-Dichlorobenzene	ND	5.0	µg/L

METHOD: 8010, Halogenated Volatile Organics

(continued on next page)

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

Certificate of Analysis No. H9-9612324-02

BP Oil Company

SAMPLE ID: S-2

SURROGATES	**% RECOVERY**
1-Chloro-2-Fluorobenzene	92

ANALYZED BY: DAO DATE/TIME: 12/14/96 10:25:00
METHOD: 8010, 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. H9-9612324-03

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

P.O.# G797420, COC#078791
DATE: 12/16/96

PROJECT: BP Oil #11102
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-3

PROJECT NO: 10-076-6-1
MATRIX: WATER
DATE SAMPLED: 12/04/96
DATE RECEIVED: 12/06/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	11000	250 P	µg/L
Benzene	ND	2.5 P	µg/L
Toluene	ND	5 P	µg/L
Ethylbenzene	ND	5 P	µg/L
Total Xylene	ND	5 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	120		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: LJ			
Date: 12/12/96			
Total Petroleum Hydrocarbons-Gasoline	5.9	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	120		
4-Bromofluorobenzene	107		
CA LUFT - Gasoline			
Analyzed by: AA			
Date: 12/12/96 02:33:00			

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

Certificate of Analysis No. H9-9612324-04

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

P.O.# G797420, COC#078791
DATE: 12/16/96

PROJECT: BP Oil #11102
SITE: Oakland, CA
SAMPLED BY: Alisto Engineering
SAMPLE ID: S-4

PROJECT NO: 10-076-6-1
MATRIX: WATER
DATE SAMPLED: 12/04/96
DATE RECEIVED: 12/06/96

ANALYTICAL DATA

PARAMETER	RESULTS	DETECTION LIMIT	UNITS
MTBE	11000	250 P	µg/L
Benzene	ND	2.5 P	µg/L
Toluene	ND	5 P	µg/L
Ethylbenzene	ND	5 P	µg/L
Total Xylene	ND	5 P	µg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	120		
4-Bromofluorobenzene	93		
METHOD 8020***			
Analyzed by: LJ			
Date: 12/12/96			
Total Petroleum Hydrocarbons-Gasoline	5.9	0.25 P	mg/L
Surrogate	**% Recovery**		
1,4-Difluorobenzene	120		
4-Bromofluorobenzene	107		
CA LUFT - Gasoline			
Analyzed by: AA			
Date: 12/12/96 02:58:00			

(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

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
Units: µg/L

Batch Id: HP_O961211011100

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	54	108	63 - 120
Benzene	ND	50	44	88.0	62 - 121
Toluene	ND	50	51	102	66 - 136
EthylBenzene	ND	50	53	106	70 - 136
O Xylene	ND	50	51	102	74 - 134
M & P Xylene	ND	100	100	100	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	6.5	20	29	112	28	108	3.64	20	39 - 150
BENZENE	ND	20	20	100	20	100	0	25	39 - 150
TOLUENE	ND	20	20	100	20	100	0	26	56 - 134
ETHYLBENZENE	ND	20	21	105	20	100	4.88	38	61 - 128
O XYLENE	ND	20	20	100	20	100	0	29	40 - 130
M & P XYLENE	ND	40	42	105	42	105	0	20	43 - 152

Analyst: AA
Sequence Date: 12/11/96
SPL ID of sample spiked: 9612555-03A
Sample File ID: OOL6442.TX0
Method Blank File ID:
Blank Spike File ID: OOL6436.TX0
Matrix Spike File ID: OOL6440.TX0
Matrix Spike Duplicate File ID: OOL6441.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): 9612308-07A 9612540-01A 9612540-02A 9612501-01A 9612501-03A 9612308-05A 9612308-11A 9612324-01A 9612324-03A 9612473-05A 9612324-04A 9612308-02A 9612308-03A 9612308-04A 9612555-03A

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_O961212065000

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	53	106	63 - 120
Benzene	ND	50	43	86.0	62 - 121
Toluene	ND	50	49	98.0	66 - 136
EthylBenzene	ND	50	50	100	70 - 136
O Xylene	ND	50	50	100	74 - 134
M & P Xylene	ND	100	98	98.0	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	5.1	20	28	114	28	114	0	20	39 - 150
BENZENE	ND	20	22	110	22	110	0	25	39 - 150
TOLUENE	ND	20	26	130	26	130	0	26	56 - 134
ETHYLBENZENE	ND	20	23	115	23	115	0	38	61 - 128
O XYLENE	ND	20	24	120	24	120	0	29	40 - 130
M & P XYLENE	ND	40	47	118	47	118	0	20	43 - 152

Analyst: LJ
Sequence Date: 12/12/96
SPL ID of sample spiked: 9612514-02A
Sample File ID: OOL6479.TX0
Method Blank File ID:
Blank Spike File ID: OOL6474.TX0
Matrix Spike File ID: OOL6489.TX0
Matrix Spike Duplicate File ID: OOL6490.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):

9612521-02A 9612521-04A 9612521-03A 9612540-03A
9612501-02A 9612308-05A 9612308-09A 9612308-12A
9612324-03A 9612324-04A 9612514-01A 9612514-03A
9612514-01A 9612521-01A 9612514-02A

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

** SPL BATCH QUALITY CONTROL REPORT **

Mod. 8015 - Diesel

Matrix: Aqueous
Units: mg/L

Batch Id: HP_T961210023001

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 Petr. Hydrocarbons	ND	5.0	5.38	108	20 - 130

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 PETR. HYDROCARBONS	ND	5.0	1.74	33.8	1.51	29.2	14.6	43	20 - 177

Analyst: RR
Sequence Date: 12/11/96
SPL ID of sample spiked: 9612386-03B
Sample File ID: TTI6884.TX0
Method Blank File ID:
Blank Spike File ID: TTI6891.TX0
Matrix Spike File ID: TTI6885.TX0
Matrix Spike Duplicate File ID: TTI6886.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 (2nd Q '94)
(***) = Source: SPL-Houston Historical Data

SAMPLES IN BATCH(SPL ID):

9612397-01B 9612397-02B 9612397-03B 9612397-04B
9612397-05B 9612397-06B 9612386-01B 9612386-03B
9612234-02B 9612386-02B 9612324-02B 9612306-01B
9612311-01B 9612311-02B 9612311-03B 9612330-01B
9612330-02B

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

** SPL BATCH QUALITY CONTROL REPORT **
State of Tennessee Method

Matrix: Aqueous
Units: mg/L

Batch Id: HP_O961213023700

L A B O R A T O R Y C O N T R O L S A M P L E

S P I K E C O M P O U N D S	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	0.87	87.0	50 - 100

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

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike 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	0.4	0.9	1.3	100	1.1	77.8	25.0 *	16	34 - 150

Analyst: LJ
Sequence Date: 12/13/96
SPL ID of sample spiked: 9612521-06A
Sample File ID: O_L6516.TX0
Method Blank File ID:
Blank Spike File ID: O_L6507.TX0
Matrix Spike File ID: O_L6512.TX0
Matrix Spike Duplicate File ID: O_L6513.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: Method Limits
(***) = Source: SPL-Houston Historical Data (3rd Q '95)

SAMPLES IN BATCH(SPL ID):

9612308-08A 9612521-06A 9612308-06A 9612324-02A
9612521-07A 9612521-08A 9612542-02A 9612543-01A
9612674-01A 9612308-01A 9612308-10A 9612308-13A
9612308-14A 9612674-03A

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PHONE (713) 660-0901

** SPL BATCH QUALITY CONTROL REPORT **
CA LUFT

Matrix: Aqueous
Units: mg/L

Batch Id: HP_O961211040700

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	1.0	0.99	99.0	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	ND	0.9	0.96	107	1.0	111	3.67	50	50 - 150

Analyst: AA
Sequence Date: 12/11/96
SPL ID of sample spiked: 9612308-07A
Sample File ID: O_L6447.TX0
Method Blank File ID:
Blank Spike File ID: O_L6434.TX0
Matrix Spike File ID: O_L6444.TX0
Matrix Spike Duplicate File ID: O_L6445.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): 9612308-07A 9612308-05A 9612308-11A 9612324-01A 9612324-03A 9612324-04A 9612308-02A 9612308-03A 9612308-04A

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_F961213045100

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	100.0	19	19.0 *	20	20.0 *	5.13	20	21 - 156
1,1-DICHLOROETHENE	ND	100.0	33	33.0	32	32.0	3.08	20	28 - 167
METHYLENE CHLORIDE	ND	100.0	50	50.0	52	52.0	3.92	20	25 - 162
TRANS-1,2-DICHLOROETHENE	ND	100.0	35	35.0 *	35	35.0 *	0	20	38 - 155
1,1-DICHLOROETHANE	ND	100.0	20	20.0 *	18	18.0 *	10.5	20	47 - 132
CHLOROFORM	ND	100.0	24	24.0 *	24	24.0 *	0	20	49 - 133
1,1,1-TRICHLOROETHANE	ND	100.0	23	23.0 *	23	23.0 *	0	20	41 - 138
CARBON TETRACHLORIDE	ND	100.0	22	22.0 *	22	22.0 *	0	20	43 - 143
1,2-DICHLOROETHANE	ND	100.0	23	23.0 *	23	23.0 *	0	20	51 - 147
2-CHLOROETHYLVINYL ETHER	ND	100.0	5.1	5.10 *	5	5.00 *	1.98	20	14 - 186
TRICHLOROETHENE	ND	100.0	27	27.0 *	26	26.0 *	3.77	20	35 - 146
1,2-DICHLOROPROPANE	ND	100.0	20	20.0 *	20	20.0 *	0	20	44 - 156
BROMODICHLOROMETHANE	ND	100.0	33	33.0 *	31	31.0 *	6.25	20	42 - 172
CIS-1,3-DICHLOROPROPENE	ND	100.0	22	22.0	21	21.0 *	4.65	20	22 - 178
TRANS-1,3-DICHLOROPROPENE	ND	100.0	22	22.0 *	21	21.0 *	4.65	20	33 - 178
1,1,2-TRICHLOROETHANE	ND	100.0	26	26.0 *	25	25.0 *	3.92	20	39 - 136
TETRACHLOROETHENE	ND	100.0	24	24.0 *	23	23.0 *	4.26	20	26 - 162
DIBROMOCHLOROMETHANE	ND	100.0	24	24.0	24	24.0	0	20	24 - 191
CHLOROBENZENE	15	100.0	41	26.0 *	49	34.0 *	26.7 *	20	38 - 150
BROMOFORM	ND	100.0	20	20.0	19	19.0	5.13	20	13 - 159
1,1,2,2-TETRACHLOROETHANE	ND	100.0	26	26.0	26	26.0	0	20	8 - 184
1,3-DICHLOROBENZENE	ND	100.0	29	29.0	29	29.0	0	20	7 - 187
1,4-DICHLOROBENZENE	ND	100.0	32	32.0 *	32	32.0 *	0	20	42 - 143
1,2-DICHLOROBENZENE	ND	100.0	29	29.0	26	26.0	10.9	20	1 - 208

Analyst: DAO
Sequence Date: 12/13/96
SPL ID of sample spiked: 9612389-09A
Sample File ID: FFL6192.TX0
Method Blank File ID:
Blank Spike File ID: FFL6183.TX0
Matrix Spike File ID: FFL6186.TX0
Matrix Spike Duplicate File ID: FFL6187.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: 601, Table 2
(***) = Source: SPL Temporary Limits

SAMPLES IN BATCH(SPL ID):

9612389-09A 9612283-14B 9612283-19B 9612283-24B
9612283-23B 9612283-11B 9612283-09B 9612283-25B
9612324-02D 9612283-01B 9612283-05B 9612283-26B
9612283-02B 9612193-01A 9612193-02A 9612386-02D

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_F961213045100

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	17	85.0	1 - 200
Chloromethane	ND	20	14	70.0	1 - 193
Vinyl chloride	ND	20	18	90.0	28 - 163
Bromomethane	ND	20	20	100	1 - 144
Chloroethane	ND	20	17	85.0	46 - 137
Trichlorofluoromethane	ND	20	17	85.0	21 - 156
1,1-Dichloroethene	ND	20	23	115	28 - 167
Methylene chloride	ND	20	26	130	25 - 162
Trans-1,2-Dichloroethene	ND	20	22	110	38 - 155
1,1-Dichloroethane	ND	20	17	85.0	34 - 132
Chloroform	ND	20	19	95.0	49 - 133
1,1,1-Trichloroethane	ND	20	18	90.0	41 - 138
Carbon tetrachloride	ND	20	15	75.0	43 - 143
1,2-Dichloroethane	ND	20	19	95.0	51 - 147
2-Chloroethylvinyl ether	ND	20	16	80.0	14 - 186
Trichloroethene	ND	20	19	95.0	35 - 146
1,2-Dichloropropane	ND	20	17	85.0	44 - 156
Bromodichloromethane	ND	20	26	130	42 - 172
cis-1,3-Dichloropropene	ND	20	15	75.0	22 - 178
trans-1,3-Dichloropropene	ND	20	18	90.0	33 - 178
1,1,2-Trichloroethane	ND	20	18	90.0	39 - 136
Tetrachloroethene	ND	20	17	85.0	26 - 162
Dibromochloromethane	ND	20	18	90.0	24 - 191
Chlorobenzene	ND	20	19	95.0	38 - 150
Bromoform	ND	20	17	85.0	13 - 159
1,1,2,2-Tetrachloroethane	ND	20	15	75.0	8 - 184
1,3-Dichlorobenzene	ND	20	18	90.0	7 - 187
1,4-Dichlorobenzene	ND	20	16	80.0	42 - 143
1,2-Dichlorobenzene	ND	20	18	90.0	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	100.0	19	19.0	21	21.0	10.0	20	1 - 200
CHLOROMETHANE	ND	100.0	20	20.0	25	25.0	22.2 *	20	1 - 193
VINYL CHLORIDE	ND	100.0	19	19.0 *	19	19.0 *	0	20	28 - 163
BROMOMETHANE	ND	100.0	29	29.0	36	36.0	21.5 *	20	1 - 144
CHLOROETHANE	ND	100.0	29	29.0 *	32	32.0 *	9.84	20	46 - 137

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_O961213012000

L A B O R A T O R Y C O N T R O L S A M P L E

S P I K E C O M P O U N D S	Method Blank Result <2>	Spike Added <3>	Blank Spike Result <1>	Blank Spike Recovery %	QC Limits(**) (Mandatory) % Recovery Range
MTBE	ND	50	52	104	63 - 120
Benzene	ND	50	42	84.0	62 - 121
Toluene	ND	50	48	96.0	66 - 136
EthylBenzene	ND	50	50	100	70 - 136
O Xylene	ND	50	48	96.0	74 - 134
M & P Xylene	ND	100	100	100	77 - 140

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

S P I K E C O M P O U N D S	Sample Results <2>	Spike Added <3>	Matrix Spike 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	3.3	20	26	114	26	114	0	20	39 - 150
BENZENE	ND	20	23	115	23	115	0	25	39 - 150
TOLUENE	ND	20	24	120	24	120	0	26	56 - 134
ETHYLBENZENE	ND	20	23	115	23	115	0	38	61 - 128
O XYLENE	ND	20	23	115	23	115	0	29	40 - 130
M & P XYLENE	ND	40	46	115	46	115	0	20	43 - 152

Analyst: LJ
Sequence Date: 12/13/96
SPL ID of sample spiked: 9612308-08A
Sample File ID: OOL6515.TX0
Method Blank File ID:
Blank Spike File ID: OOL6504.TX0
Matrix Spike File ID: OOL6510.TX0
Matrix Spike Duplicate File ID: OOL6511.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):

9612308-08A 9612521-06A 9612521-05A 9612308-06A
9612324-02A 9612521-07A 9612521-08A 9612542-02A
9612543-01A 9612674-01A 9612308-01A 9612308-10A
9612308-13A 9612308-14A 9612324-02A 9612674-03A

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** SPL QUALITY CONTROL REPORT **

Matrix: Aqueous

Reported on: 12/11/96
Analyzed on: 12/11/96
Analyst: DR

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	4.2	3.9	92.9	3.9	92.9	0	9.8	82.3 -112
							961211DR		-9612451	

Samples in batch:

9612147-01C 9612154-01C 9612161-01C 9612324-02C

COMMENTS:

CHAIN OF CUSTODY

AND

SAMPLE RECEIPT CHECKLIST

96-12-324

CHAIN OF CUSTODY

No. 078791 Page 1 of 1

CONSULTANT'S NAME: Alisto Engineering	ADDRESS: 1575 Treat Blvd #201	CITY: W.C.	STATE: Ca ZIP CODE: 94598
BP SITE NUMBER: 11102	BP CORNER ADDRESS/CITY: Oakland, Ca		CONSULTANT PROJECT NUMBER: 10-076-6-1
CONSULTANT PROJECT MANAGER: Brady Nagle	PHONE NUMBER: (510) 295-1650	FAX NUMBER: 295-1823	CONSULTANT CONTRACT NUMBER: 6797420
BP CONTACT: Scott Hooton	BP ADDRESS: Renton	PHONE NUMBER:	FAX NO.
LAB CONTACT: SPL	LABORATORY ADDRESS: Texas	PHONE NUMBER:	FAX NO.
SAMPLED BY (Please Print Name): Larry Buenvenida	SAMPLED BY (Signature):	SHIPMENT DATE: 12/04/96	SHIPMENT METHOD: Fed Ex
TAT: ☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☒ Standard 2 Weeks	ANALYSIS REQUIRED		AIRBILL NUMBER: 940479285

SAMPLE DESCRIPTION	COLLECTION DATE / TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	TPH-G BTXE	TPH-D	8010 HVOCs	COMMENTS
S-1	12/4/96	W	3	HCl		X	X	X	
S-2	↓	↓	8	↓		↓	↓	↓	
S-3	↓	↓	3	↓		↓	↓	↓	
S-4	↓	↓	3	↓		↓	↓	↓	

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	12/4/96			12/6/96	
	12/4/96		SPL	12/6/96	1000

ADDITIONAL COMMENTS: 40C VOI, intact

CLV-16722
PKG/50

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

BP

CHAIN OF CUSTODY

No.078791 Page 1 of 1

CONSULTANT'S NAME: Alisto Engineering	ADDRESS: 1575 Treat Blvd #201	CITY: W.C.	STATE: Ca	ZIP CODE: 94598
BP SITE NUMBER: 11102	BP CORNER ADDRESS/CITY: Oakland, Ca		CONSULTANT PROJECT NUMBER: 10-076-6-1	
CONSULTANT PROJECT MANAGER: Brady Nagle	PHONE NUMBER: (510) 295-1650	FAX NUMBER: 295-1823	CONSULTANT CONTRACT NUMBER: G797420	
BP CONTACT: Scott Hooton	BP ADDRESS: Renton	PHONE NUMBER:	FAX NO.:	
LAB CONTACT: SPL	LABORATORY ADDRESS: Texas	PHONE NUMBER:	FAX NO.:	
SAMPLED BY (Please Print Name): Larry Orenwanide	SAMPLED BY (Signature):	SHIPMENT DATE: 12/4/96	SHIPMENT METHOD: Fed Ex	AIRBILL NUMBER: [illegible]

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

ANALYSIS REQUIRED

SAMPLE DESCRIPTION	COLLECTION DATE / COLLECTION TIME	MATRIX SOIL/WATER	CONTAINERS NO.	TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	TPH-G/BTEX	[illegible]	TPH-D	[illegible]	[illegible]						COMMENTS
S-1	12/4/96	W	3	1L		X	X									
S-2	↓	↓	8	↓		X	X	X	X	X						
S-3	↓	↓	3	↓		X	X									
S-4	↓	↓	3	↓		X	X									

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	12/4/96		[signature]	[illegible]	

ADDITIONAL COMMENTS:

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:
12/06/96	1000

SPL Sample ID:
96-12-324

			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:		4° C	
10	Method of sample delivery to SPL:	SPL Delivery		
		Client Delivery		
		FedEx Delivery (airbill #)	940477923855	
		Other:		
11	Method of sample disposal:	SPL Disposal	—	
		HOLD		
		Return to Client		

Name:	Date:
Mary Paul	12/06/96

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

BP Site Number: 11102
ERM Contact: G797420
Sampling Date: 12/4/96
Matrix Description: Groundwater
Date Final Report Received: 12/30/96
Laboratory & Location: SPL-TX

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

Notes: (1) exceeded for some VOC's & gas range organics

Data Validation Completed by (print): Bill Howell
(signature): Bill Howell
Date: 1/9/97