**BP OIL**



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

April 22, 1997

Ms Eva Chu
Alameda County Health Care Services Agency
1131 Harbour Bay Parkway Room 250
Alameda, CA 94542-6577

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

Dear Ms Chu:

Attached please find our **GROUNDWATER MONITORING AND SAMPLING REPORT DATED MARCH 24, 1997** for the above referenced facility. Plans for the following quarter include additional groundwater monitoring.

On a final note, please note that BP and Mobil Oil Corporation have an agreement to cooperate in the filing for reimbursement applications to the UST Cleanup Fund. If you become aware of any notices or proposals to withdraw a Letter of Commitment for this site, please give me a call to let me know immediately.

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

Sincerely,

Scott T. Hooton
Environmental Remediation Management

STH:sb mswordERM11104

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

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

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

Site File

0.5



# GROUNDWATER MONITORING AND SAMPLING REPORT

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

Project No. 10-155-06-003

- MTBE at 160,000 ppb in Feb 1997! in MW-1 and RW-1
- It may becomes necessary to do GW extraction from RW-1
- Do MTBE in MW-5 next qtr. (may 1997)
- Was there a recent release?

Prepared for:

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

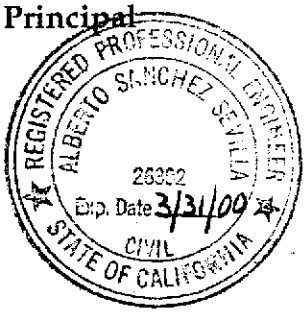
Prepared by:

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

March 24, 1997

Dale Swain
Project Manager

Al Sevilla, P.E.
Principal



# GROUNDWATER MONITORING AND SAMPLING REPORT

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

**Project No. 10-155-06-003**

**March 24, 1997**

## INTRODUCTION

This report presents the results and findings of the February 10, 1997 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11104, 1716 Webster Street, Alameda, California. A site vicinity map is shown on Figure 1.

## FIELD PROCEDURES

Field activities were performed in accordance with the procedures and guidelines of the Alameda County Health Care Services Agency and the California Regional Water Quality Control Board, San Francisco Bay Region.

Before purging and sampling, the groundwater level in each well was measured from a permanent mark on top of the casing to the nearest 0.01 foot using an electronic sounder. The depth to groundwater and top of casing elevation data were used to calculate the groundwater elevation in each well in reference to mean sea level. The survey data and groundwater elevation measurements collected to date are presented in Table 1.

Before sample collection, each well was purged of 3 casing volumes, while recording field readings of pH, temperature, electrical conductivity, and dissolved oxygen. Groundwater samples were collected for laboratory analysis by lowering a bottom-fill, disposable bailer to just below the water level in the well. The samples were transferred from the bailer into laboratory-supplied containers. The water sampling field survey forms are presented in Appendix A.

Groundwater monitoring was performed on Febuary 10, 1997 at the neighboring Chevron service station, 1802 Webster Street. The results are presented in Table 2.

## SAMPLING AND ANALYTICAL RESULTS

The results of monitoring and laboratory analysis of the groundwater samples for this and previous quarters are summarized in Table 1. The potentiometric groundwater elevations as interpreted from the results of this monitoring event are shown on Figure 2. The results of groundwater analysis are shown on Figure 3. The laboratory report and chain of custody record are presented in Appendix B.

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

ALISTO PROJECT NO. 10-155

| WELL ID | | DATE OF SAMPLING/ MONITORING | CASING ELEVATION (a) (Feet) | DEPTH TO WATER (Feet) | GROUNDWATER ELEVATION (b) (Feet) | TPH-G (ug/l) | B (ug/l) | T (ug/l) | E (ug/l) | X (ug/l) | MTBE (ug/l) | TDS (mg/l) | DO (ppm) | LAB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | | 07/21/92 | 11.98 | 5.91 | 6.07 | 34000 | 7000 | 1700 | 2500 | 6900 | --- | --- | --- | --- |
| MW-1 | | 10/20/92 | 11.98 | 6.66 | 5.32 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-1 | | 03/05/93 | 11.98 | 4.56 | 7.42 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-1 | | 04/01/93 | 11.98 | 4.57 | 7.41 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-1 | | 07/09/93 | 11.98 | 5.25 | 6.73 | 77000 | 15000 | 1400 | 2100 | 7400 | --- | --- | --- | PACE |
| MW-1 | (c) | 07/09/93 | 11.98 | --- | --- | 79000 | 16000 | 1500 | 2200 | 7700 | --- | --- | --- | PACE |
| MW-1 | | 10/08/93 | 11.98 | 6.01 | 5.97 | 42000 | 7100 | 270 | 2700 | 4700 | --- | --- | --- | PACE |
| MW-1 | | 01/06/94 | 11.98 | 6.24 | 5.74 | 45000 | 12000 | 4300 | 3000 | 6700 | --- | --- | --- | PACE |
| MW-1 | | 04/26/94 | 11.98 | 5.26 | 6.72 | 39000 | 6500 | 500 | 1800 | 1200 | --- | --- | 6.3 | PACE |
| MW-1 | | 07/25/94 | 11.98 | 5.60 | 6.38 | 38000 | 6300 | 240 | 1500 | 1100 | --- | --- | 1.7 | PACE |
| MW-1 | | 10/13/94 | 11.98 | 6.15 | 5.83 | 25000 | 6300 | 130 | 1300 | 830 | --- | --- | 2.3 | PACE |
| MW-1 | (c) | 10/13/94 | 11.98 | --- | --- | 25000 | 7300 | 120 | 1200 | 740 | --- | --- | --- | PACE |
| MW-1 | | 01/17/95 | 11.98 | 4.19 | 7.79 | 7800 | 3100 | 1100 | 460 | 850 | --- | --- | 7.9 | ATI |
| MW-1 | (c) | 01/17/95 | 11.98 | --- | --- | 8400 | 3100 | 1200 | 470 | 1000 | --- | --- | --- | ATI |
| MW-1 | | 03/31/95 | 11.98 | 4.48 | 7.50 | 37000 | 6700 | 6900 | 1200 | 4500 | --- | --- | 6.4 | ATI |
| MW-1 | (c) | 03/31/95 | 11.98 | --- | --- | 40000 | 6900 | 7300 | 1300 | 5000 | --- | --- | --- | ATI |
| MW-1 | | 05/01/95 | 11.98 | 4.39 | 7.59 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-1 | | 07/12/95 | 11.98 | 5.02 | 6.96 | 29000 | 7000 | 300 | 1500 | 3900 | --- | --- | 7.2 | ATI |
| QC-1 | (c) | 07/12/95 | --- | --- | --- | 29000 | 6600 | 380 | 1500 | 3900 | --- | --- | --- | ATI |
| MW-1 | | 10/12/95 | 11.98 | 5.68 | 6.30 | 20000 | 3400 | 310 | 1100 | 3000 | 15000 | --- | 6.3 | ATI |
| QC-1 | (c) | 10/12/95 | --- | --- | --- | 20000 | 3500 | 310 | 1100 | 3000 | 14000 | --- | --- | ATI |
| MW-1 | | 02/27/96 | 11.98 | 4.18 | 7.80 | 18000 | 4400 | 2900 | 860 | 2380 | 5500 | 472 | 7.9 | SPL |
| MW-1 | | 05/08/96 | 11.98 | 4.89 | 7.09 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-1 | | 05/09/96 | 11.98 | --- | --- | 14000 | 2300 | 1900 | 540 | 3340 | 2700 | --- | 6.1 | SPL |
| MW-1 | | 08/09/96 | 11.98 | 5.13 | 6.85 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-1 | | 08/12/96 | 11.98 | --- | --- | 13000 | 2800 | 190 | 1300 | 3040 | 1800 | --- | 7.1 | SPL |
| MW-1 | | 11/07/96 | 11.98 | 5.65 | 6.33 | 12000 | 2100 | 35 | ND<25 | ND<25 | 2100 | --- | 7.2 | SPL |
| MW-1 | | 02/10/97 | 11.98 | 4.80 | 7.18 | 180000 | 1900 | ND<500 | ND<500 | ND<500 | 160000 | --- | 6.8 | SPL |
| QC-1 | (c) | 02/10/97 | --- | --- | --- | 180000 | 2100 | ND<500 | ND<500 | ND<500 | 160000 | --- | --- | SPL |
| MW-2 | | 07/21/92 | 12.98 | 6.44 | 6.54 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | --- |
| MW-2 | | 10/20/92 | 12.98 | 7.39 | 5.59 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-2 | | 03/05/93 | 12.98 | 4.91 | 8.07 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-2 | | 04/01/93 | 12.98 | 4.92 | 8.06 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-2 | | 07/09/93 | 12.98 | 5.60 | 7.38 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-2 | | 10/08/93 | 12.98 | 6.50 | 6.48 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| QC-1 | (c) | 10/08/93 | 12.98 | --- | --- | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-2 | | 01/06/94 | 12.98 | 6.25 | 6.73 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-2 | | 04/26/94 | 12.98 | 5.73 | 7.25 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 7.5 | PACE |
| MW-2 | | 07/25/94 | 12.98 | 6.07 | 6.91 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 2.4 | PACE |
| MW-2 | | 10/13/94 | 12.98 | 6.80 | 6.18 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 2.4 | PACE |
| MW-2 | | 01/17/95 | 12.98 | 5.10 | 7.88 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-2 | | 03/31/95 | 12.98 | 4.69 | 8.29 | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<1.0 | --- | --- | 7.3 | ATI |
| MW-2 | | 05/01/95 | 12.98 | 5.23 | 7.75 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-2 | | 07/12/95 | 12.98 | 5.40 | 7.58 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-2 | | 10/12/95 | 12.98 | 6.06 | 6.92 | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<1.0 | ND<5.0 | --- | 6.9 | ATI |
| MW-2 | | 02/27/96 | 12.98 | 4.66 | 8.32 | ND<50 | ND<0.5 | ND<1 | ND<1 | ND<1 | ND<10 | 412 | 8.7 | SPL |
| MW-2 | | 05/08/96 | 12.98 | 5.28 | 7.70 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-2 | | 08/09/96 | 12.98 | 5.59 | 7.39 | ND<50 | ND<0.5 | ND<1.0 | ND<1.0 | ND<1.0 | ND<10 | --- | 7.8 | SPL |
| MW-2 | | 11/07/96 | 12.98 | 6.11 | 6.87 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-2 | | 02/10/97 | 12.98 | 5.26 | 7.72 | --- | --- | --- | --- | --- | --- | --- | --- | --- |

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

ALISTO PROJECT NO. 10-155

| WELL ID | | DATE OF SAMPLING/ MONITORING | CASING ELEVATION (Feet) | (a) | DEPTH TO WATER (Feet) | GROUNDWATER ELEVATION (Feet) | (b) | TPH-G (ug/l) | B (ug/l) | T (ug/l) | E (ug/l) | X (ug/l) | MTBE (ug/l) | TDS (mg/l) | DO (ppm) | LAB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-3 | (d) | 07/21/92 | 13.38 | | 7.07 | 6.31 | | ND<50 | 0.95 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | --- |
| MW-3 | | 10/20/92 | 13.38 | | 8.06 | 5.32 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-3 | | 03/05/93 | 13.38 | | 5.16 | 8.22 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-3 | | 04/01/93 | 13.38 | | 5.25 | 8.13 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-3 | | 07/09/93 | 13.38 | | 5.80 | 7.58 | | ND<50 | 0.6 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-3 | | 10/08/93 | 13.38 | | 7.17 | 6.21 | | ND<50 | 0.6 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-3 | | 01/06/94 | 13.38 | | 6.94 | 6.44 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-3 | | 04/26/94 | 13.38 | | 6.18 | 7.20 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 3.1 | PACE |
| MW-3 | | 07/25/94 | 13.38 | | 6.67 | 6.71 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 2.2 | PACE |
| MW-3 | | 10/13/94 | 13.38 | | 7.43 | 5.95 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 2.1 | PACE |
| MW-3 | | 01/17/95 | 13.38 | | 5.07 | 8.31 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-3 | | 03/31/95 | 13.38 | | 4.03 | 9.35 | | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<1.0 | --- | --- | 6.6 | ATI |
| MW-3 | | 05/01/95 | 13.38 | | 4.94 | 8.44 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-3 | | 07/12/95 | 13.38 | | 5.80 | 7.58 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-3 | | 10/12/95 | 13.38 | | 6.64 | 6.74 | | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<1.0 | ND<5.0 | --- | 6.4 | ATI |
| MW-3 | | 02/27/96 | 13.38 | | 4.75 | 8.63 | | ND<50 | ND<0.5 | ND<1 | ND<1 | ND<1 | ND<10 | 316 | 8.5 | SPL |
| MW-3 | | 05/08/96 | 13.38 | | 5.86 | 7.52 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-3 | | 08/09/96 | 13.38 | | 5.70 | 7.68 | | ND<50 | ND<0.5 | ND<1.0 | ND<1.0 | ND<1.0 | ND<10 | --- | 7.9 | SPL |
| MW-3 | | 11/07/96 | 13.38 | | 6.21 | 7.17 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-3 | | 02/10/97 | 13.38 | | 5.14 | 8.24 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-4 | | 03/05/93 | 11.80 | | 4.81 | 6.99 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | --- |
| MW-4 | | 04/01/93 | 11.80 | | 4.80 | 7.00 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-4 | | 07/09/93 | 11.80 | | 5.54 | 6.26 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-4 | | 10/08/93 | 11.80 | | 6.28 | 5.52 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-4 | | 01/06/94 | 11.80 | | 5.82 | 5.98 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-4 | | 04/26/94 | 11.80 | | 5.50 | 6.30 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 7.4 | PACE |
| MW-4 | | 07/25/94 | 11.80 | | 5.83 | 5.97 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 7.2 | PACE |
| MW-4 | | 10/13/94 | 11.80 | | 6.26 | 5.54 | | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 6.7 | PACE |
| MW-4 | | 01/17/95 | 11.80 | | 4.19 | 7.61 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-4 | | 03/31/95 | 11.80 | | 3.96 | 7.84 | | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<1.0 | --- | --- | 7.1 | ATI |
| MW-4 | | 05/01/95 | 11.80 | | 4.49 | 7.31 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-4 | | 07/12/95 | 11.80 | | 5.16 | 6.64 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-4 | | 10/12/95 | 11.80 | | 5.80 | 6.00 | | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<1.0 | ND<5.0 | --- | 6.9 | ATI |
| MW-4 | | 02/27/96 | 11.80 | | 4.22 | 7.58 | | ND<50 | ND<0.5 | ND<1 | ND<1 | ND<1 | ND<10 | 256 | 8.9 | SPL |
| MW-4 | | 05/08/96 | 11.80 | | 5.00 | 6.80 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-4 | | 08/09/96 | 11.80 | | 5.13 | 6.67 | | ND<50 | ND<0.5 | ND<1.0 | ND<1.0 | ND<1.0 | ND<10 | --- | 8.5 | SPL |
| MW-4 | | 11/07/96 | 11.80 | | 5.65 | 6.15 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-4 | | 02/10/97 | 11.80 | | 4.81 | 6.99 | | --- | --- | --- | --- | --- | --- | --- | --- | --- |

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

ALISTO PROJECT NO. 10-155

| WELL ID | | DATE OF SAMPLING/ MONITORING | CASING ELEVATION (a) (Feet) | DEPTH TO WATER (Feet) | GROUNDWATER ELEVATION (b) (Feet) | TPH-G (ug/l) | B (ug/l) | T (ug/l) | E (ug/l) | X (ug/l) | MTBE (ug/l) | TDS (mg/l) | DO (ppm) | LAB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-5 | | 04/01/93 | 11.62 | 4.77 | 6.85 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | --- |
| MW-5 | | 07/09/93 | 11.62 | 5.40 | 6.22 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-5 | | 10/08/93 | 11.62 | 5.87 | 5.75 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-5 | | 01/06/94 | 11.62 | 5.75 | 5.87 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | --- | PACE |
| MW-5 | | 04/26/94 | 11.62 | 5.49 | 6.13 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 7.1 | PACE |
| MW-5 | | 07/25/94 | 11.62 | 5.69 | 5.93 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 6.6 | PACE |
| MW-5 | | 10/13/94 | 11.62 | 6.03 | 5.59 | ND<50 | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | 3.0 | PACE |
| MW-5 | | 01/17/95 | 11.62 | 4.74 | 6.88 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-5 | | 03/31/95 | 11.62 | 4.58 | 7.04 | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<1.0 | --- | --- | 7.1 | ATI |
| MW-5 | | 05/01/95 | 11.62 | 4.79 | 6.83 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-5 | | 07/12/95 | 11.62 | 5.32 | 6.30 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-5 | | 10/12/95 | 11.62 | 5.70 | 5.92 | ND<50 | ND<0.50 | ND<0.50 | ND<0.50 | ND<1.0 | ND<5.0 | --- | 6.7 | ATI |
| MW-5 | (e) | 02/27/96 | 11.62 | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-5 | | 05/08/96 | 11.62 | 4.91 | 6.71 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-5 | | 08/09/96 | 11.62 | 5.01 | 6.61 | ND<50 | ND<0.5 | ND<1.0 | ND<1.0 | ND<1.0 | ND<10 | --- | 7.7 | SPL |
| MW-5 | | 11/07/96 | 11.62 | 5.54 | 6.08 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MW-5 | | 02/10/97 | 11.62 | 4.66 | 6.96 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RW-1 | | 01/06/94 | 11.84 | 5.59 | 6.25 | 23000 | 3800 | 210 | 840 | 2100 | --- | --- | --- | PACE |
| QC-1 | (c) | 01/06/94 | --- | --- | --- | 24000 | 3700 | 210 | 830 | 2000 | --- | --- | --- | PACE |
| RW-1 | | 04/26/94 | 11.84 | 5.21 | 6.63 | 24000 | 3500 | 120 | 800 | 1700 | --- | --- | 6.4 | PACE |
| QC-1 | (c) | 04/26/94 | --- | --- | --- | 22000 | 3300 | 110 | 700 | 1700 | --- | --- | --- | PACE |
| RW-1 | | 07/25/94 | 11.84 | 5.52 | 6.32 | 31000 | 4800 | 290 | 1100 | 1700 | --- | --- | 5.5 | PACE |
| QC-1 | (c) | 07/25/94 | --- | --- | --- | 28000 | 4400 | 240 | 960 | 1400 | --- | --- | --- | PACE |
| RW-1 | | 10/13/94 | 11.84 | 6.05 | 5.79 | 20000 | 4200 | 46 | 990 | 440 | --- | --- | 6.8 | PACE |
| RW-1 | | 01/17/95 | 11.84 | 4.02 | 7.82 | 9600 | 1500 | 65 | 300 | 2700 | --- | --- | 7.7 | ATI |
| RW-1 | | 03/31/95 | 11.84 | 3.81 | 8.03 | 16000 | 1500 | 780 | 370 | 2000 | --- | --- | 7.8 | ATI |
| RW-1 | | 05/01/95 | 11.84 | 4.21 | 7.63 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RW-1 | | 07/12/95 | 11.84 | 4.93 | 6.91 | 22000 | 3700 | 150 | 950 | 2800 | --- | --- | 7.2 | ATI |
| RW-1 | | 10/12/95 | 11.84 | 5.46 | 6.38 | 30000 | 1600 | 1500 | 1700 | 8500 | 4300 | --- | 7.0 | ATI |
| RW-1 | | 02/27/96 | 11.84 | 4.00 | 7.84 | 1800 | 30 | 24 | 41 | 440 | 52 | 194 | 7.7 | SPL |
| QC-1 | (c) | 02/27/96 | --- | --- | --- | 1600 | 30 | 23 | 38 | 420 | 50 | --- | --- | SPL |
| RW-1 | | 05/08/96 | 11.84 | 4.65 | 7.19 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RW-1 | | 05/09/96 | 11.84 | --- | --- | 3200 | 19 | 19 | 97 | 800 | ND<50 | --- | 7.1 | SPL |
| QC-1 | (c) | 05/09/96 | --- | --- | --- | 2900 | 15 | 15 | 78 | 700 | ND<50 | --- | --- | SPL |
| RW-1 | | 08/09/96 | 11.84 | 4.96 | 6.88 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RW-1 | | 08/12/96 | 11.84 | --- | --- | 6900 | 210 | 270 | 390 | 1920 | ND<100 | --- | 7.9 | SPL |
| QC-1 | (c) | 08/12/96 | --- | --- | --- | 8200 | 270 | 330 | 450 | 2330 | ND<100 | --- | --- | SPL |
| RW-1 | | 11/07/96 | 11.84 | 5.50 | 6.34 | 6100 | 320 | 45 | ND<10 | ND<10 | 430 | --- | 6.9 | SPL |
| QC-1 | (c) | 11/07/96 | --- | --- | --- | 6800 | 360 | 45 | ND<10 | ND<10 | 500 | --- | --- | SPL |
| RW-1 | | 02/10/97 | 11.84 | 3.85 | 7.99 | 170000 | ND<120 | ND<250 | ND<250 | ND<250 | 150000 | --- | 6.7 | SPL |

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

ALISTO PROJECT NO. 10-155

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

ABBREVIATIONS:

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

NOTES:

(a) Top of casing elevations surveyed in reference to USGS benchmark (14.108 feet above mean sea level) at northwest corner of Webster Street and Pacific Avenue.

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

(c) Blind duplicate.

(d) Sample also analyzed for cadmium, nickel, chromium, lead, and zinc. None were detected above the reported detection limit.

(e) Well inaccessible.

(f) Travel blank.

F:\01\10-155\155-6-3.WQ2

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

ALISTO PROJECT NO. 10-155

| WELL ID | DATE OF MONITORING | CASING ELEVATION (a) (Feet) | DEPTH TO WATER (Feet) | PRODUCT THICKNESS (Feet) | GROUNDWATER ELEVATION (b) (Feet) |
|---|---|---|---|---|---|
| A-1 | 05/01/95 | 11.56 | 5.80 | 0.60 | 6.21 |
| A-1 | 05/08/96 | 11.56 | 5.49 | 0.28 | 6.28 |
| A-1 | 08/23/96 | 11.56 | 6.43 | 0.22 | 5.30 |
| A-1 | 02/10/97 | 11.56 | 4.45 | 0.17 | 7.24 |
| B-1 | 02/15/95 | 12.12 | 5.37 | 0.00 | 6.75 |
| B-1 | 05/01/95 | 12.12 | 5.12 | 0.00 | 7.00 |
| B-1 | 05/08/96 | 12.12 | 4.80 | 0.00 | 7.32 |
| B-1 | 08/23/96 | 12.12 | 5.54 | 0.00 | 6.58 |
| B-1 | 02/10/97 | 12.12 | 4.59 | — | 7.53 |
| B-5 | 02/15/95 | 10.18 | 4.15 | 0.00 | 6.03 |
| B-5 | 05/01/95 | 10.18 | 4.43 | 0.00 | 5.75 |
| B-5 | 05/08/96 | 10.18 | 4.40 | 0.00 | 5.78 |
| B-5 | 08/23/96 | 10.18 | 4.99 | 0.00 | 5.19 |
| B-5 | 02/10/97 | 10.18 | 3.63 | — | 6.55 |
| B-6 | 02/15/95 | 11.97 | 4.70 | 0.00 | 7.27 |
| B-6 | 05/01/95 | 11.97 | 5.03 | 0.00 | 6.94 |
| B-6 | 05/08/96 | 11.97 | 5.23 | 0.00 | 6.74 |
| B-6 | 08/23/96 | 11.97 | 6.05 | 0.00 | 5.92 |
| B-6 | 02/10/97 | 11.97 | 4.37 | 0.00 | 7.60 |
| B-7 | 02/15/95 | 10.54 | 4.22 | 0.00 | 6.32 |
| B-7 | 05/01/95 | 10.54 | 4.50 | 0.00 | 6.04 |
| B-7 | 08/23/96 | — | — | — | — |
| B-7 | 02/10/97 | — | — | — | — |
| B-8 | 02/15/95 | 11.99 | 4.72 | 0.00 | 7.27 |
| B-8 | 05/01/95 | 11.99 | 5.00 | 0.00 | 6.99 |
| B-8 | 08/23/96 | — | — | — | — |
| B-8 | 02/10/97 | — | — | — | — |
| B-9 | 02/15/95 | 10.70 | 3.61 | 0.00 | 7.09 |
| B-9 | 05/01/95 | 10.70 | 4.29 | 0.00 | 6.41 |
| B-9 | 08/23/96 | — | — | — | — |
| B-9 | 02/10/97 | — | — | — | — |
| B-10 | 05/08/96 | 11.42 | 5.55 | 0.00 | 5.87 |
| B-10 | 08/23/96 | 11.42 | 6.19 | 0.00 | 5.23 |
| B-10 | 02/10/97 | 11.42 | 4.58 | — | 6.84 |
| B-11 | 05/08/96 | 11.98 | 5.00 | 0.00 | 6.98 |
| B-11 | 08/23/96 | 11.98 | 5.61 | 0.00 | 6.37 |
| B-11 | 02/10/97 | 11.98 | 4.07 | — | 7.91 |
| B-12 | 05/08/96 | 11.16 | 5.08 | 0.00 | 6.08 |
| B-12 | 08/23/96 | 11.16 | 5.65 | 0.00 | 5.51 |
| B-12 | 02/10/97 | 11.16 | 4.11 | 0.00 | 7.05 |
| B-13 | 05/08/96 | 11.17 | 4.97 | 0.00 | 6.20 |
| B-13 | 08/23/96 | 11.17 | 5.63 | 0.00 | 5.54 |
| B-13 | 02/10/97 | 11.17 | 4.12 | 0.00 | 7.05 |

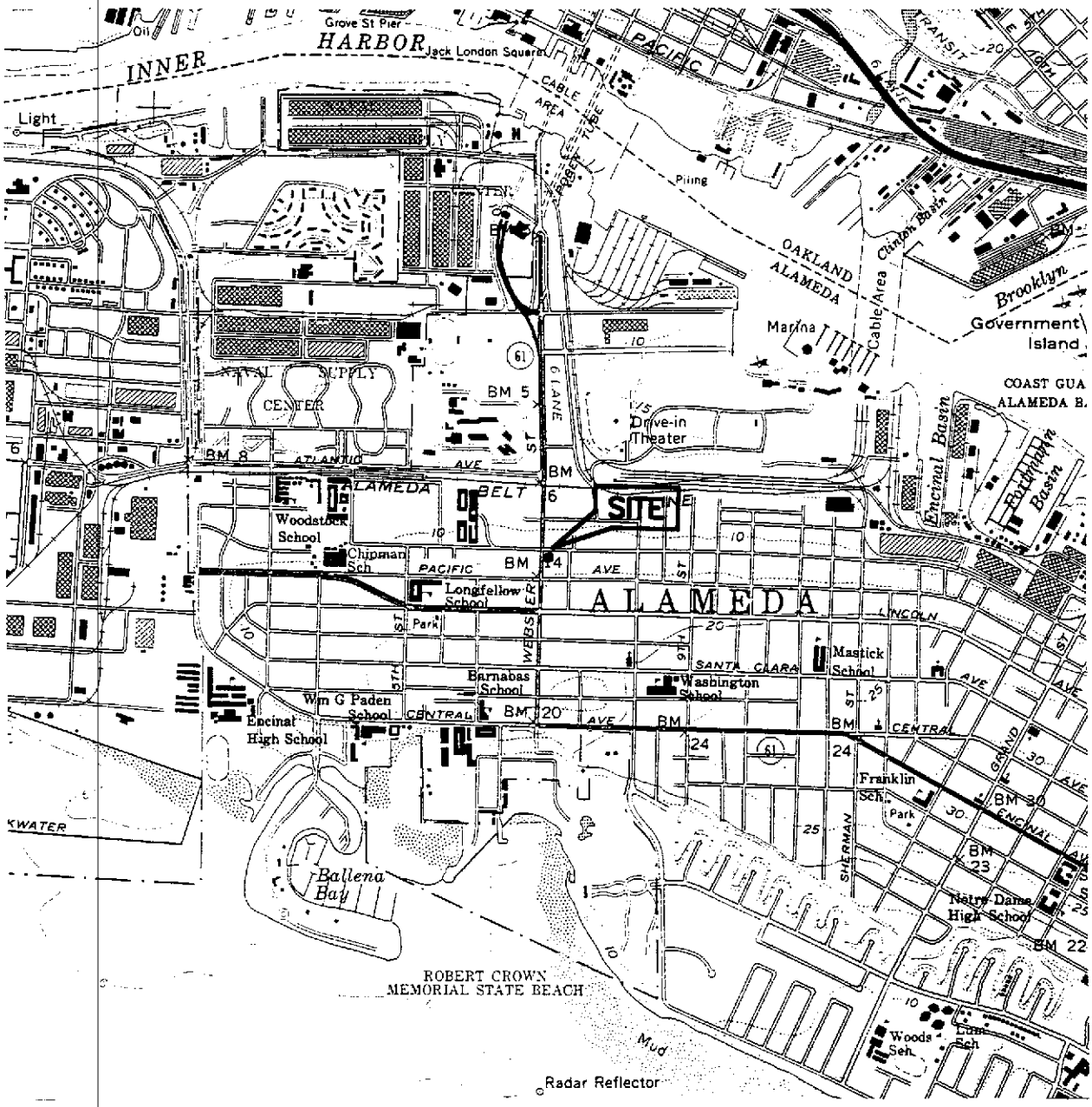
NOTES:

(a) Top of casing elevations surveyed relative to 1929 NGVD.
Measured in feet above mean sea level.

(b) Groundwater elevations assuming a specific gravity of 0.75 for separate-phase product.

— Not measured.

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




# FIGURE 1

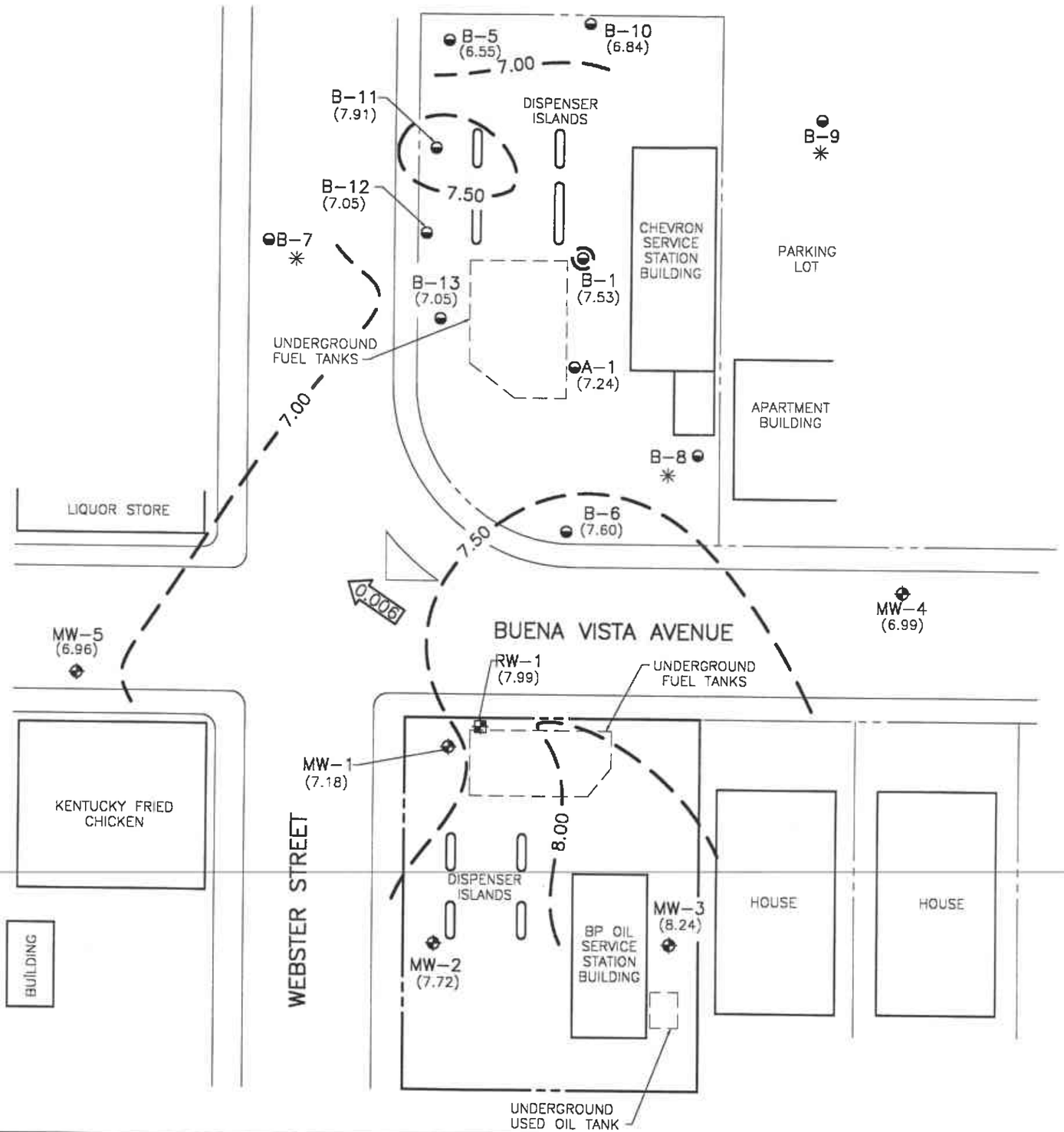
## SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11104
1716 WEBSTER STREET
ALAMEDA, CALIFORNIA

PROJECT NO. 10–155

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10155B—DMC 8-10-93 KW 1-1




N

0 40 80

SCALE IN FEET

## LEGEND

- BP OIL GROUNDWATER MONITORING WELL
- GROUNDWATER RECOVERY WELL
- CHEVRON GROUNDWATER MONITORING WELL
- (7.18) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 7.50 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL–0.50 FOOT)
- 0.006 CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT
- * DATA NOT AVAILABLE

FIGURE 2

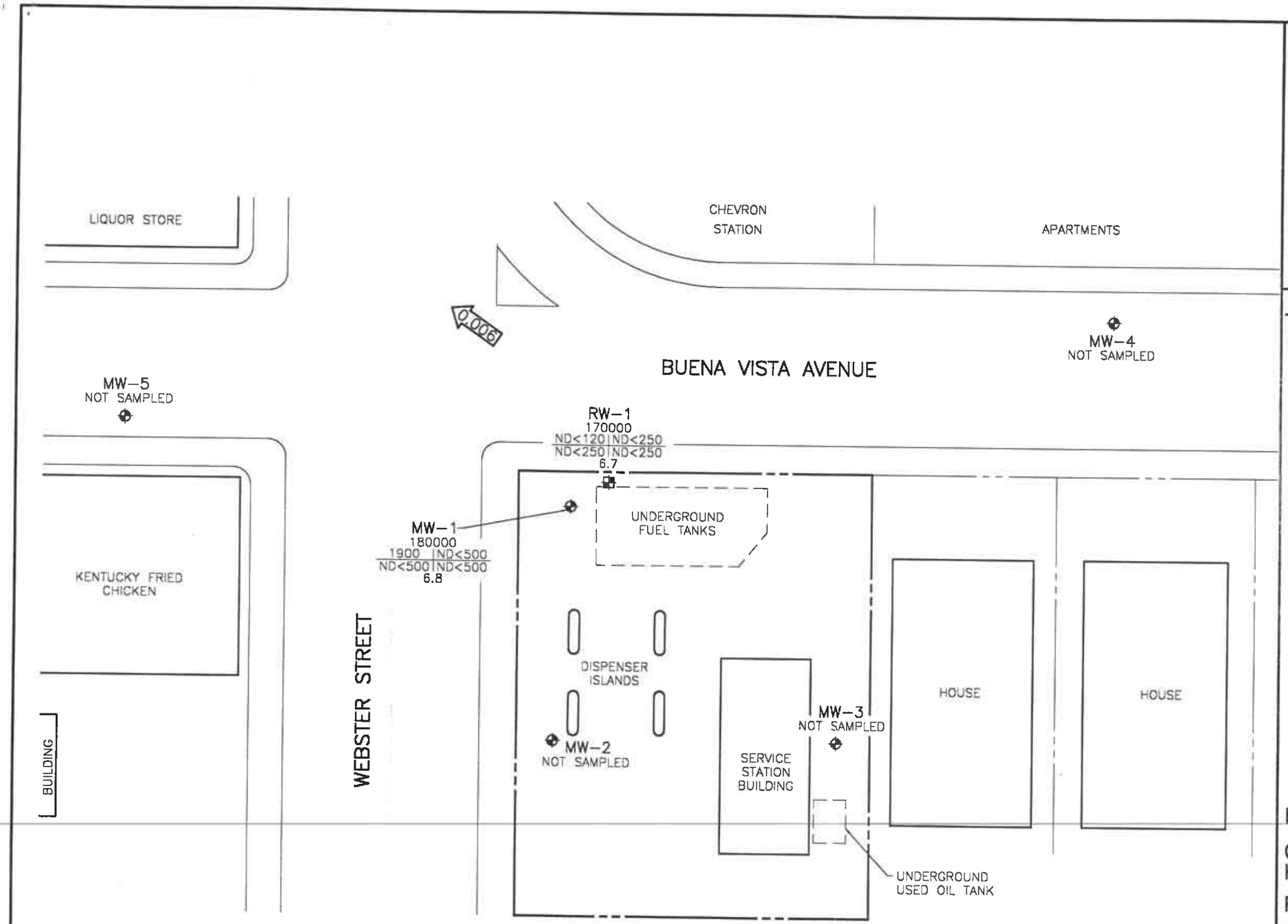
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

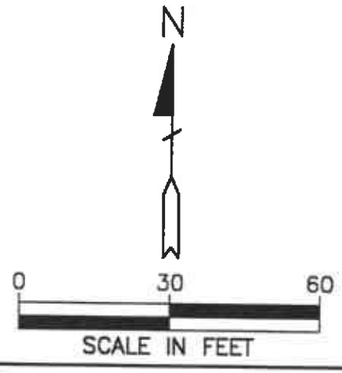
FEBRUARY 10, 1997

BP OIL SERVICE STATION NO. 11104
1716 WEBSTER STREET
ALAMEDA, CALIFORNIA

PROJECT NO. 10–155

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA




## LEGEND

| | |
|---|---|
| ◆ | GROUNDWATER MONITORING WELL |
| ◆ | GROUNDWATER RECOVERY WELL |
| TPH-G / B \| T / E \| X / 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 |
| DO | DISSOLVED OXYGEN |
| ND | NOT DETECTED ABOVE REPORTED DETECTION LIMIT |
| 0.006 | CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT |

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

FEBRUARY 10, 1997

BP OIL SERVICE STATION NO. 11104
1716 WEBSTER STREET
ALAMEDA, CALIFORNIA

PROJECT NO. 10-155

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10155C-ILDWG 3-7-97 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. 10-155-06-003 Date: 2/10/97
Address 1716 Webster St. Day: (M) T W TH F
Contract No. G797392 City: Alameda
Station No. BP 11104 Sampler: LB

### DEPTH TO GROUNDWATER SUMMARY

| WELL ID | SAMPLE ID | WELL DIAM | TOTAL DEPTH | DEPTH TO WATER | PRODUCT THICKNESS | TIME MONITORED | COMMENTS: |
|---|---|---|---|---|---|---|---|
| MW-1 | S-2 | 2" | 16.88 | 4.80 | Ø | 1117 | S-Feb/Aug S-2 QC-1 |
| MW-2 | NS | " | | 5.26 | " | 1107 | A-August |
| MW-3 | " | " | | 5.14 | " | 1110 | A-August |
| MW-4 | " | " | | 4.81 | " | 1113 | A-August |
| MW-5 | " | " | | 4.66 | " | 1115 | A-August |
| RW-1 | S-1 | 6" | 21.61 | 3.85 | " | 1120 | S-Feb/Aug S-1 |

### FIELD INSTRUMENT CALIBRATION DATA

pH METER Ion 4.00 4 7.00 7 10.00 10 TEMPERATURE COMPENSATED Y N TIME 1130 WEATHER Clear
D.O. METER Ion ZERO d.O. SOLUTION — BAROMETRIC PRESSURE 760 TEMP 57
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-1 | 4.80 | 2" | Ø | Ø | Y (N) | 2 | 1145 | 66.2 | 7.22 | 677 µs | 6.2 |
| | | | | | | 4 | | 66.8 | 7.14 | 658 µs | |
| | | | | | | 6 | 1200 | 67.3 | 7.11 | 647 µs | 6.8 |

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
16.88 - 4.80 = 12.08 x .16 = 1.93 x 3 = 5.79
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Baller(s)___ OSys Port
Comments:

O EPA 601_____
X TPH-G/BTEX HCl
O TPH Diesel____
O TOG 5520 ___
TIME/SAMPLE ID
1206

| Well ID | Depth to Wate | Diam | Cap/Lock | Product Dept | Iridescence | Gal. | Time | Temp *F | pH | E.C. | D.O. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RW-1 | 3.85 | 6" | OK | Ø | Y (N) | 29 | 1229 | 66.7 | 7.41 | 362 µs | 6.4 |
| | | | | | | 58 | | 67.3 | 7.31 | 340 µs | |
| | | | | | | 79 | 1255 | 67.9 | 7.24 | 336 µs | 6.7 |

Total Depth - Water Level= x Well Vol. Factor= x#vol. to Purge PurgeVol.
21.61 - 3.85 = 17.76 x 1.47 = 26.11 x 3 = 78.33
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Baller(s)___ OSys Port
Comments:

O EPA 601_____
X TPH-G/BTEX HCl
O TPH Diesel____
O TOG 5520 ___
TIME/SAMPLE ID
1307

# APPENDIX B

# LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

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

February 22, 1997

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

The following report contains analytical results for samples received at Southern Petroleum Laboratories (SPL) on February 12, 1997. The samples were assigned to Certificate of Analysis No. 9702480 and analyzed for all parameters as listed on the chain of custody.

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

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

Ed Fry
Project Manager

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

**SOUTHERN PETROLEUM LABORATORIES, INC.**

**Certificate of Analysis Number: 97-02-480**

Approved for Release by:

Ed Fry, Project Manager

Date: 2/12/97

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. H9-9702480-01

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

P.O.# G797392 , COC#055975
DATE: 02/22/97

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

**PROJECT NO:** 10-155-6-3
**MATRIX:** WATER
**DATE SAMPLED:** 02/10/97
**DATE RECEIVED:** 02/12/97

## ANALYTICAL DATA

| PARAMETER | RESULTS | DETECTION LIMIT | UNITS |
|---|---|---|---|
| MTBE | 150000 | 5000 P | µg/L |
| Benzene | ND | 120 P | µg/L |
| Toluene | ND | 250 P | µg/L |
| Ethylbenzene | ND | 250 P | µg/L |
| Total Xylene | ND | 250 P | µg/L |
| **Surrogate** | **% Recovery** | | |
| 1,4-Difluorobenzene | 107 | | |
| 4-Bromofluorobenzene | 87 | | |
| Method 8020A*** | | | |
| Analyzed by: YN | | | |
| Date: 02/15/97 | | | |
| Total Petroleum Hydrocarbons-Gasoline | 170 | 12 P | mg/L |
| **Surrogate** | **% Recovery** | | |
| 1,4-Difluorobenzene | 87 | | |
| 4-Bromofluorobenzene | 101 | | |
| California LUFT Manual | | | |
| Analyzed by: fab | | | |
| Date: 02/17/97 09:44:00 | | | |

(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. H9-9702480-02

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

P.O.# G797392 , COC#055975
DATE: 02/22/97

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

**PROJECT NO:** 10-155-6-3
**MATRIX:** WATER
**DATE SAMPLED:** 02/10/97
**DATE RECEIVED:** 02/12/97

## ANALYTICAL DATA

| PARAMETER | RESULTS | DETECTION LIMIT | UNITS |
|---|---|---|---|
| MTBE | 160000 | 5000 P | µg/L |
| Benzene | 1900 | 250 P | µg/L |
| Toluene | ND | 500 P | µg/L |
| Ethylbenzene | ND | 500 P | µg/L |
| Total Xylene | ND | 500 P | µg/L |
| **Surrogate** | **% Recovery** | | |
| 1,4-Difluorobenzene | 127 | | |
| 4-Bromofluorobenzene | 87 | | |
| Method 8020A*** | | | |
| Analyzed by: YN | | | |
| Date: 02/15/97 | | | |
| Total Petroleum Hydrocarbons-Gasoline | 180 | 25 P | mg/L |
| **Surrogate** | **% Recovery** | | |
| 1,4-Difluorobenzene | 87 | | |
| 4-Bromofluorobenzene | 93 | | |
| California LUFT Manual | | | |
| Analyzed by: LJ | | | |
| Date: 02/20/97 09:29:00 | | | |

(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. H9-9702480-03

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

P.O.# G797392 , COC#055975
DATE: 02/22/97

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

**PROJECT NO:** 10-155-6-3
**MATRIX:** WATER
**DATE SAMPLED:** 02/10/97
**DATE RECEIVED:** 02/12/97

## ANALYTICAL DATA

| PARAMETER | RESULTS | DETECTION LIMIT | UNITS |
|---|---|---|---|
| MTBE | 160000 | 5000 P | µg/L |
| Benzene | 2100 | 250 P | µg/L |
| Toluene | ND | 500 P | µg/L |
| Ethylbenzene | ND | 500 P | µg/L |
| Total Xylene | ND | 500 P | µg/L |
| **Surrogate** | **% Recovery** | | |
| 1,4-Difluorobenzene | 127 | | |
| 4-Bromofluorobenzene | 87 | | |
| Method 8020A*** | | | |
| Analyzed by: YN | | | |
| Date: 02/15/97 | | | |
| Total Petroleum Hydrocarbons-Gasoline | 180 | 25 P | mg/L |
| **Surrogate** | **% Recovery** | | |
| 1,4-Difluorobenzene | 87 | | |
| 4-Bromofluorobenzene | 93 | | |
| California LUFT Manual | | | |
| Analyzed by: LJ | | | |
| Date: 02/20/97 09:58:00 | | | |

(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

**Method 8020A ***** **BATCH#:**HP_N970217123800
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 26 | 87 | 74- 131 |
| 4-Bromofluorobenzene | 30 | 28 | 93 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_N970217123800
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702529-01A

| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 1,4-DIFLUOROBENZENE | 30 | 28 | 93 | 70- 131 |
| 4-BROMOFLUOROBENZENE | 30 | 25 | 83 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_N970217123800
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702529-01A

| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 27 | 90 | 70- 131 |
| 4-Bromofluorobenzene | 30 | 28 | 93 | 43- 135 |

**California LUFT Manual** **BATCH#:**HP_N970217130600
**WORK ORDER:** 9702480-01A **CLIENT SAMPLE ID:**S-1

| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 26.0000 | 87 | 50- 150 |
| 4-Bromofluorobenzene | 30 | 30.4000 | 101 | 50- 150 |

**California LUFT Manual** **BATCH#:**HP_N970217130600
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 28 | | 50- 150 |
| 4-Bromofluorobenzene | 30 | 29 | | 50- 150 |

**California LUFT Manual** **BATCH#:**HP_N970217130600
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702529-02A

| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 34 | 113 | 50- 150 |
| 4-Bromofluorobenzene | 30 | 29 | 97 | 50- 150 |

**California LUFT Manual** **BATCH#:**HP_N970217130600
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702529-02A

| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 35 | 117 | 50- 150 |
| 4-Bromofluorobenzene | 30 | 29 | 97 | 50- 150 |

**Method 8020A ***** **BATCH#:**HP_N970219092600
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 26 | 26.1 | 74- 131 |

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| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 26 | 26.0 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_N970219092600
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702646-01A

| | | | | |
|---|---|---|---|---|
| 1,4-DIFLUOROBENZENE | 30 | 27 | 90 | 70- 131 |
| 4-BROMOFLUOROBENZENE | 30 | 25 | 83 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_N970219092600
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702646-01A

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

**Modified 8015A - Gasoline***** **BATCH#:**HP_N970219105300
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 31 | 30.6 | 52- 152 |
| 1,4-Difluorobenzene | 30 | 27 | 27.0 | 54- 137 |

**Modified 8015A - Gasoline***** **BATCH#:**HP_N970219105300
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702646-07A

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 27 | 90 | 52- 152 |
| 1,4-Difluorobenzene | 30 | 31 | 103 | 54- 137 |

**Modified 8015A - Gasoline***** **BATCH#:**HP_N970219105300
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702646-07A

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 28 | 93 | 52- 152 |
| 1,4-Difluorobenzene | 30 | 30 | 100 | 54- 137 |

**Method 8020A ***** **BATCH#:**HP_N970220092400
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 26 | 87 | 74- 131 |
| 4-Bromofluorobenzene | 30 | 26 | 87 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_N970220092400
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702561-01A

| | | | | |
|---|---|---|---|---|
| 1,4-DIFLUOROBENZENE | 30 | 27 | 90 | 70- 131 |
| 4-BROMOFLUOROBENZENE | 30 | 25 | 83 | 43- 135 |

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| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|

**Method 8020A ***** **BATCH#:**HP_N970220092400
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702561-01A

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

**California LUFT Manual** **BATCH#:**HP_N970220103500
**WORK ORDER:** 9702480-02A **CLIENT SAMPLE ID:**S-2

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 26.0000 | 87 | 50- 150 |
| 4-Bromofluorobenzene | 30 | 28.0000 | 93 | 50- 150 |

**California LUFT Manual** **BATCH#:**HP_N970220103500
**WORK ORDER:** 9702480-03A **CLIENT SAMPLE ID:**S-3

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 26.0000 | 87 | 50- 150 |
| 4-Bromofluorobenzene | 30 | 28.0000 | 93 | 50- 150 |

**California LUFT Manual** **BATCH#:**HP_N970220103500
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 27 | 90 | 50- 150 |
| 4-Bromofluorobenzene | 30 | 27 | 90 | 50- 150 |

**California LUFT Manual** **BATCH#:**HP_N970220103500
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702758-01A

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 32 | 107 | 50- 150 |
| 4-Bromofluorobenzene | 30 | 28 | 93 | 50- 150 |

**California LUFT Manual** **BATCH#:**HP_N970220103500
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702758-01A

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 32 | 107 | 50- 150 |
| 4-Bromofluorobenzene | 30 | 28 | 93 | 50- 150 |

**Method 8020A ***** **BATCH#:**HP_O970213011300
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 29 | 29.4 | 74- 131 |
| 4-Bromofluorobenzene | 30 | 25 | 25.1 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_O970213011300
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702466-06A

| | | | | |
|---|---|---|---|---|
| 1,4-DIFLUOROBENZENE | 30 | 30 | 100 | 70- 131 |

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| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 4-BROMOFLUOROBENZENE | 30 | 27 | 90 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_O970213011300
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702466-06A

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 30 | 100 | 70- 131 |
| 4-Bromofluorobenzene | 30 | 27 | 90 | 43- 135 |

**State of Tennessee Method for Gasoline** **BATCH#:**HP_O970213103900
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702466-07A

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 26 | 87 | 50- 119 |
| 1,4-Difluorobenzene | 30 | 31 | 103 | 63- 136 |

**State of Tennessee Method for Gasoline** **BATCH#:**HP_O970213103900
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702466-07A

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 28 | 93 | 50- 119 |
| 1,4-Difluorobenzene | 30 | 32 | 107 | 63- 136 |

**Method 8020A***** **BATCH#:**HP_O970214113000
**WORK ORDER:** 9702480-01A **CLIENT SAMPLE ID:**S-1

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 36.0000 | 120 | 70- 131 |
| 4-Bromofluorobenzene | 30 | 25.6000 | 85 | 43- 135 |

**Method 8020A***** **BATCH#:**HP_O970214113000
**WORK ORDER:** 9702480-02A **CLIENT SAMPLE ID:**S-2

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 38.0000 | 127 | 70- 131 |
| 4-Bromofluorobenzene | 30 | 26.0000 | 87 | 43- 135 |

**Method 8020A***** **BATCH#:**HP_O970214113000
**WORK ORDER:** 9702480-03A **CLIENT SAMPLE ID:**S-3

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 38.0000 | 127 | 70- 131 |
| 4-Bromofluorobenzene | 30 | 26.0000 | 87 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_O970214113000
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 29 | 29.2 | 74- 131 |
| 4-Bromofluorobenzene | 30 | 26 | 25.6 | 43- 135 |

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| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|

**Method 8020A ***** **BATCH#:**HP_O970214113000
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702256-01A

| | | | | |
|---|---|---|---|---|
| 1,4-DIFLUOROBENZENE | 30 | 31 | 103 | 70- 131 |
| 4-BROMOFLUOROBENZENE | 30 | 27 | 90 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_O970214113000
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702256-01A

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 31 | 103 | 70- 131 |
| 4-Bromofluorobenzene | 30 | 27 | 90 | 43- 135 |

**State of Tennessee Method for Gasoline** **BATCH#:**HP_O970214124300
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 25 | 25.0 | 50- 150 |
| 1,4-Difluorobenzene | 30 | 28 | 28.1 | 50- 150 |

**State of Tennessee Method for Gasoline** **BATCH#:**HP_O970214124300
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702256-02A

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 28 | 93 | 50- 119 |
| 1,4-Difluorobenzene | 30 | 32 | 107 | 63- 136 |

**State of Tennessee Method for Gasoline** **BATCH#:**HP_O970214124300
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702256-02A

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 28 | 93 | 50- 119 |
| 1,4-Difluorobenzene | 30 | 31 | 103 | 63- 136 |

**Method 8020A***** **BATCH#:**HP_O970215195600
**WORK ORDER:** 9702480-01A **CLIENT SAMPLE ID:**S-1

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 32.0000 | 107 | 70- 131 |
| 4-Bromofluorobenzene | 30 | 26.0000 | 87 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_O970215195600
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 29 | 29.4 | 74- 131 |
| 4-Bromofluorobenzene | 30 | 25 | 25.5 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_O970215195600
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702522-04A

| | | | | |
|---|---|---|---|---|
| 1,4-DIFLUOROBENZENE | 30 | 30 | 100 | 70- 131 |

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| | AMOUNT ADDED | CONC. MEASURED | RECOVERY | LIMITS |
|---|---|---|---|---|
| 4-BROMOFLUOROBENZENE | 30 | 27 | 90 | 43- 135 |

**Method 8020A ***** **BATCH#:**HP_O970215195600
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702522-04A

| | | | | |
|---|---|---|---|---|
| 1,4-Difluorobenzene | 30 | 30 | 100 | 70- 131 |
| 4-Bromofluorobenzene | 30 | 27 | 90 | 43- 135 |

**State of Tennessee Method for Gasoline** **BATCH#:**HP_O970215202200
**WORK ORDER:** Method Blank **CLIENT SAMPLE ID:**

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 35 | 35.0 | 50- 150 |
| 1,4-Difluorobenzene | 30 | 29 | 28.7 | 50- 150 |

**State of Tennessee Method for Gasoline** **BATCH#:**HP_O970215202200
**WORK ORDER:** Matrix Spike **CLIENT SAMPLE ID:**9702522-06A

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 28 | 93 | 50- 119 |
| 1,4-Difluorobenzene | 30 | 31 | 103 | 63- 136 |

**State of Tennessee Method for Gasoline** **BATCH#:**HP_O970215202200
**WORK ORDER:** Matrix Spike Dup. **CLIENT SAMPLE ID:**9702522-06A

| | | | | |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 30 | 28 | 93 | 50- 119 |
| 1,4-Difluorobenzene | 30 | 31 | 103 | 63- 136 |

**« = Recovery outside of control limits**
*** = Methods for Chemical Analysis of Water & Wastes,1983,EPA**
**** = Standard Methods for Examination of Water & Wastewater,17th**
***** = Test Methods for Evaluating Solid Waste,EPA SW846,3rd**

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

Matrix: Aqueous
Units: µg/L

Batch Id: HP_0970215195600

## 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 | 39 | 78.0 | 63 - 120 |
| Benzene | ND | 50 | 50 | 100 | 62 - 121 |
| Toluene | ND | 50 | 52 | 104 | 66 - 136 |
| EthylBenzene | ND | 50 | 51 | 102 | 70 - 136 |
| O Xylene | ND | 50 | 52 | 104 | 74 - 134 |
| M & P Xylene | ND | 100 | 110 | 110 | 77 - 140 |

## MATRIX SPIKES

| SPIKE COMPOUNDS | Sample Results <2> | Spike Added <3> | Matrix Spike Result <1> | Matrix Spike Recovery <4> | Matrix Spike Duplicate Result <1> | Matrix Spike Duplicate Recovery <5> | MS/MSD Relative % Difference | QC Limits(***) (Advisory) RPD Max. | QC Limits(***) (Advisory) Recovery Range |
|---|---|---|---|---|---|---|---|---|---|
| MTBE | ND | 20 | 17 | 85.0 | 21 | 105 | 21.1 * | 20 | 39 - 150 |
| BENZENE | ND | 20 | 19 | 95.0 | 18 | 90.0 | 5.41 | 25 | 39 - 150 |
| TOLUENE | ND | 20 | 19 | 95.0 | 18 | 90.0 | 5.41 | 26 | 56 - 134 |
| ETHYLBENZENE | ND | 20 | 19 | 95.0 | 18 | 90.0 | 5.41 | 38 | 61 - 128 |
| O XYLENE | ND | 20 | 19 | 95.0 | 18 | 90.0 | 5.41 | 29 | 40 - 130 |
| M & P XYLENE | ND | 40 | 40 | 100 | 38 | 95.0 | 5.13 | 20 | 43 - 152 |

Analyst: YN
Sequence Date: 02/15/97
SPL ID of sample spiked: 9702522-04A
Sample File ID: OOB7567.TX0
Method Blank File ID:
Blank Spike File ID: OOB7557.TX0
Matrix Spike File ID: OOB7559.TX0
Matrix Spike Duplicate File ID: OOB7560.TX0

* = Values Outside QC Range. « = Data outside Method Specification limits.
NC = Not Calculated (Sample exceeds spike by factor of 4 or more)
ND = Not Detected/Below Detection Limit
% Recovery = [( <1> - <2> ) / <3> ] x 100
LCS % Recovery = (<1> / <3> ) x 100
Relative Percent Difference = |(<4> - <5> | / [(<4> + <5> ) x 0.5] x 100
(**) = Source: SPL-Houston Historical Data (3rd Q '95)
(***) = Source: SPL-Houston Historical Data (2nd Q '95)

SAMPLES IN BATCH(SPL ID): 9702522-07A 9702480-01A 9702522-04A 9702522-06A 9702522-01A 9702522-02A 9702522-05A 9702522-03A 9702590-06A 9702575-04C 9702575-01C 9702590-01A 9702590-04A

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** SPL BATCH QUALITY CONTROL REPORT **

METHOD 8020/602

Matrix: Aqueous

Batch Id: HP_0970214113000

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 | 32 | 64.0 | 63 - 120 |
| Benzene | ND | 50 | 48 | 96.0 | 62 - 121 |
| Toluene | ND | 50 | 49 | 98.0 | 66 - 136 |
| EthylBenzene | ND | 50 | 49 | 98.0 | 70 - 136 |
| O Xylene | ND | 50 | 50 | 100 | 74 - 134 |
| M & P Xylene | ND | 100 | 110 | 110 | 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 | 18 | 64.5 | 21 | 79.5 | 20.8 * | 20 | 39 - 150 |
| BENZENE | ND | 20 | 16 | 80.0 | 20 | 100 | 22.2 | 25 | 39 - 150 |
| TOLUENE | ND | 20 | 17 | 85.0 | 20 | 100 | 16.2 | 26 | 56 - 134 |
| ETHYLBENZENE | ND | 20 | 16 | 80.0 | 19 | 95.0 | 17.1 | 38 | 61 - 128 |
| O XYLENE | ND | 20 | 17 | 85.0 | 20 | 100 | 16.2 | 29 | 40 - 130 |
| M & P XYLENE | ND | 40 | 32 | 80.0 | 41 | 102 | 24.2 * | 20 | 43 - 152 |

Analyst: YN

Sequence Date: 02/14/97

SPL ID of sample spiked: 9702256-01A

Sample File ID: 00B7530.TX0

Method Blank File ID:

Blank Spike File ID: 00B7521.TX0

Matrix Spike File ID: 00B7522.TX0

Matrix Spike Duplicate File ID: 00B7523.TX0

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

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

ND = Not Detected/Below Detection Limit

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

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

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

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

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

SAMPLES IN BATCH(SPL ID):

9702466-06A 9702466-07A 9702466-08A 9702256-01A
9702256-02A 9702466-09A 9702481-01A 9702480-03A
9702480-02A 9702480-01A 9702481-03A 9702256-03A
9702466-02A 9702466-03A 9702466-05A 9702481-02A
9702466-11A 9702466-10A 9702466-01A 9702466-04A

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** SPL BATCH QUALITY CONTROL REPORT **

CA LUFT

Matrix: Aqueous

Batch Id: HP_N970217130600

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 |
|---|---|---|---|---|---|
| Petroleum Hydrocarbons-Gas | ND | 1.00 | 0.94 | 94.0 | 50 - 150 |

## MATRIX SPIKES

| SPIKE COMPOUNDS | Sample Results <2> | Spike Added <3> | Matrix Spike Result <1> | Matrix Spike Recovery <4> | Matrix Spike Duplicate Result <1> | Matrix Spike Duplicate Recovery <5> | MS/MSD Relative % Difference | QC Limits(***) (Advisory) RPD Max. | QC Limits(***) (Advisory) Recovery Range |
|---|---|---|---|---|---|---|---|---|---|
| PETROLEUM HYDROCARBONS-GAS | ND | 0.90 | 0.77 | 85.6 | 0.77 | 85.6 | 0 | 50 | 50 - 150 |

Analyst: fab

Sequence Date: 02/17/97

SPL ID of sample spiked: 9702529-02A

Sample File ID: NNB7654.TX0

Method Blank File ID:

Blank Spike File ID: NNB7651.TX0

Matrix Spike File ID: NNB7662.TX0

Matrix Spike Duplicate File ID: NNB7663.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: Temporary Limits

(***) = Source: Temporary Limits

SAMPLES IN BATCH(SPL ID): 9702529-03A 9702529-04A 9702529-05A 9702529-06A 9702480-01A 9702529-01A 9702529-02A 9702531-10A

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** SPL BATCH QUALITY CONTROL REPORT **

CA LUFT

Matrix: Aqueous
Units: mg/L

Batch Id: HP_N970220103500

## LABORATORY CONTROL SAMPLE

| SPIKE COMPOUNDS | Method Blank Result <2> | Spike Added <3> | Blank Spike Result <1> | Blank Spike Recovery % | QC Limits(**) (Mandatory) % Recovery Range |
|---|---|---|---|---|---|
| Petroleum Hydrocarbons-Gas | ND | 1.00 | 0.9 | 90.0 | 50 - 150 |

## MATRIX SPIKES

| SPIKE COMPOUNDS | Sample Results <2> | Spike Added <3> | Matrix Spike Result <1> | Matrix Spike Recovery <4> | Matrix Spike Duplicate Result <1> | Matrix Spike Duplicate Recovery <5> | MS/MSD Relative % Difference | QC Limits(***) (Advisory) RPD Max. | QC Limits(***) (Advisory) Recovery Range |
|---|---|---|---|---|---|---|---|---|---|
| PETROLEUM HYDROCARBONS-GAS | 0.32 | 0.90 | 0.85 | 58.9 | 0.85 | 58.9 | 0 | 50 | 50 - 150 |

Analyst: LJ
Sequence Date: 02/20/97
SPL ID of sample spiked: 9702758-01A
Sample File ID: NNB7751.TX0
Method Blank File ID:
Blank Spike File ID: NNB7744.TX0
Matrix Spike File ID: NNB7747.TX0
Matrix Spike Duplicate File ID: NNB7748.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: Temporary Limits
(***) = Source: Temporary Limits

SAMPLES IN BATCH(SPL ID): 9702531-09A 9702531-11A 9702480-02A 9702480-03A
9702634-01A 9702634-05A 9702634-06A 9702634-07A

*CHAIN OF CUSTODY*

*AND*

*SAMPLE RECEIPT CHECKLIST*

9702480

# CHAIN OF CUSTODY

No. 055975 Page 1 of 1

| CONSULTANT'S NAME | ADDRESS | CITY | STATE | ZIP CODE |
|---|---|---|---|---|
| [illegible] | 1575 Treat Blvd #201 | W.C. | Ca | 94598 |

| BP SITE NUMBER | BP CORNER ADDRESS/CITY | CONSULTANT PROJECT NUMBER |
|---|---|---|
| 11104 | Alameda | 10-155-6-3 |

| CONSULTANT PROJECT MANAGER | PHONE NUMBER | FAX NUMBER | CONSULTANT CONTRACT NUMBER |
|---|---|---|---|
| Brady Nagle | (510) 295-1650 | 295-1823 | 6797392 |

| BP CONTACT | BP ADDRESS | PHONE NUMBER | FAX NO. |
|---|---|---|---|
| Scott Hooten | Houston, TX | | |

| LAB CONTACT | LABORATORY ADDRESS | PHONE NUMBER | FAX NO. |
|---|---|---|---|
| SPL | Texas | | |

| SAMPLED BY (Please Print Name) | SAMPLED BY (Signature) | SHIPMENT DATE | SHIPMENT METHOD |
|---|---|---|---|
| Larry Brownell | [signature] | 2-11-97 | FedEx |

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

AIRBILL NUMBER: 3824 69870

ANALYSIS REQUIRED

| SAMPLE DESCRIPTION | COLLECTION DATE / COLLECTION TIME | MATRIX SOIL/WATER | CONTAINERS NO. | CONTAINERS TYPE (VOL.) | PRESERVATIVE LAB SAMPLE # | TPH-D | BTEX | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| S-1 | 2/10/97 | W | 3 | HCl | | X | X | |
| S-2 | ↓ | ↓ | ↓ | ↓ | | ↓ | ↓ | |
| S-3 | ↓ | ↓ | ↓ | ↓ | | ↓ | ↓ | |

| RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME |
|---|---|---|---|---|---|
| [signature] | 2/11/97 | | [signature] | 2-1-97 | 3:30 |
| [signature] Hooten | 2/11/97 | 7:21 | S. West | 2/12/97 | 1000 |

ADDITIONAL COMMENTS: 3°C

CLV-16722

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

# SPL Houston Environmental Laboratory

## Sample Login Checklist

| Date: | Time: |
|---|---|
| 2/12/97 | 1000 |

| SPL Sample ID: |
|---|
| 9702480 |

| | | | 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 #) | 384846970 | |
| | | Other: | | |
| 11 | Method of sample disposal: | SPL Disposal | ✓ | |
| | | HOLD | | |
| | | Return to Client | | |

| Name: | Date: |
|---|---|
| S. West | 2/12/97 |

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

BP Site Number: 11104
ERM Contact: G797392
Sampling Date: 2/10/97
Matrix Description:
Date Final Report Received: 3/3/97
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 timeframe? | X | | |
| 3. | Does report agree with the COC? | X | | |
| 4. | Are units consistent with the given matrix? | X | | |
| 5. | Were any target analytes/compounds detected in blanks (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? | X | | |
| 9. | Are MS/MSD acceptable using laboratory criteria? | X | | |
| 10. | Are LCS results acceptable using laboratory criteria? | | X | |

Notes: MTBE + M+P Xylene values were outside QC Ranges for Matrix Spikes.

Data Validation Completed by: Dale Swain

(signature): Dale Swain

Date: 3-20-97