BP OIL

BP Oil Company
16400 Southcenter Parkway, Suite 301
Tukwila, Washington 98188
(206) 575-4077

December 16, 1993



Mr. Eddy So
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street., Ste. 500
Oakland, CA 94612

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

Dear Mr. So:

Attached please find our **GROUNDWATER MONITORING AND SAMPLING REPORT DATED NOVEMBER 16,1993** for the above referenced facility.

Please call me at (206) 394-5243 with questions regarding this submission.

Respectfully,

Scott T. Hooton
Environmental Resources Management

STH:sc ERM11105

cc: Ms. Juliette Shin, Alameda County Health Care Services Agency, 80 Swan Way, Room 200, Oakland, Ca 94621

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

Site file

ALCO
HAZMAT
94 JAN 20 PM 1:36

Chevron

Chevron

**Chevron U.S.A. Products Company**
2410 Camino Ramon
San Ramon, CA 94583
P.O. Box 5004
San Ramon, CA 94583-0804

**Marketing Department**
Phone 510 842 9500

January 19, 1994

Mr. Scott Seery
Alameda County Environmental Health Department
80 Swan Way, Room 200
Oakland, CA 94621

Re : Former Chevron Service Station No. 9-4930
3369 Castro Valley Blvd., Castro Valley, CA 94546

Dear Mr. Seery :

At the request of Chevron, RESNA drilled four borings, and converted the four borings into 2 inch groundwater monitoring wells. During the drilling of these borings, soil samples were collected and analyzed for dissolved hydrocarbons. Six soil samples were collected, and two of the six samples detected petroleum hydrocarbons. After the borings were converted into monitoring wells, one groundwater sample was collected from each well and analyzed for dissolved hydrocarbons. All monitoring wells with the exception of MW-3 detected dissolved gasoline. Well MW-3 detected a compound that does not match the typical gasoline pattern. **Chevron Research & Technology Company will be reviewing and analyzing MW-3's chromatograms.**

Chevron has done an extensive amount of source removal (approximately 7500 cu. yds.). The soil underneath the site is predominately silty clay or clay based on boring logs and observations that were made during the excavation. It also appears that groundwater contamination has not moved off-site in the down-gradient direction. From RESNA's Water Well Inventory search, there are no known domestic or irrigation wells down-gradient of the site. From RESNA's off-site source investigation, there are other potential sources in the area. Based on the above information, Chevron will implement Alternate Points of Compliance (APC) unless there is an objection. Chevron will select a consultant to monitor and sample the wells on a quarterly basis as part of APC. Chevron will report the analytical results to Alameda County Environmental Health and the property owners. If a remediation system is required, Chevron will work with the property owners in allocating the necessary space for one.

Please refer to the enclosed report from RESNA dated December 13, 1993 for additional information. Also refer to two additional reports, one from RESNA dated December 16, 1992 on the initial investigation and the other from Touchstone Development dated June 5, 1993 on the excavation. If you have any questions or comments, please feel free to call me at (510) 842-8752.

Sincerely,

Chevron U.S.A. Products Co.

Kenneth Kan
Engineer

LKAN/MacFile 9-4930R6

Enclosure

cc: Mr. Richard Hiett
RWQCB-S.F.Bay Region
2101 Webster Street, Suite 500
Oakland, CA 94612

Anna Counelis & Tula Gallanes
109 Casa Vieja Place
Orinda, CA 94563

Ms. Bette Owen
Chevron U.S.A. Products Co.

Mr. Bill Howell
Page 11

FOOTNOTES
for pages 9 through 10

October 05, 1993
PACE Project Number: 430924522

Client Reference: BP Station # 11105

| | |
|---|---|
| MDL | Method Detection Limit |
| ND | Not detected at or above the MDL. |
| RPD | Relative Percent Difference |

11 Digital Drive
Novato, CA 94949
**TEL: 415-883-6100**
FAX: 415-883-2673

pace INCORPORATED
THE ASSURANCE OF QUALITY

# B.P. OIL COMPANY

**16400 Southcenter Parkway, Suite 301, Tukwila, WA 98188**

## CHAIN OF CUSTODY

№ 0344

430924.522

☒ Novato, CA, 11 Digital Drive, 94949
Phone: (415) 883-6100 Fax: (415) 883-2673

☐ Huntington Beach, CA, 5702 Bolsa Avenue, 92649
Phone: (714) 892-2565 Fax: (714) 890-4032

| | | |
|---|---|---|
| Consultant's Name: Alisto Engineering | Consultant Project #: 10-138-01/003 | Page 1 of 1 |
| Address: 1777 Oakland Blvd #200, Walnut Creek | | |
| Project Contact: Bill Howell | Phone #: (510) 295-1650 Fax #: 295-1823 | Alisto ~~Consultant~~ Work Order #: F949131 |
| Sampled by (print): Larry Buenvenida | Sampler's Signature: Larry Buenvenida | B.P. Site Location #: 11105 |
| Shipment Method: Courier / Airbill #: | Shipment Date: | B.P. Site Location: Castro Valley |

TAT: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☒ Standard (10 day)

Sample Condition as Received
Temperature ° C: _____
Cooler #: _____
Inbound Seal Yes No
Outbound Seal Yes No

| Sample Description | Collection Date/Time | Matrix Soil/Water | Prsv | # of Cont | PACE Sample # | TPH/GAS/BTEX EPA 8015/8020 | TPH/Diesel EPA 8015 | TRPH EPA 418.1 | HVOC 8010 | | | | | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QC-2 | 9/23/93 | W | HCl | 2 | 16072.3 | X | | | | | | | | | | | |
| ESE-1 | | | | 3 | 16073.1 | | | | | | | | | | | | |
| ESE-2 | | | | | 16074.0 | | | | | | | | | | | | |
| ESE-3 | | | | | 16075.8 | | | | | | | | | | | | |
| ESE-4 | | | | | 16076.6 | | | | | | | | | | | | |
| ESE-5 | | | | | 16077.4 | | | | | | | | | | | | |
| QC-1 | ↓ | ↓ | ↓ | ↓ | 16078.2 | ↓ | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

| Relinquished by/Affiliation | Date | Time | Accepted by/Affiliation | Date | Time |
|---|---|---|---|---|---|
| Larry Buenvenida | 9/24/93 | 1730 | Elizabeth Pace | 9/24 | 1730 |
| Elizabeth Pace | 9/24 | 1915 | J. Glenn Pace | 9/24 | 1915 |
| | | | | | |

Additional Comments:

15/3

Distribution: White - Original Yellow - B.P. Oil Pink - Lab Goldenrod - Consultant Field Staff

**BP OIL**

BP Oil Company
16400 Southcenter Parkway, Suite 301
Tukwila, Washington 98188
(206) 575-4077

ALCO HAZMAT
94 JAN 24 PM 2:21

January 7, 1994

XTRA Oil Company
Attention Mr. Ted Simas
2307 Pacific Avenue
Alameda, CA 94501

RE: Shell Service Station
3495 Castro Valley Boulevard
Castro Valley, CA

Dear Mr. Simas:

BP has been performing assessment and monitoring activities at its service station facility located at 3515 Castro Valley Boulevard. This facility is located to the east of the above-captioned location, across Redwood Road. The assessment activity was performed during late 1992 in order to obtain baseline soil and groundwater chemical data for a potential property transaction. Data from BP's assessment work indicates that a petroleum release from your facility has impacted our station.

Because of this development, BP may incur additional assessment and remediation costs associated with the release from your facility. This letter is to put you on notice that BP intends to hold you responsible for any costs, expenses, or other damages BP may incur as a result from the release from your facility.

BP believes that it would be in our mutual best interests to coordinate our respective remediation and/or assessment activities in order to minimize the time and expense associated with this matter. I welcome your thoughts on this suggestion. Please feel free to give me a call at (206) 251-0667.

I look forward to a response at your earliest convenience.

Sincerely,

Scott T. Hooton
Environmental Resources Management

cc: site file 11105
C. Pinzone, Esq.
S. Seery Alameda County Health Care Services Agency

# GROUNDWATER MONITORING AND SAMPLING REPORT

BP Oil Company Service Station No. 11105
3515 Castro Valley Boulevard
Castro Valley, California

Project No. 10-138-01-003

Prepared for:

BP Oil Company
Environmental Resource Management
16400 Southcenter Parkway, Suite 301
Tukwila, Washington

Prepared by:

Alisto Engineering Group
1777 Oakland Boulevard, Suite 200
Walnut Creek, California

**November 16, 1993**

Bill Howell
Project Manager

Al Sevilla, P.E.
Principal

# GROUNDWATER MONITORING AND SAMPLING REPORT

**BP Oil Company Service Station No. 11105**
**3515 Castro Valley Boulevard**
**Castro Valley, California**

**Project No. 10-138-01-003**

**November 16, 1993**

## INTRODUCTION

This report presents the results and findings of the September 23, 1993 groundwater monitoring and sampling conducted by Alisto Engineering Group at BP Oil Company Service Station No. 11105, 3515 Castro Valley Boulevard, Castro Valley, California. A site vicinity map is shown in 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 the 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. 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, and electrical conductivity. Groundwater samples were collected for laboratory analysis by lowering a bottom-fill, disposable bailer to just below the water level in the well. The samples were transferred from the bailer into laboratory-supplied containers. The water sampling field survey forms are presented in Appendix A.

## SAMPLING AND ANALYTICAL RESULTS

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

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11105
3515 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

ALISTO PROJECT NO. 10-138

| WELL ID | DATE OF SAMPLING/ MONITORING | CASING ELEVATION (a) (Feet) | DEPTH TO WATER (Feet) | GROUNDWATER ELEVATION (b) (Feet) | TPH-G (ppb) | TPH-D (ppb) | B (ppb) | T (ppb) | E (ppb) | X (ppb) | TOG (ppb) | 1,2-DCA (ppb) | LAB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ESE-1 | 10/05/92 | 182.49 | 11.22 | 171.27 | 2100 | 96 | 370 | 150 | 17 | 110 | ND | 1.8 | --- |
| ESE-1D (c) | 10/05/92 | --- | --- | --- | 2300 | --- | 370 | 160 | 16 | 110 | --- | --- | --- |
| ESE-1 | 04/01/93 | 182.49 | 8.79 | 173.70 | 5900 | --- | 1500 | 410 | 110 | 390 | --- | --- | PACE |
| ESE-1 | 06/29/93 | 182.49 | 10.34 | 172.15 | 7600 | --- | 2900 | 390 | 130 | 460 | --- | --- | PACE |
| ESE-1 | 09/23/93 | 182.49 | 10.91 | 171.58 | 2000 | --- | 490 | 40 | 20 | 56 | --- | --- | PACE |
| QC-1 (c) | 09/23/93 | --- | --- | --- | 1500 | --- | 420 | 39 | 19 | 56 | --- | --- | PACE |
| ESE-2 | 10/05/92 | 181.95 | 11.68 | 170.27 | 300 | --- | 5.4 | 16 | 3.9 | 45 | --- | --- | --- |
| ESE-2 | 04/01/93 | 181.95 | 9.17 | 172.78 | 240 | --- | 27 | ND<0.5 | 17 | 2.6 | --- | --- | PACE |
| ESE-2 | 06/29/93 | 181.95 | 10.88 | 171.07 | 1700 | --- | 260 | 24 | 110 | 23 | --- | --- | PACE |
| QC-1 (c) | 06/29/93 | --- | --- | --- | 1300 | --- | 240 | 17 | 110 | 25 | --- | --- | PACE |
| ESE-2 | 09/23/93 | 181.95 | 11.56 | 170.39 | 240 | --- | 3.1 | 0.5 | 0.6 | 2.5 | --- | --- | PACE |
| ESE-3 | 10/05/92 | 182.00 | 10.58 | 171.42 | 430 | --- | 57 | 31 | 3.6 | 34 | --- | --- | --- |
| ESE-3 | 04/01/93 | 182.00 | 8.14 | 173.86 | 2400 | --- | 460 | 220 | 74 | 210 | --- | --- | PACE |
| ESE-3 | 06/29/93 | 182.00 | 9.72 | 172.28 | 280 | --- | 56 | 14 | 15 | 13 | --- | --- | PACE |
| ESE-3 | 09/23/93 | 182.00 | 10.46 | 171.54 | 72 | --- | 13 | 3.5 | 1.7 | 4.1 | --- | --- | PACE |
| ESE-4 | 10/05/92 | 182.47 | 10.33 | 172.14 | 98 | --- | 7.2 | 1.3 | 1.1 | 6.1 | --- | --- | --- |
| ESE-4 | 04/01/93 | 182.47 | 7.88 | 174.59 | 550 | --- | 93 | 20 | 23 | 33 | --- | --- | PACE |
| ESE-4 | 06/29/93 | 182.07 (d) | 8.33 | 173.74 | 150 | --- | 23 | 0.6 | 5.4 | 0.5 | --- | --- | PACE |
| ESE-4 | 09/23/93 | 182.07 | 10.05 | 172.02 | 110 | --- | 14 | 1.7 | 3.2 | 4.6 | --- | --- | PACE |
| ESE-5 | 10/05/92 | 184.09 | 9.22 | 174.87 | 1300 | --- | 200 | 3.8 | 1.2 | 18 | --- | --- | --- |
| ESE-5 | 04/01/93 | 184.09 | 7.02 | 177.07 | 13000 | --- | 2200 | 26 | 730 | 1000 | --- | --- | PACE |
| QC-1 (c) | 04/01/93 | --- | --- | --- | 13000 | --- | 2500 | 25 | 740 | 1100 | --- | --- | PACE |
| ESE-5 | 06/29/93 | 184.09 | 10.21 | 173.88 | 7600 | --- | 1500 | 9.3 | 170 | 100 | --- | --- | PACE |
| ESE-5 | 09/23/93 | 184.09 | 10.64 | 173.45 | 560 | --- | 19 | 1.2 | 0.9 | 1.8 | --- | --- | PACE |
| QC-2 (e) | 04/01/93 | --- | --- | --- | ND<50 | --- | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | PACE |
| QC-2 (e) | 06/29/93 | --- | --- | --- | ND<50 | --- | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | PACE |
| QC-2 (e) | 09/23/93 | --- | --- | --- | ND<50 | --- | ND<0.5 | ND<0.5 | ND<0.5 | ND<0.5 | --- | --- | PACE |

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 |
| 1,2-DCA | 1,2-dichloroethane |
| ppb | Parts per billion |
| ND | Not detected above reported detection limit |
| --- | Not measured/analyzed/available |
| PACE | Pace, Inc. |

NOTES:

(a) Top of casing elevations relative to an arbitrary datum with an elevation of 264 feet above mean sea level.

(b) Groundwater elevations in feet relative to mean sea level.

(c) Blind duplicate.

(d) Top of casing lowered by 0.07 foot after the 4/1/93 monitoring event.

(f) Travel blank.


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

N

0 1000' 2000'

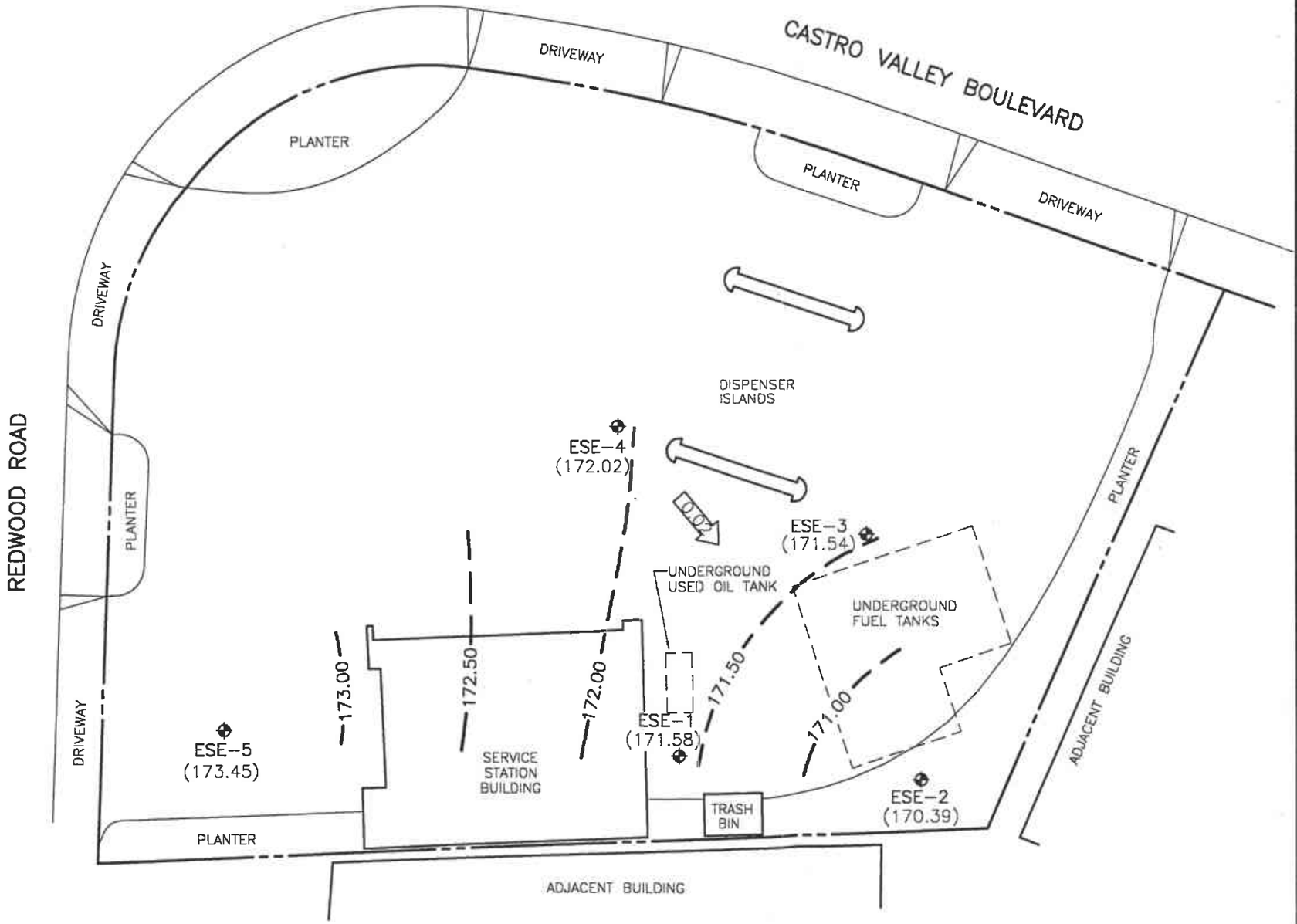
FIGURE 1

SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11105
3515 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

PROJECT NO. 10-138

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA




N

0 20 40

SCALE IN FEET

## LEGEND

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

FIGURE 2

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

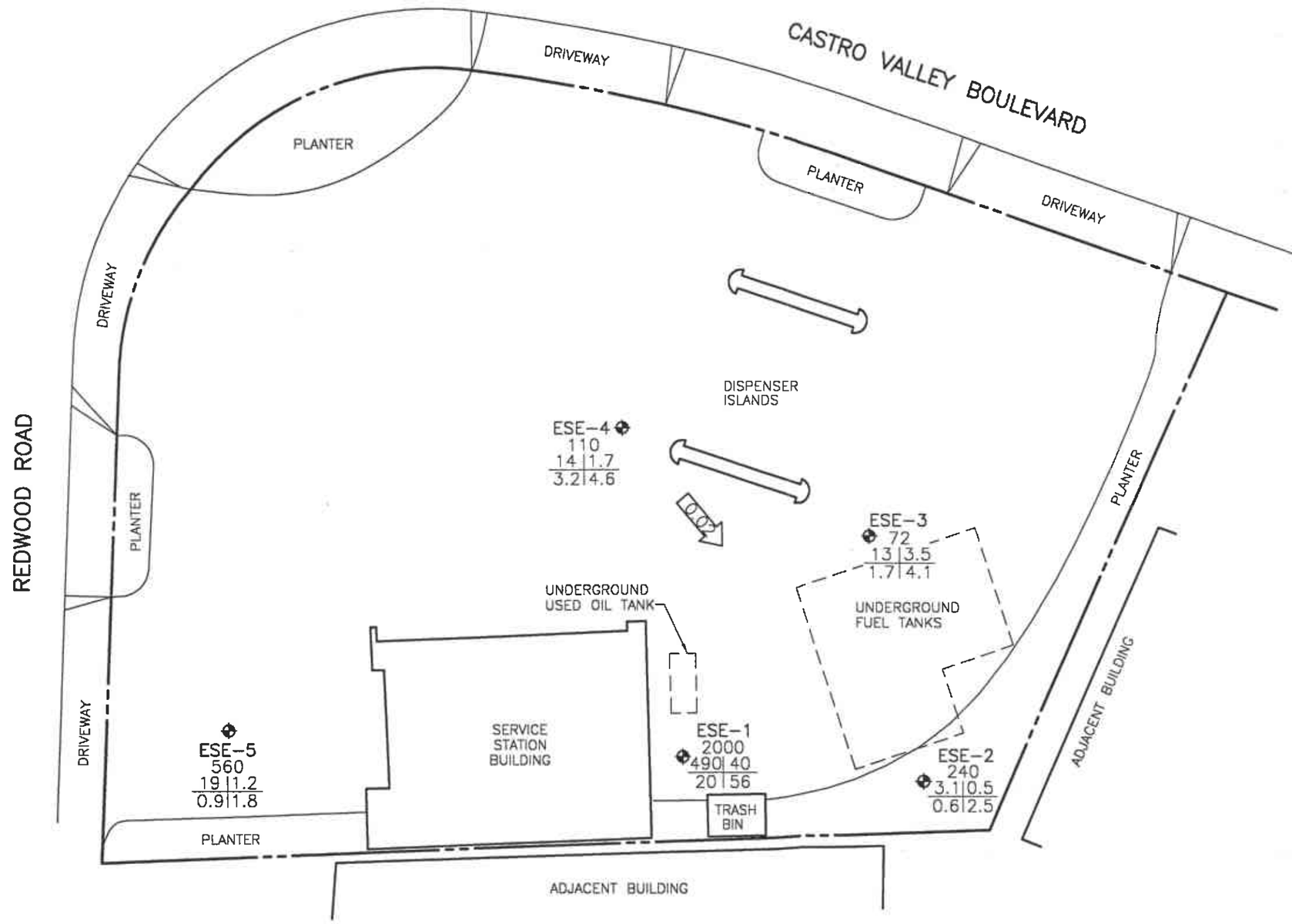
SEPTEMBER 23, 1993

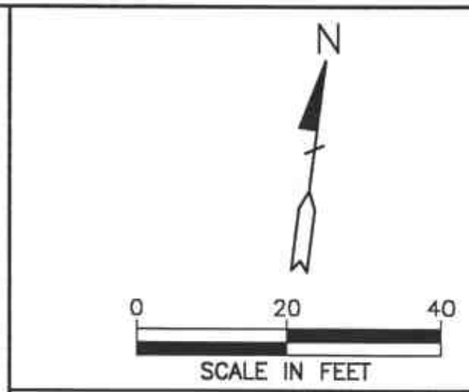
BP OIL SERVICE STATION NO. 11105
3515 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

PROJECT NO. 10–138

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10138DM2.DWG 11-11-93 RKW 1=20




## LEGEND

| | |
|---|---|
| ◆ | GROUNDWATER MONITORING WELL |
| TPH–G / B \| T / E \| X | CONCENTRATION OF CONSTITUENTS IN PARTS PER BILLION |
| TPH–G | TOTAL PETROLEUM HYDROCARBONS AS GASOLINE |
| B | BENZENE |
| T | TOLUENE |
| E | ETHYLBENZENE |
| X | TOTAL XYLENES |
| ND | NOT DETECTED ABOVE REPORTED DETECTION LIMIT |
| 0.02 | CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT |

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

SEPTEMBER 23, 1993

BP OIL SERVICE STATION NO. 11105
3515 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

PROJECT NO. 10–138

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10138EAG.DWG 11-10-93 RKW 1=20

# APPENDIX A

# WATER SAMPLING FIELD SURVEY FORMS

138-1-3

# ALISTO ENGINEERING GROUP
# GROUNDWATER MONITORING

Client: BP
Alisto Project No: 10-138
Service Station No: 11105

Date: 9/23/93
Field Personnel: LCB
Site Address: Castro Valley, CA

FIELD ACTIVITY:

___Groundwater Monitoring
_X_Groundwater Sampling
___Well Development

QUALITY CONTROL SAMPLES:

ESE-1 QC-1 Sample Duplicate (Well ID)
_X_ QC-2 Trip Blank
___ QC-3 Rinsate Blank

| Well ID | Well Diam | Order Measured/ Sampled | Total Depth | Depth to Water | Depth to Product | Product Thick-ness | Comments |
|---|---|---|---|---|---|---|---|
| ESE-1 | 2" | 5 | 30.00 | 10.91 | Ø | Ø | |
| ESE-2 | | 2 | 30.00 | 11.56 | | | |
| ESE-3 | | 3 | 30.00 | 10.46 | | | |
| ESE-4 | | 1 | 25.00 | 10.05 | | | |
| ESE-5 | ↓ | 4 | 24.00 | 10.64 | ↓ | ↓ | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Notes:

FORM: FS2/121592

# ALISTO ENGINEERING GROUP
## Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-138
Service Station No: 11105

Date: 9/23/93
Field Personnel: LCB
Address: Castro Valley

Well ID: ESE-1 Field Activity: ___Well Development X Well Sampling ___Product Bailing

**Casing Diameter:**
X 2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
___4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

**Purge Method:**
X Pump (dispos. Poly Tubing)
___Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

**Well Data:**
0 Depth to Product
0 Product Thickness
10.91 Depth to Water

**Sampling Method:**
X Disposable Bailer
___Pump

**Decontamination Method:**
X Triple Rinse (Liquinox)
___ Steam Cleaned

**Calculated Purge Volume**

| 30.00 | - | 10.91 | = | 19.09 ft | X | .16 Gal/Ft | = | 3.05 Gal | X | 3 | = | 9.15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Depth of Well | | Depth to Water | | Water Column | | Conversion Factor | | Casing Vol | | Vols to Purge | | Total Volume |

**Well Development/Sampling Parameters**

| Time | Temp °F | pH | Cond. (umhos/cm) | Purge Vol (Gal) | Comments/ Turbidity | | Analysis Required | Container Type | Preserv |
|---|---|---|---|---|---|---|---|---|---|
| 1338 | 75.4 | 7.55 | X1000 .44 | 2 | Lt. Brown | X | TPH-G/BTEX | VOA | HCL |
| 1341 | 73.7 | 7.49 | .41 | 4 | | | TPH-Diesel | Amber Liter | Solvent Rinsed |
| 1344 | 73.2 | 7.42 | .39 | 6 | | | EPA 601 | VOA | |
| 1347 | 72.9 | 7.37 | .37 | 8 | | | TOG 5520BF | Amber Liter | $H_2SO_4$ |
| 1350 | 72.6 | 7.33 | .37 | 9.25 | ↓ | | | | |

Begin 1335 Stop 1350 Sampled 1400

QC-1 taken from this well

FORM: FS3/121592

# ALISTO ENGINEERING GROUP
## Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-138
Service Station No: 1105

Date: 9/23/93
Field Personnel: LCB
Address: Castro Valley, Ca

Well ID: ESE-2 Field Activity: ___Well Development X Well Sampling ___Product Bailing

**Casing Diameter:**
- X 2 Inch (0.16 Gal/foot)
- ___3 Inch (0.37 Gal/foot)
- ___4 Inch (0.65 Gal/Foot)
- ___4.5 Inch (0.83 Gal/foot)
- ___6 Inch (1.47 Gal/foot)

**Purge Method:**
- X Pump (dispos. Poly Tubing)
- ___Disposable Bailers
- ___Other
- ___1.66 PVC Standard Bailer
- ___3.50 PVC Standard Bailer

**Well Data:**
- Ø Depth to Product
- Ø Product Thickness
- 11.56 Depth to Water

**Sampling Method:**
- X Disposable Bailer
- ____Pump

**Decontamination Method:**
- X Triple Rinse (Liquinox)
- ___ Steam Cleaned

**Calculated Purge Volume**

30.00 (Total Depth of Well) - 11.56 (Depth to Water) = 18.44 ft (Water Column) X .16 Gal/Ft (Conversion Factor) = 2.95 Gal (Casing Vol) X 3 (Vols to Purge) = 8.85 (Total Volume)

**Well Development/Sampling Parameters**

| Time | Temp °F | pH | Cond. (umhos/cm) | Purge Vol (Gal) | Comments/ Turbidity | Analysis Required | Container Type | Preserv |
|---|---|---|---|---|---|---|---|---|
| 1222 | 78.6 | 7.81 | .44 X1000 | 2 | Lt. Brown | X TPH-G/BTEX | VOA | HCL |
| 1224 | 76.0 | 7.72 | .42 | 4 | ↓ | TPH-Diesel | Amber Liter | Solvent Rinsed |
| 1226 | 74.0 | 7.64 | .41 | 6 | Clear | EPA 601 | VOA | |
| 1228 | 73.6 | 7.61 | .40 | 8 | | TOG 5520BF | Amber Liter | $H_2SO_4$ |
| 1230 | 73.2 | 7.58 | .40 | 9 | ↓ | | | |

Begin 1220 Stop 1230 Sampled 1235

FORM: FS3/121592

# ALISTO ENGINEERING GROUP
## Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-138
Service Station No: 11105

Date: 9/23/93
Field Personnel: LB
Address: Castro Valley, CA

Well ID: ESE-3 Field Activity: ___Well Development X Well Sampling ___Product Bailing

**Casing Diameter:**

X 2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
___4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

**Purge Method:**

X Pump (dispos. Poly Tubing)
___Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

**Well Data:**

0 Depth to Product
0 Product Thickness
10.46 Depth to Water

**Sampling Method:**

X Disposable Bailer
___Pump

**Decontamination Method:**

X Triple Rinse (Liquinox)
___ Steam Cleaned

**Calculated Purge Volume**

30.00 (Total Depth of Well) - 10.46 (Depth to Water) = 19.54 ft (Water Column) X .16 Gal/Ft (Conversion Factor) = 3.13 Gal (Casing Vol) X 3 (Vols to Purge) = 9.39 (Total Volume)

**Well Development/Sampling Parameters**

| Time | Temp °F | pH | Cond. (umhos/cm) | Purge Vol (Gal) | Comments/ Turbidity | Analysis Required | Container Type | Preserv |
|---|---|---|---|---|---|---|---|---|
| | | | X1000 | | | | | |
| 1242 | 74.5 | 7.72 | .37 | 2 | Clear | Y TPH-G/BTEX | VOA | HCL |
| 1244 | 73.8 | 7.62 | .37 | 4 | | TPH-Diesel | Amber Liter | Solvent Rinsed |
| 1246 | 73.3 | 7.56 | .35 | 6 | | EPA 601 | VOA | |
| 1248 | 73.0 | 7.52 | .34 | 8 | | TOG 5520BF | Amber Liter | $H_2SO_4$ |
| 1250 | 72.7 | 7.47 | .33 | 10.00 | | | | |

Begin 1240 Stop 1250 Sampled 1300

FORM: FS3/121592

# ALISTO ENGINEERING GROUP
## Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-138
Service Station No: 11105

Date: 9/23/93
Field Personnel: LCB
Address: Castro Valley, CA

**Well ID:** ESE4 **Field Activity:** ___Well Development X Well Sampling ___Product Bailing

**Casing Diameter:**
- X 2 Inch (0.16 Gal/foot)
- ___3 Inch (0.37 Gal/foot)
- ___4 Inch (0.65 Gal/Foot)
- ___4.5 Inch (0.83 Gal/foot)
- ___6 Inch (1.47 Gal/foot)

**Purge Method:**
- X Pump (dispos. Poly Tubing)
- ___Disposable Bailers
- ___Other
- ___1.66 PVC Standard Bailer
- ___3.50 PVC Standard Bailer

**Well Data:**
- Ø Depth to Product
- Ø Product Thickness
- 10.05 Depth to Water

**Sampling Method:**
- X Disposable Bailer
- ___Pump

**Decontamination Method:**
- X Triple Rinse (Liquinox)
- ___ Steam Cleaned

**Calculated Purge Volume**

25.00 (Total Depth of Well) - 10.05 (Depth to Water) = 14.95 ft (Water Column) X .16 (Conversion Factor) Gal/Ft = 2.39 Gal (Casing Vol) X 3 (Vols to Purge) = 7.17 (Total Volume)

**Well Development/Sampling Parameters**

| Time | Temp °F | pH | Cond. (umhos/cm) | Purge Vol (Gal) | Comments/ Turbidity | | Analysis Required | Container Type | Preserv |
|---|---|---|---|---|---|---|---|---|---|
| 1202 | 75.7 | 7.61 | X1000 .52 | 1.50 | clear | X | TPH-G/BTEX | VOA | HCL |
| 1204 | 75.1 | 8.12 | .46 | 3.00 | | | TPH-Diesel | Amber Liter | Solvent Rinsed |
| 1206 | 75.5 | 7.83 | .46 | 4.50 | | | EPA 601 | VOA | |
| 1208 | 75.3 | 7.79 | .45 | 6.00 | | | TOG 5520BF | Amber Liter | $H_2SO_4$ |
| 1210 | 75.1 | 7.76 | .45 | 7.25 | | | | | |

Begin 1200 Stop 1210 Sampled 1215

FORM: FS3/121592

# ALISTO ENGINEERING GROUP
## Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-138
Service Station No: 11105

Date: 9/23/93
Field Personnel: LCB
Address: Castro Valley, CA

Well ID: ESE-5 Field Activity: ___Well Development X Well Sampling ___Product Bailing

**Casing Diameter:**
- X 2 Inch (0.16 Gal/foot)
- ___3 Inch (0.37 Gal/foot)
- ___4 Inch (0.65 Gal/Foot)
- ___4.5 Inch (0.83 Gal/foot)
- ___6 Inch (1.47 Gal/foot)

**Purge Method:**
- X Pump (dispos. Poly Tubing)
- ___Disposable Bailers
- ___Other
- ___1.66 PVC Standard Bailer
- ___3.50 PVC Standard Bailer

**Well Data:**
- 0 Depth to Product
- 0 Product Thickness
- 10.64 Depth to Water

**Sampling Method:**
- X Disposable Bailer
- ___Pump

**Decontamination Method:**
- X Triple Rinse (Liquinox)
- ___ Steam Cleaned

**Calculated Purge Volume**

24.00 (Total Depth of Well) - 10.64 (Depth to Water) = 13.36 ft (Water Column) X .16 Gal/Ft (Conversion Factor) = 2.14 Gal (Casing Vol) X 3 (Vols to Purge) = 6.42 (Total Volume)

**Well Development/Sampling Parameters**

| Time | Temp °F | pH | Cond. (umhos/cm) | Purge Vol (Gal) | Comments/ Turbidity | | Analysis Required | Container Type | Preserv |
|---|---|---|---|---|---|---|---|---|---|
| | | | X1000 | | | X | TPH-G/BTEX | VOA | HCL |
| 1312 | 75.5 | 7.60 | .47 | 1.25 | clear | | | | |
| 1314 | 75.0 | 7.38 | .49 | 2.75 | | | TPH-Diesel | Amber Liter | Solvent Rinsed |
| 1316 | 74.9 | 7.22 | .50 | 4.00 | | | EPA 601 | VOA | |
| 1318 | 74.6 | 7.17 | .51 | 5.75 | | | TOG 5520BF | Amber Liter | $H_2SO_4$ |
| 1320 | 74.2 | 7.13 | .51 | 6.50 | ↓ | | | | |

Begin 1310 Stop 1320 Sampled 1325

FORM: FS3/121592

# APPENDIX B

# LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

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# REPORT OF LABORATORY ANALYSIS

Alisto Engineering Group
1777 Oakland Blvd., Ste. 200
Walnut Creek, CA 94596

October 05, 1993
PACE Project Number: 430924522

Attn: Mr. Bill Howell

Client Reference: BP Station # 11105

| | | | | |
|---|---|---|---|---|
| PACE Sample Number: | | | 70 0160723 | |
| Date Collected: | | | 09/23/93 | |
| Date Received: | | | 09/24/93 | |
| Client Sample ID: | | | QC-2 | |
| Parameter | Units | MDL | | DATE ANALYZED |
| ORGANIC ANALYSIS | | | | |
| PURGEABLE FUELS AND AROMATICS | | | | |
| TOTAL FUEL HYDROCARBONS, (LIGHT): | | | - | 10/01/93 |
| Purgeable Fuels, as Gasoline (EPA 8015M) | ug/L | 50 | ND | 10/01/93 |
| PURGEABLE AROMATICS (BTXE BY EPA 8020M): | | | - | 10/01/93 |
| Benzene | ug/L | 0.5 | ND | 10/01/93 |
| Toluene | ug/L | 0.5 | ND | 10/01/93 |
| Ethylbenzene | ug/L | 0.5 | ND | 10/01/93 |
| Xylenes, Total | ug/L | 0.5 | ND | 10/01/93 |

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TEL: 415-883-6100
FAX: 415-883-2673

# REPORT OF LABORATORY ANALYSIS



October 05, 1993
PACE Project Number: 430924522

Client Reference: BP Station # 11105

| | | | | |
|---|---|---|---|---|
| PACE Sample Number: | | | 70 0160731 | |
| Date Collected: | | | 09/23/93 | |
| Date Received: | | | 09/24/93 | |
| Client Sample ID: | | | ESE-1 | |
| Parameter | Units | MDL | | DATE ANALYZED |
| ORGANIC ANALYSIS | | | | |
| PURGEABLE FUELS AND AROMATICS | | | | |
| TOTAL FUEL HYDROCARBONS, (LIGHT): | | | - | 10/01/93 |
| Purgeable Fuels, as Gasoline (EPA 8015M) | ug/L | 250 | 2000 | 10/01/93 |
| PURGEABLE AROMATICS (BTXE BY EPA 8020M): | | | - | 10/01/93 |
| Benzene | ug/L | 2.5 | 490 | 10/01/93 |
| Toluene | ug/L | 2.5 | 40 | 10/01/93 |
| Ethylbenzene | ug/L | 2.5 | 20 | 10/01/93 |
| Xylenes, Total | ug/L | 2.5 | 56 | 10/01/93 |

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# REPORT OF LABORATORY ANALYSIS



October 05, 1993
PACE Project Number: 430924522

Client Reference: BP Station # 11105

| | | | | |
|---|---|---|---|---|
| PACE Sample Number: | | | 70 0160740 | |
| Date Collected: | | | 09/23/93 | |
| Date Received: | | | 09/24/93 | |
| Client Sample ID: | | | ESE-2 | |
| Parameter | Units | MDL | | DATE ANALYZED |
| ORGANIC ANALYSIS | | | | |
| PURGEABLE FUELS AND AROMATICS | | | | |
| TOTAL FUEL HYDROCARBONS, (LIGHT): | | | - | 10/01/93 |
| Purgeable Fuels, as Gasoline (EPA 8015M) | ug/L | 50 | 240 | 10/01/93 |
| PURGEABLE AROMATICS (BTXE BY EPA 8020M): | | | - | 10/01/93 |
| Benzene | ug/L | 0.5 | 3.1 | 10/01/93 |
| Toluene | ug/L | 0.5 | 0.5 | 10/01/93 |
| Ethylbenzene | ug/L | 0.5 | 0.6 | 10/01/93 |
| Xylenes, Total | ug/L | 0.5 | 2.5 | 10/01/93 |

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Client Reference: BP Station # 11105

| | | | | |
|---|---|---|---|---|
| PACE Sample Number: | | | 70 0160758 | |
| Date Collected: | | | 09/23/93 | |
| Date Received: | | | 09/24/93 | |
| Client Sample ID: | | | ESE-3 | |
| Parameter | Units | MDL | | DATE ANALYZED |
| ORGANIC ANALYSIS | | | | |
| PURGEABLE FUELS AND AROMATICS | | | | |
| TOTAL FUEL HYDROCARBONS, (LIGHT): | | | - | 10/01/93 |
| Purgeable Fuels, as Gasoline (EPA 8015M) | ug/L | 50 | 72 | 10/01/93 |
| PURGEABLE AROMATICS (BTXE BY EPA 8020M): | | | - | 10/01/93 |
| Benzene | ug/L | 0.5 | 13 | 10/01/93 |
| Toluene | ug/L | 0.5 | 3.5 | 10/01/93 |
| Ethylbenzene | ug/L | 0.5 | 1.7 | 10/01/93 |
| Xylenes, Total | ug/L | 0.5 | 4.1 | 10/01/93 |

# REPORT OF LABORATORY ANALYSIS



October 05, 1993
PACE Project Number: 430924522

Client Reference: BP Station # 11105

| | | | | |
|---|---|---|---|---|
| PACE Sample Number: | | | 70 0160766 | |
| Date Collected: | | | 09/23/93 | |
| Date Received: | | | 09/24/93 | |
| Client Sample ID: | | | ESE-4 | |
| Parameter | Units | MDL | | DATE ANALYZED |
| ORGANIC ANALYSIS | | | | |
| PURGEABLE FUELS AND AROMATICS | | | | |
| TOTAL FUEL HYDROCARBONS, (LIGHT): | | | - | 10/01/93 |
| Purgeable Fuels, as Gasoline (EPA 8015M) | ug/L | 50 | 110 | 10/01/93 |
| PURGEABLE AROMATICS (BTXE BY EPA 8020M): | | | - | 10/01/93 |
| Benzene | ug/L | 0.5 | 14 | 10/01/93 |
| Toluene | ug/L | 0.5 | 1.7 | 10/01/93 |
| Ethylbenzene | ug/L | 0.5 | 3.2 | 10/01/93 |
| Xylenes, Total | ug/L | 0.5 | 4.6 | 10/01/93 |

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# REPORT OF LABORATORY ANALYSIS



October 05, 1993
PACE Project Number: 430924522

Client Reference: BP Station # 11105

| | | | | |
|---|---|---|---|---|
| PACE Sample Number: | | | 70 0160774 | |
| Date Collected: | | | 09/23/93 | |
| Date Received: | | | 09/24/93 | |
| Client Sample ID: | | | ESE-5 | |
| Parameter | Units | MDL | | DATE ANALYZED |
| ORGANIC ANALYSIS | | | | |
| PURGEABLE FUELS AND AROMATICS | | | | |
| TOTAL FUEL HYDROCARBONS, (LIGHT): | | | - | 10/01/93 |
| Purgeable Fuels, as Gasoline (EPA 8015M) | ug/L | 50 | 560 | 10/01/93 |
| PURGEABLE AROMATICS (BTXE BY EPA 8020M): | | | - | 10/01/93 |
| Benzene | ug/L | 0.5 | 19 | 10/01/93 |
| Toluene | ug/L | 0.5 | 1.2 | 10/01/93 |
| Ethylbenzene | ug/L | 0.5 | 0.9 | 10/01/93 |
| Xylenes, Total | ug/L | 0.5 | 1.8 | 10/01/93 |

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# REPORT OF LABORATORY ANALYSIS

Mr. Bill Howell
Page 7

October 05, 1993
PACE Project Number: 430924522

Client Reference: BP Station # 11105

| | | | | |
|---|---|---|---|---|
| PACE Sample Number: | | | 70 0160782 | |
| Date Collected: | | | 09/23/93 | |
| Date Received: | | | 09/24/93 | |
| Client Sample ID: | | | QC-1 | |
| Parameter | Units | MDL | | DATE ANALYZED |
| ORGANIC ANALYSIS | | | | |
| PURGEABLE FUELS AND AROMATICS | | | | |
| TOTAL FUEL HYDROCARBONS, (LIGHT): | | | - | 10/01/93 |
| Purgeable Fuels, as Gasoline (EPA 8015M) | ug/L | 50 | 1500 | 10/01/93 |
| PURGEABLE AROMATICS (BTXE BY EPA 8020M): | | | - | 10/01/93 |
| Benzene | ug/L | 0.5 | 420 | 10/01/93 |
| Toluene | ug/L | 0.5 | 39 | 10/01/93 |
| Ethylbenzene | ug/L | 0.5 | 19 | 10/01/93 |
| Xylenes, Total | ug/L | 0.5 | 56 | 10/01/93 |

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

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Mr. Bill Howell | FOOTNOTES | October 05, 1993
Page 8 | for pages 1 through 7 | PACE Project Number: 430924522

Client Reference: BP Station # 11105

MDL Method Detection Limit
ND Not detected at or above the MDL.

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QUALITY CONTROL DATA

October 05, 1993
PACE Project Number: 430924522

Client Reference: BP Station # 11105

PURGEABLE FUELS AND AROMATICS
Batch: 70 25117
Samples: 70 0160740

METHOD BLANK:

| Parameter | Units | MDL | Method Blank |
|---|---|---|---|
| TOTAL FUEL HYDROCARBONS, (LIGHT): | | | - |
| Purgeable Fuels, as Gasoline (EPA 8015M | ug/L | 50 | ND |
| PURGEABLE AROMATICS (BTXE BY EPA 8020M) | | | - |
| Benzene | ug/L | 0.5 | ND |
| Toluene | ug/L | 0.5 | ND |
| Ethylbenzene | ug/L | 0.5 | ND |
| Xylenes, Total | ug/L | 0.5 | ND |

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

| Parameter | Units | MDL | Reference Value | Recv | Dupl Recv | RPD |
|---|---|---|---|---|---|---|
| Purgeable Fuels, as Gasoline (EPA 8015M | ug/L | 50 | 1000 | 112% | 108% | 3% |
| Benzene | ug/L | 0.5 | 40.0 | 101% | 96% | 5% |
| Toluene | ug/L | 0.5 | 40.0 | 104% | 96% | 8% |
| Ethylbenzene | ug/L | 0.5 | 40.0 | 102% | 99% | 2% |
| Xylenes, Total | ug/L | 0.5 | 120 | 108% | 99% | 8% |

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Mr. Bill Howell
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QUALITY CONTROL DATA

October 05, 1993
PACE Project Number: 430924522

Client Reference: BP Station # 11105

PURGEABLE FUELS AND AROMATICS
Batch: 70 25118
Samples: 70 0160723, 70 0160731, 70 0160758, 70 0160766, 70 0160774
70 0160782

METHOD BLANK:

| Parameter | Units | MDL | Method Blank |
|---|---|---|---|
| TOTAL FUEL HYDROCARBONS, (LIGHT): | | | - |
| Purgeable Fuels, as Gasoline (EPA 8015M | ug/L | 50 | ND |
| PURGEABLE AROMATICS (BTXE BY EPA 8020M) | | | - |
| Benzene | ug/L | 0.5 | ND |
| Toluene | ug/L | 0.5 | ND |
| Ethylbenzene | ug/L | 0.5 | ND |
| Xylenes, Total | ug/L | 0.5 | ND |
| Methyl tert-butyl ether | ug/L | 5.0 | ND |

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

| Parameter | Units | MDL | Reference Value | Recv | Dupl Recv | RPD |
|---|---|---|---|---|---|---|
| Purgeable Fuels, as Gasoline (EPA 8015M | ug/L | 50 | 1000 | 101% | 91% | 10% |
| Benzene | ug/L | 0.5 | 40 | 95% | 92% | 3% |
| Toluene | ug/L | 0.5 | 40 | 91% | 88% | 3% |
| Ethylbenzene | ug/L | 0.5 | 40 | 86% | 85% | 1% |
| Xylenes, Total | ug/L | 0.5 | 120 | 89% | 90% | 1% |
| Methyl tert-butyl ether | ug/L | 5.0 | 40 | 92% | 91% | 1% |

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