

October 17, 2003

Ms. eva chu  
Alameda County Health Care Services Agency  
Department of Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

**Re: Third Quarter 2003 Groundwater Monitoring Report**  
**ARCO Service Station #4977**  
**2770 Castro Valley Blvd**  
**Castro Valley, California**  
**URS Project # 38486461**

Dear Ms. chu

On behalf of Atlantic Richfield Company (ARCO – an affiliated company of the Group Environmental Management Company), URS Corporation (URS) is submitting the *Third Quarter 2003 Groundwater Monitoring Report* for ARCO Service Station # 4977, located at 2770 Castro Valley Blvd, Castro Valley, California.

If you have any questions regarding this submission, please call (510) 874-3280.

Sincerely,  
URS CORPORATION

Scott Robinson  
Project Manager

James F. Durkin, C.Hg.  
Senior Geologist



Enclosure: Third Quarter 2003 Groundwater Monitoring Report

cc: Mr. Paul Supple, ARCO (electronic copy uploaded to ENFOS)



Atlantic Richfield Company  
(a BP affiliated company)

P.O. Box 6549  
Moraga, California 94570  
Phone: (925) 299-8891  
Fax: (925) 299-8872

October 17, 2003

RE: Third Quarter 2003 Groundwater Monitoring Report  
ARCO Service Station #4977  
2770 Castro Valley Blvd.  
Castro Valley, CA  
URS Project #38486461

I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by:

Paul Supple  
Environmental Business Manager

**R E P O R T**

**THIRD QUARTER 2003  
GROUNDWATER MONITORING**

ARCO SERVICE STATION #4977  
2770 CASTRO VALLEY BLVD  
CASTRO VALLEY, CALIFORNIA

*Prepared for*  
Atlantic Richfield Company

October 17, 2003

**URS**

URS Corporation  
500 12th Street, Suite 200  
Oakland, California 94607

38486461

Date: October 17, 2003

Quarter: 3Q 03

**ATLANTIC RICHFIELD COMPANY QUARTERLY GROUNDWATER MONITORING REPORT**

Facility No.: 4977 Address: 2770 Castro Valley Blvd, Castro Valley, CA  
ARCO Environmental Business Manager: Paul Supple  
Consulting Co./Contact Person: URS Corporation / Scott Robinson  
Consultant Project No.: 38486461  
Primary Agency: Alameda County Health Services Agency (ACHCSA)

**WORK PERFORMED THIS QUARTER (Third – 2003):**

1. Performed third quarter groundwater monitoring event on September 18, 2003.
2. Prepared and submitted second quarter 2003 groundwater monitoring report.

**WORK PROPOSED FOR NEXT QUARTER (Fourth – 2003):**

1. Perform fourth quarter groundwater monitoring event.
2. Prepare and submit third quarter 2003 groundwater monitoring report.

Current Phase of Project: GW monitoring/sampling  
Frequency of Groundwater Sampling: Quarterly: Wells MW-1 through MW-3  
Frequency of Groundwater Monitoring: Quarterly  
Is Free Product (FP) Present On-Site: No  
Current Remediation Techniques: Natural Attenuation  
Approximate Depth to Groundwater: 7.61 ft (MW-2) to 9.45 ft (MW-1)  
Groundwater Gradient (direction): South-southwest  
Groundwater Gradient (magnitude): 0.022 feet per foot

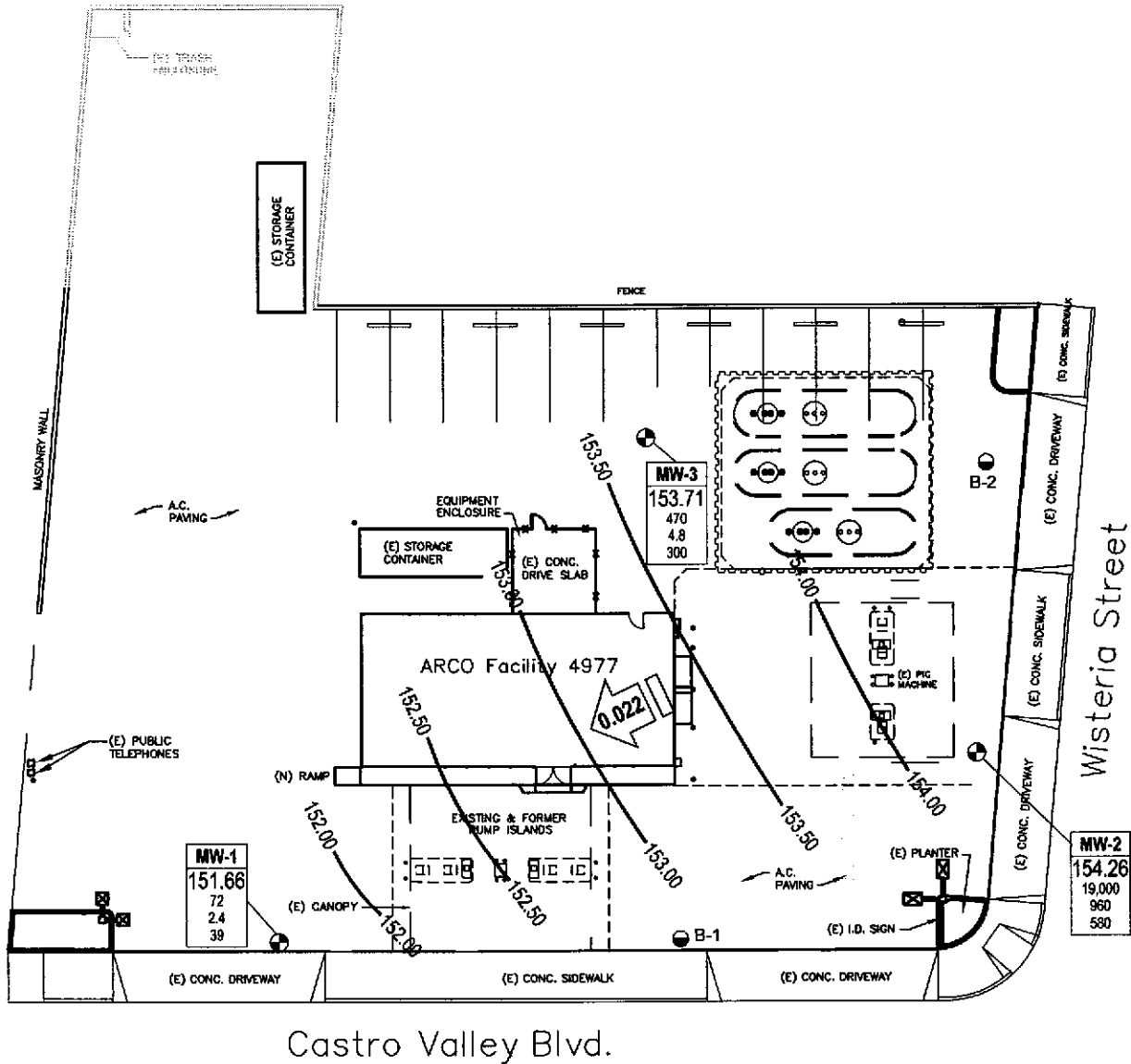
**DISCUSSION:**

TPH-g was detected above laboratory reporting limits in all three wells sampled this quarter at concentrations ranging from 72 µg/L (MW-1) to 19,000 µg/L (MW-2). Benzene was detected above laboratory reporting limits in all three wells at concentrations of 2.4 µg/L (MW-1) to 960 µg/L (MW-2). MTBE was detected above laboratory reporting limits in all three wells at concentrations ranging from 39 µg/L (MW-1) to 580 µg/L (MW-2). TAME was detected above laboratory reporting limits in MW-3 at a concentration of 3.2 µg/L.

**ATTACHMENTS:**

- Figure 1 - Groundwater Elevation Contour and Analytical Summary Map – September 18, 2003
- Table 1 - Groundwater Elevation and Analytical Data
- Table 2 - Groundwater Flow Direction and Gradient
- Table 3 - Fuel Oxygenate Analytical Data
- Attachment A - Field Procedures and Field Data Sheets
- Attachment B - Laboratory Procedures, Certified Analytical Reports and Chain-of-Custody Records
- Attachment C - EDCC Report and EDF/Geowell Submittal Confirmation

X:\x\_env\waste\BP\_GEM\Sites\Scott Robinson\Paul Supple\4977\Monitoring\Qtr. 3, 2003\Drawings\GWEC-AS 9-18.dwg, 10/17/2003 11:33:45 AM, JKMT, URS



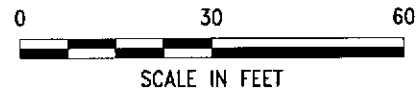
**LEGEND**

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- |         |
|---------|
| Well    |
| ELEV    |
| TPH-g   |
| Benzene |
| MTBE    |

 WELL DESIGNATION
- |         |
|---------|
| ELEV    |
| TPH-g   |
| Benzene |
| MTBE    |

 GROUNDWATER ELEVATION (FT ABOVE MSL)
- |         |
|---------|
| TPH-g   |
| Benzene |
| MTBE    |

 CONCENTRATION OF TPH-g, BENZENE AND MTBE IN GROUNDWATER (µg/L)
- ND< NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS
- 152.00 — GROUNDWATER ELEVATION CONTOUR (FT ABOVE MSL)
- GROUNDWATER FLOW DIRECTION AND GRADIENT (FT/FT)



NOTE: SITE MAP ADAPTED FROM DELTA ENVIRONMENTAL FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



**Project No. 38486461**  
**Arco Service Station #4977**  
**2770 Castro Valley Boulevard**  
**Castro Valley, California**

**GROUNDWATER ELEVATION CONTOUR**  
**AND ANALYTICAL SUMMARY MAP**  
**Third Quarter 2003 (September 18, 2003)**

FIGURE  
**1**

**Table 1**  
**Groundwater Elevation and Analytical Data**

ARCO Service Station #4977  
2770 Castro Valley Boulevard  
Castro Valley, California

| Sample ID | Date                        | Top of Casing Elevation (ft amsl) | Depth to Groundwater (ft btc) | Groundwater Elevation (ft amsl) | TPH-g (µg/L)  | Benzene (µg/L) | Toluene (µg/L) | Ethyl-benzene (µg/L) | Total Xylenes (µg/L) | MTBE (µg/L)  | Dissolved Oxygen <sup>b</sup> (mg/L) | pH <sup>b</sup> |
|-----------|-----------------------------|-----------------------------------|-------------------------------|---------------------------------|---------------|----------------|----------------|----------------------|----------------------|--------------|--------------------------------------|-----------------|
| MW-1      | 04/19/02                    | 161.11                            | 11.21                         | 149.90                          | 660           | 12             | 1.3            | 4.3                  | 0.80                 | 38           | NA                                   | NA              |
|           | 09/27/02                    |                                   | 9.29                          | 151.82                          | 130           | 7.7            | 0.87           | 5.4                  | 0.79                 | 39           | 1.7                                  | 6.9             |
|           | 12/16/02*                   |                                   | 8.55                          | 152.56                          | 77            | 1.8            | ND<0.50        | 0.69                 | ND<1.0               | 42           | 1.6                                  | 6.9             |
|           | 03/11/03                    |                                   | 8.07                          | 153.04                          | 140           | 9.8            | ND<0.50        | 5.6                  | ND<0.50              | 20           | 1.4                                  | 7.4             |
|           | 06/17/03                    |                                   | 8.31                          | 152.80                          | 510           | 60             | 1.4            | 81                   | ND<1.0               | 23           | 2.2                                  | 7.0             |
|           | <b>09/18/03<sup>a</sup></b> |                                   |                               | <b>9.45</b>                     | <b>151.66</b> | <b>72</b>      | <b>2.4</b>     | <b>1.4</b>           | <b>1.6</b>           | <b>1.5</b>   | <b>39</b>                            | <b>2.7</b>      |
| MW-2      | 04/19/02                    | 161.87                            | 6.59                          | 155.28                          | 28,000        | 970            | 120            | 860                  | 6,900                | 760          | NA                                   | NA              |
|           | 09/27/02                    |                                   | 7.18                          | 154.69                          | 17,000        | 1,400          | ND<50          | 1,200                | 3,700                | 1,400        | 1.5                                  | 6.8             |
|           | 12/16/02*                   |                                   | 7.31                          | 154.56                          | 17,000        | 1,000          | ND<50          | 980                  | 3,300                | 980          | 1.9                                  | 6.8             |
|           | 03/11/03                    |                                   | 6.02                          | 155.85                          | 24,000        | 1,600          | 70             | 1,300                | 4,300                | 920          | 1.7                                  | 7.4             |
|           | 06/17/03                    |                                   | 6.31                          | 155.56                          | 28,000        | 1,300          | 55             | 1,300                | 4,500                | 610          | 1.4                                  | 6.9             |
|           | <b>09/18/03</b>             |                                   |                               | <b>7.61</b>                     | <b>154.26</b> | <b>19,000</b>  | <b>960</b>     | <b>63</b>            | <b>1,100</b>         | <b>3,100</b> | <b>580</b>                           | <b>2.7</b>      |
| MW-3      | 04/19/02                    | 162.14                            | 6.94                          | 155.20                          | 1,200         | 29             | 1.1            | 43                   | 62                   | 1,700        | NA                                   | NA              |
|           | 09/27/02                    |                                   | 8.26                          | 153.88                          | 740           | 7.8            | ND<2.5         | 6.8                  | 4.4                  | 1,100        | 1.0                                  | 6.7             |
|           | 12/16/02*                   |                                   | 6.76                          | 155.38                          | 1,200         | 13             | ND<10          | 170                  | 88                   | 910          | 2.3                                  | 6.8             |
|           | 03/11/03                    |                                   | 6.92                          | 155.22                          | ND<2,500      | ND<25          | ND<25          | ND<25                | ND<25                | 470          | 1.7                                  | 7.5             |
|           | 06/17/03                    |                                   | 7.44                          | 154.70                          | ND<1,000      | ND<10          | ND<10          | 14                   | ND<10                | 530          | 1.9                                  | 7.0             |
|           | <b>09/18/03</b>             |                                   |                               | <b>8.43</b>                     | <b>153.71</b> | <b>470</b>     | <b>4.8</b>     | <b>ND&lt;2.5</b>     | <b>10</b>            | <b>9.2</b>   | <b>300</b>                           | <b>2.9</b>      |

amsl = above mean sea level

btc = below top of casing

TPH-g = Total petroleum hydrocarbons in the gasoline range (C5-C9).

MTBE = Methyl tertiary butyl ether analyzed by EPA Method 8021B unless otherwise noted. (before 12/16/02)

µg/L = micrograms per liter

mg/L = milligrams per liter

ND< = Not detected at or above laboratory reporting limits

\* = TPH, BTEX, and MTBE analyzed by EPA Method 8260B beginning on 4th Quarter Sampling event (12/16/02)

a = This sample was originally analyzed within the EPA recommended hold time. Re-analysis for confirmation or dilution was performed past the recommended hold time. The results may still be used for their intended purpose. For more details see Attachment B.

b = Dissolved oxygen and pH are field measurements

Source : The data within this table collected prior to September 2002 was provided to URS by Group Environmental Management Company and their previous consultants. URS has not verified the accuracy of this information.

**Table 2**  
**Groundwater Flow Direction and Gradient**

ARCO Service Station #4977  
2770 Castro Valley Boulevard  
Castro Valley, California

| <b>Date Measured</b> | <b>Average Flow Direction</b> | <b>Average Hydraulic Gradient</b> |
|----------------------|-------------------------------|-----------------------------------|
| 04/19/02             | Southwest                     | 0.038                             |
| 09/27/02             | Southwest                     | 0.021                             |
| 12/16/02             | Southeast                     | 0.029                             |
| 03/11/03             | South                         | 0.024                             |
| 06/17/03             | South-Southwest               | 0.022                             |
| <b>09/18/03</b>      | <b>South-Southwest</b>        | <b>0.022</b>                      |

Source : The data within this table collected prior to September 2002 was provided to URS by Group Environmental Management Company and their previous consultants. URS has not verified the accuracy of this information.



**Table 3**  
**Fuel Oxygenate Analytical Data**

ARCO Service Station #4977  
2770 Castro Valley Boulevard  
Castro Valley, California

| Well Number | Date Sampled                | Ethanol (µg/L)     | TBA (µg/L)         | MTBE (µg/L) | DIPE (µg/L)       | ETBE (µg/L)       | TAME (µg/L)       | 1,2-DCA (µg/L)    | EDB (µg/L)        |
|-------------|-----------------------------|--------------------|--------------------|-------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| MW-1        | 12/16/02                    | ND<50              | ND<5.0             | 42          | ND<0.50           | ND<0.50           | ND<0.50           | ND<0.50           | ND<0.50           |
|             | 03/11/03                    | ND<100             | ND<20              | 20          | ND<0.50           | ND<0.50           | ND<0.50           | ND<0.50           | ND<0.50           |
|             | 06/17/03                    | ND<200             | ND<40              | 23          | ND<1.0            | ND<1.0            | ND<1.0            | ND<1.0            | ND<1.0            |
|             | <b>09/18/03<sup>a</sup></b> | <b>ND&lt;100</b>   | <b>ND&lt;20</b>    | <b>39</b>   | <b>ND&lt;0.50</b> | <b>ND&lt;0.50</b> | <b>ND&lt;0.50</b> | <b>ND&lt;0.50</b> | <b>ND&lt;0.50</b> |
| MW-2        | 12/16/02                    | ND<5,000           | ND<500             | 980         | ND<50             | ND<50             | ND<50             | ND<50             | ND<50             |
|             | 03/11/03                    | ND<10,000          | ND<2,000           | 920         | ND<50             | ND<50             | ND<50             | ND<50             | ND<50             |
|             | 06/17/03                    | ND<10,000          | ND<2,000           | 610         | ND<50             | ND<50             | ND<50             | ND<50             | ND<50             |
|             | <b>09/18/03</b>             | <b>ND&lt;5,000</b> | <b>ND&lt;1,000</b> | <b>580</b>  | <b>ND&lt;25</b>   | <b>ND&lt;25</b>   | <b>ND&lt;25</b>   | <b>ND&lt;25</b>   | <b>ND&lt;25</b>   |
| MW-3        | 12/16/02                    | ND<1,000           | ND<100             | 910         | ND<10             | ND<10             | 12                | ND<10             | ND<10             |
|             | 03/11/03                    | ND<5,000           | ND<1,000           | 470         | ND<25             | ND<25             | ND<25             | ND<25             | ND<25             |
|             | 06/17/03                    | ND<2,000           | ND<400             | 530         | ND<10             | ND<10             | ND<10             | ND<10             | ND<10             |
|             | <b>09/18/03</b>             | <b>ND&lt;500</b>   | <b>ND&lt;100</b>   | <b>300</b>  | <b>ND&lt;2.5</b>  | <b>ND&lt;2.5</b>  | <b>3.2</b>        | <b>ND&lt;2.5</b>  | <b>ND&lt;2.5</b>  |

Note = All fuel oxygenate compounds analyzed using EPA Method 8260B

TBA = tert-Butyl alcohol

MTBE = Methyl tert-butyl ether

DIPE = Di-isopropyl ether

ETBE = Ethyl tert butyl ether

TAME = tert-Amyl methyl ether

1,2-DCE = 1,2-Dichloroethane

EDB = 1, 2 Dibromoethane

µg/L = micrograms per liter

ND< = Not detected at or above laboratory reporting limit

a = This sample was originally analyzed within the EPA recommended hold time. Re-analysis for confirmation or dilution was performed past the recommended hold time. The results may still be used for their intended purpose. For more details see Attachment B.

**ATTACHMENT A**  
**FIELD PROCEDURES AND FIELD DATA SHEETS**

## FIELD PROCEDURES

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### Sampling Procedures

The sampling procedure for each well consists first of measuring the water level and depth to bottom, and checking for the presence of free phase petroleum product (free product), using either an electronic indicator and a clear Teflon™ bailer or an oil-water interface probe. Wells not containing free product are purged approximately three casing volumes of water (or until dewatered) using a centrifugal pump, gas displacement pump, or bailer. Equipment and purging method used for the current sampling event is noted on the attached field data sheets. During purging, temperature, pH, and electrical conductivity are monitored to document that these parameters are stable prior to collecting samples. After purging, water levels are allowed to partially (approximately 80%) recover. Groundwater samples (both purge and no purge) are collected using a Teflon bailer, placed into appropriate Environmental Protection Agency- (EPA) approved containers, labeled, logged onto chain-of-custody records, and transported on ice to a California State-certified laboratory. Wells with free product are not sampled and free product is removed according to California Code of Regulation, Title 23, Div. 3, Chap. 16, Section 2655, UST Regulations.





## ARCO / BP WELL MONITORING DATA SHEET

|                                 |  |
|---------------------------------|--|
| BTS #: 030918-MD1               | Station # Arco 4977                    |
| Sampler: John De Jong           | Date: 9/18/03                          |
| Well I.D.: MW-2                 | Well Diameter: 2 3 <u>4</u> 6 8        |
| Total Well Depth: 14.55         | Depth to Water: 7.61                   |
| Depth to Free Product:          | Thickness of Free Product (feet):      |
| Referenced to: <u>PVC</u> Grade | D.O. Meter (if req'd): <u>YSI</u> HACH |

| Well Diameter | Multiplier | Well Diameter | Multiplier                  |
|---------------|------------|---------------|-----------------------------|
| 1"            | 0.04       | <u>4"</u>     | 0.65                        |
| 2"            | 0.16       | 6"            | 1.47                        |
| 3"            | 0.37       | Other         | radius <sup>2</sup> * 0.163 |

Purge Method:  Bailer      Sampling Method: ~~Bailer~~

Disposable Bailer      Disposable Bailer

Middleburg      Extraction Port

Electric Submersible      Other: \_\_\_\_\_

Extraction Pump

Other: \_\_\_\_\_

Top of Screen: \_\_\_\_\_ If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

|                       |   |                   |   |                   |       |
|-----------------------|---|-------------------|---|-------------------|-------|
| <u>4.5</u>            | X | <u>3</u>          | = | <u>13.5</u>       | Gals. |
| 1 Case Volume (Gals.) |   | Specified Volumes |   | Calculated Volume |       |

| Time | Temp (°F) | pH  | Conductivity (mS or $\mu$ S) | Gals. Removed | Observations                     |
|------|-----------|-----|------------------------------|---------------|----------------------------------|
| 855  | 74.1      | 6.7 | 1029                         | 4.5           | semi-clear, very strong gas odor |
|      |           |     |                              | 7             | DTW = 12.95                      |
|      |           |     |                              |               |                                  |
| 950  | 74.6      | 6.8 | 949                          | —             | DTW = 10.52 @ site Dep. v. v. t. |

Did well dewater?  Yes     No      Gallons actually evacuated: 7

Sampling Time: 950      Sampling Date: 9/18/03

Sample I.D.: MW-2      Laboratory: Pace Sequoia Other \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: OXYGENATES, Ethanol, 1,2-DCA, EDB all by 826C

|                    |            |      |             |      |
|--------------------|------------|------|-------------|------|
| D.O. (if req'd):   | Pre-purge: | mg/L | Post-purge: | mg/L |
|                    |            |      | <u>2.7</u>  |      |
| O.R.P. (if req'd): | Pre-purge: | mV   | Post-purge: | mV   |

## ARCO / BP WELL MONITORING DATA SHEET

|                                 |  |
|---------------------------------|--|
| BTS #: 030918-MDI               | Station # Arco 4977                    |
| Sampler: John DeJong            | Date: 9/18/03                          |
| Well I.D.: MW-3                 | Well Diameter: 2 3 <u>4</u> 6 8        |
| Total Well Depth: 14.95         | Depth to Water: 8.43                   |
| Depth to Free Product:          | Thickness of Free Product (feet):      |
| Referenced to: <u>PVC</u> Grade | D.O. Meter (if req'd): <u>YSI</u> HACH |

| Well Diameter | Multiplier | Well Diameter | Multiplier                  |
|---------------|------------|---------------|-----------------------------|
| 1"            | 0.04       | <u>4"</u>     | 0.65                        |
| 2"            | 0.16       | 6"            | 1.47                        |
| 3"            | 0.37       | Other         | radius <sup>2</sup> * 0.163 |

|  |   |
|--|---|
| Purge Method: <u>Bailer</u><br>Disposable Bailer<br>Middleburg<br><u>Electric Submersible</u><br>Extraction Pump<br>Other: _____ | Sampling Method: <del>Bailer</del><br><u>Disposable Bailer</u><br>Extraction Port<br>Other: _____ |
|--|---|

Top of Screen: \_\_\_\_\_ If well is listed as a no-purge, confirm that water level is below the top of screen. Otherwise, the well must be purged.

|                       |   |                   |   |                   |       |
|-----------------------|---|-------------------|---|-------------------|-------|
| <u>4.2</u>            | x | <u>3</u>          | = | <u>12.6</u>       | Gals. |
| 1 Case Volume (Gals.) |   | Specified Volumes |   | Calculated Volume |       |

| Time | Temp (°F)        | pH  | Conductivity (mS or <u>µS</u> ) | Gals. Removed | Observations                 |
|------|------------------|-----|---------------------------------|---------------|------------------------------|
| 833  | 75.3             | 6.2 | 871                             | 4.5           | clear, strong gas odor       |
|      | well dewatered @ |     |                                 | 5.0           | DTW = 13.0                   |
| 910  | 75.2             | 6.8 | 863                             | —             | DTW = 10.51 @ site departure |

|  |   |
|--|---|
| Did well dewater? <u>Yes</u> No  | Gallons actually evacuated: <u>5</u>        |
| Sampling Time: <u>910</u>  | Sampling Date: <u>9/18/03</u>               |
| Sample I.D.: <u>MW-3</u>   | Laboratory: Pace <u>Sequoia</u> Other _____ |
| Analyzed for: <u>TPH-GOBTEX</u> MTBE TPH-D Other: <u>OXYGENATES, Ethanol, 1,2-DCA, EDB all by 826C</u> |   |
| D.O. (if req'd):   | Pre-purge: _____ mg/L                       |
|  | <u>Post-purge</u> : <u>2.9</u> mg/L         |
| O.R.P. (if req'd):   | Pre-purge: _____ mV                         |
|  | Post-purge: _____ mV                        |

BP GEM OIL COMPANY TYPE **A** BILL OF LADING

SOURCE RECORD **BILL OF LADING** FOR NON-HAZARDOUS PURGEWATER RECOVERED FROM GROUNDWATER WELLS AT BP GEM OIL COMPANY FACILITIES IN THE STATE OF CALIFORNIA. THE NON-HAZARDOUS PURGE- WATER WHICH HAS BEEN RECOVERED FROM GROUND- WATER WELLS IS COLLECTED BY THE CONTRACTOR, MADE UP INTO LOADS OF APPROPRIATE SIZE AND HAULED BY DILLARD ENVIRONMENTAL TO THE ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY IN LIVERMORE, CALIFORNIA.

The contractor performing this work is BLAINE TECH SERVICES, INC. (BTS), 1680 Rogers Avenue, San Jose, CA 95112 (phone [408] 573-0555). Blaine Tech Services, Inc. is authorized by BP GEM OIL COMPANY to recover, collect, apportion into loads the Non-Hazardous Well Purgewater that is drawn from wells at the BP GEM Oil Company facility indicated below and deliver that purgewater to BTS. Transport routing of the Non-Hazardous Well Purgewater may be direct from one BP GEM facility to the designated destination point; from one BP GEM facility to the designated destination point via another BP GEM facility; from a BP GEM facility to the designated destination point via the contractor's facility, or any combination thereof. The Non-Hazardous Well Purgewater is and remains the property of BP GEM Oil Company.

This **Source Record BILL OF LADING** was initiated to cover the recovery of Non-Hazardous Well Purgewater from wells at the BP GEM Oil Company facility described below:

Arco 4977

Station #

2770 Castro Valley, <sup>plus</sup> Castro Valley

Station Address

Total Gallons Collected From Groundwater Monitoring Wells:

15

added equip. rinse water \_\_\_\_\_

any other adjustments \_\_\_\_\_

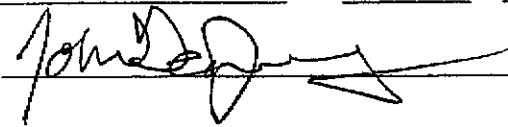
**TOTAL GALS. RECOVERED** 15

loaded onto BTS vehicle # \_\_\_\_\_

BTS event # 030918fndt

time 1015 date

signature



\*\*\*\*\*

REC'D AT

time

date

unloaded by

signature \_\_\_\_\_





**ATTACHMENT B**  
**LABORATORY PROCEDURES,**  
**CERTIFIED ANALYTICAL REPORTS,**  
**AND CHAIN-OF-CUSTODY RECORDS**

## **LABORATORY PROCEDURES**

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### **Laboratory Procedures**

The groundwater samples were analyzed for the presence of the chemicals mentioned in the chain of custody using standard EPA methods. The methods of analysis for the groundwater samples are documented in the certified analytical report. The certified analytical reports and chain-of-custody record are presented in this attachment. The analytical data provided by the laboratory approved by Group Environmental Management Company have been reviewed and verified by that laboratory.



**Sequoia  
Analytical**

885 Jarvis Drive  
Morgan Hill, CA 95037  
(408) 776-9600  
FAX (408) 782-6308  
www.sequoialabs.com

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13 October, 2003

Scott Robinson  
URS Corporation [Arco]  
500 12th Street, Suite 200  
Oakland, CA 94607

RE: ARCO #4977, Castro Valley, CA  
Work Order: MMI0549

Enclosed are the results of analyses for samples received by the laboratory on 09/19/03 10:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Theresa Allen  
Project Manager

CA ELAP Certificate #1210



URS Corporation [Arco]  
500 12th Street, Suite 200  
Oakland CA, 94607

Project: ARCO #4977, Castro Valley, CA  
Project Number: INTRIM-50467  
Project Manager: Scott Robinson

MMI0549  
**Reported:**  
10/13/03 08:42

**ANALYTICAL REPORT FOR SAMPLES**

| Sample ID  | Laboratory ID | Matrix | Date Sampled   | Date Received  |
|------------|---------------|--------|----------------|----------------|
| MW-1       | MMI0549-01    | Water  | 09/18/03 09:30 | 09/19/03 10:40 |
| MW-2       | MMI0549-02    | Water  | 09/18/03 09:50 | 09/19/03 10:40 |
| MW-3       | MMI0549-03    | Water  | 09/18/03 09:10 | 09/19/03 10:40 |
| Trip Blank | MMI0549-04    | Water  | 09/18/03 00:00 | 09/19/03 10:40 |

There were custody seals that were received with this project.



885 Jarvis Drive  
 Morgan Hill, CA 95037  
 (408) 776-9600  
 FAX (408) 782-6308  
 www.sequoialabs.com

URS Corporation [Arco]  
 500 12th Street, Suite 200  
 Oakland CA, 94607

Project: ARCO #4977, Castro Valley, CA  
 Project Number: INTRIM-50467  
 Project Manager: Scott Robinson

MMI0549  
 Reported:  
 10/13/03 08:42

**Volatile Organic Compounds by EPA Method 8260B**  
**Sequoia Analytical - Morgan Hill**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------|--------|-----------------|-------|----------|-------|----------|----------|--------|-------|
|---------|--------|-----------------|-------|----------|-------|----------|----------|--------|-------|

**MW-1 (MMI0549-01) Water**    **Sampled: 09/18/03 09:30**    **Received: 09/19/03 10:40**

|   |    |       |        |     |         |          |          |           |  |
|---|----|-------|--------|-----|---------|----------|----------|-----------|--|
| Ethanol                                 | ND | 50000 | ug/l   | 500 | 3130003 | 09/30/03 | 09/30/03 | EPA 8260B |  |
| tert-Butyl alcohol                      | ND | 10000 | "      | "   | "       | "        | "        | "         |  |
| Methyl tert-butyl ether                 | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| Di-isopropyl ether                      | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| Ethyl tert-butyl ether                  | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| tert-Amyl methyl ether                  | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| 1,2-Dichloroethane                      | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| 1,2-Dibromoethane (EDB)                 | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| Benzene                                 | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| Toluene                                 | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| Ethylbenzene                            | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| Xylenes (total)                         | ND | 250   | "      | "   | "       | "        | "        | "         |  |
| Gasoline Range Organics (C6-C10)        | ND | 25000 | "      | "   | "       | "        | "        | "         |  |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> |    | 104 % | 78-129 | "   | "       | "        | "        | "         |  |

**MW-1 (MMI0549-01RE1) Water**    **Sampled: 09/18/03 09:30**    **Received: 09/19/03 10:40**

**HT-RA**

|   |            |             |        |   |         |          |          |           |  |
|---|------------|-------------|--------|---|---------|----------|----------|-----------|--|
| Ethanol                                 | ND         | 100         | ug/l   | 1 | 3103006 | 10/03/03 | 10/03/03 | EPA 8260B |  |
| tert-Butyl alcohol                      | ND         | 20          | "      | " | "       | "        | "        | "         |  |
| Methyl tert-butyl ether                 | 39         | 0.50        | "      | " | "       | "        | "        | "         |  |
| Di-isopropyl ether                      | ND         | 0.50        | "      | " | "       | "        | "        | "         |  |
| Ethyl tert-butyl ether                  | ND         | 0.50        | "      | " | "       | "        | "        | "         |  |
| tert-Amyl methyl ether                  | ND         | 0.50        | "      | " | "       | "        | "        | "         |  |
| 1,2-Dichloroethane                      | ND         | 0.50        | "      | " | "       | "        | "        | "         |  |
| 1,2-Dibromoethane (EDB)                 | ND         | 0.50        | "      | " | "       | "        | "        | "         |  |
| <b>Benzene</b>                          | <b>2.4</b> | <b>0.50</b> | "      | " | "       | "        | "        | "         |  |
| <b>Toluene</b>                          | <b>1.4</b> | <b>0.50</b> | "      | " | "       | "        | "        | "         |  |
| <b>Ethylbenzene</b>                     | <b>1.6</b> | <b>0.50</b> | "      | " | "       | "        | "        | "         |  |
| <b>Xylenes (total)</b>                  | <b>1.5</b> | <b>0.50</b> | "      | " | "       | "        | "        | "         |  |
| <b>Gasoline Range Organics (C6-C10)</b> | <b>72</b>  | <b>50</b>   | "      | " | "       | "        | "        | "         |  |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> |            | 108 %       | 78-129 | " | "       | "        | "        | "         |  |

Sequoia Analytical - Morgan Hill

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URS Corporation [Arco]  
 500 12th Street, Suite 200  
 Oakland CA, 94607

 Project: ARCO #4977, Castro Valley, CA  
 Project Number: INTRIM-50467  
 Project Manager: Scott Robinson

 MMI0549  
 Reported:  
 10/13/03 08:42

**Volatile Organic Compounds by EPA Method 8260B**  
**Sequoia Analytical - Morgan Hill**

| Analyte   | Result       | Reporting Limit | Units  | Dilution | Batch   | Prepared | Analyzed | Method    | Notes |
|---|--------------|-----------------|--------|----------|---------|----------|----------|-----------|-------|
| <b>MW-2 (MMI0549-02) Water Sampled: 09/18/03 09:50 Received: 09/19/03 10:40</b> |              |                 |        |          |         |          |          |           |       |
| Ethanol   | ND           | 5000            | ug/l   | 50       | 3130003 | 09/30/03 | 09/30/03 | EPA 8260B |       |
| tert-Butyl alcohol  | ND           | 1000            | "      | "        | "       | "        | "        | "         |       |
| <b>Methyl tert-butyl ether</b>  | <b>580</b>   | 25              | "      | "        | "       | "        | "        | "         |       |
| Di-isopropyl ether  | ND           | 25              | "      | "        | "       | "        | "        | "         |       |
| Ethyl tert-butyl ether  | ND           | 25              | "      | "        | "       | "        | "        | "         |       |
| tert-Amyl methyl ether  | ND           | 25              | "      | "        | "       | "        | "        | "         |       |
| 1,2-Dichloroethane  | ND           | 25              | "      | "        | "       | "        | "        | "         |       |
| 1,2-Dibromoethane (EDB)   | ND           | 25              | "      | "        | "       | "        | "        | "         |       |
| <b>Benzene</b>  | <b>960</b>   | 25              | "      | "        | "       | "        | "        | "         |       |
| <b>Toluene</b>  | <b>63</b>    | 25              | "      | "        | "       | "        | "        | "         |       |
| <b>Ethylbenzene</b>   | <b>1100</b>  | 25              | "      | "        | "       | "        | "        | "         |       |
| <b>Xylenes (total)</b>  | <b>3100</b>  | 25              | "      | "        | "       | "        | "        | "         |       |
| <b>Gasoline Range Organics (C6-C10)</b>   | <b>19000</b> | 2500            | "      | "        | "       | "        | "        | "         |       |
| <i>Surrogate: 1,2-Dichloroethane-d4</i>   |              | 101 %           | 78-129 | "        | "       | "        | "        | "         |       |
| <b>MW-3 (MMI0549-03) Water Sampled: 09/18/03 09:10 Received: 09/19/03 10:40</b> |              |                 |        |          |         |          |          |           |       |
| Ethanol   | ND           | 500             | ug/l   | 5        | 3130003 | 09/30/03 | 09/30/03 | EPA 8260B |       |
| tert-Butyl alcohol  | ND           | 100             | "      | "        | "       | "        | "        | "         |       |
| <b>Methyl tert-butyl ether</b>  | <b>300</b>   | 2.5             | "      | "        | "       | "        | "        | "         |       |
| Di-isopropyl ether  | ND           | 2.5             | "      | "        | "       | "        | "        | "         |       |
| Ethyl tert-butyl ether  | ND           | 2.5             | "      | "        | "       | "        | "        | "         |       |
| <b>tert-Amyl methyl ether</b>   | <b>3.2</b>   | 2.5             | "      | "        | "       | "        | "        | "         |       |
| 1,2-Dichloroethane  | ND           | 2.5             | "      | "        | "       | "        | "        | "         |       |
| 1,2-Dibromoethane (EDB)   | ND           | 2.5             | "      | "        | "       | "        | "        | "         |       |
| <b>Benzene</b>  | <b>4.8</b>   | 2.5             | "      | "        | "       | "        | "        | "         |       |
| Toluene   | ND           | 2.5             | "      | "        | "       | "        | "        | "         |       |
| <b>Ethylbenzene</b>   | <b>10</b>    | 2.5             | "      | "        | "       | "        | "        | "         |       |
| <b>Xylenes (total)</b>  | <b>9.2</b>   | 2.5             | "      | "        | "       | "        | "        | "         |       |
| <b>Gasoline Range Organics (C6-C10)</b>   | <b>470</b>   | 250             | "      | "        | "       | "        | "        | "         |       |
| <i>Surrogate: 1,2-Dichloroethane-d4</i>   |              | 95.2 %          | 78-129 | "        | "       | "        | "        | "         |       |



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 500 12th Street, Suite 200  
 Oakland CA, 94607

Project: ARCO #4977, Castro Valley, CA  
 Project Number: INTRIM-50467  
 Project Manager: Scott Robinson

MMI0549  
 Reported:  
 10/13/03 08:42

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Sequoia Analytical - Morgan Hill**

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

**Batch 3I30003 - EPA 5030B P/T**

**Blank (3I30003-BLK1)**

Prepared & Analyzed: 09/30/03

|   |      |      |      |      |  |      |        |  |  |  |
|---|------|------|------|------|--|------|--------|--|--|--|
| Ethanol                                 | ND   | 100  | ug/l |      |  |      |        |  |  |  |
| tert-Butyl alcohol                      | ND   | 20   | "    |      |  |      |        |  |  |  |
| Methyl tert-butyl ether                 | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| Di-isopropyl ether                      | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| Ethyl tert-butyl ether                  | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| tert-Amyl methyl ether                  | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| 1,2-Dichloroethane                      | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| 1,2-Dibromoethane (EDB)                 | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| Benzene                                 | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| Toluene                                 | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| Ethylbenzene                            | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| Xylenes (total)                         | ND   | 0.50 | "    |      |  |      |        |  |  |  |
| Gasoline Range Organics (C6-C10)        | ND   | 50   | "    |      |  |      |        |  |  |  |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 4.82 |      | "    | 5.00 |  | 96.4 | 78-129 |  |  |  |

**Laboratory Control Sample (3I30003-BS1)**

Prepared & Analyzed: 09/30/03

|   |      |      |      |      |  |      |        |  |  |  |
|---|------|------|------|------|--|------|--------|--|--|--|
| Ethanol                                 | 153  | 100  | ug/l | 200  |  | 76.5 | 31-186 |  |  |  |
| tert-Butyl alcohol                      | 47.7 | 20   | "    | 50.0 |  | 95.4 | 0-206  |  |  |  |
| Methyl tert-butyl ether                 | 10.2 | 0.50 | "    | 10.0 |  | 102  | 63-137 |  |  |  |
| Di-isopropyl ether                      | 9.67 | 0.50 | "    | 10.0 |  | 96.7 | 76-130 |  |  |  |
| Ethyl tert-butyl ether                  | 9.53 | 0.50 | "    | 10.0 |  | 95.3 | 61-141 |  |  |  |
| tert-Amyl methyl ether                  | 9.64 | 0.50 | "    | 10.0 |  | 96.4 | 56-140 |  |  |  |
| 1,2-Dichloroethane                      | 10.1 | 0.50 | "    | 10.0 |  | 101  | 77-136 |  |  |  |
| 1,2-Dibromoethane (EDB)                 | 10.9 | 0.50 | "    | 10.0 |  | 109  | 77-132 |  |  |  |
| Benzene                                 | 9.98 | 0.50 | "    | 10.0 |  | 99.8 | 78-124 |  |  |  |
| Toluene                                 | 10.5 | 0.50 | "    | 10.0 |  | 105  | 78-129 |  |  |  |
| Ethylbenzene                            | 10.5 | 0.50 | "    | 10.0 |  | 105  | 84-117 |  |  |  |
| Xylenes (total)                         | 30.8 | 0.50 | "    | 30.0 |  | 103  | 83-125 |  |  |  |
| <i>Surrogate: 1,2-Dichloroethane-d4</i> | 4.55 |      | "    | 5.00 |  | 91.0 | 78-129 |  |  |  |

Sequoia Analytical - Morgan Hill

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 500 12th Street, Suite 200  
 Oakland CA, 94607

 Project: ARCO #4977, Castro Valley, CA  
 Project Number: INTRIM-50467  
 Project Manager: Scott Robinson

 MMI0549  
 Reported:  
 10/13/03 08:42

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Sequoia Analytical - Morgan Hill**

| Analyte   | Result | Reporting<br>Limit | Units | Spike<br>Level | Source<br>Result              | %REC<br>Limits | RPD   | RPD<br>Limit | Notes |
|---|--------|--------------------|-------|----------------|-------------------------------|----------------|-------|--------------|-------|
| <b>Batch 3I30003 - EPA 5030B P/T</b>                |        |                    |       |                |                               |                |       |              |       |
| <b>Laboratory Control Sample (3I30003-BS2)</b>      |        |                    |       |                | Prepared & Analyzed: 09/30/03 |                |       |              |       |
| Methyl tert-butyl ether                             | 8.25   | 0.50               | ug/l  | 10.1           |                               | 81.7 63-137    |       |              |       |
| Benzene   | 5.31   | 0.50               | "     | 6.48           |                               | 81.9 78-124    |       |              |       |
| Toluene   | 32.0   | 0.50               | "     | 29.7           |                               | 108 78-129     |       |              |       |
| Ethylbenzene  | 7.79   | 0.50               | "     | 7.20           |                               | 108 84-117     |       |              |       |
| Xylenes (total)                                     | 37.9   | 0.50               | "     | 33.7           |                               | 112 83-125     |       |              |       |
| Gasoline Range Organics (C6-C10)                    | 314    | 50                 | "     | 440            |                               | 71.4 70-113    |       |              |       |
| Surrogate: 1,2-Dichloroethane-d4                    | 4.62   |                    | "     | 5.00           |                               | 92.4 78-129    |       |              |       |
| <b>Laboratory Control Sample Dup (3I30003-BSD1)</b> |        |                    |       |                | Prepared & Analyzed: 09/30/03 |                |       |              |       |
| Ethanol   | 196    | 100                | ug/l  | 200            |                               | 98.0 31-186    | 24.6  | 37           |       |
| tert-Butyl alcohol                                  | 51.5   | 20                 | "     | 50.0           |                               | 103 0-206      | 7.66  | 22           |       |
| Methyl tert-butyl ether                             | 10.2   | 0.50               | "     | 10.0           |                               | 102 63-137     | 0.00  | 13           |       |
| Di-isopropyl ether                                  | 9.96   | 0.50               | "     | 10.0           |                               | 99.6 76-130    | 2.95  | 9            |       |
| Ethyl tert-butyl ether                              | 9.79   | 0.50               | "     | 10.0           |                               | 97.9 61-141    | 2.69  | 9            |       |
| tert-Amyl methyl ether                              | 9.50   | 0.50               | "     | 10.0           |                               | 95.0 56-140    | 1.46  | 12           |       |
| 1,2-Dichloroethane                                  | 10.3   | 0.50               | "     | 10.0           |                               | 103 77-136     | 1.96  | 13           |       |
| 1,2-Dibromoethane (EDB)                             | 10.5   | 0.50               | "     | 10.0           |                               | 105 77-132     | 3.74  | 9            |       |
| Benzene   | 10.1   | 0.50               | "     | 10.0           |                               | 101 78-124     | 1.20  | 12           |       |
| Toluene   | 10.2   | 0.50               | "     | 10.0           |                               | 102 78-129     | 2.90  | 10           |       |
| Ethylbenzene  | 9.67   | 0.50               | "     | 10.0           |                               | 96.7 84-117    | 8.23  | 10           |       |
| Xylenes (total)                                     | 27.7   | 0.50               | "     | 30.0           |                               | 92.3 83-125    | 10.6  | 11           |       |
| Surrogate: 1,2-Dichloroethane-d4                    | 4.87   |                    | "     | 5.00           |                               | 97.4 78-129    |       |              |       |
| <b>Laboratory Control Sample Dup (3I30003-BSD2)</b> |        |                    |       |                | Prepared & Analyzed: 09/30/03 |                |       |              |       |
| Methyl tert-butyl ether                             | 8.54   | 0.50               | ug/l  | 10.1           |                               | 84.6 63-137    | 3.45  | 13           |       |
| Benzene   | 5.69   | 0.50               | "     | 6.48           |                               | 87.8 78-124    | 6.91  | 12           |       |
| Toluene   | 32.2   | 0.50               | "     | 29.7           |                               | 108 78-129     | 0.623 | 10           |       |
| Ethylbenzene  | 7.81   | 0.50               | "     | 7.20           |                               | 108 84-117     | 0.256 | 10           |       |
| Xylenes (total)                                     | 37.4   | 0.50               | "     | 33.7           |                               | 111 83-125     | 1.33  | 11           |       |
| Gasoline Range Organics (C6-C10)                    | 319    | 50                 | "     | 440            |                               | 72.5 70-113    | 1.58  | 9            |       |
| Surrogate: 1,2-Dichloroethane-d4                    | 5.02   |                    | "     | 5.00           |                               | 100 78-129     |       |              |       |

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 Project Number: INTRIM-50467  
 Project Manager: Scott Robinson

MMI0549  
 Reported:  
 10/13/03 08:42

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Sequoia Analytical - Morgan Hill**

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

**Batch 3J03006 - EPA 5030B Modified**

**Blank (3J03006-BLK1)**

Prepared & Analyzed: 10/03/03

|                                  |    |      |      |  |  |  |  |  |  |  |
|----------------------------------|----|------|------|--|--|--|--|--|--|--|
| Ethanol                          | ND | 100  | ug/l |  |  |  |  |  |  |  |
| tert-Butyl alcohol               | ND | 20   | "    |  |  |  |  |  |  |  |
| Methyl tert-butyl ether          | ND | 0.50 | "    |  |  |  |  |  |  |  |
| Di-isopropyl ether               | ND | 0.50 | "    |  |  |  |  |  |  |  |
| Ethyl tert-butyl ether           | ND | 0.50 | "    |  |  |  |  |  |  |  |
| tert-Amyl methyl ether           | ND | 0.50 | "    |  |  |  |  |  |  |  |
| 1,2-Dichloroethane               | ND | 0.50 | "    |  |  |  |  |  |  |  |
| 1,2-Dibromoethane (EDB)          | ND | 0.50 | "    |  |  |  |  |  |  |  |
| Benzene                          | ND | 0.50 | "    |  |  |  |  |  |  |  |
| Toluene                          | ND | 0.50 | "    |  |  |  |  |  |  |  |
| Ethylbenzene                     | ND | 0.50 | "    |  |  |  |  |  |  |  |
| Xylenes (total)                  | ND | 0.50 | "    |  |  |  |  |  |  |  |
| Gasoline Range Organics (C6-C10) | ND | 50   | "    |  |  |  |  |  |  |  |

Surrogate: 1,2-Dichloroethane-d4      4.82      "      5.00      96.4      78-129

**Laboratory Control Sample (3J03006-BS1)**

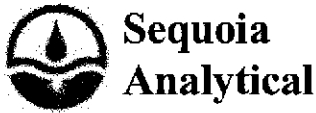
Prepared & Analyzed: 10/03/03

|                         |      |      |      |      |  |      |        |  |  |  |
|-------------------------|------|------|------|------|--|------|--------|--|--|--|
| Ethanol                 | 162  | 100  | ug/l | 200  |  | 81.0 | 31-186 |  |  |  |
| tert-Butyl alcohol      | 35.4 | 20   | "    | 50.0 |  | 70.8 | 0-206  |  |  |  |
| Methyl tert-butyl ether | 8.51 | 0.50 | "    | 10.0 |  | 85.1 | 63-137 |  |  |  |
| Di-isopropyl ether      | 9.57 | 0.50 | "    | 10.0 |  | 95.7 | 76-130 |  |  |  |
| Ethyl tert-butyl ether  | 9.40 | 0.50 | "    | 10.0 |  | 94.0 | 61-141 |  |  |  |
| tert-Amyl methyl ether  | 9.31 | 0.50 | "    | 10.0 |  | 93.1 | 56-140 |  |  |  |
| 1,2-Dichloroethane      | 9.37 | 0.50 | "    | 10.0 |  | 93.7 | 77-136 |  |  |  |
| 1,2-Dibromoethane (EDB) | 9.66 | 0.50 | "    | 10.0 |  | 96.6 | 77-132 |  |  |  |
| Benzene                 | 10.0 | 0.50 | "    | 10.0 |  | 100  | 78-124 |  |  |  |
| Toluene                 | 10.6 | 0.50 | "    | 10.0 |  | 106  | 78-129 |  |  |  |
| Ethylbenzene            | 11.0 | 0.50 | "    | 10.0 |  | 110  | 84-117 |  |  |  |
| Xylenes (total)         | 33.1 | 0.50 | "    | 30.0 |  | 110  | 83-125 |  |  |  |

Surrogate: 1,2-Dichloroethane-d4      4.78      "      5.00      95.6      78-129

Sequoia Analytical - Morgan Hill

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.*



885 Jarvis Drive  
 Morgan Hill, CA 95037  
 (408) 776-9600  
 FAX (408) 782-6308  
 www.sequoialabs.com

|   |   |  |
|---|---|--|
| URS Corporation [Arco]<br>500 12th Street, Suite 200<br>Oakland CA, 94607 | Project: ARCO #4977, Castro Valley, CA<br>Project Number: INTRIM-50467<br>Project Manager: Scott Robinson | MMI0549<br>Reported:<br>10/13/03 08:42 |
|---|---|--|

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Sequoia Analytical - Morgan Hill**

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|
|---------|--------|-----------------|-------|-------------|---------------|------|-------------|-----|-----------|-------|

**Batch 3J03006 - EPA 5030B Modified**

**Laboratory Control Sample (3J03006-BS2)**

Prepared & Analyzed: 10/03/03

|                                  |      |    |      |      |  |      |        |  |  |  |
|----------------------------------|------|----|------|------|--|------|--------|--|--|--|
| Gasoline Range Organics (C6-C10) | 451  | 50 | ug/l | 440  |  | 102  | 70-113 |  |  |  |
| Surrogate: 1,2-Dichloroethane-d4 | 4.90 |    | "    | 5.00 |  | 98.0 | 78-129 |  |  |  |

**Laboratory Control Sample Dup (3J03006-BSD1)**

Prepared: 10/03/03 Analyzed: 10/04/03

|                                  |      |      |      |      |  |      |        |       |    |  |
|----------------------------------|------|------|------|------|--|------|--------|-------|----|--|
| Ethanol                          | 186  | 100  | ug/l | 200  |  | 93.0 | 31-186 | 13.8  | 37 |  |
| tert-Butyl alcohol               | 40.2 | 20   | "    | 50.0 |  | 80.4 | 0-206  | 12.7  | 22 |  |
| Methyl tert-butyl ether          | 9.21 | 0.50 | "    | 10.0 |  | 92.1 | 63-137 | 7.90  | 13 |  |
| Di-isopropyl ether               | 10.1 | 0.50 | "    | 10.0 |  | 101  | 76-130 | 5.39  | 9  |  |
| Ethyl tert-butyl ether           | 10.1 | 0.50 | "    | 10.0 |  | 101  | 61-141 | 7.18  | 9  |  |
| tert-Amyl methyl ether           | 10.0 | 0.50 | "    | 10.0 |  | 100  | 56-140 | 7.15  | 12 |  |
| 1,2-Dichloroethane               | 9.86 | 0.50 | "    | 10.0 |  | 98.6 | 77-136 | 5.10  | 13 |  |
| 1,2-Dibromoethane (EDB)          | 10.3 | 0.50 | "    | 10.0 |  | 103  | 77-132 | 6.41  | 9  |  |
| Benzene                          | 10.1 | 0.50 | "    | 10.0 |  | 101  | 78-124 | 0.995 | 12 |  |
| Toluene                          | 9.94 | 0.50 | "    | 10.0 |  | 99.4 | 78-129 | 6.43  | 10 |  |
| Ethylbenzene                     | 10.4 | 0.50 | "    | 10.0 |  | 104  | 84-117 | 5.61  | 10 |  |
| Xylenes (total)                  | 31.2 | 0.50 | "    | 30.0 |  | 104  | 83-125 | 5.91  | 11 |  |
| Surrogate: 1,2-Dichloroethane-d4 | 4.91 |      | "    | 5.00 |  | 98.2 | 78-129 |       |    |  |

**Laboratory Control Sample Dup (3J03006-BSD2)**

Prepared: 10/03/03 Analyzed: 10/04/03

|                                  |      |    |      |      |  |      |        |      |   |  |
|----------------------------------|------|----|------|------|--|------|--------|------|---|--|
| Gasoline Range Organics (C6-C10) | 415  | 50 | ug/l | 440  |  | 94.3 | 70-113 | 8.31 | 9 |  |
| Surrogate: 1,2-Dichloroethane-d4 | 5.12 |    | "    | 5.00 |  | 102  | 78-129 |      |   |  |

Sequoia Analytical - Morgan Hill

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URS Corporation [Arco]  
500 12th Street, Suite 200  
Oakland CA, 94607

Project: ARCO #4977, Castro Valley, CA  
Project Number: INTRIM-50467  
Project Manager: Scott Robinson

MM10549  
**Reported:**  
10/13/03 08:42

#### Notes and Definitions

HT-RA This sample was originally analyzed within the EPA recommended hold time. Re-analysis for confirmation or dilution was performed past the recommended hold time. The results may still be used for their intended purpose.

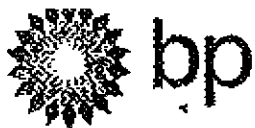
DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference



# Chain of Custody Record

Project Name 4977GWM  
 BP BU/GEM CO Portfolio Retail  
 BP Laboratory Contract Number: Atlantic Richfield Company

7ME0549

On-site Time: 800 Temp: 70  
 Off-site Time: 1015 Temp: 76  
 Sky Conditions: Clear  
 Meteorological Events:  
 Wind Speed: \_\_\_\_\_ Direction: \_\_\_\_\_

Date: 9/14/03 Requested Due Date (mm/dd/yy) 14 day TAT

|   |  |   |
|---|--|---|
| Send To:  | BP/GEM Facility No.: <u>ARCO 4977</u>                                    | Consultant/Contractor: <u>URS</u>                               |
| Lab Name: <u>SEQUOIA</u>                          | BP/GEM Facility Address: <u>2770 Castro Valley Rd, Castro Valley, CA</u> | Address: <u>500 12th St., Ste. 200</u>                          |
| Lab Address: <u>885 Jarvis Dr.</u>                | Site ID No. <u>ARCO 4977</u>   | <u>Oakland, CA 94609-4014</u>                                   |
| <u>Morgan Hill, CA 95037</u>                      | Site Lat/Long:   | e-mail EDD: <u>donna.casper@URSCorp.com</u>                     |
|   | California Global ID #:  | Consultant/Contractor Project No.: <u>J5-00004977.01 00427</u>  |
| Lab PM <u>Theresa Allen</u>                       | BP/GEM PM Contact: <u>PAUL SUPPLE</u>                                    | Consultant Tele/Fax: <u>510-893-3600/510-874-3268</u>           |
| Tele/Fax: <u>408-776-9600 / 408-782-6308</u>      | Address: <u>P.O. Box 0549</u>  | Consultant/Contractor PM: <u>Scott Robinson</u>                 |
| Report Type & QC Level: <u>1 Send EDP Reports</u> | <u>Moraga, CA 94570</u>  | Invoice to: Consultant/Contractor of <u>BP/GEM</u> (circle one) |
| BP/GEM Account No.:                               | Tele/Fax: <u>925-299-8891/925-299-8872</u>                               | BP/GEM Work Release No: <u>INTRIM -50467</u>                    |

| Item No. | Sample Description | Time | Matrix     |              |           |     | Laboratory No. | No. of containers | Preservatives |                                |                  | Requested Analysis |                                  |              |             |             | Sample Point Lat/Long #<br>Comments |                                      |
|----------|--------------------|------|------------|--------------|-----------|-----|----------------|-------------------|---------------|--------------------------------|------------------|--------------------|----------------------------------|--------------|-------------|-------------|-------------------------------------|--------------------------------------|
|          |                    |      | Soil/Solid | Water/Liquid | Sediments | Air |                |                   | Unpreserved   | H <sub>2</sub> SO <sub>4</sub> | HNO <sub>3</sub> | HCl                | TPH-G/BTEX<br>(8214, 8221, 8260) | TPH-D (8015) | MTBE (8021) | MTBE (8260) |                                     | MTBE, TAME, BTBB<br>DIBP, TBA (8260) |
| 1        | MW-1               | 930  |            | ✓            |           |     | 01             | 3                 |               |                                |                  |                    |                                  | ✓            | ✓           | ✓           |                                     |                                      |
| 2        | MW-2               | 950  |            | ✓            |           |     | 02             | 3                 |               |                                |                  |                    |                                  | ✓            | ✓           | ✓           |                                     |                                      |
| 3        | MW-3               | 910  |            | ✓            |           |     | 03             | 3                 |               |                                |                  |                    |                                  | ✓            | ✓           | ✓           |                                     |                                      |
| 4        | Field Blank        |      |            | ✓            |           |     | 04             | 1                 |               |                                |                  |                    |                                  |              |             |             |                                     | on hold                              |
| 5        | Temp Blank         |      |            | ✓            |           |     |                | 1                 |               |                                |                  |                    |                                  |              |             |             |                                     |                                      |
| 6        |                    |      |            |              |           |     |                |                   |               |                                |                  |                    |                                  |              |             |             |                                     |                                      |
| 7        |                    |      |            |              |           |     |                |                   |               |                                |                  |                    |                                  |              |             |             |                                     |                                      |
| 8        |                    |      |            |              |           |     |                |                   |               |                                |                  |                    |                                  |              |             |             |                                     |                                      |
| 9        |                    |      |            |              |           |     |                |                   |               |                                |                  |                    |                                  |              |             |             |                                     |                                      |
| 10       |                    |      |            |              |           |     |                |                   |               |                                |                  |                    |                                  |              |             |             |                                     |                                      |

| Sampler's Name:                                | Relinquished By / Affiliation | Date           | Time        | Accepted By / Affiliation | Date           | Time        |
|--|-------------------------------|----------------|-------------|---------------------------|----------------|-------------|
| <u>John De Jary</u>                            | <u>[Signature] / DTS</u>      | <u>9/19/03</u> | <u>944</u>  | <u>[Signature]</u>        | <u>9/19/03</u> | <u>944</u>  |
| Sampler's Company: <u>Blaine Tech Services</u> |                               | <u>9/19/03</u> | <u>1040</u> | <u>Andrew Jensen</u>      | <u>9-19-03</u> | <u>1040</u> |
| Shipment Date:                                 |                               |                |             |                           |                |             |
| Shipment Method:                               |                               |                |             |                           |                |             |
| Shipment Tracking No.:                         |                               |                |             |                           |                |             |

Instructions: Address Invoice to BP/GEM but send to URS for approval

Seals in Place Yes  No  Temperature Blank Yes  No  Cooler Temperature on Receipt 2.3 °F/C Trip Blank Yes  No

Distribution: White Copy - Laboratory / Yellow Copy - BP/GEM / Pink Copy - Consultant/Contractor

CLIENT NAME: URS  
 REC. BY (PRINT): AS  
 WORKORDER: MHW0599

DATE REC'D AT LAB: 9-19-03  
 TIME REC'D AT LAB: 1040  
 DATE LOGGED IN: 9-19-03

Drinking water for regulatory purposes: YES/  
 Wastewater for regulatory purposes: YES/

| CIRCLE THE APPROPRIATE RESPONSE  | LAB SAMPLE # | DASH # | CLIENT ID  | CONTAINER DESCRIPTION | PRESERVATIVE | SAMPLE MATRIX | DATE SAMPLED | REMARKS: CONDITION (ET) |
|--|--------------|--------|------------|-----------------------|--------------|---------------|--------------|-------------------------|
| 1. Custody Seal(s)<br><input checked="" type="radio"/> Present / <input type="radio"/> Absent<br><input type="radio"/> Intact / <input type="radio"/> Broken*                              | 01           |        | MW-1       | (3) VOCs              | HCl          | ↓             | 9-18-03      | lot HA 321306           |
| 2. Chain-of-Custody<br><input checked="" type="radio"/> Present / <input type="radio"/> Absent*  | 02           |        | MW-2       | ↓                     | ↓            | ↓             | ↓            |                         |
| 3. Traffic Reports or Packing List:<br><input type="radio"/> Present / <input checked="" type="radio"/> Absent   | 03           |        | MW-3       | ↓                     | ↓            | ↓             | ↓            |                         |
| 4. Airbill:<br><input type="radio"/> Airbill / <input type="radio"/> Sticker<br><input type="radio"/> Present / <input checked="" type="radio"/> Absent                                    | 04           |        | trip blank | (2) VOCs              | ↓            | ↓             | ↓            |                         |
| 5. Airbill #:  |              |        |            |                       |              |               |              |                         |
| 6. Sample Labels:<br><input checked="" type="radio"/> Present / <input type="radio"/> Absent   |              |        |            |                       |              |               |              |                         |
| 7. Sample IDs:<br><input checked="" type="radio"/> Listed / <input type="radio"/> Not Listed on Chain-of-Custody   |              |        |            |                       |              |               |              |                         |
| 8. Sample Condition:<br><input checked="" type="radio"/> Intact / <input type="radio"/> Broken* / <input type="radio"/> Leaking*   |              |        |            |                       |              |               |              |                         |
| 9. Does information on custody reports, traffic reports and sample labels agree?<br><input checked="" type="radio"/> Yes / <input type="radio"/> No*                                       |              |        |            |                       |              |               |              |                         |
| 10. Sample received within hold time:<br><input checked="" type="radio"/> Yes / <input type="radio"/> No*  |              |        |            |                       |              |               |              |                         |
| 11. Proper Preservatives used:<br><input checked="" type="radio"/> Yes / <input type="radio"/> No*   |              |        |            |                       |              |               |              |                         |
| 12. Temp Rec. at Lab:<br>Is temp 4 +/- 2°C?<br><u>2.3°C</u><br><input checked="" type="radio"/> Yes / <input type="radio"/> No**<br>(Acceptance range for samples requiring thermal pres.) |              |        |            |                       |              |               |              |                         |

9-18-03 AS

\*IF CIRCLED, CONTACT PROJECT MANAGER AND ATTACH RECORD OF RESOLUTION.

- Sample Receipt Log  
 Revision 3 (03/18/03)  
 Replaces Revision 2.3 (12/24/02)  
 Effective 03/18/03

**ATTACHMENT C**

**EDCC REPORT AND EDF/GEOWELL SUBMITTAL CONFIRMATION**

---

## Error Summary Log

10/13/03

EDF 1.2i All files present in deliverable.

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|                    |  |
|--------------------|--|
| Laboratory:        | Sequoia Analytical Laboratories, Inc., Morgan Hill, CA |
| Project Name:      | ARCO #4977, Castro Valley                              |
| Work Order Number: | MMI0549  |
| Global ID:         | NA   |
| Lab Report Number: | MMI0549101320030842                                    |



## Report Summary

| Labreport               | Sampid | Labsampid   | Mtrx | QC  | Anmcode | Exmcode | Logdate  | Extdate  | Anadate  | Lablotctl | Run | Sub |
|-------------------------|--------|-------------|------|-----|---------|---------|----------|----------|----------|-----------|-----|-----|
| MMI05491013200<br>30842 | MW-1   | MMI054901   | W    | CS  | 8260TPH | SW5030B | 09/18/03 | 09/30/03 | 09/30/03 | 3I30003   | 1   |     |
| MMI05491013200<br>30842 | MW-1   | MMI054901R1 | W    | CS  | 8260TPH | SW5030B | 09/18/03 | 10/03/03 | 10/03/03 | 3J03006   | 1   |     |
| MMI05491013200<br>30842 | MW-2   | MMI054902   | W    | CS  | 8260TPH | SW5030B | 09/18/03 | 09/30/03 | 09/30/03 | 3I30003   | 1   |     |
| MMI05491013200<br>30842 | MW-3   | MMI054903   | W    | CS  | 8260TPH | SW5030B | 09/18/03 | 09/30/03 | 09/30/03 | 3I30003   | 1   |     |
|                         |        | 3I30003BSD1 | WQ   | BD1 | 8260TPH | SW5030B | //       | 09/30/03 | 09/30/03 | 3I30003   | 1   |     |
|                         |        | 3I30003BSD2 | WQ   | BD2 | 8260TPH | SW5030B | //       | 09/30/03 | 09/30/03 | 3I30003   | 1   |     |
|                         |        | 3I30003BS1  | WQ   | BS1 | 8260TPH | SW5030B | //       | 09/30/03 | 09/30/03 | 3I30003   | 1   |     |
|                         |        | 3I30003BS2  | WQ   | BS2 | 8260TPH | SW5030B | //       | 09/30/03 | 09/30/03 | 3I30003   | 1   |     |
|                         |        | 3I30003BLK1 | WQ   | LB1 | 8260TPH | SW5030B | //       | 09/30/03 | 09/30/03 | 3I30003   | 1   |     |
|                         |        | 3J03006BSD1 | WQ   | BD1 | 8260TPH | SW5030B | //       | 10/03/03 | 10/04/03 | 3J03006   | 1   |     |
|                         |        | 3J03006BSD2 | WQ   | BD2 | 8260TPH | SW5030B | //       | 10/03/03 | 10/04/03 | 3J03006   | 1   |     |
|                         |        | 3J03006BS1  | WQ   | BS1 | 8260TPH | SW5030B | //       | 10/03/03 | 10/03/03 | 3J03006   | 1   |     |
|                         |        | 3J03006BS2  | WQ   | BS2 | 8260TPH | SW5030B | //       | 10/03/03 | 10/03/03 | 3J03006   | 1   |     |
|                         |        | 3J03006BLK1 | WQ   | LB1 | 8260TPH | SW5030B | //       | 10/03/03 | 10/03/03 | 3J03006   | 1   |     |

# EDFSAMP: Error Summary Log

10/13/03

| Error type                            | Logcode | Projname | Npdlwo | Sampid | Matrix |
|---------------------------------------|---------|----------|--------|--------|--------|
| There are no errors in this data file |         |          |        |        |        |

---

## EDFTEST: Error Summary Log

10/13/03

| Error type                            | Labsampid | Qccode | Anmcode | Exmcode | Anadate | Run number |
|---------------------------------------|-----------|--------|---------|---------|---------|------------|
| There are no errors in this data file |           |        |         |         | //      | 0          |

---

## EDFRES: Error Summary Log

10/13/03

| Error type                            | Labsampid | Qccode | Matrix | Anmcode | Pvccode | Anadate | Run number | Parlabel |
|---------------------------------------|-----------|--------|--------|---------|---------|---------|------------|----------|
| There are no errors in this data file |           |        |        |         |         | //      | 0          |          |

---

## EDFQC: Error Summary Log

10/13/03

| Error type                             | Lablctf | Anmcode | Parlabel | Qccode | Labqid |
|--|---------|---------|----------|--------|--------|
| There are no errors in this data files |         |         |          |        |        |

---

## EDFCL: Error Summary Log

10/13/03

| Error type                            | Clevdate | Anmcode | Exmcode | Parlabel | Cicode |
|---------------------------------------|----------|---------|---------|----------|--------|
| There are no errors in this data file | 11       |         |         |          |        |

## AB2886 Electronic Delivery

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Your EDF file has been successfully uploaded!

**Confirmation Number:** 9764624357

**Date/Time of Submittal:** 10/13/2003 12:28:19 PM

**Facility Global ID:** T0600100089

**Facility Name:** ARCO

**Submittal Title:** 3rd Qtr 2003 Monitoring Report for #4977

**Submittal Type:** GW Monitoring Report

Logged in as URSCORP-OAKLAND  
(CONTRACTOR)

CONTACT SITE [ADMINISTRATOR](#)

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### UPLOADING A GEO\_WELL FILE

**Processing is complete. No errors were found!**  
**Your file has been successfully submitted!**

**Submittal Title:** 3rd Qtr 2003 Geowell for #4977

**Submittal Date/Time:** 10/13/2003 12:29:52 PM

**Confirmation Number:** 9017887711

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