# 3R - 431

# AGWMR

# 07/08/2009

3R431

TETRA TECH, INC.

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Albuquerque, NM 87110
(505) 237-8440

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July 8, 2009

Mr. Glen von Gonten
State of New Mexico Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: ConocoPhillips Howell K-1 2008 Annual Groundwater Monitoring Report
Aztec, New Mexico

Dear Mr. von Gonten:

Enclosed please find a copy of the above-referenced document as compiled by Tetra Tech, Inc., formerly Maxim Technologies, for this Farmington area site.

Please do not hesitate to contact me at (505) 237-8440 if you have any questions or require additional information.

Sincerely,

Kelly E. Blanchard

Kelly E. Blanchard
Project Manager/Geologist

Enclosures (1)

# 2008 ANNUAL GROUNDWATER MONITORING REPORT

# CONOCOPHILLIPS
# HOWELL K-1
# SAN JUAN COUNTY, NEW MEXICO

OCD # _____

**Prepared for:**

ConocoPhillips

420 South Keeler Avenue
Bartlesville, OK 74004

**Prepared by:**

TETRA TECH, INC.

6121 Indian School Rd. NE, Suite 200
Albuquerque, NM 87110
Tetra Tech Project No. 1158690089

July 2, 2009

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# ANNUAL GROUNDWATER MONITORING
# HOWELL K-1, SAN JUAN COUNTY, NEW MEXICO

## 1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring events conducted by Tetra Tech, Inc. (Tetra Tech) in March, August, October 2008 and January 2009, at the ConocoPhillips Howell K-1 site, located approximately ½ mile southeast of Navajo Lake State Park and 10 miles east of Aztec in Unit Letter K, Section 21, Township 30N, Range 8W of San Juan County, New Mexico (Site). The Site consists of a gas production well and associated equipment and installations. The location and general features of the Site are shown on **Figures 1** and **2**, respectively.

### 1.1 Site Background

The environmental investigation at the Site began in August 2005 with the excavation of approximately 4000 cubic yards of hydrocarbon impacted soil from an area southwest of the wellhead at the Howell K-1 site. The hydrocarbon impacted soils were discovered in the area during below grade tank removal activities. The final dimension of the excavation were 70 feet by 50 feet by 36 feet deep (groundwater was encountered at a depth of approximately 34 feet below ground surface (bgs)). Once these dimensions had been reached, the excavation was stopped due to the inability of the equipment to operate safely at this depth; however, the limits of the hydrocarbon impact had not been delineated. The excavation was backfilled with clean soil. In March 2006, one groundwater monitoring well (MW-1) was installed in the general area of the backfilled excavation by Envirotech. The location of this well is shown on **Figure 2**.

Due to the transition of Site consulting responsibilities from Lode Star LLC of Farmington, NM, to Tetra Tech following the acquisition of Burlington Resources by ConocoPhillips Company in March 2006, groundwater monitoring was not performed at the Site in March and June 2007. Tetra Tech began sampling groundwater at the Howell K-1 site in November of 2007 using MW-1 and continued to do so until August of 2008, when 3 additional monitoring wells were installed at the Site by WDC Exploration and Wells of Peralta, NM and under Tetra Tech supervision. Additional wells were installed in response to a request by the New Mexico Oil Conservation Division (OCD) for Site characterization and enhanced laboratory analyses. This request was communicated to Tetra Tech during an April 2008 meeting conducted in Santa Fe, New Mexico with Glen Von Gonten, OCD Environmental Bureau Hydrologist. Groundwater monitoring well MW-2 was installed upgradient of MW-1 and monitoring wells MW-3 and MW-4 were installed down gradient of MW-1 (**Figure 2**). October 2008 marks the first quarterly groundwater monitoring event to include all 4 monitoring wells for analysis at the Site. A summary of the Howell K-1 site history can be seen in **Table 1**.

### 1.2 Groundwater Monitoring Well Installation

On August 13 and14, 2008, WDC installed 3 groundwater monitoring wells at the Site under the supervision of Tetra Tech: MW-2, MW-3, and MW-4. All wells were drilled using a CME-85 drill rig, hollow stem augers, and split-spoon sampling techniques. MW-2 was installed on August 13, 2008 to a total depth of 40 feet bgs, MW-3 was installed on August 13, 2008 to a total depth of 38 feet bgs, and MW-4 was

installed on August 14, 2008 to a total depth of 36 feet bgs. Groundwater was encountered at approximately 30 feet during the monitoring well installation procedures for MW-2, MW-3 and MW-4. Soil boring logs and well completion forms are included as **Appendix A**. A generalized geologic cross section for the Site is presented in **Figure 3**.

Soil samples were obtained from MW-2, MW-3 and MW-4 during soil boring activities from depths of 28 to 29.5 feet bgs; 38 to 39.5 feet bgs; and from 28.5 to 30 feet bgs, respectively. Each soil sample was analyzed for diesel range organics (DRO) and gasoline range organics (GRO) by Environmental Protection Agency (EPA) Method 8015B; total mercury by EPA Method 7471A; total metals by EPA Methods 6010B and 6020; semivolatile organic compounds (SVOCs) by EPA Method 8270C; and volatile organic compounds (VOCs) by EPA Method 8260B. None of the analytes were detected in concentrations above OCD recommended action levels. Results of the soil analysis are shown in **Table 2** and **Appendix B**.

# 2.0 MONITORING SUMMARY AND SAMPLING METHODOLOGY AND ANALYTICAL RESULTS

## 2.1 Monitoring Summary

Quarterly groundwater sampling of groundwater monitoring well MW-1 was conducted in March and August of 2008. In October of 2008 and January of 2009, groundwater sampling included samples from MW-1, MW-2, MW-3 and MW-4. Groundwater levels were measured in each well during each sampling event and are presented on **Table 3**. The groundwater flow direction is to the west, southwest based on groundwater elevation data collected on October 24, 2008 and January 30th 2009, and can be seen on **Figure 4** and **Figure 5**.

## 2.2 Groundwater Sampling Methodology

During each sampling event, each monitoring well was purged either of three casing volumes of water or was purged until groundwater parameters had stabilized. Measured groundwater parameters included temperature, pH, conductivity, total dissolved solids (TDS), oxidation-reduction potential (ORP) and dissolved oxygen (DO) and were collected using a YSI 556 multi-parameter sonde. A 1.5-inch clear, poly-vinyl, disposable bailer was used to purge each well and to collect the groundwater samples. The purge water generated during the event was disposed of in the produced water tank located on site (**Figure 2**). The groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped with chain-of-custody documentation to Southern Petroleum Laboratory (SPL) in Houston Texas. All groundwater samples collected were analyzed for the presence of benzene, toluene, ethylbenezene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8260B.

In addition to analysis for the presence BTEX, a baseline chemistry analysis was performed during October 2008 for monitoring wells MW-1, MW-2, MW-3 and MW-4 which included analysis for volatile organic compounds (VOCs) by EPA Method 8260B, semi-volatile organic compounds (SVOCs) by EPA Method 8270C, total petroleum hydrocarbons (TPH) by EPA Method 8015, metals by EPA Methods 6010, 6020 and 7470, and ion chromatography by EPA Method E300.0. Groundwater sampling field forms for all 4 quarters

are included as **Appendix C**. Each of the four quarters of data collected during quarterly sampling in 2008 and 2009 indicate regulatory compliance in MW-1, MW-2, MW-3 and MW-4.

### 2.3 Groundwater Sampling Analytical Results

Samples collected from monitoring well MW-1 in March, August and October of 2008 and January 2009 indicate that groundwater concentrations for BTEX were below laboratory method detection limits (MDL) / practical quantitation limits (PQL). Additional monitoring wells MW-2, MW-3 and MW-4 were also below laboratory method detection limits for BTEX during both October 2008 and January 2009 sampling events.

Although BTEX constituents were found to be below NMWQCC standards during the baseline chemistry analysis in October of 2008, 3 other constituents were found to be above standard. All 4 wells on Site were found to be above the NMWQCC standard for sulfate, iron and manganese. **Table 4** lists the baseline analytical results from groundwater sampling done during the October 2008 sampling event. A summary of historical BTEX results including all 4 quarters from 2008 are included in **Table 5**. The corresponding laboratory analysis reports including quality control summaries can be found in **Appendix D**.

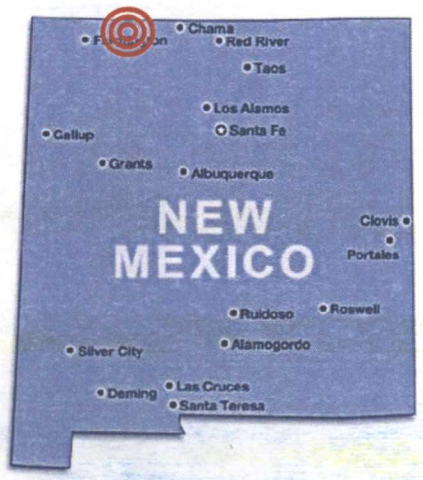
## 3.0 CONCLUSIONS

Based on the historical groundwater quality data, groundwater samples collected from groundwater monitoring well MW-1 have never exceeded New Mexico Water Quality Control Commission (NMWQCC) groundwater quality standards for BTEX constituents during sampling conducted from March of 2006 to January of 2009. Frequently, BTEX concentrations were below the minimum detection limits for these constituents. In addition, groundwater samples collected from MW-2, MW-3 and MW-4 have also not exceeded NMWQCC groundwater quality standards for BTEX constituents from October of 2008 to January of 2009. Although BTEX is below standards in all 4 monitoring wells, Tetra Tech recommends annual groundwater monitoring until levels of sulfate, iron and manganese are also bellow NMWQCC standards or until concentrations reach regional background levels. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

# FIGURES


**FIGURE 1.**

Site Location Map
ConocoPhillips
Howell K-1
Aztec, NM




Approximate ConocoPhillips Howell K-1 Site location

Latitude = 36.79505 deg N
Longitude = -107.68474 deg W

N

TETRA TECH, INC.

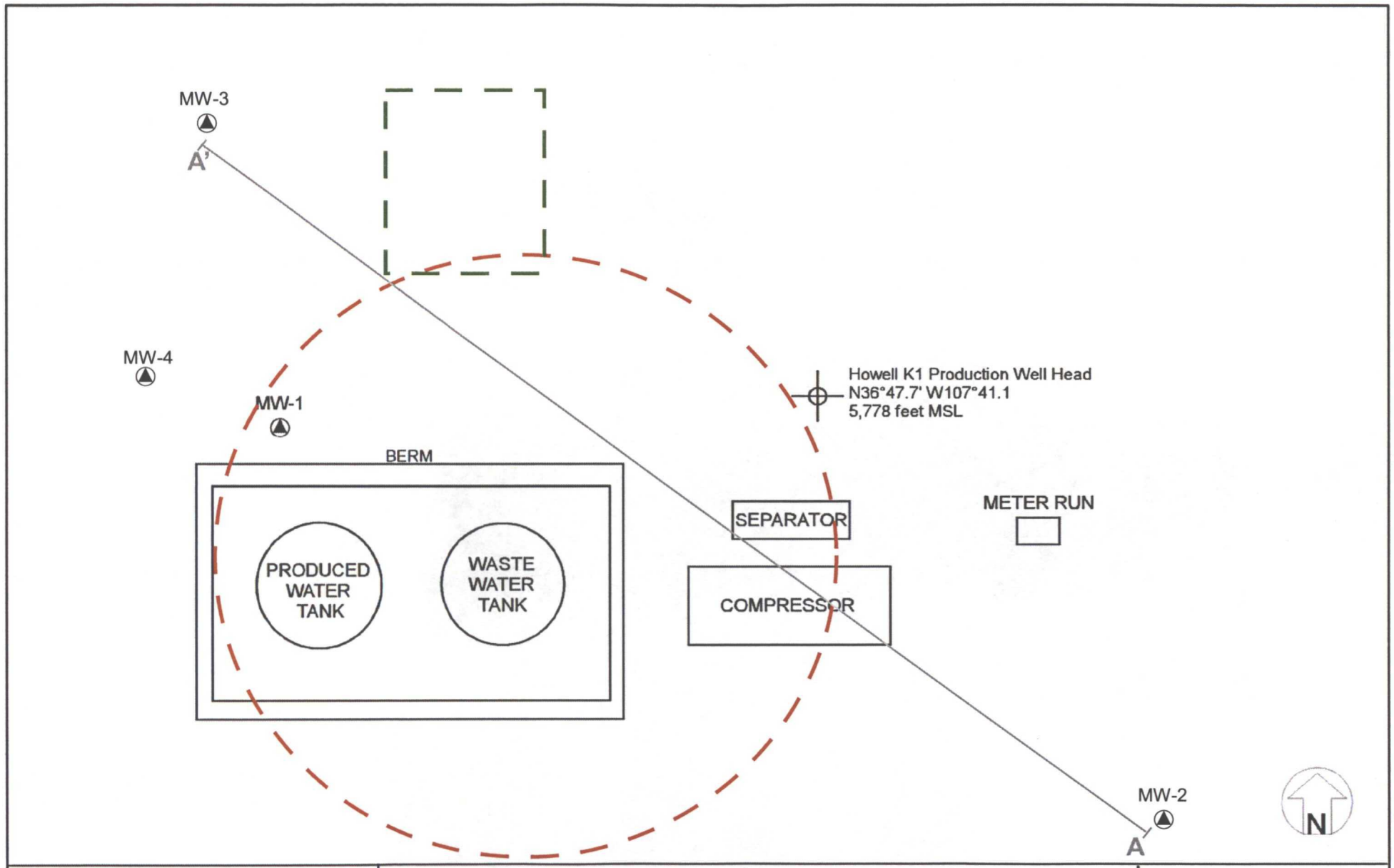



**FIGURE 2:**
SITE LAYOUT MAP
CONOCOPHILLIPS
HOWELL K-1
Unit K, Sec 21, Twp 30N, Rng 8W
San Juan County, New Mexico
Revised by CFM 06/09

LEGEND

- WELLHEAD
- MONITORING WELL
- GENERAL AREA OF UNDERGROUND TANK REMOVAL EXCAVATION
- GENERAL AREA OF UNLINED EARTHEN PIT EXCAVATION

0 15 30
FEET

TETRA TECH, INC.

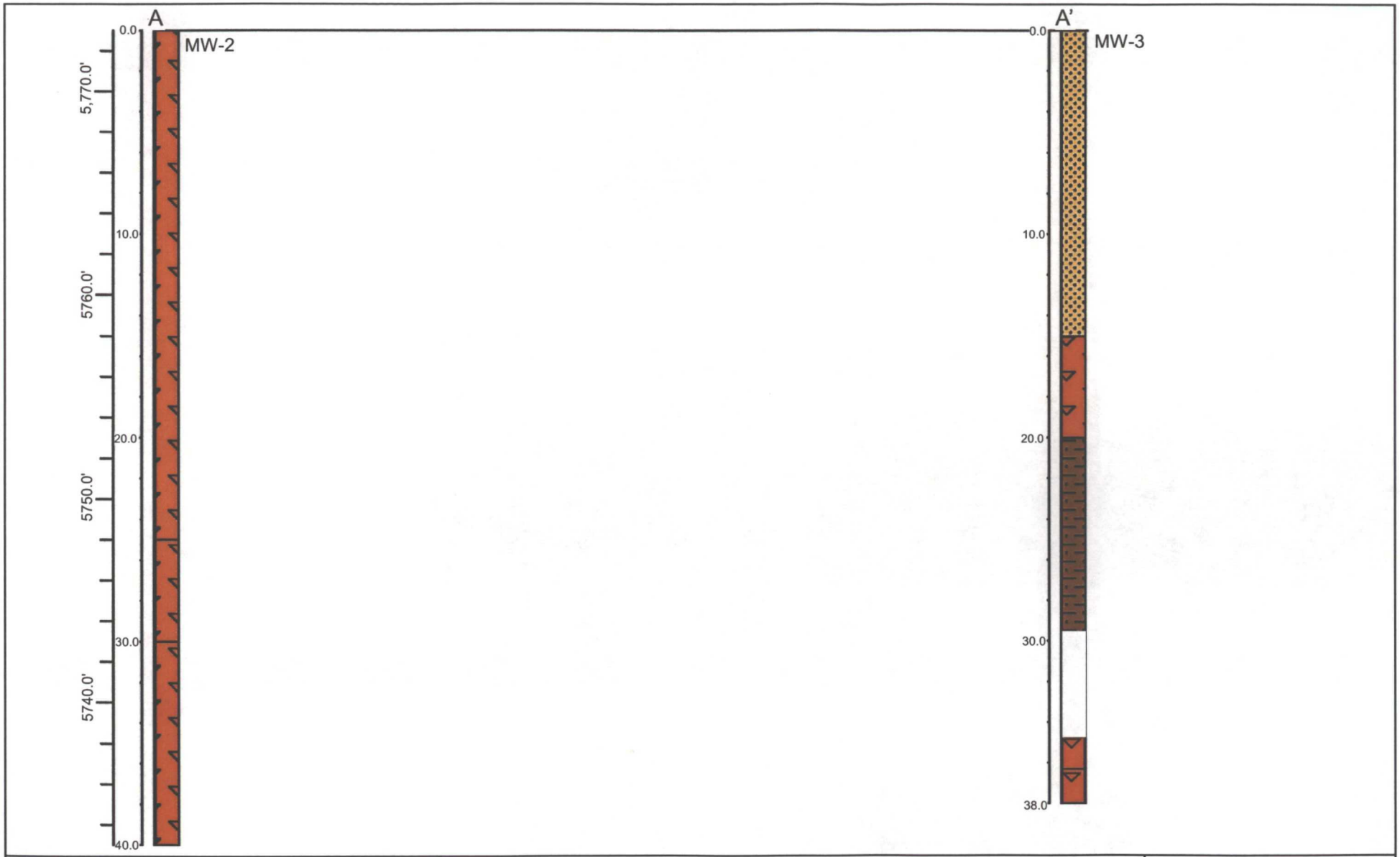



**FIGURE 3:**
GENERALIZED GEOLOGIC CROSS SECTION
CONOCOPHILLIPS COMPANY
HOWELL K-1
Sec 21, T30N, R8W
San Juan County, New Mexico

**LEGEND**

- Clayey sand
- Fine-grained sand
- Medium-grained sand
- 0% recovery during split spoon sampling

TETRA TECH, INC.

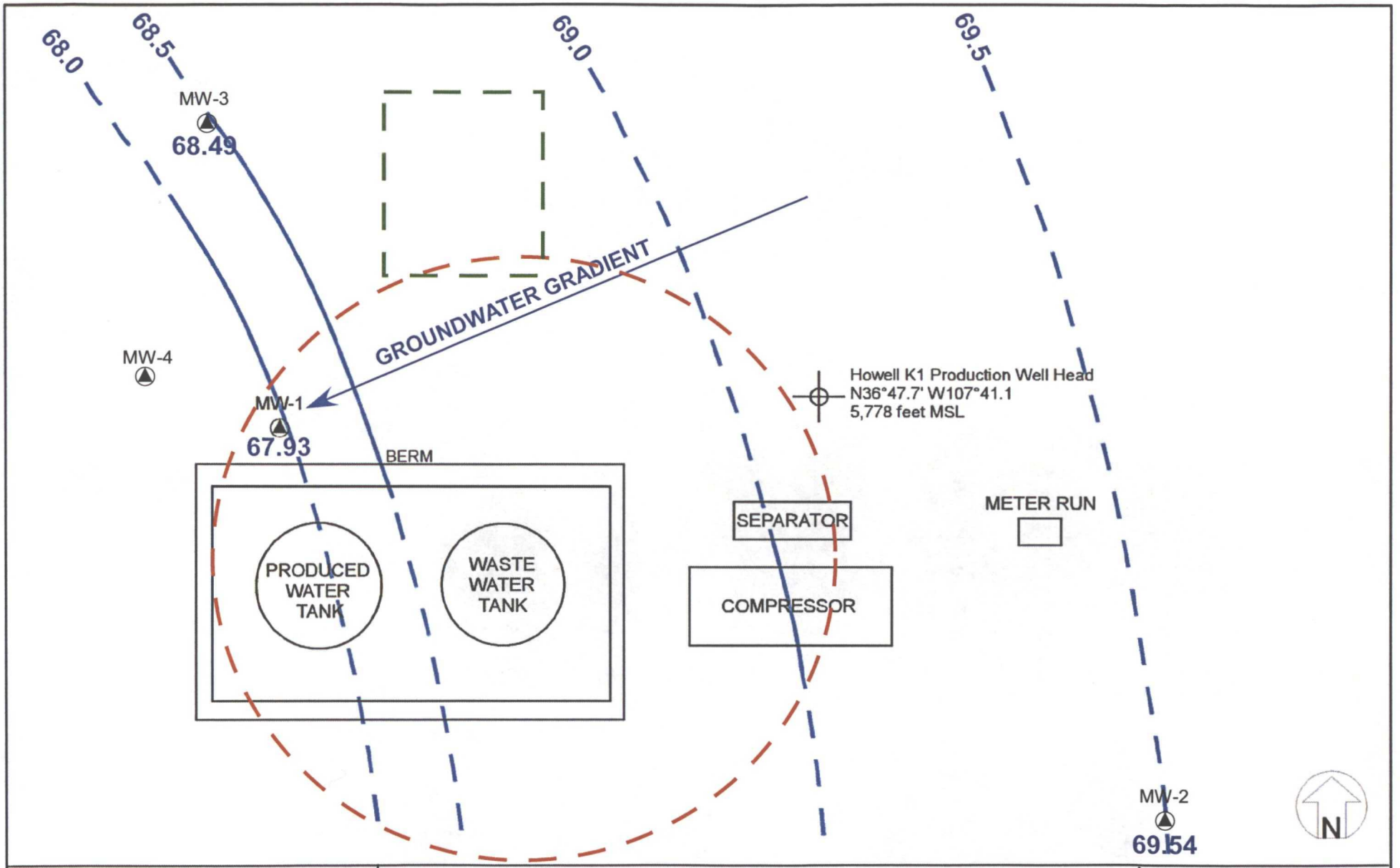



**FIGURE 4:**
OCTOBER 2008 GROUNDWATER ELEVATION CONTOUR MAP
CONOCOPHILLIPS
HOWELL K-1
Unit K, Sec 21, Twp 30N, Rng 8W
San Juan County, New Mexico
Revised by CFM 06/09

LEGEND

- WELLHEAD
- MONITORING WELL
- GENERAL AREA OF UNDERGROUND TANK REMOVAL EXCAVATION
- GENERAL AREA OF UNLINED EARTHEN PIT EXCAVATION
- GROUNDWATER ELEVATION (dashed where inferred)

0 15 30
FEET

TETRA TECH, INC.

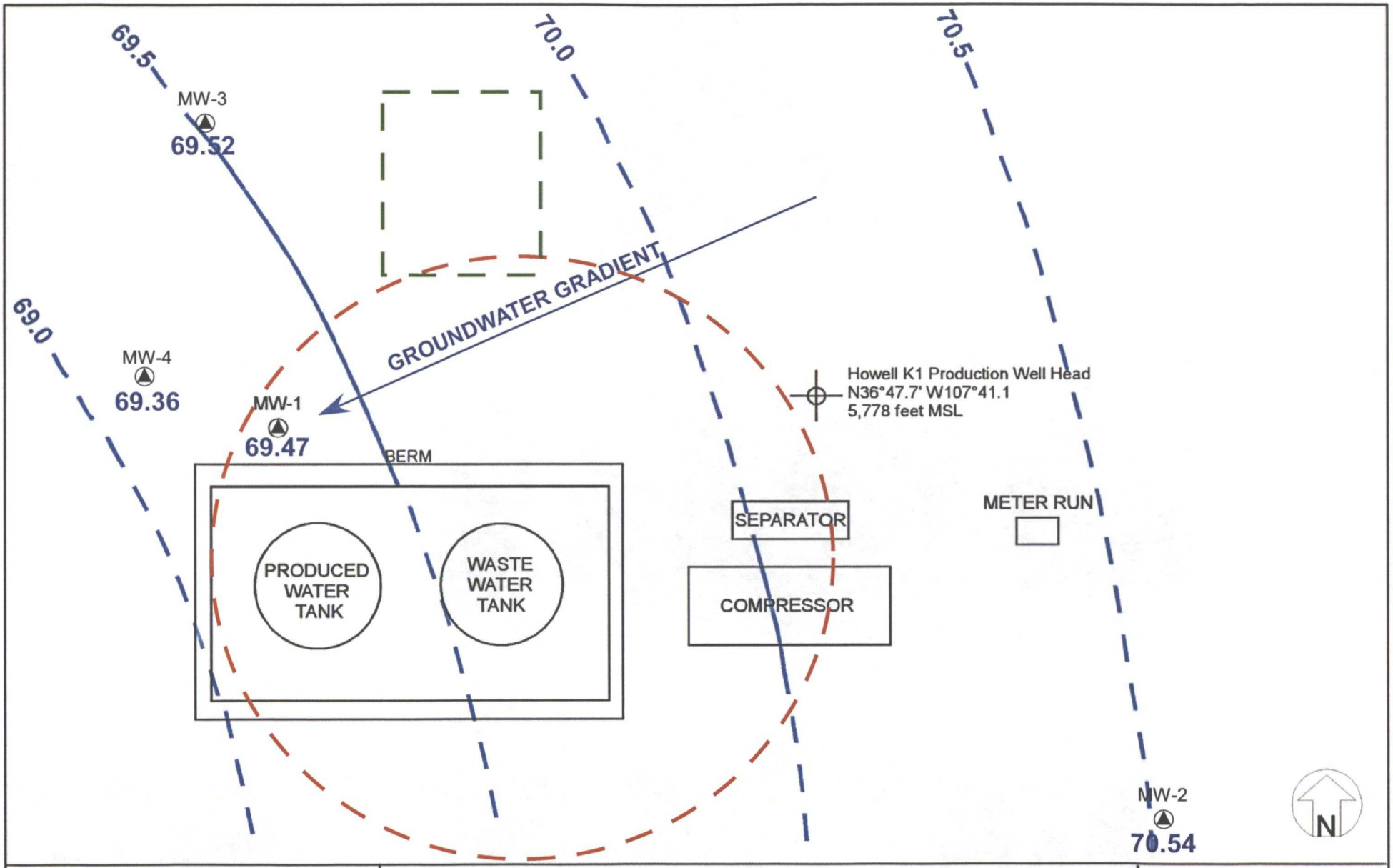



**FIGURE 5:**
JANUARY 2009 GROUNDWATER ELEVATION CONTOUR MAP
CONOCOPHILLIPS
HOWELL K-1
Unit K, Sec 21, Twp 30N, Rng 8W
San Juan County, New Mexico
Revised by CFM 06/09

LEGEND

- WELLHEAD
- MONITORING WELL
- GENERAL AREA OF UNDERGROUND TANK REMOVAL EXCAVATION
- GENERAL AREA OF UNLINED EARTHEN PIT EXCAVATION
- GROUNDWATER ELEVATION (dashed where inferred)

0 15 30
FEET

TETRA TECH, INC.

# TABLES

Table 1. Site History Timeline

| Date/Time Period | Event/Action | Description/Comments |
|---|---|---|
| ıly 26, through August 18, 2005 | Initial Site Assessment | Environmental investigation began with the excavation of approximately 4000 cubic yards of impacted soil from an area southwest of the Howell K-1 well head. Impacted soils were discovered during the removal activities of a below grade tank. Dimensions of the excavation are approximately 70 feet long by 50 feet wide by 36 feet deep. Groundwater was encountered at approximately 34 feet and soils were still impacted at 36 feet deep, the point at which excavation machinery was stopped at the practical limit for safe operation. The total extent of hydrocarbon impacts were not completely deliniated. Soil was treated with 600 total gallons of potassium permanganate solution. The excavation area was backfilled with clean soil. |
| March 10, 2006 | Groundwater monitoring well installation | One ground water monitoring well, MW-1, was installed in the center of the backfilled excavation by Envirotech. Total depth of well was set at 35 feet. |
| March 31, 2009 | Site Transfer | ConocoPhillips Company completed acqisition of Burlington Resources. |
| March and ıne 2007 | Groundwater monitoring not performed | After the acqisition of Burlington Resources by ConocoPhillips, consulting responsibilities were transferred from Lode Star LLC of Ermington New Mexico to Tetra Tech of Albuqerqe. Due to the transition, first and second qarter sampling of 2007 was not performed |
| November 9, 2007 through March 19, 2008 | Groundwater monitoring | Tetra Tech began sampling the Howell K-1 site qarterly in November of 2007. Groundwater was sampled from MW-1 and was analyzed for BTEX constituents. No constituents were detected at levels that exceeded the NMWQC standards at any point during this period. |
| April 1, 2008 | Additional Monitoring Reqested by OCD | Oil Concervation Division of NM Energy, Minerals, and Resources Dept. indicates additional investigation and sampling is necessary for closure consideration during a meeting with Glenn Von Gonten |
| ıly 23, 2008 | Groundwater monitoring postponed | Groundwater monitoring of MW-1 was postponed after it was found that there was an obstruction caused by settling and shifting of the MW-1 casing and the surrounding backfill. It was determined that the obstruction could be avoided by using a smaller bailer to collect samples. Sampling was postponed and was set to follow upcoming monitoring well installation so that proper sampling materials could be used. |
| August 13 and 14, 2008 | Groundwater monitoring well installation and groundwater monitoring | Three additional groundwater monitoring wells, MW-2, MW-3 and MW-4 were installed by WDC and overseen by Tetra Tech in response to . MW-2 was installed upgradient of MW-1. Both MW-3 and MW-4 were installed downgradient of MW-1. All wells were developed by purging approximately 80 gallons of fluid using a surge block and a purge pump. A sample was collected from MW-1 on August 14th since sampling could not be done in ıly of 2008. A 3/4 inch disposable bailer was used to avoid obstruction in MW-1. Sample was analyzed for BTEX constituents. All constituents were below NMWQC standards. |
| October 24, 2008 | Groundwater monitoring | Third qarter 2008 groundwater monitoring was completed and was the first qarter of sampling to include all four monitoring wells on site. A baseline suite was completed including majr ions, total metals, semi-volatile organic compounds (SVOCs) volatile organic compounds (VOCs)including BTEX, diesel range organics, and gasoline range organics. All BTEX constituents were below NMWQC standards. All four wells were above standards for sulfate, iron and manganese. MW-4 was also above the standard for fluoride. |
| anuary 30, 2009 | 4th qarter 2009 groundwater monitoring | Tetra Tech conducted forth qarter 2008 groundwater monitoring at the site for BTEX constituents in all four monitoring wells. All wells are below NMWQC standards for BTEX . |

ConocoPhillips Howell K-1

**Table 2. Soil Boring Laboratory Analytical Results**

| Constituent | | | Sample ID (Collected 8/13/2008 and 8/14/2008) | | | |
|---|---|---|---|---|---|---|
| **Metals, Total** | **Method** | **Units** | **MW-2 (28 - 29.5)** | **MW-3 (38 - 39.5)** | **MW-4 (28.5 - 30)** | **NMOCD** |
| Mercury | SW7471A | mg/kg - dry | < 0.0344 | < 0.0362 | <0.0357 | NE |
| Aluminum | SW6010B | mg/kg - dry | 9,220 | 5,970 | 5,130 | NE |
| Boron | SW6010B | mg/kg - dry | < 57.3 | <60.4 | < 59.5 | NE |
| Calcium | SW6010B | mg/kg - dry | 11,900 | 10,500 | 49,700 | NE |
| Iron | SW6010B | mg/kg - dry | 12,300 | 9,300 | 7,130 | NE |
| Magnesium | SW6010B | mg/kg - dry | 4,720 | 1,710 | 2,000 | NE |
| Potassium | SW6010B | mg/kg - dry | 1,060 | 1,050 | 859 | NE |
| Sodium | SW6010B | mg/kg - dry | 1,380 | 155 | 354 | NE |
| Strontium | SW6010B | mg/kg - dry | 373 | 86.6 | 1140 | NE |
| Tin | SW6010B | mg/kg - dry | < 5.73 | < 6.04 | < 5.95 | NE |
| Titanium | SW6010B | mg/kg - dry | 100 | 64.3 | 56.2 | NE |
| Antimony | SW6020 | mg/kg - dry | < 0.573 | < 0.604 | < 0.595 | NE |
| Arsenic | SW6020 | mg/kg - dry | 4.5 | 2.86 | 2.1 | NE |
| Barium | SW6020 | mg/kg - dry | 246 | 137 | 109 | NE |
| Beryllium | SW6020 | mg/kg - dry | 0.825 | 0.471 | 0.385 | NE |
| Cadmium | SW6020 | mg/kg - dry | < 0.573 | < 0.604 | < 0.595 | NE |
| Chromium | SW6020 | mg/kg - dry | 8.26 | 5.11 | 4.3 | NE |
| Cobalt | SW6020 | mg/kg - dry | 4.65 | 3.19 | 3.06 | NE |
| Copper | SW6020 | mg/kg - dry | 7.44 | 5.52 | 4.59 | NE |
| Lead | SW6020 | mg/kg - dry | 7.38 | 4.97 | 4.08 | NE |
| Manganese | SW6020 | mg/kg - dry | 286 | 203 | 261 | NE |
| Molybdenum | SW6020 | mg/kg - dry | 0.61 | < 0.604 | < 0.595 | NE |
| Nickel | SW6020 | mg/kg - dry | 8.83 | 4.66 | 3.93 | NE |
| Selenium | SW6020 | mg/kg - dry | < 0.573 | < 0.604 | < 0.595 | NE |
| Silver | SW6020 | mg/kg - dry | < 0.573 | < 0.604 | < 0.595 | NE |
| Thallium | SW6020 | mg/kg - dry | 0.182 | 0.11 | 0.115 | NE |
| Tungsten | SW6020 | mg/kg - dry | < 0.573 | <.604 | < 0.595 | NE |
| Vanadium | SW6020 | mg/kg - dry | 17.5 | 12.2 | 9.49 | NE |
| Zinc | SW6020 | mg/kg - dry | 27.1 | 20.5 | 15.6 | NE |
| **SVOCS (detections only)** | **Method** | **Units** | **MW-2 (28 - 29.5)** | **MW-3 (38 - 39.5)** | **MW-4 (28.5 - 30)** | **NMOCD** |
| As listed | 8270C | µg/kg - dry | -- | -- | -- | -- |
| **VOCs (detections and BTEX only)** | **Method** | **Units** | **MW-2 (28 - 29.5)** | **MW-3 (38 - 39.5)** | **MW-4 (28.5 - 30)** | **NMOCD** |
| Methylene Chloride | 8260B | µg/kg - dry | 11 | 13 | 12 | NE |
| Benzene | 8260B | µg/kg - dry | < 5.7 | < 6.0 | < 6.0 | 10,000 |
| Toluene | 8260B | µg/kg - dry | < 5.7 | < 6.0 | < 6.0 | NE |
| Ethylbenzene | 8260B | µg/kg - dry | < 5.7 | < 6.0 | < 6.0 | NE |
| Total Xylenes | 8260B | µg/kg - dry | < 5.7 | < 6.0 | < 6.0 | NE |
| Total BTEX | -- | µg/kg - dry | < 5.7 | < 6.0 | < 6.0 | 50,000 |
| **Other** | **Method** | **Units** | **MW-2 (28 - 29.5)** | **MW-3 (38 - 39.5)** | **MW-4 (28.5 - 30)** | **NMOCD** |
| Percent Moisture | D2216 | % | 12.7 | 17.2 | 16 | NE |
| Diesel Range Organics | SW8015B | mg/kg - dry | < 5.7 | < 6.0 | < 6.0 | NE |
| Gasoline Range Organics | SW8015B | mg/kg - dry | < 0.11 | < 0.12 | < 0.12 | NE |

**Notes:**
MW = monitoring well
NMOCD = New Mexico Oil Conservation Division recommended action level
SVOCs = semi-volatile organic compounds
VOCs = volatile organic compounds
mg/kg - dry = milligrams per kilogram, analyzed after residual water removed from the soil
µg/kg - dry = micrograms per kilogram
NE = not established

**Table 3. Groundwater Elevation Data Summary**

| Well ID | Total Depth (ft bgs) | Screen Interval (ft) | *Elevation (ft) (TOC) | Date Measured | Depth to Groundwater (ft below TOC) | Relative Groundwater Elevation |
|---|---|---|---|---|---|---|
| MW-1 | 37.47 | 21.0 - 36.0 | 97.84 | 3/22/2006 | 28.54 | 69.30 |
| | | | | 6/21/2006 | 29.15 | 68.69 |
| | | | | 10/19/2006 | 27.83 | 70.01 |
| | | | | 12/12/2006 | 28.22 | 69.62 |
| | | | | March | NS | -- |
| | | | | June | NS | -- |
| | | | | 11/9/2007 | 29.03 | 68.81 |
| | | | | 1/15/2008 | 28.34 | 69.5 |
| | | | | 3/19/2008 | field error | field error |
| | | | | 7/23/2008 | 28.46 | 69.38 |
| | | | | 10/24/2008 | 29.91 | 67.93 |
| | | | | 1/30/2009 | 28.37 | 69.47 |
| MW-2 | 39.81 | 21.0 - 36.0 | 95.28 | 10/24/2008 | 25.74 | 69.54 |
| | | | | 1/30/2009 | 24.74 | 70.54 |
| MW-3 | 37.47 | 19.0 - 34.0 | 95.44 | 10/24/2008 | 26.95 | 68.49 |
| | | | | 1/30/2009 | 25.92 | 69.52 |
| MW-4 | 34.66 | 17.0 - 32.0 | 95.36 | 10/24/2008 | field error | field error |
| | | | | 1/30/2009 | 26.00 | 69.36 |

ft = Feet

TOC = Top of casing

bgs = below ground surface

* Elevation relative to wellhead

NS = Not Sampled (quarters not sampled were due to a change in consulting responsibilities from Lodestar LLC to Tetra Tech Inc.)

**Table 4. Groundwater Laboratory Analytical Results - ConocoPhillips Howll K-1**

| Constituent | | | MW-1 | | MW-2 | MW-3 | MW-4 | |
|---|---|---|---|---|---|---|---|---|
| Ions | Method | Units | 10/24/2008 | Duplicate | 10/24/2008 | 10/24/2008 | 10/24/2008 | NMWQCC Groundwater Standard |
| Chloride | E300.0 | mg/L | 144 | NA | 18.9 | 10 | 121 | 250 |
| Fluoride | E300.0 | mg/L | < 2.0 | NA | < 2 | < 2 | **2.43** | 1.6 |
| Orthophospate (as P) | E300.0 | mg/L | < 5.0 | NA | < 5 | < 5 | < 5 | NE |
| Sulfate | E300.0 | mg/L | **2,390** | NA | **1,480** | **1,480** | **3,400** | 600 |
| Nitrate (as N) | E300.0 | mg/L | 0.914 | NA | < 0.5 | 0.825 | 4.75 | 10 |
| Metals, Total | Method | Units | 10/24/2008 | Duplicate | 10/24/2008 | 10/24/2008 | 10/24/2008 | NMWQCC Groundwater Standard |
| Mercury | SW7470A | mg/L | < 0.0002 | NA | < 0.0002 | < 0.0002 | < 0.0002 | 0.002 |
| Aluminum | SW6020A | mg/L | 0.284 | NA | 3.61 | NA | NA | 5 |
| Boron | SW6010B | mg/L | NA | NA | NA | NA | NA | 0.75 |
| Calcium | SW6010B | mg/L | 593 | NA | 570 | 609 | 438 | NE |
| Iron | SW6010B | mg/L | **32.1** | NA | **3.28** | **3.38** | **2.7** | 1.0 |
| Magnesium | SW6010B | mg/L | 278 | NA | 78.3 | 86 | 456 | NE |
| Potassium | SW6010B | mg/L | 4.54 | NA | < 2.0 | < 2.0 | < 2.0 | NE |
| Sodium | SW6010B | mg/L | 544 | NA | 144 | 239 | 844 | NE |
| Strontium | SW6010B | mg/L | 7.09 | NA | 10.5 | 10.9 | 9.44 | NE |
| Titanium | SW6010B | mg/L | 0.103 | NA | < 0.1 | 0.0248 | 0.0206 | NE |
| Aluminum | SW6020A | mg/L | 0.284 | NA | 3.61 | **5.01** | 4.17 | 5.0 |
| Antimony | SW6020A | mg/L | < 0.005 | NA | < 0.005 | < 0.005 | < 0.005 | NE |
| Arsenic | SW6020A | mg/L | 0.0144 | NA | < 0.005 | < 0.005 | < 0.005 | 0.1 |
| Barium | SW6020A | mg/L | 0.0222 | NA | 0.0321 | 0.0396 | 0.0273 | 1.0 |
| Beryllium | SW6020A | mg/L | < 0.004 | NA | < 0.004 | < 0.004 | < 0.004 | NE |
| Cadmium | SW6020A | mg/L | < 0.005 | NA | < 0.005 | < 0.005 | < 0.005 | 0.01 |
| Chromium | SW6020A | mg/L | < 0.005 | NA | < 0.005 | < 0.005 | < 0.005 | 0.05 |
| Cobalt | SW6020A | mg/L | 0.0124 | NA | < 0.005 | 0.00789 | 0.021 | 0.05 |
| Copper | SW6020A | mg/L | 0.0105 | NA | 0.0105 | 0.0128 | 0.017 | 1.0 |
| Lead | SW6020A | mg/L | < 0.005 | NA | 0.0051 | 0.00957 | 0.00796 | 0.05 |
| Manganese | SW6020A | mg/L | **13.4** | NA | **0.231** | **1.31** | **7.79** | 0.2 |
| Molybdenum | SW6020A | mg/L | < 0.01 | NA | < 0.01 | < 0.01 | < 0.01 | 1.0 |
| Nickel | SW6020A | mg/L | 0.0153 | NA | 0.0144 | 0.0189 | 0.0222 | 0.2 |
| Selenium | SW6020A | mg/L | < 0.005 | NA | < 0.005 | < 0.005 | 0.0122 | 0.05 |
| Silver | SW6020A | mg/L | < 0.005 | NA | < 0.005 | < 0.005 | < 0.005 | 0.05 |
| Thallium | SW6020A | mg/L | < 0.005 | NA | < 0.005 | < 0.005 | < 0.005 | NE |
| Tungsten | SW6020A | mg/L | < 0.01 | NA | < 0.01 | < 0.01 | < 0.01 | NE |
| Vanadium | SW6020A | mg/L | < 0.005 | NA | 0.00964 | 0.0107 | 0.00785 | NE |
| Zinc | SW6020A | mg/L | 0.0195 | NA | 0.0215 | 0.0209 | 0.0302 | 10 |
| SVOCS (detections only) | Method | Units | 10/24/2008 | Duplicate | 10/24/2008 | 10/24/2008 | 10/24/2008 | |
| All wells non detect for SVOCS | | | | | | | | |
| VOCs (detections and BTEX only) | Method | Units | 10/24/2008 | Duplicate | 10/24/2008 | 10/24/2008 | 10/24/2008 | NMWQCC Groundwater Standard |
| 1,3,5-Trimethylbenzene | 8260B | µg/L | < 5 | NA | < 5 | < 5 | 29 | NE |
| Naphthalene | 8260B | µg/L | < 5 | NA | < 5 | < 5 | 7 | 30 |
| Benzene | 8260B | µg/L | < 5 | < 5 | < 5 | < 5 | < 5 | 10 |
| Toluene | 8260B | µg/L | < 5 | < 5 | < 5 | < 5 | < 5 | 750 |
| Ethylbenzene | 8260B | µg/L | < 5 | < 5 | < 5 | < 5 | < 5 | 750 |
| Total Xylenes | 8260B | µg/L | < 5 | < 5 | < 5 | < 5 | < 5 | 620 |
| Other | Method | Units | 10/24/2008 | Duplicate | 10/24/2008 | 10/24/2008 | 10/24/2008 | NMWQCC Groundwater Standard |
| Diesel Range Organics | SW8015B | mg/L | 0.96 | NA | < 0.1 | < 0.1 | 0.37 | NE |
| Gasoline Range Organics | SW8015B | mg/L | < 0.1 | NA | < 0.1 | < 0.1 | 0.11 | NE |

**Notes:**
MW = monitoring well
NMWQCC = New Mexico Water Quality Control Commission
SVOCs = semi-volatile organic compounds
VOCs = volatile organic compounds
mg/L = milligrams per liter
µg/L = micrograms per liter
P = phosphate
N = nitrogen
NE = not established
NA = not analyzed
Items in **BOLD** show exceedences of NMWQCC groundwater quality standards

ConocoPhillips Howell K-1

**Table 5. Groundwater Analytical Results Summary**

| Well ID | Date | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | GRO (mg/L) | DRO (mg/L) |
|---|---|---|---|---|---|---|---|
| MW-1 | 3/22/2006 | ND | ND | 1 | 2 | NA | NA |
| | 6/21/2006 | 1.4 | 1.4 | ND | 10.6 | NA | NA |
| | 10/19/2006 | ND | ND | ND | 1.1 | NA | NA |
| | 12/12/2006 | ND | 0.5 | 0.4 | 2.1 | NA | NA |
| | 11/9/2007 | <0.5 U | <0.7 U | <0.8 U | <0.9 J | NA | NA |
| | 1/15/2008 | <0.5 U | <0.7 U | <0.8 U | <0.8 U | NA | NA |
| | 3/19/2008 | <0.5 | <0.5 | <0.5 | <0.5 | NA | NA |
| | 8/14/2008 | <0.5 | <0.5 | <0.5 | <0.5 | NA | NA |
| | 10/24/2008 | <0.5 | <0.5 | <0.5 | <0.5 | <0.1 U | 0.96 |
| | 1/30/2009 | <0.5 U | <0.5 U | <0.5 U | <0.5 U | NA | NA |
| MW-2 | 10/24/2008 | <0.5 U | <0.5 U | <0.5 U | <0.5 U | <0.1 U | <0.1 U |
| | 1/30/2009 | <0.5 U | <0.5 U | <0.5 U | <0.5 U | NA | NA |
| MW-3 | 10/24/2008 | <0.5 U | <0.5 U | <0.5 U | <0.5 U | <0.1 U | <0.1 U |
| | 1/30/2009 | <0.5 U | <0.5 U | <0.5 U | <0.5 U | NA | NA |
| MW-4 | 10/24/2008 | <0.5 U | <0.5 U | <0.5 U | <0.5 U | 0.11 | 0.37 |
| | 1/30/2009 | <0.5 U | <0.5 U | <0.5 U | <0.5 U | NA | NA |
| **NMWQCC Standards** | | **10 (µg/L)** | **750 (µg/L)** | **750 (µg/L)** | **620 (µg/L)** | **100 (mg/L)** | |

**Explanation**

ND = Not Detected
NMWQCC = New Mexico Water Quality Control Commission
mg/L = milligrams per liter (parts per million)
µg/L = micrograms per liter (parts per billion)
NA = Not Analyzed
<0.7 = Below laboratory detection limit of 0.7 ug/L
U = Analyte was analyzed for but not detected at the indicated MDL
**Bold** = concentrations that exceed the NMWQCC limits

# APPENDIX A

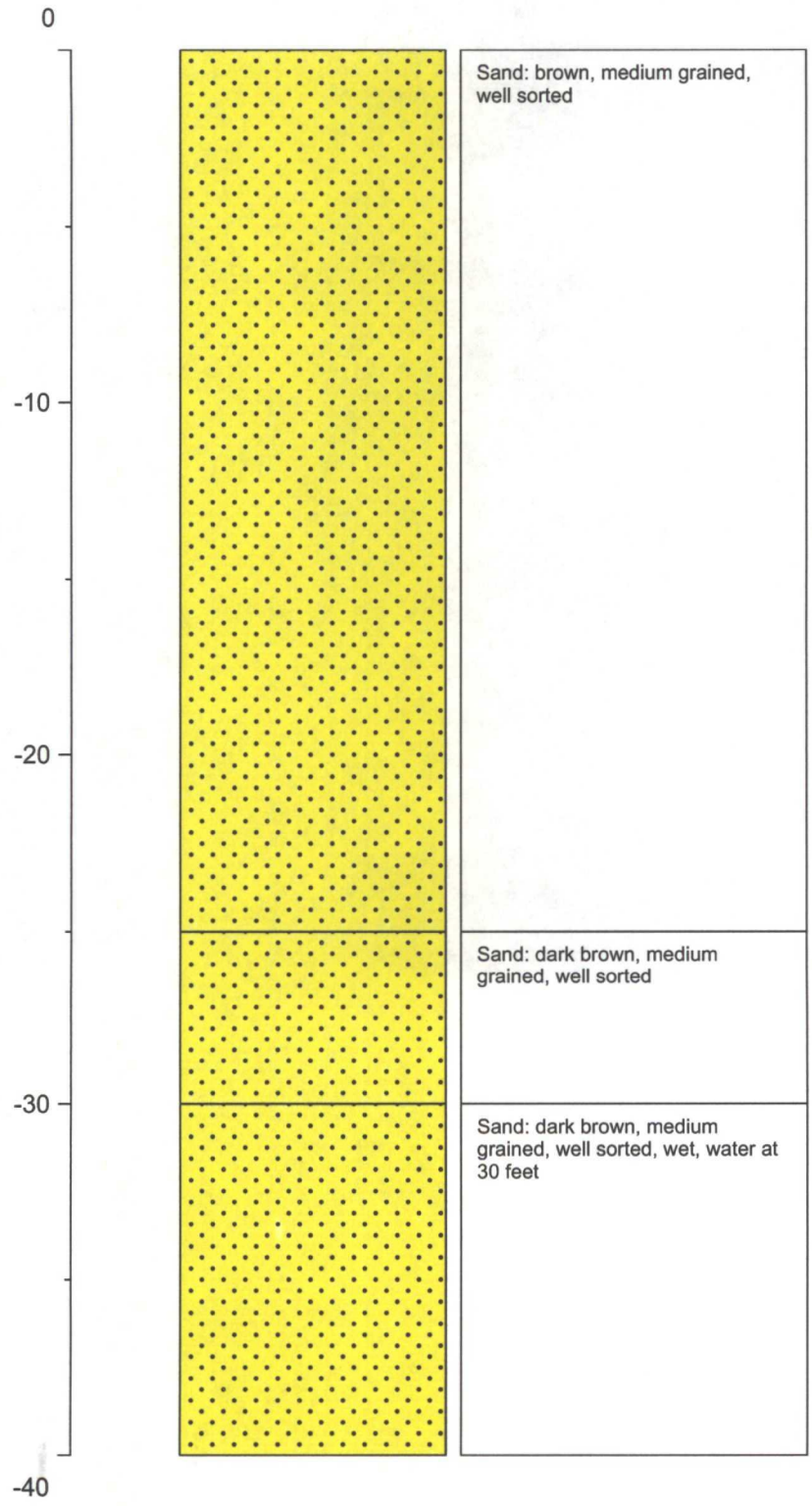
## SOIL BORING LOGS AND WELL COMPLETION FORMS

# Tetra Tech

**Site Location:** Aztec, San Juan Co., NM
**Project:** Howell K-1
**Boring advanced by:** Matt Cain of WDC
**Date advanced:** 8/13/2009

**Boring ID:** MW-2
**Logged by:** Ana Moreno
**Total depth:** 40 feet

| DEPTH ( in feet bgs ) | INTERPRETED LITHOLOGY | DESCRIPTIONS |
|---|---|---|



# Tetra Tech

**Site Location:** Aztec, San Juan Co., NM
**Project:** Howell K-1
**Boring advanced by:** Matt Cain of WDC
**Date advanced:** 8/13/2008

**Boring ID:** MW-3
**Logged by:** Chrsitine Mathews
**Total depth:** 38 feet

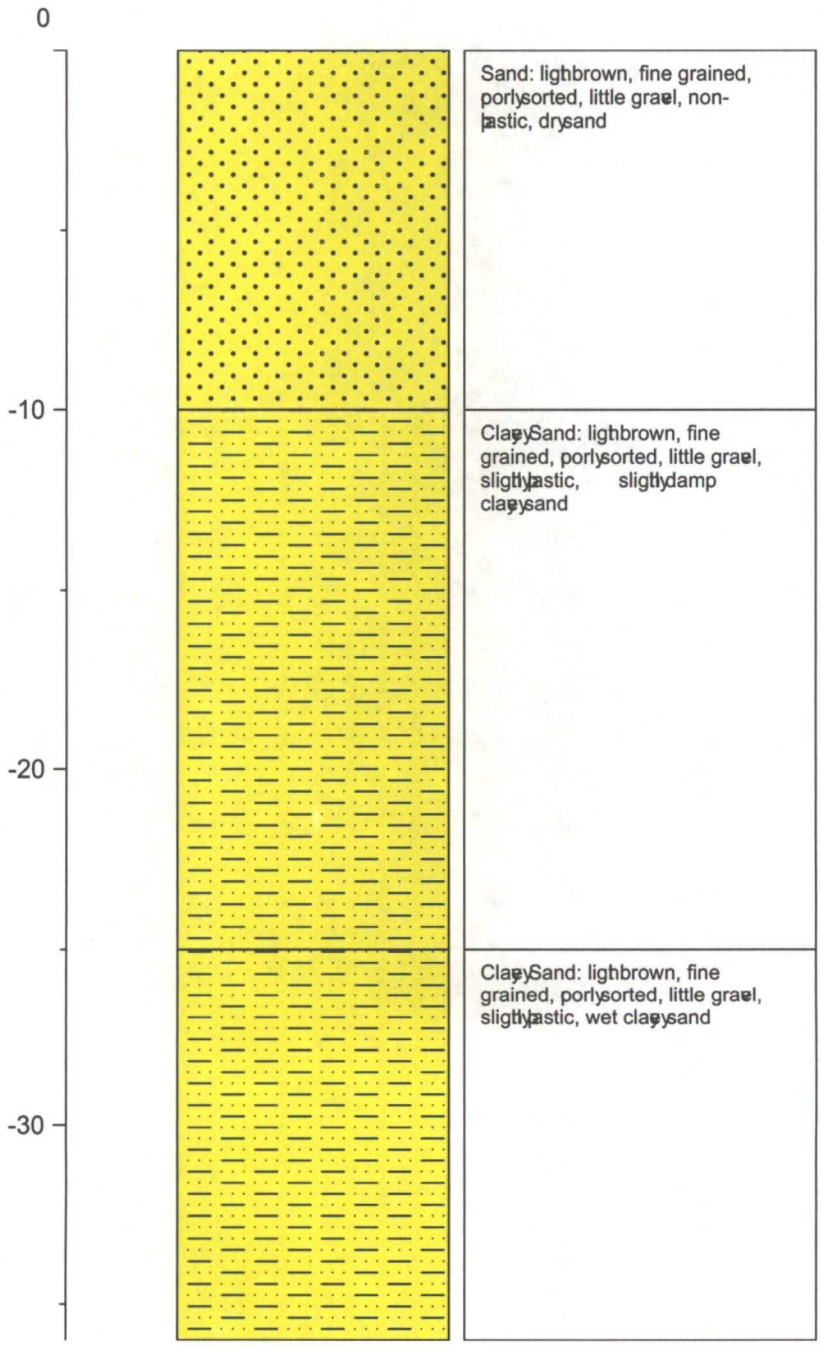
| DEPTH ( in feet bgs ) | INTERPRETED LITHOLOGY | DESCRIPTIONS |
|---|---|---|
| 0 | | |
| | | Sand: light brown, fine grained, poorly sorted, little gravel, non-plastc, dry sand |
| -10 | | |
| | | Sand: light brown, medium grained, poorly sorted, gravels, non-plastic, damp sand |
| -20 | | |
| | | Clayey Sand: light brown, medium grained, poorly sorted, little gravel, slightly plastic, damp clayey sand |
| -30 | | |
| | | 0% recovery from split spoon, no data available |
| | | Sand: light brown, medium grained, poorly sorted, gravels, non-plastic, wet sand |

# Tetra Tech

**Site Location:** Aztec, San Juan Co., NM
**Project:** Howell K-1
**Boring advanced by:** Matt Cain of WDC
**Date advanced:** 8/14/2008

**Boring ID:** MW-4
**Logged by:** Ana Moreno
**Total depth:** 30 feet

| DEPTH ( in feet bgs ) | INTERPRETED LITHOLOGY | DESCRIPTIONS |
|---|---|---|



TETRA TECH, INC.

# Well Completion Diagram

Well ID MW-2

Job Name ConocoPhillips Howell K-1

Job No. 1158690089 Date 8/14/2008

Project Manager Mike Egan

*Well I.D.* MW-2

Field Geologist Ana Moreno

Driller Matt Cain - WDC

Equipment CME-85

## Materials

| | | | | |
|---|---|---|---|---|
| 550 | Pounds | 1630 Silica Sand | | Filter Pack |
| 200 | Pounds | Chips and Powder | | Bentonite Seal |
| 35 | Gallons | Pure Wyoming | | Grout |
| 75 | Pounds | | | Concrete |
| | Feet of native fill/ slough | | | |
| 21 | Feet of | 2 inch | PVC | Blank Casing |
| 15 | Feet of | 2 inch | 010 PVC | Slotted Screen |
| | Feet of | | | Outer Casing |
| | Feet of | | | Sump/ Silt Trap |

Placement Method

Notes

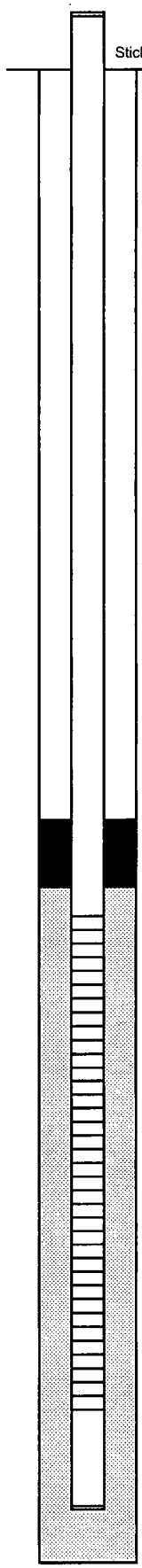
## Development

Method surge block / purge pump

Date 8/14/2008

Amount Purged 80 gallons

Notes discharged to on-site waste water tank



Stickup (feet): 0

Other:

Flush mount well cover

Casing:

0 ft. to 19 ft.

8 inch diameter

Borehole:

0 ft. to 40 ft.

Outer Casing:

ft. to ft.

Concrete: approx. 4' well pads

0 ft. to 1 ft.

Grout:

1 ft. to 17 ft.

Bentonite Seal:

17 ft. to 20 ft.

Filter Pack:

20 ft. to 40 ft.

Slotted Screen:

21 ft. to 36 ft.

Native fill/ slough:

ft. to ft.

8 inch diameter

Borehole:

0 ft. to 40 ft.

Sump/ Silt Trap:

ft. to ft.

Total Depth Borehole (feet):

40

TETRA TECH, INC.

# Well Completion Diagram

Well ID MW-3

Job Name ConocoPhillips Howell K-1

Job No. 1158690089 Date 8/14/2008

Project Manager Mike Egan

*Well I.D.* MW-3

Field Geologist Ana Moreno

Driller Matt Cain - WDC

Equipment CME-85

## Materials

| | | | |
|---|---|---|---|
| 400 | Pounds | 1630 Silica Sand | Filter Pack |
| 125 | Pounds | Chips and Powder | Bentonite Seal |
| 35 | Gallons | Pure Wyoming | Grout |
| 75 | Pounds | | Concrete |
| | Feet of native fill/ slough | | |
| 19 | Feet of | 2 inch PVC | Blank Casing |
| 15 | Feet of | 2 inch 010 PVC | Slotted Screen |
| | Feet of | | Outer Casing |
| | Feet of | | Sump/ Silt Trap |

Placement Method

Notes

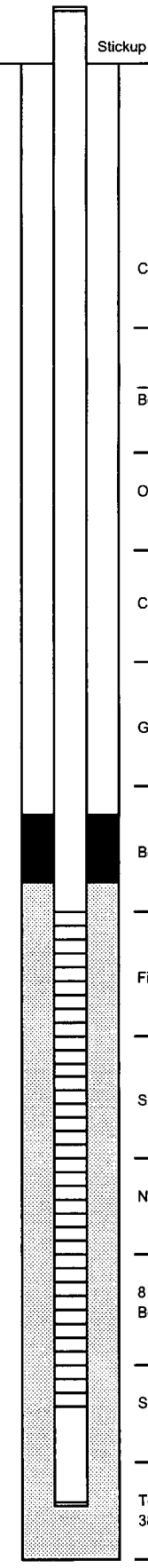
## Development

Method surge block / purge pump

Date 8/14/2008

Amount Purged 80 gallons

Notes discharged to on-site waste water tank



Stickup (feet): 0

Other:

Flush mount well cover

Casing:

0 ft. to 19 ft.

8 inch diameter

Borehole:

0 ft. to 38 ft.

Outer Casing:

ft. to ft.

Concrete: approx. 4' well pads

0 ft. to 1 ft.

Grout:

1 ft. to 15 ft.

Bentonite Seal:

15 ft. to 18 ft.

Filter Pack:

18 ft. to 38 ft.

Slotted Screen:

19 ft. to 34 ft.

Native fill/ slough:

ft. to ft.

8 inch diameter

Borehole:

0 ft. to 38 ft.

Sump/ Silt Trap:

ft. to ft.

Total Depth Borehole (feet):

38

TETRA TECH, INC.

# Well Completion Diagram

Well ID MW-4

Job Name ConocoPhillips Howell K-1

Job No. 1158690089 Date 8/14/2008

Project Manager Mike Egan

*Well I.D.* MW-4

Field Geologist Ana Moreno

Driller Matt Cain - WDC

Equipment CME-85

## Materials

| | | | | |
|---|---|---|---|---|
| 450 | Pounds | 1630 Silica Sand | | Filter Pack |
| 200 | Pounds | Chips and Powder | | Bentonite Seal |
| 40 | Gallons | Pure Wyoming | | Grout |
| 25 | Pounds | | | Concrete |
| | Feet of native fill/ slough | | | |
| 17 | Feet of | 2 inch | PVC | Blank Casing |
| 15 | Feet of | 2 inch | 010 PVC | Slotted Screen |
| | Feet of | | | Outer Casing |
| | Feet of | | | Sump/ Silt Trap |

Placement Method

Notes

## Development

Method surge block / purge pump

Date 8/15/2008

Amount Purged 80 gallons

Notes discharged to on-site waste water tank

Stickup (feet): 0

Other:

Flush mount well cover

Casing:

0 ft. to 17 ft.

8 inch diameter

Borehole:

0 ft. to 36 ft.

Outer Casing:

ft. to ft.

Concrete: approx. 4' well pads

0 ft. to 0.5 ft.

Grout:

1 ft. to 13 ft.

Bentonite Seal:

13 ft. to 16 ft.

Filter Pack:

16 ft. to 36 ft.

Slotted Screen:

17 ft. to 32 ft.

Native fill/ slough:

ft. to ft.

8 inch diameter

Borehole:

0 ft. to 36 ft.

Sump/ Silt Trap:

ft. to ft.

Total Depth Borehole (feet):

36

# APPENDIX B

## SOIL BORING LABORATORY ANALYSIS REPORT

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

## Conoco Phillips

**Certificate of Analysis Number:**

**08080981**

| Report To: | | Project Name: | COP Howell K-1 |
|---|---|---|---|
| Tetra Tech EM, Inc. | | Site: | Aztec, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4510016701 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 9/4/2008 |
| ph: (505) 881-3188 | fax: | | |

This Report Contains A Total Of 51 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

9/8/2008

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

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

## Case Narrative for:
## Conoco Phillips

### Certificate of Analysis Number:
### 08080981

| Report To: | | Project Name: | COP Howell K-1 |
|---|---|---|---|
| Tetra Tech EM, Inc. | | Site: | Aztec, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4510016701 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 9/4/2008 |
| ph: (505) 881-3188 | fax: | | |

Per our conversation on August 6, 2008, samples requested for TPH analysis by Method 418.1 were analyzed at SPL for Gasoline Range Organics and Diesel Range Organics by SW846 Method 8015B.

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

Results for soils are reported on a dry-weight basis.

Per ConocoPhillips Central Region Environmental Contract Laboratory Program Technical Specifications Manual Revision 0, for Semivolatile Organic analysis by SW846 Method 8270B, the percent difference for target analytes in the continuing calibration verification standard must be less than 20%D. The CCV analyzed with the samples in QC Batch ID 82934 recovered low and did not meet the TSM criteria for the following compounds: 4,6-Dinitro-2-methylphenol=-26.969% Drift, 2,4-Dinitrophenol=-25.897% Drift, Benzyl alcohol=21.023% Drift, and Benzoic acid=76.520%Drift.

The samples submitted for Volatile Organics by SW846 Method 8260B and Gasoline Range Organics by SW846 Method 8015B were received in a vessel that is not stipulated in Method 5035A; the sample were preserved and/or analyzed within 48 hours of sample collection.

Samples analyzed for Total Metals by SW846 Method 6020A (Batch ID: 83008C-I) did not have a Laboratory Control Standard for Tungsten. The Matrix Spike and Matrix spike Duplicate were analyzed as quality control.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.



SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Bethany Agarwal



9/8/2008

Bethany A. Agarwal
Senior Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

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

# Conoco Phillips

## Certificate of Analysis Number:

## 08080981

**Report To:** Tetra Tech EM, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 881-3188 fax: (505) 881-3283

**Fax To:**

**Project Name:** COP Howell K-1
**Site:** Aztec, NM
**Site Address:**
**PO Number:** 4510016701
**State:** New Mexico
**State Cert. No.:**
**Date Reported:** 9/4/2008

| Client Sample ID | Lab Sample ID | Matrix | Date Collected | Date Received | COC ID | HOLD |
|---|---|---|---|---|---|---|
| MW-2 (28-29.5) | 08080981-01 | Soil | 8/13/2008 12:30:00 PM | 8/19/2008 9:30:00 AM | | ☐ |
| MW-1 | 08080981-02 | Water | 8/14/2008 8:45:00 AM | 8/19/2008 9:30:00 AM | | ☐ |
| MW-4 (28.5-30) | 08080981-03 | Soil | 8/14/2008 9:15:00 AM | 8/19/2008 9:30:00 AM | | ☐ |
| MW-3 (38-39.5) | 08080981-04 | Soil | 8/13/2008 3:30:00 PM | 8/19/2008 9:30:00 AM | | ☐ |

Bethany A. Agarwal
Senior Project Manager

9/8/2008
Date

Richard R. Reed
Laboratory Director

Ted Yen
Quality Assurance Officer

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

**Client Sample ID:** MW-2 (28-29.5) **Collected:** 08/13/2008 12:30 **SPL Sample ID:** 08080981-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/kg-dry** | |
| Diesel Range Organics (C10-C28) | ND | | 5.7 | 1 | 08/22/08 12:32 | NW | 4642628 |
| Surr: n-Pentacosane | 65.5 | | % 20-154 | 1 | 08/22/08 12:32 | NW | 4642628 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3550B | 08/21/2008 13:04 | QMT | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/kg-dry** | |
| Gasoline Range Organics | ND | | 0.11 | 1 | 08/21/08 15:58 | SFE | 4640504 |
| Surr: 1,4-Difluorobenzene | 103 | | % 63-142 | 1 | 08/21/08 15:58 | SFE | 4640504 |
| Surr: 4-Bromofluorobenzene | 96.0 | | % 50-159 | 1 | 08/21/08 15:58 | SFE | 4640504 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW5030B | 08/21/2008 11:20 | XML | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **MERCURY, TOTAL** | | | | **MCL** | **SW7471A** | **Units: mg/kg-dry** | |
| Mercury | ND | | 0.0344 | 1 | 08/25/08 15:32 | CMC | 4644296 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW7471A | 08/25/2008 12:15 | CMC | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6010B, TOTAL** | | | | **MCL** | **SW6010B** | **Units: mg/kg-dry** | |
| Aluminum | 9220 | | 11.5 | 1 | 09/01/08 16:45 | BDG | 4656261 |
| Boron | ND | | 57.3 | 5 | 09/02/08 18:52 | BDG | 4659233 |
| Calcium | 11900 | | 11.5 | 1 | 09/01/08 16:45 | BDG | 4656261 |
| Iron | 12300 | | 2.29 | 1 | 09/01/08 16:45 | BDG | 4656261 |
| Magnesium | 4720 | | 11.5 | 1 | 09/01/08 16:45 | BDG | 4656261 |
| Potassium | 1060 | | 229 | 1 | 09/01/08 16:45 | BDG | 4656261 |
| Sodium | 1380 | | 57.3 | 1 | 09/01/08 16:45 | BDG | 4656261 |
| Strontium | 373 | | 2.29 | 1 | 09/01/08 16:45 | BDG | 4656261 |
| Tin | ND | | 5.73 | 1 | 09/01/08 16:45 | BDG | 4656261 |
| Titanium | 100 | | 2.29 | 1 | 09/01/08 16:45 | BDG | 4656261 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3050B | 08/21/2008 11:40 | DDW | 1.00 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-2 (28-29.5) **Collected:** 08/13/2008 12:30 **SPL Sample ID:** 08080981-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6020, TOTAL** | | | | **MCL** | **SW6020A** | **Units: mg/kg-dry** | |
| Antimony | ND | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Arsenic | 4.5 | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Barium | 246 | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Beryllium | 0.825 | | 0.00458 | 1 | 08/26/08 20:22 | AL_H | 4647845 |
| Cadmium | ND | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Chromium | 8.26 | | 0.00573 | 1 | 08/26/08 20:22 | AL_H | 4647845 |
| Cobalt | 4.65 | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Copper | 7.44 | | 0.00573 | 1 | 08/26/08 20:22 | AL_H | 4647845 |
| Lead | 7.38 | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Manganese | 286 | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Molybdenum | 0.61 | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Nickel | 8.83 | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Selenium | ND | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Silver | ND | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Thallium | 0.182 | | 0.00573 | 1 | 08/26/08 20:22 | AL_H | 4647845 |
| Tungsten | ND | | 0.573 | 1 | 08/28/08 13:50 | PG | 4651663 |
| Vanadium | 17.5 | | 0.573 | 1 | 08/25/08 18:38 | PG | 4645628 |
| Zinc | 27.1 | | 1.15 | 1 | 08/25/08 18:38 | PG | 4645628 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3050B | 08/21/2008 11:40 | DDW | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PERCENT MOISTURE** | | | | **MCL** | **D2216** | **Units: wt%** | |
| Percent Moisture | 12.7 | | 0 | 1 | 08/21/08 18:25 | IAB | 4638962 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-2 (28-29.5) **Collected:** 08/13/2008 12:30 **SPL Sample ID:** 08080981-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **SEMIVOLATILE ORGANICS BY METHOD 8270C** | | | **MCL** | **SW8270C** | **Units: ug/kg-dry** | | |
| 1,2,4-Trichlorobenzene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 1,2-Dichlorobenzene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 1,2-Diphenylhydrazine | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 1,3-Dichlorobenzene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 1,4-Dichlorobenzene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2,4,5-Trichlorophenol | ND | | 920 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2,4,6-Trichlorophenol | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2,4-Dichlorophenol | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2,4-Dimethylphenol | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2,4-Dinitrophenol | ND | | 920 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2,4-Dinitrotoluene | ND | | 920 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2,6-Dinitrotoluene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2-Chloronaphthalene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2-Chlorophenol | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2-Methylnaphthalene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2-Nitroaniline | ND | | 920 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2-Nitrophenol | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 3,3'-Dichlorobenzidine | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 3-Nitroaniline | ND | | 920 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 4,6-Dinitro-2-methylphenol | ND | | 920 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 4-Bromophenyl phenyl ether | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 4-Chloro-3-methylphenol | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 4-Chloroaniline | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 4-Chlorophenyl phenyl ether | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 4-Nitroaniline | ND | | 920 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 4-Nitrophenol | ND | | 920 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Acenaphthene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Acenaphthylene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Aniline | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Anthracene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Benz(a)anthracene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Benzo(a)pyrene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Benzo(b)fluoranthene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Benzo(g,h,i)perylene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Benzo(k)fluoranthene | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Benzoic acid | ND | | 1800 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Benzyl alcohol | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Bis(2-chloroethoxy)methane | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Bis(2-chloroethyl)ether | ND | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |

**Qualifiers:**

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B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-2 (28-29.5) **Collected:** 08/13/2008 12:30 **SPL Sample ID:** 08080981-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroisopropyl)ether | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Bis(2-ethylhexyl)phthalate | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Butyl benzyl phthalate | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Carbazole | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Chrysene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Dibenz(a,h)anthracene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Dibenzofuran | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Diethyl phthalate | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Dimethyl phthalate | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Di-n-butyl phthalate | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Di-n-octyl phthalate | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Fluoranthene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Fluorene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Hexachlorobenzene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Hexachlorobutadiene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Hexachlorocyclopentadiene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Hexachloroethane | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Indeno(1,2,3-cd)pyrene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Isophorone | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Naphthalene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Nitrobenzene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| N-Nitrosodi-n-propylamine | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| N-Nitrosodiphenylamine | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Pentachlorophenol | ND | | | 920 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Phenanthrene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Phenol | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Pyrene | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Pyridine | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 2-Methylphenol | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| 3 & 4-Methylphenol | ND | | | 380 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Surr: 2,4,6-Tribromophenol | 84.0 | | % | 19-135 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Surr: 2-Fluorobiphenyl | 76.5 | | % | 15-140 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Surr: 2-Fluorophenol | 72.0 | | % | 15-122 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Surr: Nitrobenzene-d5 | 70.6 | | % | 10-134 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Surr: Phenol-d5 | 80.0 | | % | 10-123 | 1 | 08/27/08 14:17 | GY | 4651382 |
| Surr: Terphenyl-d14 | 82.4 | | % | 18-166 | 1 | 08/27/08 14:17 | GY | 4651382 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3550B | 08/21/2008 13:34 | QMT | 1.00 |

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TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-2 (28-29.5) **Collected:** 08/13/2008 12:30 **SPL Sample ID:** 08080981-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/kg-dry** | |
| 1,1,1,2-Tetrachloroethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,1,1-Trichloroethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,1,2,2-Tetrachloroethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,1,2-Trichloroethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,1-Dichloroethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,1-Dichloroethene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,1-Dichloropropene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2,3-Trichlorobenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2,3-Trichloropropane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2,4-Trichlorobenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2,4-Trimethylbenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2-Dibromo-3-chloropropane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2-Dibromoethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2-Dichlorobenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2-Dichloroethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2-Dichloropropane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,3,5-Trimethylbenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,3-Dichlorobenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,3-Dichloropropane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,4-Dichlorobenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 2,2-Dichloropropane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 2-Butanone | ND | | 23 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 2-Chloroethyl vinyl ether | ND | | 11 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 2-Chlorotoluene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 2-Hexanone | ND | | 11 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 4-Chlorotoluene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 4-Isopropyltoluene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 4-Methyl-2-pentanone | ND | | 11 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Acetone | ND | | 110 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Acrylonitrile | ND | | 57 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Benzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Bromobenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Bromochloromethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Bromodichloromethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Bromoform | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Bromomethane | ND | | 11 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Carbon disulfide | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Carbon tetrachloride | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Chlorobenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |

**Qualifiers:**

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J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-2 (28-29.5) **Collected:** 08/13/2008 12:30 **SPL Sample ID:** 08080981-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| Chloroethane | ND | | 11 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Chloroform | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Chloromethane | ND | | 11 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Dibromochloromethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Dibromomethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Dichlorodifluoromethane | ND | | 11 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Ethylbenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Hexachlorobutadiene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Isopropylbenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Methyl tert-butyl ether | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Methylene chloride | 11 | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Naphthalene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| n-Butylbenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| n-Propylbenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| sec-Butylbenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Styrene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| tert-Butylbenzene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Tetrachloroethene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Toluene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Trichloroethene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Trichlorofluoromethane | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Vinyl acetate | ND | | 11 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Vinyl chloride | ND | | 11 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| cis-1,2-Dichloroethene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| cis-1,3-Dichloropropene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| m,p-Xylene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| o-Xylene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| trans-1,2-Dichloroethene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| trans-1,3-Dichloropropene | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Xylenes,Total | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| 1,2-Dichloroethene (total) | ND | | 5.7 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Surr: 1,2-Dichloroethane-d4 | 110 | | % 64-130 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Surr: 4-Bromofluorobenzene | 84.0 | | % 62-130 | 1 | 08/21/08 17:27 | TLE | 4640321 |
| Surr: Toluene-d8 | 102 | | % 70-140 | 1 | 08/21/08 17:27 | TLE | 4640321 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW5030B | 08/20/2008 17:59 | AG | 1.00 |

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TNTC - Too numerous to count
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-1 **Collected:** 08/14/2008 8:45 **SPL Sample ID:** 08080981-02

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Ethylbenzene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Toluene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| m,p-Xylene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| o-Xylene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Xylenes,Total | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Surr: 1,2-Dichloroethane-d4 | 96.0 | | % 62-130 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Surr: 4-Bromofluorobenzene | 108 | | % 70-130 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Surr: Toluene-d8 | 104 | | % 74-122 | 1 | 08/25/08 16:42 | LU_L | 4645459 |

**Qualifiers:**

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MI - Matrix Interference

**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-4 (28.5-30) **Collected:** 08/14/2008 9:15 **SPL Sample ID:** 08080981-03

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS** | | | **MCL** | **SW8015B** | **Units: mg/kg-dry** | | |
| Diesel Range Organics (C10-C28) | ND | | 6 | 1 | 08/22/08 12:53 | NW | 4642629 |
| Surr: n-Pentacosane | 95.2 | | % 20-154 | 1 | 08/22/08 12:53 | NW | 4642629 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3550B | 08/21/2008 13:04 | QMT | 1.00 |

| **GASOLINE RANGE ORGANICS** | | | **MCL** | **SW8015B** | **Units: mg/kg-dry** | | |
|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 0.12 | 1 | 08/21/08 17:25 | SFE | 4640507 |
| Surr: 1,4-Difluorobenzene | 102 | | % 63-142 | 1 | 08/21/08 17:25 | SFE | 4640507 |
| Surr: 4-Bromofluorobenzene | 98.2 | | % 50-159 | 1 | 08/21/08 17:25 | SFE | 4640507 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW5030B | 08/21/2008 11:24 | XML | 1.00 |

| **MERCURY, TOTAL** | | | **MCL** | **SW7471A** | **Units: mg/kg-dry** | | |
|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.0357 | 1 | 08/25/08 15:39 | CMC | 4644299 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW7471A | 08/25/2008 12:15 | CMC | 1.00 |

| **METALS BY METHOD 6010B, TOTAL** | | | **MCL** | **SW6010B** | **Units: mg/kg-dry** | | |
|---|---|---|---|---|---|---|---|
| Aluminum | 5130 | | 11.9 | 1 | 09/01/08 16:50 | BDG | 4656263 |
| Boron | ND | | 59.5 | 5 | 09/02/08 18:57 | BDG | 4659235 |
| Calcium | 49700 | | 11.9 | 1 | 09/01/08 16:50 | BDG | 4656263 |
| Iron | 7130 | | 2.38 | 1 | 09/01/08 16:50 | BDG | 4656263 |
| Magnesium | 2000 | | 11.9 | 1 | 09/01/08 16:50 | BDG | 4656263 |
| Potassium | 859 | | 238 | 1 | 09/01/08 16:50 | BDG | 4656263 |
| Sodium | 354 | | 59.5 | 1 | 09/01/08 16:50 | BDG | 4656263 |
| Strontium | 1140 | | 2.38 | 1 | 09/01/08 16:50 | BDG | 4656263 |
| Tin | ND | | 5.95 | 1 | 09/01/08 16:50 | BDG | 4656263 |
| Titanium | 56.2 | | 2.38 | 1 | 09/01/08 16:50 | BDG | 4656263 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3050B | 08/21/2008 11:40 | DDW | 1.00 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-4 (28.5-30) **Collected:** 08/14/2008 9:15 **SPL Sample ID:** 08080981-03

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6020, TOTAL** | | | | **MCL** | **SW6020A** | **Units: mg/kg-dry** | |
| Antimony | ND | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Arsenic | 2.1 | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Barium | 109 | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Beryllium | 0.385 | | 0.00476 | 1 | 08/26/08 20:27 | AL_H | 4647846 |
| Cadmium | ND | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Chromium | 4.3 | | 0.00595 | 1 | 08/26/08 20:27 | AL_H | 4647846 |
| Cobalt | 3.06 | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Copper | 4.59 | | 0.00595 | 1 | 08/26/08 20:27 | AL_H | 4647846 |
| Lead | 4.08 | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Manganese | 261 | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Molybdenum | ND | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Nickel | 3.93 | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Selenium | ND | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Silver | ND | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Thallium | 0.115 | | 0.00595 | 1 | 08/26/08 20:27 | AL_H | 4647846 |
| Tungsten | ND | | 0.595 | 1 | 08/28/08 13:54 | PG | 4651664 |
| Vanadium | 9.49 | | 0.595 | 1 | 08/25/08 18:43 | PG | 4645629 |
| Zinc | 15.6 | | 1.19 | 1 | 08/25/08 18:43 | PG | 4645629 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3050B | 08/21/2008 11:40 | DDW | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PERCENT MOISTURE** | | | | **MCL** | **D2216** | **Units: wt%** | |
| Percent Moisture | 16 | | 0 | 1 | 08/21/08 18:25 | IAB | 4638961 |

**Qualifiers:**

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TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
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MI - Matrix Interference

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

**Client Sample ID:** MW-4 (28.5-30) **Collected:** 08/14/2008 9:15 **SPL Sample ID:** 08080981-03

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **SEMIVOLATILE ORGANICS BY METHOD 8270C** | | | **MCL** | **SW8270C** | **Units: ug/kg-dry** | | |
| 1,2,4-Trichlorobenzene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 1,2-Dichlorobenzene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 1,2-Diphenylhydrazine | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 1,3-Dichlorobenzene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 1,4-Dichlorobenzene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2,4,5-Trichlorophenol | ND | | 950 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2,4,6-Trichlorophenol | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2,4-Dichlorophenol | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2,4-Dimethylphenol | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2,4-Dinitrophenol | ND | | 950 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2,4-Dinitrotoluene | ND | | 950 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2,6-Dinitrotoluene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2-Chloronaphthalene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2-Chlorophenol | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2-Methylnaphthalene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2-Nitroaniline | ND | | 950 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2-Nitrophenol | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 3,3'-Dichlorobenzidine | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 3-Nitroaniline | ND | | 950 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 4,6-Dinitro-2-methylphenol | ND | | 950 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 4-Bromophenyl phenyl ether | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 4-Chloro-3-methylphenol | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 4-Chloroaniline | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 4-Chlorophenyl phenyl ether | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 4-Nitroaniline | ND | | 950 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 4-Nitrophenol | ND | | 950 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Acenaphthene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Acenaphthylene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Aniline | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Anthracene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Benz(a)anthracene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Benzo(a)pyrene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Benzo(b)fluoranthene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Benzo(g,h,i)perylene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Benzo(k)fluoranthene | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Benzoic acid | ND | | 1900 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Benzyl alcohol | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Bis(2-chloroethoxy)methane | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Bis(2-chloroethyl)ether | ND | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |

**Qualifiers:**

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>MCL - Result Over Maximum Contamination Limit(MCL)
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-4 (28.5-30) **Collected:** 08/14/2008 9:15 **SPL Sample ID:** 08080981-03

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroisopropyl)ether | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Bis(2-ethylhexyl)phthalate | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Butyl benzyl phthalate | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Carbazole | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Chrysene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Dibenz(a,h)anthracene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Dibenzofuran | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Diethyl phthalate | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Dimethyl phthalate | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Di-n-butyl phthalate | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Di-n-octyl phthalate | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Fluoranthene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Fluorene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Hexachlorobenzene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Hexachlorobutadiene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Hexachlorocyclopentadiene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Hexachloroethane | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Indeno(1,2,3-cd)pyrene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Isophorone | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Naphthalene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Nitrobenzene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| N-Nitrosodi-n-propylamine | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| N-Nitrosodiphenylamine | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Pentachlorophenol | ND | | | 950 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Phenanthrene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Phenol | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Pyrene | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Pyridine | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 2-Methylphenol | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| 3 & 4-Methylphenol | ND | | | 390 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Surr: 2,4,6-Tribromophenol | 84.0 | | % | 19-135 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Surr: 2-Fluorobiphenyl | 82.4 | | % | 15-140 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Surr: 2-Fluorophenol | 80.0 | | % | 15-122 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Surr: Nitrobenzene-d5 | 76.5 | | % | 10-134 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Surr: Phenol-d5 | 84.0 | | % | 10-123 | 1 | 08/27/08 14:49 | GY | 4651383 |
| Surr: Terphenyl-d14 | 82.4 | | % | 18-166 | 1 | 08/27/08 14:49 | GY | 4651383 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3550B | 08/21/2008 13:34 | QMT | 1.00 |

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

**Client Sample ID:** MW-4 (28.5-30) **Collected:** 08/14/2008 9:15 **SPL Sample ID:** 08080981-03

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/kg-dry** | | |
| 1,1,1,2-Tetrachloroethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,1,1-Trichloroethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,1,2,2-Tetrachloroethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,1,2-Trichloroethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,1-Dichloroethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,1-Dichloroethene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,1-Dichloropropene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2,3-Trichlorobenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2,3-Trichloropropane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2,4-Trichlorobenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2,4-Trimethylbenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2-Dibromo-3-chloropropane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2-Dibromoethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2-Dichlorobenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2-Dichloroethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2-Dichloropropane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,3,5-Trimethylbenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,3-Dichlorobenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,3-Dichloropropane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,4-Dichlorobenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 2,2-Dichloropropane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 2-Butanone | ND | | 24 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 2-Chloroethyl vinyl ether | ND | | 12 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 2-Chlorotoluene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 2-Hexanone | ND | | 12 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 4-Chlorotoluene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 4-Isopropyltoluene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 4-Methyl-2-pentanone | ND | | 12 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Acetone | ND | | 120 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Acrylonitrile | ND | | 60 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Benzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Bromobenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Bromochloromethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Bromodichloromethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Bromoform | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Bromomethane | ND | | 12 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Carbon disulfide | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Carbon tetrachloride | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Chlorobenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |

**Qualifiers:**

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J - Estimated Value between MDL and PQL
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TNTC - Too numerous to count
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-4 (28.5-30) **Collected:** 08/14/2008 9:15 **SPL Sample ID:** 08080981-03

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| Chloroethane | ND | | 12 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Chloroform | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Chloromethane | ND | | 12 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Dibromochloromethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Dibromomethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Dichlorodifluoromethane | ND | | 12 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Ethylbenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Hexachlorobutadiene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Isopropylbenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Methyl tert-butyl ether | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Methylene chloride | 12 | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Naphthalene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| n-Butylbenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| n-Propylbenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| sec-Butylbenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Styrene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| tert-Butylbenzene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Tetrachloroethene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Toluene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Trichloroethene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Trichlorofluoromethane | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Vinyl acetate | ND | | 12 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Vinyl chloride | ND | | 12 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| cis-1,2-Dichloroethene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| cis-1,3-Dichloropropene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| m,p-Xylene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| o-Xylene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| trans-1,2-Dichloroethene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| trans-1,3-Dichloropropene | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Xylenes,Total | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| 1,2-Dichloroethene (total) | ND | | 6 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Surr: 1,2-Dichloroethane-d4 | 106 | | % 64-130 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Surr: 4-Bromofluorobenzene | 84.0 | | % 62-130 | 1 | 08/21/08 17:55 | TLE | 4640322 |
| Surr: Toluene-d8 | 100 | | % 70-140 | 1 | 08/21/08 17:55 | TLE | 4640322 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW5030B | 08/20/2008 18:01 | AG | 1.00 |

**Qualifiers:**

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

**Client Sample ID:** MW-3 (38-39.5) **Collected:** 08/13/2008 15:30 **SPL Sample ID:** 08080981-04

**Site:** Aztec, NM

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS** | | | **MCL** | **SW8015B** | **Units: mg/kg-dry** | | |
| Diesel Range Organics (C10-C28) | ND | | 6 | 1 | 08/22/08 13:14 | NW | 4642630 |
| Surr: n-Pentacosane | 93.3 | | % 20-154 | 1 | 08/22/08 13:14 | NW | 4642630 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3550B | 08/21/2008 13:04 | QMT | 1.00 |

| GASOLINE RANGE ORGANICS | | | | MCL | SW8015B | Units: mg/kg-dry | |
|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | | 0.12 | 1 | 08/21/08 17:54 | SFE | 4640508 |
| Surr: 1,4-Difluorobenzene | 102 | | % 63-142 | 1 | 08/21/08 17:54 | SFE | 4640508 |
| Surr: 4-Bromofluorobenzene | 94.7 | | % 50-159 | 1 | 08/21/08 17:54 | SFE | 4640508 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW5030B | 08/21/2008 11:27 | XML | 1.00 |

| MERCURY, TOTAL | | | | MCL | SW7471A | Units: mg/kg-dry | |
|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.0362 | 1 | 08/25/08 15:42 | CMC | 4644300 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW7471A | 08/25/2008 12:15 | CMC | 1.00 |

| METALS BY METHOD 6010B, TOTAL | | | | MCL | SW6010B | Units: mg/kg-dry | |
|---|---|---|---|---|---|---|---|
| Aluminum | 5970 | | 12.1 | 1 | 09/01/08 16:54 | BDG | 4656265 |
| Boron | ND | | 60.4 | 5 | 09/02/08 19:01 | BDG | 4659236 |
| Calcium | 10500 | | 12.1 | 1 | 09/01/08 16:54 | BDG | 4656265 |
| Iron | 9300 | | 2.42 | 1 | 09/01/08 16:54 | BDG | 4656265 |
| Magnesium | 1710 | | 12.1 | 1 | 09/01/08 16:54 | BDG | 4656265 |
| Potassium | 1050 | | 242 | 1 | 09/01/08 16:54 | BDG | 4656265 |
| Sodium | 155 | | 60.4 | 1 | 09/01/08 16:54 | BDG | 4656265 |
| Strontium | 86.6 | | 2.42 | 1 | 09/01/08 16:54 | BDG | 4656265 |
| Tin | ND | | 6.04 | 1 | 09/01/08 16:54 | BDG | 4656265 |
| Titanium | 64.3 | | 2.42 | 1 | 09/01/08 16:54 | BDG | 4656265 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3050B | 08/21/2008 11:40 | DDW | 1.00 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-3 (38-39.5) **Collected:** 08/13/2008 15:30 **SPL Sample ID:** 08080981-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6020, TOTAL** | | | | **MCL** | **SW6020A** | **Units: mg/kg-dry** | |
| Antimony | ND | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Arsenic | 2.86 | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Barium | 137 | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Beryllium | 0.471 | | 0.00483 | 1 | 08/26/08 20:32 | AL_H | 4647847 |
| Cadmium | ND | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Chromium | 5.11 | | 0.00604 | 1 | 08/26/08 20:32 | AL_H | 4647847 |
| Cobalt | 3.19 | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Copper | 5.52 | | 0.00604 | 1 | 08/26/08 20:32 | AL_H | 4647847 |
| Lead | 4.97 | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Manganese | 203 | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Molybdenum | ND | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Nickel | 4.66 | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Selenium | ND | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Silver | ND | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Thallium | 0.11 | | 0.00604 | 1 | 08/26/08 20:32 | AL_H | 4647847 |
| Tungsten | ND | | 0.604 | 1 | 08/28/08 13:59 | PG | 4651665 |
| Vanadium | 12.2 | | 0.604 | 1 | 08/25/08 18:59 | PG | 4645630 |
| Zinc | 20.5 | | 1.21 | 1 | 08/25/08 18:59 | PG | 4645630 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3050B | 08/21/2008 11:40 | DDW | 1.00 |

| PERCENT MOISTURE | | | | MCL | D2216 | Units: wt% | |
|---|---|---|---|---|---|---|---|
| Percent Moisture | 17.2 | | 0 | 1 | 08/21/08 18:25 | IAB | 4638960 |

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TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
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MI - Matrix Interference

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

**Client Sample ID:** MW-3 (38-39.5) **Collected:** 08/13/2008 15:30 **SPL Sample ID:** 08080981-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **SEMIVOLATILE ORGANICS BY METHOD 8270C** | | | **MCL** | **SW8270C** | **Units: ug/kg-dry** | | |
| 1,2,4-Trichlorobenzene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 1,2-Dichlorobenzene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 1,2-Diphenylhydrazine | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 1,3-Dichlorobenzene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 1,4-Dichlorobenzene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2,4,5-Trichlorophenol | ND | | 970 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2,4,6-Trichlorophenol | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2,4-Dichlorophenol | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2,4-Dimethylphenol | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2,4-Dinitrophenol | ND | | 970 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2,4-Dinitrotoluene | ND | | 970 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2,6-Dinitrotoluene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2-Chloronaphthalene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2-Chlorophenol | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2-Methylnaphthalene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2-Nitroaniline | ND | | 970 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2-Nitrophenol | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 3,3'-Dichlorobenzidine | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 3-Nitroaniline | ND | | 970 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 4,6-Dinitro-2-methylphenol | ND | | 970 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 4-Bromophenyl phenyl ether | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 4-Chloro-3-methylphenol | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 4-Chloroaniline | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 4-Chlorophenyl phenyl ether | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 4-Nitroaniline | ND | | 970 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 4-Nitrophenol | ND | | 970 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Acenaphthene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Acenaphthylene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Aniline | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Anthracene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Benz(a)anthracene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Benzo(a)pyrene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Benzo(b)fluoranthene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Benzo(g,h,i)perylene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Benzo(k)fluoranthene | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Benzoic acid | ND | | 1900 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Benzyl alcohol | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Bis(2-chloroethoxy)methane | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Bis(2-chloroethyl)ether | ND | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |

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E - Estimated Value exceeds calibration curve
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-3 (38-39.5) **Collected:** 08/13/2008 15:30 **SPL Sample ID:** 08080981-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroisopropyl)ether | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Bis(2-ethylhexyl)phthalate | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Butyl benzyl phthalate | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Carbazole | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Chrysene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Dibenz(a,h)anthracene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Dibenzofuran | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Diethyl phthalate | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Dimethyl phthalate | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Di-n-butyl phthalate | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Di-n-octyl phthalate | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Fluoranthene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Fluorene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Hexachlorobenzene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Hexachlorobutadiene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Hexachlorocyclopentadiene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Hexachloroethane | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Indeno(1,2,3-cd)pyrene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Isophorone | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Naphthalene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Nitrobenzene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| N-Nitrosodi-n-propylamine | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| N-Nitrosodiphenylamine | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Pentachlorophenol | ND | | | 970 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Phenanthrene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Phenol | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Pyrene | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Pyridine | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 2-Methylphenol | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| 3 & 4-Methylphenol | ND | | | 400 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Surr: 2,4,6-Tribromophenol | 80.0 | | % | 19-135 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Surr: 2-Fluorobiphenyl | 82.4 | | % | 15-140 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Surr: 2-Fluorophenol | 72.0 | | % | 15-122 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Surr: Nitrobenzene-d5 | 70.6 | | % | 10-134 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Surr: Phenol-d5 | 80.0 | | % | 10-123 | 1 | 08/27/08 15:22 | GY | 4651384 |
| Surr: Terphenyl-d14 | 82.4 | | % | 18-166 | 1 | 08/27/08 15:22 | GY | 4651384 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3550B | 08/21/2008 13:34 | QMT | 1.00 |

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

**Client Sample ID:** MW-3 (38-39.5) **Collected:** 08/13/2008 15:30 **SPL Sample ID:** 08080981-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/kg-dry** | |
| 1,1,1,2-Tetrachloroethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,1,1-Trichloroethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,1,2,2-Tetrachloroethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,1,2-Trichloroethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,1-Dichloroethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,1-Dichloroethene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,1-Dichloropropene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2,3-Trichlorobenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2,3-Trichloropropane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2,4-Trichlorobenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2,4-Trimethylbenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2-Dibromo-3-chloropropane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2-Dibromoethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2-Dichlorobenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2-Dichloroethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2-Dichloropropane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,3,5-Trimethylbenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,3-Dichlorobenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,3-Dichloropropane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,4-Dichlorobenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 2,2-Dichloropropane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 2-Butanone | ND | | 24 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 2-Chloroethyl vinyl ether | ND | | 12 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 2-Chlorotoluene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 2-Hexanone | ND | | 12 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 4-Chlorotoluene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 4-Isopropyltoluene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 4-Methyl-2-pentanone | ND | | 12 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Acetone | ND | | 120 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Acrylonitrile | ND | | 60 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Benzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Bromobenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Bromochloromethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Bromodichloromethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Bromoform | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Bromomethane | ND | | 12 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Carbon disulfide | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Carbon tetrachloride | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Chlorobenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |

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J - Estimated Value between MDL and PQL
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TNTC - Too numerous to count
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**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-3 (38-39.5) **Collected:** 08/13/2008 15:30 **SPL Sample ID:** 08080981-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| Chloroethane | ND | | 12 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Chloroform | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Chloromethane | ND | | 12 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Dibromochloromethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Dibromomethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Dichlorodifluoromethane | ND | | 12 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Ethylbenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Hexachlorobutadiene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Isopropylbenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Methyl tert-butyl ether | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Methylene chloride | 13 | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Naphthalene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| n-Butylbenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| n-Propylbenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| sec-Butylbenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Styrene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| tert-Butylbenzene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Tetrachloroethene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Toluene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Trichloroethene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Trichlorofluoromethane | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Vinyl acetate | ND | | 12 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Vinyl chloride | ND | | 12 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| cis-1,2-Dichloroethene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| cis-1,3-Dichloropropene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| m,p-Xylene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| o-Xylene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| trans-1,2-Dichloroethene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| trans-1,3-Dichloropropene | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Xylenes,Total | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| 1,2-Dichloroethene (total) | ND | | 6 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Surr: 1,2-Dichloroethane-d4 | 108 | | % 64-130 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Surr: 4-Bromofluorobenzene | 84.0 | | % 62-130 | 1 | 08/21/08 18:22 | TLE | 4640323 |
| Surr: Toluene-d8 | 102 | | % 70-140 | 1 | 08/21/08 18:22 | TLE | 4640323 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW5030B | 08/20/2008 18:03 | AG | 1.00 |

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# *Quality Control Documentation*

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

# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Diesel Range Organics
**Method:** SW8015B

**WorkOrder:** 08080981
**Lab Batch ID:** 82928

### Method Blank

RunID: HP_Z_080821A-4640300 Units: mg/kg
Analysis Date: 08/21/2008 15:24 Analyst: NW
Preparation Date: 08/21/2008 11:25 Prep By: QMT Method SW3550B

| Analyte | Result | Rep Limit |
|---|---|---|
| Diesel Range Organics (C10-C28) | ND | 5.0 |
| Surr: n-Pentacosane | 79.8 | 20-154 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

### Laboratory Control Sample (LCS)

RunID: HP_Z_080821A-4640301 Units: mg/kg
Analysis Date: 08/21/2008 15:46 Analyst: NW
Preparation Date: 08/21/2008 11:25 Prep By: QMT Method SW3550B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Diesel Range Organics (C10-C28) | 66.6 | 58.5 | 87.9 | 57 | 150 |
| Surr: n-Pentacosane | 1.66 | 1.43 | 86.3 | 20 | 154 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08081052-02
RunID: HP_Z_080821A-4640304 Units: mg/kg
Analysis Date: 08/21/2008 16:50 Analyst: NW
Preparation Date: 08/21/2008 11:25 Prep By: QMT Method SW3550B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (C10-C28) | 5.03 | 66.6 | 58.2 | 79.9 | 66.6 | 73.8 | 103 | 23.5 | 50 | 21 | 175 |
| Surr: n-Pentacosane | ND | 1.66 | 1.08 | 65.0 | 1.66 | 1.35 | 81.6 | 22.6 | 30 | 20 | 154 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Gasoline Range Organics
**Method:** SW8015B
**WorkOrder:** 08080981
**Lab Batch ID:** R249116

### Method Blank

RunID: HP_O_080821A-4640502 Units: mg/kg
Analysis Date: 08/21/2008 14:59 Analyst: SFE
Preparation Date: 08/21/2008 14:59 Prep By: Method

| Analyte | Result | Rep Limit |
|---|---|---|
| Gasoline Range Organics | ND | 0.10 |
| Surr: 1,4-Difluorobenzene | 101.9 | 63-142 |
| Surr: 4-Bromofluorobenzene | 92.9 | 50-159 |

### Samples in Analytical Batch:

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

### Laboratory Control Sample (LCS)

RunID: HP_O_080821A-4640501 Units: mg/kg
Analysis Date: 08/21/2008 14:30 Analyst: SFE
Preparation Date: 08/21/2008 14:30 Prep By: Method SW5030B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Gasoline Range Organics | 1.00 | 1.03 | 103 | 70 | 130 |
| Surr: 1,4-Difluorobenzene | 0.100 | 0.102 | 102 | 63 | 142 |
| Surr: 4-Bromofluorobenzene | 0.100 | 0.0941 | 94.1 | 50 | 159 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08080981-01
RunID: HP_O_080821A-4640505 Units: mg/kg-dry
Analysis Date: 08/21/2008 16:27 Analyst: SFE
Preparation Date: 08/21/2008 11:21 Prep By: XML Method SW5030B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | 1.15 | 0.952 | 83.1 | 1.15 | 0.785 | 68.6 | 19.2 | 50 | 26 | 147 |
| Surr: 1,4-Difluorobenzene | ND | 0.115 | 0.118 | 103 | 0.115 | 0.117 | 102 | 0.195 | 30 | 63 | 142 |
| Surr: 4-Bromofluorobenzene | ND | 0.115 | 0.109 | 95.2 | 0.115 | 0.111 | 96.6 | 1.46 | 30 | 50 | 159 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6010B, Total
**Method:** SW6010B
**WorkOrder:** 08080981
**Lab Batch ID:** 82930

### Method Blank

RunID: TJA_080822A-4640867 Units: mg/kg
Analysis Date: 08/22/2008 14:13 Analyst: BDG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Result | Rep Limit |
|---|---|---|
| Boron | ND | 10 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

### Laboratory Control Sample (LCS)

RunID: TJA_080822A-4640868 Units: mg/kg
Analysis Date: 08/22/2008 14:17 Analyst: BDG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Boron | 96.60 | 72.33 | 74.88 | 56 | 144 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08080929-01
RunID: TJA_080822A-4640870 Units: mg/kg
Analysis Date: 08/22/2008 14:27 Analyst: BDG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Boron | ND | 100 | 82.06 | 78.54 | 100 | 83.44 | 79.92 | 1.664 | 20 | 75 | 125 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6020, Total
**Method:** SW6020A
**WorkOrder:** 08080981
**Lab Batch ID:** 82930A-I

### Method Blank

RunID: ICPMS_080825B-4644562 Units: mg/kg
Analysis Date: 08/25/2008 17:55 Analyst: PG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

| Analyte | Result | Rep Limit |
|---|---|---|
| Antimony | ND | 0.5 |
| Arsenic | ND | 0.5 |
| Barium | ND | 0.5 |
| Cadmium | ND | 0.5 |
| Cobalt | ND | 0.5 |
| Lead | ND | 0.5 |
| Manganese | ND | 0.5 |
| Molybdenum | ND | 0.5 |
| Nickel | ND | 0.5 |
| Selenium | ND | 0.5 |
| Silver | ND | 0.5 |
| Vanadium | ND | 0.5 |
| Zinc | ND | 1 |

### Laboratory Control Sample (LCS)

RunID: ICPMS_080825B-4644556 Units: mg/kg
Analysis Date: 08/25/2008 17:22 Analyst: PG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Antimony | 77.50 | 79.25 | 102.3 | 30 | 223 |
| Arsenic | 80.90 | 75.64 | 93.50 | 79 | 121 |
| Barium | 156.0 | 142.4 | 91.28 | 82 | 119 |
| Cadmium | 233.0 | 219.3 | 94.12 | 81 | 119 |
| Cobalt | 68.60 | 68.43 | 99.75 | 82 | 118 |
| Lead | 76.80 | 71.56 | 93.18 | 81 | 120 |
| Manganese | 304.0 | 304.3 | 100.1 | 80 | 120 |
| Molybdenum | 58.40 | 55.12 | 94.38 | 79 | 121 |
| Nickel | 49.60 | 50.78 | 102.4 | 81 | 119 |
| Selenium | 82.90 | 85.89 | 103.6 | 76 | 124 |
| Silver | 80.00 | 83.76 | 104.7 | 61 | 139 |
| Vanadium | 72.40 | 68.00 | 93.92 | 71 | 128 |
| Zinc | 116.0 | 117.4 | 101.2 | 78 | 122 |

### Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6020, Total **WorkOrder:** 08080981
**Method:** SW6020A **Lab Batch ID:** 82930A-I

Sample Spiked: 08080929-01
RunID: ICPMS_080825B-4644565 Units: mg/kg
Analysis Date: 08/25/2008 18:11 Analyst: PG

| Analyte | Sample Result | PDS Spike Added | PDS Result | PDS % Recovery | PDSD Spike Added | PDSD Result | PDSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 2.77 | 10 | 12.03 | 92.58 | 10 | 12.06 | 92.88 | 0.2491 | 20 | 75 | 125 |
| Nickel | 12.8 | 10 | 32.9 | 201.3 * | 10 | 32.73 | 199.6 * | 0.5181 | 20 | 75 | 125 |

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08080929-01
RunID: ICPMS_080825B-4644558 Units: mg/kg
Analysis Date: 08/25/2008 17:33 Analyst: PG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 2.772 | 10 | 6.389 | 36.17 * | 10 | 5.873 | 31.01 * | 8.416 | 20 | 75 | 125 |
| Arsenic | 2.670 | 10 | 11.58 | 89.10 | 10 | 11.10 | 84.30 | 4.233 | 20 | 75 | 125 |
| Barium | 66.03 | 10 | 72.53 | N/C | 10 | 73.46 | N/C | N/C | 20 | 75 | 125 |
| Cadmium | ND | 10 | 9.258 | 89.64 | 10 | 8.714 | 84.20 | 6.054 | 20 | 75 | 125 |
| Cobalt | 2.241 | 10 | 11.33 | 90.89 | 10 | 10.83 | 85.89 | 4.513 | 20 | 75 | 125 |
| Lead | 396.9 | 10 | 32.31 | N/C | 10 | 33.18 | N/C | N/C | 20 | 75 | 125 |
| Manganese | 97.24 | 10 | 99.89 | N/C | 10 | 102.3 | N/C | N/C | 20 | 75 | 125 |
| Molybdenum | 2.930 | 10 | 12.35 | 94.20 | 10 | 10.88 | 79.50 | 12.66 | 20 | 75 | 125 |
| Nickel | 12.77 | 10 | 19.79 | 70.20 * | 10 | 22.91 | 101.4 | 14.61 | 20 | 75 | 125 |
| Selenium | ND | 10 | 9.245 | 89.96 | 10 | 9.030 | 87.80 | 2.353 | 20 | 75 | 125 |
| Silver | ND | 10 | 9.925 | 97.23 | 10 | 9.210 | 90.08 | 7.473 | 20 | 75 | 125 |
| Vanadium | 10.51 | 10 | 20.57 | 100.6 | 10 | 19.58 | 90.70 | 4.932 | 20 | 75 | 125 |
| Zinc | 196.1 | 10 | 211.6 | N/C | 10 | 207.5 | N/C | N/C | 20 | 75 | 125 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6020, Total
**Method:** SW6020A
**WorkOrder:** 08080981
**Lab Batch ID:** 82930B-I

### Method Blank

RunID: ICPMS_080826A-4647835 Units: mg/kg
Analysis Date: 08/26/2008 19:33 Analyst: AL_H
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

| Analyte | Result | Rep Limit |
|---|---|---|
| Beryllium | ND | 0.4 |
| Chromium | ND | 0.5 |
| Copper | ND | 0.5 |
| Thallium | ND | 0.5 |

### Laboratory Control Sample (LCS)

RunID: ICPMS_080826A-4647836 Units: mg/kg
Analysis Date: 08/26/2008 19:38 Analyst: AL_H
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Beryllium | 143.0 | 146.6 | 102.5 | 82 | 118 |
| Chromium | 60.80 | 64.46 | 106.0 | 78 | 121 |
| Copper | 131.0 | 135.9 | 103.7 | 79 | 118 |
| Thallium | 158.0 | 154.6 | 97.85 | 76 | 125 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08080929-01
RunID: ICPMS_080826A-4647838 Units: mg/kg
Analysis Date: 08/26/2008 19:48 Analyst: AL_H
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Beryllium | ND | 10 | 9.719 | 94.98 | 10 | 9.394 | 91.73 | 3.401 | 20 | 75 | 125 |
| Chromium | 79.15 | 10 | 31.64 | N/C | 10 | 29.66 | N/C | N/C | 20 | 75 | 125 |
| Copper | 48.61 | 10 | 237.5 | N/C | 10 | 56.07 | N/C | N/C | 20 | 75 | 125 |
| Thallium | ND | 10 | 10.08 | 97.57 | 10 | 9.582 | 92.59 | 5.066 | 20 | 75 | 125 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6020, Total
**Method:** SW6020A
**WorkOrder:** 08080981
**Lab Batch ID:** 82930C-I

### Method Blank

RunID: ICPMS_080828A-4651657 Units: mg/kg
Analysis Date: 08/28/2008 13:19 Analyst: PG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Result | Rep Limit |
|---|---|---|
| Tungsten | ND | 0.5 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

### Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 08080929-01
RunID: ICPMS_080828A-4651669 Units: mg/kg
Analysis Date: 08/28/2008 14:37 Analyst: PG

| Analyte | Sample Result | PDS Spike Added | PDS Result | PDS % Recovery | PDSD Spike Added | PDSD Result | PDSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tungsten | ND | 10 | 7.946 | 79.46 | 10 | 8.266 | 82.66 | 3.948 | 20 | 75 | 125 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08080929-01
RunID: ICPMS_080828A-4651660 Units: mg/kg
Analysis Date: 08/28/2008 13:34 Analyst: PG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tungsten | ND | 10 | D | D | 10 | D | D | D | 20 | 75 | 125 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6010B, Total **WorkOrder:** 08080981
**Method:** SW6010B **Lab Batch ID:** 82930d

### Method Blank

RunID: TJA_080901A-4656783 Units: mg/kg
Analysis Date: 09/01/2008 19:45 Analyst: BDG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Result | Rep Limit |
|---|---|---|
| Aluminum | ND | 10 |
| Calcium | ND | 10 |
| Iron | ND | 2 |
| Magnesium | ND | 10 |
| Potassium | ND | 200 |
| Sodium | ND | 50 |
| Strontium | ND | 2 |
| Tin | ND | 5 |
| Titanium | ND | 2 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

### Laboratory Control Sample (LCS)

RunID: TJA_080901A-4656773 Units: mg/kg
Analysis Date: 09/01/2008 16:04 Analyst: BDG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Aluminum | 7590 | 7306 | 96.26 | 58 | 142 |
| Calcium | 4320 | 4269 | 98.83 | 79 | 121 |
| Iron | 14400 | 15930 | 110.6 | 52 | 149 |
| Magnesium | 2220 | 2256 | 101.6 | 77 | 123 |
| Potassium | 2380 | 2327 | 97.76 | 71 | 129 |
| Sodium | 456.0 | 371.7 | 81.51 | 56 | 144 |
| Strontium | 113.0 | 110.0 | 97.35 | 80 | 120 |
| Tin | 175.0 | 168.9 | 96.51 | 70 | 130 |
| Titanium | 281.0 | 297.1 | 105.7 | 40 | 160 |

### Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 08080929-01
RunID: TJA_080901A-4656780 Units: mg/kg
Analysis Date: 09/01/2008 16:27 Analyst: BDG

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6010B, Total **WorkOrder:** 08080981
**Method:** SW6010B **Lab Batch ID:** 82930d

| Analyte | Sample Result | PDS Spike Added | PDS Result | PDS % Recovery | PDSD Spike Added | PDSD Result | PDSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 747 | 1000 | 1763 | 101.7 | 1000 | 1765 | 101.9 | 0.1127 | 20 | 75 | 125 |
| Titanium | 76 | 100 | 173.3 | 97.36 | 100 | 169.8 | 93.85 | 2.044 | 20 | 75 | 125 |

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08080929-01
RunID: TJA_080901A-4656776 Units: mg/kg
Analysis Date: 09/01/2008 16:13 Analyst: BDG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 4385 | 100 | 6513 | N/C | 100 | 7805 | N/C | N/C | 20 | 75 | 125 |
| Iron | 7090 | 100 | 7452 | N/C | 100 | 7854 | N/C | N/C | 20 | 75 | 125 |
| Magnesium | 4376 | 100 | 4025 | N/C | 100 | 4651 | N/C | N/C | 20 | 75 | 125 |
| Potassium | 746.6 | 1000 | 2024 | 127.7 * | 1000 | 2202 | 145.5 * | 8.404 | 20 | 75 | 125 |
| Sodium | 221.5 | 100 | 337.5 | 116.0 | 100 | 346.3 | 124.8 | 2.574 | 20 | 75 | 125 |
| Strontium | 144.2 | 100 | 244.3 | 100.1 | 100 | 257.6 | 113.5 | 5.306 | 20 | 75 | 125 |
| Tin | ND | 100 | 93.46 | 92.37 | 100 | 92.91 | 91.83 | 0.5806 | 20 | 75 | 125 |
| Titanium | 75.95 | 100 | 200.7 | 124.7 | 100 | 219.4 | 143.4 * | 8.903 | 20 | 75 | 125 |

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08080929-01
RunID: TJA_080901A-4656785 Units: mg/kg
Analysis Date: 09/01/2008 19:59 Analyst: BDG
Preparation Date: 08/21/2008 11:40 Prep By: DD Method SW3050B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 41530 | 100 | 38560 | N/C | 100 | 39050 | N/C | N/C | 20 | 75 | 125 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Mercury, Total **WorkOrder:** 08080981
**Method:** SW7471A **Lab Batch ID:** 83035

### Method Blank

RunID: HGLC_080825A-4644295 Units: mg/kg
Analysis Date: 08/25/2008 15:26 Analyst: CMC
Preparation Date: 08/25/2008 12:15 Prep By: CMC Method SW7471A

| Analyte | Result | Rep Limit |
|---|---|---|
| Mercury | ND | 0.03 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

### Laboratory Control Sample (LCS)

RunID: HGLC_080825A-4644314 Units: mg/kg
Analysis Date: 08/25/2008 16:17 Analyst: CMC
Preparation Date: 08/25/2008 12:15 Prep By: CMC Method SW7471A

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Mercury | 3.600 | 4.234 | 117.6 | 68 | 132 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08080981-01
RunID: HGLC_080825A-4644297 Units: mg/kg-dry
Analysis Date: 08/25/2008 15:34 Analyst: CMC
Preparation Date: 08/25/2008 12:15 Prep By: CMC Method SW7471A

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.3436 | 0.3188 | 88.28 | 0.3436 | 0.3348 | 92.95 | 4.904 | 20 | 75 | 125 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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## Quality Control Report

### Conoco Phillips
**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C
**Method:** SW8270C
**WorkOrder:** 08080981
**Lab Batch ID:** 82934

**Method Blank**

RunID: H_080827F-4651381
Units: ug/kg
Analysis Date: 08/27/2008 11:03
Analyst: GY
Preparation Date: 08/21/2008 13:34
Prep By: QMT Method SW3550B

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

| Analyte | Result | Rep Limit |
|---|---|---|
| 1,2,4-Trichlorobenzene | ND | 330 |
| 1,2-Dichlorobenzene | ND | 330 |
| 1,2-Diphenylhydrazine | ND | 330 |
| 1,3-Dichlorobenzene | ND | 330 |
| 1,4-Dichlorobenzene | ND | 330 |
| 2,4,5-Trichlorophenol | ND | 800 |
| 2,4,6-Trichlorophenol | ND | 330 |
| 2,4-Dichlorophenol | ND | 330 |
| 2,4-Dimethylphenol | ND | 330 |
| 2,4-Dinitrophenol | ND | 800 |
| 2,4-Dinitrotoluene | ND | 800 |
| 2,6-Dinitrotoluene | ND | 330 |
| 2-Chloronaphthalene | ND | 330 |
| 2-Chlorophenol | ND | 330 |
| 2-Methylnaphthalene | ND | 330 |
| 2-Nitroaniline | ND | 800 |
| 2-Nitrophenol | ND | 330 |
| 3,3'-Dichlorobenzidine | ND | 330 |
| 3-Nitroaniline | ND | 800 |
| 4,6-Dinitro-2-methylphenol | ND | 800 |
| 4-Bromophenyl phenyl ether | ND | 330 |
| 4-Chloro-3-methylphenol | ND | 330 |
| 4-Chloroaniline | ND | 330 |
| 4-Chlorophenyl phenyl ether | ND | 330 |
| 4-Nitroaniline | ND | 800 |
| 4-Nitrophenol | ND | 800 |
| Acenaphthene | ND | 330 |
| Acenaphthylene | ND | 330 |
| Aniline | ND | 330 |
| Anthracene | ND | 330 |
| Benz(a)anthracene | ND | 330 |
| Benzo(a)pyrene | ND | 330 |
| Benzo(b)fluoranthene | ND | 330 |
| Benzo(g,h,i)perylene | ND | 330 |
| Benzo(k)fluoranthene | ND | 330 |
| Benzoic acid | ND | 1600 |
| Benzyl alcohol | ND | 330 |
| Bis(2-chloroethoxy)methane | ND | 330 |
| Bis(2-chloroethyl)ether | ND | 330 |
| Bis(2-chloroisopropyl)ether | ND | 330 |
| Bis(2-ethylhexyl)phthalate | ND | 330 |
| Butyl benzyl phthalate | ND | 330 |
| Carbazole | ND | 330 |
| Chrysene | ND | 330 |
| Dibenz(a,h)anthracene | ND | 330 |
| Dibenzofuran | ND | 330 |

**Qualifiers:**

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B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
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D - Recovery Unreportable due to Dilution
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C
**Method:** SW8270C
**WorkOrder:** 08080981
**Lab Batch ID:** 82934

### Method Blank

RunID: H_080827F-4651381 Units: ug/kg
Analysis Date: 08/27/2008 11:03 Analyst: GY
Preparation Date: 08/21/2008 13:34 Prep By: QMT Method SW3550B

| Analyte | Result | Rep Limit |
|---|---|---|
| Diethyl phthalate | ND | 330 |
| Dimethyl phthalate | ND | 330 |
| Di-n-butyl phthalate | ND | 330 |
| Di-n-octyl phthalate | ND | 330 |
| Fluoranthene | ND | 330 |
| Fluorene | ND | 330 |
| Hexachlorobenzene | ND | 330 |
| Hexachlorobutadiene | ND | 330 |
| Hexachlorocyclopentadiene | ND | 330 |
| Hexachloroethane | ND | 330 |
| Indeno(1,2,3-cd)pyrene | ND | 330 |
| Isophorone | ND | 330 |
| Naphthalene | ND | 330 |
| Nitrobenzene | ND | 330 |
| N-Nitrosodi-n-propylamine | ND | 330 |
| N-Nitrosodiphenylamine | ND | 330 |
| Pentachlorophenol | ND | 800 |
| Phenanthrene | ND | 330 |
| Phenol | ND | 330 |
| Pyrene | ND | 330 |
| Pyridine | ND | 330 |
| 2-Methylphenol | ND | 330 |
| 3 & 4-Methylphenol | ND | 330 |
| Surr: 2,4,6-Tribromophenol | 92.0 | 19-135 |
| Surr: 2-Fluorobiphenyl | 94.1 | 15-140 |
| Surr: 2-Fluorophenol | 88.0 | 15-122 |
| Surr: Nitrobenzene-d5 | 82.4 | 10-134 |
| Surr: Phenol-d5 | 92.0 | 10-123 |
| Surr: Terphenyl-d14 | 88.2 | 18-166 |

### Laboratory Control Sample (LCS)

RunID: H_080827F-4651386 Units: ug/kg
Analysis Date: 08/27/2008 16:28 Analyst: GY
Preparation Date: 08/21/2008 13:34 Prep By: QMT Method SW3550B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 850 | 460 | 54.1 | 34 | 116 |
| 1,2-Dichlorobenzene | 850 | 450 | 52.9 | 32 | 129 |
| 1,2-Diphenylhydrazine | 850 | 430 | 50.6 | 10 | 256 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C **WorkOrder:** 08080981
**Method:** SW8270C **Lab Batch ID:** 82934

**Laboratory Control Sample (LCS)**

RunID: H_080827F-4651386 Units: ug/kg
Analysis Date: 08/27/2008 16:28 Analyst: GY
Preparation Date: 08/21/2008 13:34 Prep By: QMT Method SW3550B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| 1,3-Dichlorobenzene | 850 | 450 | 52.9 | 10 | 172 |
| 1,4-Dichlorobenzene | 850 | 440 | 51.8 | 20 | 124 |
| 2,4,5-Trichlorophenol | 850 | 500 | 58.8 | 40 | 150 |
| 2,4,6-Trichlorophenol | 850 | 490 | 57.6 | 37 | 144 |
| 2,4-Dichlorophenol | 850 | 480 | 56.5 | 39 | 135 |
| 2,4-Dimethylphenol | 850 | 460 | 54.1 | 32 | 119 |
| 2,4-Dinitrophenol | 850 | 580 | 68.2 | 10 | 191 |
| 2,4-Dinitrotoluene | 850 | 500 | 58.8 | 30 | 150 |
| 2,6-Dinitrotoluene | 850 | 480 | 56.5 | 30 | 150 |
| 2-Chloronaphthalene | 850 | 500 | 58.8 | 20 | 175 |
| 2-Chlorophenol | 850 | 480 | 56.5 | 23 | 134 |
| 2-Methylnaphthalene | 850 | 490 | 57.6 | 30 | 135 |
| 2-Nitroaniline | 850 | 450 | 52.9 | 20 | 175 |
| 2-Nitrophenol | 850 | 480 | 56.5 | 29 | 182 |
| 3,3'-Dichlorobenzidine | 850 | 460 | 54.1 | 10 | 261 |
| 3-Nitroaniline | 850 | 480 | 56.5 | 20 | 175 |
| 4,6-Dinitro-2-methylphenol | 850 | 570 | 67.1 | 10 | 181 |
| 4-Bromophenyl phenyl ether | 850 | 540 | 63.5 | 20 | 175 |
| 4-Chloro-3-methylphenol | 850 | 510 | 60.0 | 22 | 147 |
| 4-Chloroaniline | 850 | 480 | 56.5 | 20 | 175 |
| 4-Chlorophenyl phenyl ether | 850 | 580 | 68.2 | 25 | 158 |
| 4-Nitroaniline | 850 | 490 | 57.6 | 20 | 175 |
| 4-Nitrophenol | 850 | 500 | 58.8 | 10 | 132 |
| Acenaphthene | 850 | 480 | 56.5 | 30 | 160 |
| Acenaphthylene | 850 | 480 | 56.5 | 10 | 150 |
| Aniline | 1700 | 850 | 50.0 | 10 | 160 |
| Anthracene | 850 | 500 | 58.8 | 27 | 133 |
| Benz(a)anthracene | 850 | 500 | 58.8 | 33 | 143 |
| Benzo(a)pyrene | 850 | 490 | 57.6 | 17 | 163 |
| Benzo(b)fluoranthene | 850 | 500 | 58.8 | 24 | 159 |
| Benzo(g,h,i)perylene | 850 | 450 | 52.9 | 10 | 219 |
| Benzo(k)fluoranthene | 850 | 480 | 56.5 | 11 | 162 |
| Benzoic acid | 850 | 540 | 63.5 | 10 | 450 |
| Benzyl alcohol | 850 | 340 | 40.0 | 30 | 160 |

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## Quality Control Report

### Conoco Phillips
**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C
**Method:** SW8270C
**WorkOrder:** 08080981
**Lab Batch ID:** 82934

**Laboratory Control Sample (LCS)**

RunID: H_080827F-4651386
Analysis Date: 08/27/2008 16:28
Preparation Date: 08/21/2008 13:34
Units: ug/kg
Analyst: GY
Prep By: QMT Method SW3550B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Bis(2-chloroethoxy)methane | 850 | 830 | 97.6 | 33 | 184 |
| Bis(2-chloroethyl)ether | 850 | 520 | 61.2 | 28 | 158 |
| Bis(2-chloroisopropyl)ether | 850 | 510 | 60.0 | 36 | 166 |
| Bis(2-ethylhexyl)phthalate | 850 | 550 | 64.7 | 10 | 158 |
| Butyl benzyl phthalate | 850 | 580 | 68.2 | 10 | 152 |
| Carbazole | 850 | 510 | 60.0 | 45 | 135 |
| Chrysene | 850 | 500 | 58.8 | 17 | 168 |
| Dibenz(a,h)anthracene | 850 | 470 | 55.3 | 10 | 227 |
| Dibenzofuran | 850 | 500 | 58.8 | 30 | 160 |
| Diethyl phthalate | 850 | 530 | 62.4 | 10 | 160 |
| Dimethyl phthalate | 850 | 540 | 63.5 | 10 | 112 |
| Di-n-butyl phthalate | 850 | 570 | 67.1 | 10 | 118 |
| Di-n-octyl phthalate | 850 | 540 | 63.5 | 10 | 146 |
| Fluoranthene | 850 | 510 | 60.0 | 26 | 137 |
| Fluorene | 850 | 490 | 57.6 | 35 | 135 |
| Hexachlorobenzene | 850 | 500 | 58.8 | 10 | 152 |
| Hexachlorobutadiene | 850 | 460 | 54.1 | 20 | 140 |
| Hexachlorocyclopentadiene | 850 | 310 | 36.5 | 10 | 152 |
| Hexachloroethane | 850 | 430 | 50.6 | 25 | 118 |
| Indeno(1,2,3-cd)pyrene | 850 | 480 | 56.5 | 10 | 171 |
| Isophorone | 850 | 480 | 56.5 | 21 | 196 |
| Naphthalene | 850 | 470 | 55.3 | 21 | 133 |
| Nitrobenzene | 850 | 420 | 49.4 | 35 | 180 |
| N-Nitrosodi-n-propylamine | 850 | 470 | 55.3 | 10 | 230 |
| N-Nitrosodiphenylamine | 1700 | 1400 | 82.4 | 30 | 160 |
| Pentachlorophenol | 850 | 520 | 61.2 | 14 | 176 |
| Phenanthrene | 850 | 500 | 58.8 | 35 | 135 |
| Phenol | 850 | 500 | 58.8 | 44 | 120 |
| Pyrene | 850 | 510 | 60.0 | 34 | 138 |
| Pyridine | 1700 | 740 | 43.5 | 10 | 150 |
| 2-Methylphenol | 850 | 470 | 55.3 | 40 | 160 |
| 3 & 4-Methylphenol | 850 | 550 | 64.7 | 40 | 160 |
| Surr: 2,4,6-Tribromophenol | 2500 | 1600 | 64.0 | 19 | 135 |
| Surr: 2-Fluorobiphenyl | 1700 | 1000 | 58.8 | 15 | 140 |

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## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C **WorkOrder:** 08080981
**Method:** SW8270C **Lab Batch ID:** 82934

### Laboratory Control Sample (LCS)

RunID: H_080827F-4651386 Units: ug/kg
Analysis Date: 08/27/2008 16:28 Analyst: GY
Preparation Date: 08/21/2008 13:34 Prep By: QMT Method SW3550B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Surr: 2-Fluorophenol | 2500 | 1400 | 56.0 | 15 | 122 |
| Surr: Nitrobenzene-d5 | 1700 | 930 | 54.7 | 32 | 153 |
| Surr: Phenol-d5 | 2500 | 1500 | 60.0 | 10 | 123 |
| Surr: Terphenyl-d14 | 1700 | 1000 | 58.8 | 18 | 166 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08080981-01
RunID: H_080827F-4651392 Units: ug/kg-dry
Analysis Date: 08/27/2008 19:43 Analyst: GY
Preparation Date: 08/21/2008 13:34 Prep By: QMT Method SW3550B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | ND | 974 | 699 | 71.8 | 974 | 710 | 72.9 | 1.63 | 28 | 34 | 116 |
| 1,2-Dichlorobenzene | ND | 974 | 710 | 72.9 | 974 | 710 | 72.9 | 0 | 60 | 32 | 129 |
| 1,2-Diphenylhydrazine | ND | 974 | 653 | 67.1 | 974 | 641 | 65.9 | 1.77 | 60 | 10 | 256 |
| 1,3-Dichlorobenzene | ND | 974 | 687 | 70.6 | 974 | 687 | 70.6 | 0 | 60 | 10 | 172 |
| 1,4-Dichlorobenzene | ND | 974 | 676 | 69.4 | 974 | 687 | 70.6 | 1.68 | 28 | 20 | 124 |
| 2,4,5-Trichlorophenol | ND | 974 | 767 | 78.8 | 974 | 767 | 78.8 | 0 | 60 | 40 | 150 |
| 2,4,6-Trichlorophenol | ND | 974 | 733 | 75.3 | 974 | 745 | 76.5 | 1.55 | 60 | 37 | 144 |
| 2,4-Dichlorophenol | ND | 974 | 745 | 76.5 | 974 | 745 | 76.5 | 0 | 60 | 39 | 135 |
| 2,4-Dimethylphenol | ND | 974 | 722 | 74.1 | 974 | 699 | 71.8 | 3.23 | 60 | 32 | 119 |
| 2,4-Dinitrophenol | ND | 974 | 825 | 84.7 | 974 | 756 | 77.6 | 8.70 | 60 | 10 | 191 |
| 2,4-Dinitrotoluene | ND | 974 | 779 | 80.0 | 974 | 779 | 80.0 | 0 | 50 | 30 | 150 |
| 2,6-Dinitrotoluene | ND | 974 | 733 | 75.3 | 974 | 767 | 78.8 | 4.58 | 60 | 30 | 150 |
| 2-Chloronaphthalene | ND | 974 | 745 | 76.5 | 974 | 779 | 80.0 | 4.51 | 60 | 20 | 175 |
| 2-Chlorophenol | ND | 974 | 722 | 74.1 | 974 | 733 | 75.3 | 1.57 | 40 | 23 | 134 |
| 2-Methylnaphthalene | ND | 974 | 745 | 76.5 | 974 | 756 | 77.6 | 1.53 | 60 | 30 | 135 |
| 2-Nitroaniline | ND | 974 | 699 | 71.8 | 974 | 722 | 74.1 | 3.23 | 60 | 20 | 175 |
| 2-Nitrophenol | ND | 974 | 745 | 76.5 | 974 | 767 | 78.8 | 3.03 | 60 | 29 | 182 |
| 3,3'-Dichlorobenzidine | ND | 974 | 733 | 75.3 | 974 | 722 | 74.1 | 1.57 | 60 | 10 | 261 |

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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C **WorkOrder:** 08080981
**Method:** SW8270C **Lab Batch ID:** 82934

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08080981-01
RunID: H_080827F-4651392 Units: ug/kg-dry
Analysis Date: 08/27/2008 19:43 Analyst: GY
Preparation Date: 08/21/2008 13:34 Prep By: QMT Method SW3550B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-Nitroaniline | ND | 974 | 767 | 78.8 | 974 | 767 | 78.8 | 0 | 60 | 20 | 175 |
| 4,6-Dinitro-2-methylphenol | ND | 974 | 825 | 84.7 | 974 | 779 | 80.0 | 5.71 | 60 | 10 | 181 |
| 4-Bromophenyl phenyl ether | ND | 974 | 802 | 82.4 | 974 | 825 | 84.7 | 2.82 | 60 | 20 | 175 |
| 4-Chloro-3-methylphenol | ND | 974 | 779 | 80.0 | 974 | 779 | 80.0 | 0 | 42 | 22 | 147 |
| 4-Chloroaniline | ND | 974 | 733 | 75.3 | 974 | 745 | 76.5 | 1.55 | 60 | 20 | 175 |
| 4-Chlorophenyl phenyl ether | ND | 974 | 882 | 90.6 | 974 | 905 | 92.9 | 2.56 | 60 | 25 | 158 |
| 4-Nitroaniline | ND | 974 | 756 | 77.6 | 974 | 767 | 78.8 | 1.50 | 60 | 20 | 175 |
| 4-Nitrophenol | ND | 974 | 722 | 74.1 | 974 | 733 | 75.3 | 1.57 | 50 | 10 | 132 |
| Acenaphthene | ND | 974 | 733 | 75.3 | 974 | 756 | 77.6 | 3.08 | 31 | 30 | 160 |
| Acenaphthylene | ND | 974 | 745 | 76.5 | 974 | 767 | 78.8 | 3.03 | 50 | 10 | 150 |
| Aniline | ND | 1950 | 1260 | 64.7 | 1950 | 1260 | 64.7 | 0 | 60 | 10 | 160 |
| Anthracene | ND | 974 | 767 | 78.8 | 974 | 767 | 78.8 | 0 | 50 | 27 | 133 |
| Benz(a)anthracene | ND | 974 | 767 | 78.8 | 974 | 767 | 78.8 | 0 | 50 | 33 | 143 |
| Benzo(a)pyrene | ND | 974 | 756 | 77.6 | 974 | 756 | 77.6 | 0 | 60 | 17 | 163 |
| Benzo(b)fluoranthene | ND | 974 | 767 | 78.8 | 974 | 733 | 75.3 | 4.58 | 60 | 24 | 159 |
| Benzo(g,h,i)perylene | ND | 974 | 722 | 74.1 | 974 | 722 | 74.1 | 0 | 60 | 10 | 219 |
| Benzo(k)fluoranthene | ND | 974 | 710 | 72.9 | 974 | 745 | 76.5 | 4.72 | 60 | 11 | 162 |
| Benzoic acid | ND | 974 | 607 | 62.4 | 974 | 607 | 62.4 | 0 | 60 | 10 | 450 |
| Benzyl alcohol | ND | 974 | 515 | 52.9 | 974 | 493 | 50.6 | 4.55 | 60 | 30 | 160 |
| Bis(2-chloroethoxy)methane | ND | 974 | 1260 | 129 | 974 | 1260 | 129 | 0 | 60 | 33 | 184 |
| Bis(2-chloroethyl)ether | ND | 974 | 802 | 82.4 | 974 | 790 | 81.2 | 1.44 | 60 | 28 | 158 |
| Bis(2-chloroisopropyl)ether | ND | 974 | 779 | 80.0 | 974 | 779 | 80.0 | 0 | 60 | 36 | 166 |
| Bis(2-ethylhexyl)phthalate | ND | 974 | 871 | 89.4 | 974 | 871 | 89.4 | 0 | 60 | 10 | 158 |
| Butyl benzyl phthalate | ND | 974 | 893 | 91.8 | 974 | 871 | 89.4 | 2.60 | 60 | 10 | 152 |
| Carbazole | ND | 974 | 790 | 81.2 | 974 | 779 | 80.0 | 1.46 | 60 | 45 | 135 |
| Chrysene | ND | 974 | 767 | 78.8 | 974 | 767 | 78.8 | 0 | 60 | 17 | 168 |
| Dibenz(a,h)anthracene | ND | 974 | 745 | 76.5 | 974 | 745 | 76.5 | 0 | 60 | 10 | 227 |
| Dibenzofuran | ND | 974 | 756 | 77.6 | 974 | 779 | 80.0 | 2.99 | 60 | 45 | 135 |
| Diethyl phthalate | ND | 974 | 802 | 82.4 | 974 | 825 | 84.7 | 2.82 | 60 | 10 | 160 |
| Dimethyl phthalate | ND | 974 | 802 | 82.4 | 974 | 825 | 84.7 | 2.82 | 60 | 10 | 112 |
| Di-n-butyl phthalate | ND | 974 | 871 | 89.4 | 974 | 871 | 89.4 | 0 | 60 | 10 | 118 |
| Di-n-octyl phthalate | ND | 974 | 848 | 87.1 | 974 | 848 | 87.1 | 0 | 60 | 10 | 146 |

**Qualifiers:**
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MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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## Quality Control Report

**Conoco Phillips**

**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C **WorkOrder:** 08080981
**Method:** SW8270C **Lab Batch ID:** 82934

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08080981-01
RunID: H_080827F-4651392 Units: ug/kg-dry
Analysis Date: 08/27/2008 19:43 Analyst: GY
Preparation Date: 08/21/2008 13:34 Prep By: QMT Method SW3550B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | ND | 974 | 779 | 80.0 | 974 | 779 | 80.0 | 0 | 60 | 26 | 137 |
| Fluorene | ND | 974 | 756 | 77.6 | 974 | 779 | 80.0 | 2.99 | 60 | 45 | 135 |
| Hexachlorobenzene | ND | 974 | 767 | 78.8 | 974 | 767 | 78.8 | 0 | 60 | 10 | 152 |
| Hexachlorobutadiene | ND | 974 | 710 | 72.9 | 974 | 710 | 72.9 | 0 | 60 | 20 | 140 |
| Hexachlorocyclopentadiene | ND | 974 | 458 | 47.1 | 974 | 401 | 41.2 | 13.3 | 60 | 10 | 152 |
| Hexachloroethane | ND | 974 | 664 | 68.2 | 974 | 664 | 68.2 | 0 | 60 | 25 | 118 |
| Indeno(1,2,3-cd)pyrene | ND | 974 | 756 | 77.6 | 974 | 767 | 78.8 | 1.50 | 60 | 10 | 171 |
| Isophorone | ND | 974 | 733 | 75.3 | 974 | 756 | 77.6 | 3.08 | 60 | 21 | 196 |
| Naphthalene | ND | 974 | 710 | 72.9 | 974 | 722 | 74.1 | 1.60 | 60 | 21 | 133 |
| Nitrobenzene | ND | 974 | 641 | 65.9 | 974 | 653 | 67.1 | 1.77 | 60 | 35 | 180 |
| N-Nitrosodi-n-propylamine | ND | 974 | 767 | 78.8 | 974 | 733 | 75.3 | 4.58 | 38 | 10 | 230 |
| N-Nitrosodiphenylamine | ND | 1950 | 2060 | 106 | 1950 | 2060 | 106 | 0 | 60 | 30 | 160 |
| Pentachlorophenol | ND | 974 | 550 | 56.5 | 974 | 538 | 55.3 | 2.11 | 50 | 14 | 176 |
| Phenanthrene | ND | 974 | 756 | 77.6 | 974 | 767 | 78.8 | 1.50 | 60 | 45 | 135 |
| Phenol | ND | 974 | 779 | 80.0 | 974 | 767 | 78.8 | 1.48 | 42 | 44 | 120 |
| Pyrene | ND | 974 | 779 | 80.0 | 974 | 790 | 81.2 | 1.46 | 31 | 26 | 127 |
| Pyridine | ND | 1950 | 1150 | 58.8 | 1950 | 1150 | 58.8 | 0 | 60 | 10 | 150 |
| 2-Methylphenol | ND | 974 | 745 | 76.5 | 974 | 710 | 72.9 | 4.72 | 60 | 40 | 160 |
| 3 & 4-Methylphenol | ND | 974 | 836 | 85.9 | 974 | 836 | 85.9 | 0 | 60 | 40 | 160 |
| Surr: 2,4,6-Tribromophenol | ND | 2860 | 2290 | 80.0 | 2860 | 2410 | 84.0 | 4.88 | 30 | 19 | 135 |
| Surr: 2-Fluorobiphenyl | ND | 1950 | 1490 | 76.5 | 1950 | 1600 | 82.4 | 7.41 | 30 | 15 | 140 |
| Surr: 2-Fluorophenol | ND | 2860 | 2060 | 72.0 | 2860 | 2060 | 72.0 | 0 | 30 | 15 | 122 |
| Surr: Nitrobenzene-d5 | ND | 1950 | 1370 | 70.6 | 1950 | 1370 | 70.6 | 0 | 30 | 10 | 134 |
| Surr: Phenol-d5 | ND | 2860 | 2180 | 76.0 | 2860 | 2290 | 80.0 | 5.13 | 30 | 10 | 123 |
| Surr: Terphenyl-d14 | ND | 1950 | 1490 | 76.5 | 1950 | 1600 | 82.4 | 7.41 | 30 | 18 | 166 |

**Qualifiers:**

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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249104

**Method Blank**

RunID: M_080821A-4640312 Units: ug/kg
Analysis Date: 08/21/2008 13:20 Analyst: TLE

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01A | MW-2 (28-29.5) |
| 08080981-03A | MW-4 (28.5-30) |
| 08080981-04A | MW-3 (38-39.5) |

| Analyte | Result | Rep Limit |
|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 1,1-Dichloroethane | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,3-Dichloropropane | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| 2-Butanone | ND | 20 |
| 2-Chloroethyl vinyl ether | ND | 10 |
| 2-Chlorotoluene | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 4-Chlorotoluene | ND | 5.0 |
| 4-Isopropyltoluene | ND | 5.0 |
| 4-Methyl-2-pentanone | ND | 10 |
| Acetone | ND | 100 |
| Acrylonitrile | ND | 50 |
| Benzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Bromomethane | ND | 10 |
| Carbon disulfide | ND | 5.0 |
| Carbon tetrachloride | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| Chloroethane | ND | 10 |
| Chloroform | ND | 5.0 |
| Chloromethane | ND | 10 |
| Dibromochloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| Dichlorodifluoromethane | ND | 10 |
| Ethylbenzene | ND | 5.0 |

**Qualifiers:**

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B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249104

### Method Blank

RunID: M_080821A-4640312 Units: ug/kg
Analysis Date: 08/21/2008 13:20 Analyst: TLE

| Analyte | Result | Rep Limit |
|---|---|---|
| Hexachlorobutadiene | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| Methyl tert-butyl ether | ND | 5.0 |
| Methylene chloride | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| n-Propylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| Styrene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |
| Toluene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| Trichlorofluoromethane | ND | 5.0 |
| Vinyl acetate | ND | 10 |
| Vinyl chloride | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| m,p-Xylene | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,2-Dichloroethene (total) | ND | 5.0 |
| Xylenes,Total | ND | 5.0 |
| Surr: 1,2-Dichloroethane-d4 | 100.0 | 64-130 |
| Surr: 4-Bromofluorobenzene | 86.0 | 62-130 |
| Surr: Toluene-d8 | 104.0 | 70-140 |

### Laboratory Control Sample (LCS)

RunID: M_080821A-4640311 Units: ug/kg
Analysis Date: 08/21/2008 12:25 Analyst: TLE

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 20.0 | 17.0 | 85.0 | 35 | 175 |
| 1,1,1-Trichloroethane | 20.0 | 20.0 | 100 | 35 | 175 |
| 1,1,2,2-Tetrachloroethane | 20.0 | 20.0 | 100 | 35 | 175 |
| 1,1,2-Trichloroethane | 20.0 | 21.0 | 105 | 35 | 175 |
| 1,1-Dichloroethane | 20.0 | 23.0 | 115 | 35 | 175 |

**Qualifiers:**

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E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
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N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249104

**Laboratory Control Sample (LCS)**

RunID: M_080821A-4640311 Units: ug/kg
Analysis Date: 08/21/2008 12:25 Analyst: TLE

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 20.0 | 21.0 | 105 | 59 | 172 |
| 1,1-Dichloropropene | 20.0 | 20.0 | 100 | 35 | 175 |
| 1,2,3-Trichlorobenzene | 20.0 | 17.0 | 85.0 | 20 | 200 |
| 1,2,3-Trichloropropane | 20.0 | 22.0 | 110 | 35 | 175 |
| 1,2,4-Trichlorobenzene | 20.0 | 16.0 | 80.0 | 40 | 200 |
| 1,2,4-Trimethylbenzene | 20.0 | 20.0 | 100 | 35 | 175 |
| 1,2-Dibromo-3-chloropropane | 20.0 | 19.0 | 95.0 | 15 | 175 |
| 1,2-Dibromoethane | 20.0 | 19.0 | 95.0 | 35 | 175 |
| 1,2-Dichlorobenzene | 20.0 | 19.0 | 95.0 | 35 | 175 |
| 1,2-Dichloroethane | 20.0 | 23.0 | 115 | 35 | 175 |
| 1,2-Dichloropropane | 20.0 | 21.0 | 105 | 35 | 175 |
| 1,3,5-Trimethylbenzene | 20.0 | 19.0 | 95.0 | 35 | 175 |
| 1,3-Dichlorobenzene | 20.0 | 20.0 | 100 | 35 | 175 |
| 1,3-Dichloropropane | 20.0 | 21.0 | 105 | 35 | 175 |
| 1,4-Dichlorobenzene | 20.0 | 20.0 | 100 | 35 | 175 |
| 2,2-Dichloropropane | 20.0 | 19.0 | 95.0 | 35 | 175 |
| 2-Butanone | 120 | 200 | 167 | 20 | 235 |
| 2-Chloroethyl vinyl ether | 20.0 | 18.0 | 90.0 | 10 | 250 |
| 2-Chlorotoluene | 20.0 | 20.0 | 100 | 31 | 175 |
| 2-Hexanone | 20.0 | 25.0 | 125 | 10 | 250 |
| 4-Chlorotoluene | 20.0 | 20.0 | 100 | 35 | 175 |
| 4-Isopropyltoluene | 20.0 | 19.0 | 95.0 | 35 | 175 |
| 4-Methyl-2-pentanone | 20.0 | 19.0 | 95.0 | 10 | 170 |
| Acetone | 200 | 520 | 260 | 10 | 350 |
| Acrylonitrile | 100 | 130 | 130 | 20 | 200 |
| Benzene | 20.0 | 21.0 | 105 | 66 | 142 |
| Bromobenzene | 20.0 | 19.0 | 95.0 | 35 | 175 |
| Bromochloromethane | 20.0 | 21.0 | 105 | 35 | 175 |
| Bromodichloromethane | 20.0 | 20.0 | 100 | 35 | 175 |
| Bromoform | 20.0 | 18.0 | 90.0 | 35 | 175 |
| Bromomethane | 20.0 | 20.0 | 100 | 35 | 175 |
| Carbon disulfide | 20.0 | 17.0 | 85.0 | 30 | 220 |
| Carbon tetrachloride | 20.0 | 18.0 | 90.0 | 35 | 175 |
| Chlorobenzene | 20.0 | 19.0 | 95.0 | 60 | 133 |

**Qualifiers:**

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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249104

**Laboratory Control Sample (LCS)**

RunID: M_080821A-4640311 Units: ug/kg
Analysis Date: 08/21/2008 12:25 Analyst: TLE

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Chloroethane | 20.0 | 21.0 | 105 | 35 | 175 |
| Chloroform | 20.0 | 22.0 | 110 | 35 | 175 |
| Chloromethane | 20.0 | 21.0 | 105 | 35 | 175 |
| Dibromochloromethane | 20.0 | 19.0 | 95.0 | 35 | 175 |
| Dibromomethane | 20.0 | 20.0 | 100 | 35 | 175 |
| Dichlorodifluoromethane | 20.0 | 14.0 | 70.0 | 30 | 175 |
| Ethylbenzene | 20.0 | 18.0 | 90.0 | 35 | 175 |
| Hexachlorobutadiene | 20.0 | 16.0 | 80.0 | 35 | 175 |
| Isopropylbenzene | 20.0 | 14.0 | 70.0 | 35 | 175 |
| Methyl tert-butyl ether | 40.0 | 39.0 | 97.5 | 35 | 175 |
| Methylene chloride | 20.0 | 23.0 | 115 | 35 | 175 |
| Naphthalene | 20.0 | 17.0 | 85.0 | 20 | 175 |
| n-Butylbenzene | 20.0 | 20.0 | 100 | 35 | 175 |
| n-Propylbenzene | 20.0 | 19.0 | 95.0 | 35 | 175 |
| sec-Butylbenzene | 20.0 | 20.0 | 100 | 35 | 175 |
| Styrene | 20.0 | 16.0 | 80.0 | 35 | 175 |
| tert-Butylbenzene | 20.0 | 20.0 | 100 | 35 | 175 |
| Tetrachloroethene | 20.0 | 18.0 | 90.0 | 30 | 250 |
| Toluene | 20.0 | 20.0 | 100 | 59 | 139 |
| Trichloroethene | 20.0 | 19.0 | 95.0 | 60 | 140 |
| Trichlorofluoromethane | 20.0 | 18.0 | 90.0 | 17 | 250 |
| Vinyl acetate | 20.0 | 25.0 | 125 | 10 | 250 |
| Vinyl chloride | 20.0 | 25.0 | 125 | 30 | 175 |
| cis-1,2-Dichloroethene | 20.0 | 22.0 | 110 | 35 | 175 |
| cis-1,3-Dichloropropene | 20.0 | 20.0 | 100 | 35 | 175 |
| m,p-Xylene | 40.0 | 41.0 | 102 | 35 | 175 |
| o-Xylene | 20.0 | 19.0 | 95.0 | 35 | 175 |
| trans-1,2-Dichloroethene | 20.0 | 22.0 | 110 | 35 | 175 |
| trans-1,3-Dichloropropene | 20.0 | 20.0 | 100 | 35 | 175 |
| 1,2-Dichloroethene (total) | 40 | 44 | 110 | 35 | 175 |
| Xylenes,Total | 60 | 60 | 100 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 47 | 94.0 | 64 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 49 | 98.0 | 62 | 130 |
| Surr: Toluene-d8 | 50.0 | 53 | 106 | 70 | 140 |

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B/V - Analyte detected in the associated Method Blank
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249104

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08080983-02
RunID: M_080821A-4640316 Units: ug/kg-dry
Analysis Date: 08/21/2008 15:09 Analyst: TLE
Preparation Date: 08/20/2008 17:20 Prep By: AG Method SW5030B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 22.9 | 17.2 | 75.0 | 22.9 | 16.0 | 70.0 | 6.90 | 30 | 35 | 175 |
| 1,1,1-Trichloroethane | ND | 22.9 | 27.5 | 120 | 22.9 | 27.5 | 120 | 0 | 30 | 35 | 175 |
| 1,1,2,2-Tetrachloroethane | ND | 22.9 | 18.3 | 80.0 | 22.9 | 18.3 | 80.0 | 0 | 30 | 35 | 175 |
| 1,1,2-Trichloroethane | ND | 22.9 | 19.5 | 85.0 | 22.9 | 19.5 | 85.0 | 0 | 30 | 35 | 175 |
| 1,1-Dichloroethane | ND | 22.9 | 30.9 | 135 | 22.9 | 32.0 | 140 | 3.64 | 30 | 35 | 175 |
| 1,1-Dichloroethene | ND | 22.9 | 29.7 | 130 | 22.9 | 30.9 | 135 | 3.77 | 22 | 59 | 172 |
| 1,1-Dichloropropene | ND | 22.9 | 25.2 | 110 | 22.9 | 26.3 | 115 | 4.44 | 30 | 35 | 175 |
| 1,2,3-Trichlorobenzene | ND | 22.9 | 10.3 | 45.0 | 22.9 | 9.15 | 40.0 | 11.8 | 30 | 20 | 200 |
| 1,2,3-Trichloropropane | ND | 22.9 | 18.3 | 80.0 | 22.9 | 17.2 | 75.0 | 6.45 | 30 | 35 | 175 |
| 1,2,4-Trichlorobenzene | ND | 22.9 | 10.3 | 45.0 | 22.9 | 9.15 | 40.0 | 11.8 | 30 | 40 | 200 |
| 1,2,4-Trimethylbenzene | ND | 22.9 | 20.6 | 75.0 | 22.9 | 20.6 | 75.0 | 0 | 30 | 35 | 175 |
| 1,2-Dibromo-3-chloropropane | ND | 22.9 | 16.0 | 70.0 | 22.9 | 16.0 | 70.0 | 0 | 30 | 15 | 175 |
| 1,2-Dibromoethane | ND | 22.9 | 16.0 | 70.0 | 22.9 | 16.0 | 70.0 | 0 | 30 | 35 | 175 |
| 1,2-Dichlorobenzene | ND | 22.9 | 14.9 | 65.0 | 22.9 | 13.7 | 60.0 | 8.00 | 30 | 35 | 175 |
| 1,2-Dichloroethane | ND | 22.9 | 26.3 | 115 | 22.9 | 25.2 | 110 | 4.44 | 30 | 35 | 175 |
| 1,2-Dichloropropane | ND | 22.9 | 21.7 | 95.0 | 22.9 | 22.9 | 100 | 5.13 | 30 | 35 | 175 |
| 1,3,5-Trimethylbenzene | ND | 22.9 | 19.5 | 75.0 | 22.9 | 18.3 | 70.0 | 6.06 | 30 | 35 | 175 |
| 1,3-Dichlorobenzene | ND | 22.9 | 16.0 | 70.0 | 22.9 | 14.9 | 65.0 | 7.41 | 30 | 35 | 175 |
| 1,3-Dichloropropane | ND | 22.9 | 19.5 | 85.0 | 22.9 | 19.5 | 85.0 | 0 | 30 | 35 | 175 |
| 1,4-Dichlorobenzene | ND | 22.9 | 16.0 | 70.0 | 22.9 | 14.9 | 65.0 | 7.41 | 30 | 35 | 175 |
| 2,2-Dichloropropane | ND | 22.9 | 26.3 | 115 | 22.9 | 26.3 | 115 | 0 | 30 | 35 | 175 |
| 2-Butanone | ND | 22.9 | 46.9 | 205 | 22.9 | 46.9 | 205 | 0 | 30 | 10 | 230 |
| 2-Chloroethyl vinyl ether | ND | 22.9 | 11.4 | 50.0 | 22.9 | 13.7 | 60.0 | 18.2 | 30 | 10 | 250 |
| 2-Chlorotoluene | ND | 22.9 | 18.3 | 80.0 | 22.9 | 17.2 | 75.0 | 6.45 | 30 | 31 | 175 |
| 2-Hexanone | ND | 22.9 | 21.7 | 95.0 | 22.9 | 21.7 | 95.0 | 0 | 30 | 10 | 250 |
| 4-Chlorotoluene | ND | 22.9 | 17.2 | 75.0 | 22.9 | 16.0 | 70.0 | 6.90 | 30 | 35 | 175 |
| 4-Isopropyltoluene | ND | 22.9 | 16.0 | 70.0 | 22.9 | 14.9 | 65.0 | 7.41 | 30 | 35 | 175 |
| 4-Methyl-2-pentanone | ND | 22.9 | 16.0 | 70.0 | 22.9 | 17.2 | 75.0 | 6.90 | 30 | 10 | 170 |
| Acetone | ND | 114 | 481 | 398 * | 114 | 492 | 408 * | 2.35 | 30 | 10 | 350 |
| Acrylonitrile | ND | 229 | 286 | 125 | 133 | 286 | 216 * | 0 | 30 | 20 | 200 |

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MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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

## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249104

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08080983-02
RunID: M_080821A-4640316 Units: ug/kg-dry
Analysis Date: 08/21/2008 15:09 Analyst: TLE
Preparation Date: 08/20/2008 17:20 Prep By: AG Method SW5030B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 22.9 | 22.9 | 100 | 22.9 | 24.0 | 105 | 4.88 | 21 | 66 | 142 |
| Bromobenzene | ND | 22.9 | 16.0 | 70.0 | 22.9 | 16.0 | 70.0 | 0 | 30 | 35 | 175 |
| Bromochloromethane | ND | 22.9 | 25.2 | 110 | 22.9 | 24.0 | 105 | 4.65 | 30 | 35 | 175 |
| Bromodichloromethane | ND | 22.9 | 20.6 | 90.0 | 22.9 | 20.6 | 90.0 | 0 | 30 | 35 | 175 |
| Bromoform | ND | 22.9 | 17.2 | 75.0 | 22.9 | 16.0 | 70.0 | 6.90 | 30 | 35 | 175 |
| Bromomethane | ND | 22.9 | 27.5 | 120 | 22.9 | 28.6 | 125 | 4.08 | 30 | 35 | 175 |
| Carbon disulfide | ND | 22.9 | 27.5 | 120 | 22.9 | 28.6 | 125 | 4.08 | 30 | 30 | 220 |
| Carbon tetrachloride | ND | 22.9 | 22.9 | 100 | 22.9 | 22.9 | 100 | 0 | 30 | 35 | 175 |
| Chlorobenzene | ND | 22.9 | 18.3 | 80.0 | 22.9 | 17.2 | 75.0 | 6.45 | 21 | 60 | 133 |
| Chloroethane | ND | 22.9 | 30.9 | 135 | 22.9 | 35.5 | 155 | 13.8 | 30 | 35 | 175 |
| Chloroform | ND | 22.9 | 28.6 | 125 | 22.9 | 28.6 | 125 | 0 | 30 | 35 | 175 |
| Chloromethane | ND | 22.9 | 28.6 | 125 | 22.9 | 33.2 | 145 | 14.8 | 30 | 35 | 175 |
| Dibromochloromethane | ND | 22.9 | 17.2 | 75.0 | 22.9 | 17.2 | 75.0 | 0 | 30 | 35 | 175 |
| Dibromomethane | ND | 22.9 | 19.5 | 85.0 | 22.9 | 19.5 | 85.0 | 0 | 30 | 35 | 175 |
| Dichlorodifluoromethane | ND | 22.9 | 24.0 | 105 | 22.9 | 24.0 | 105 | 0 | 30 | 30 | 175 |
| Ethylbenzene | ND | 22.9 | 17.2 | 75.0 | 22.9 | 17.2 | 75.0 | 0 | 30 | 35 | 175 |
| Hexachlorobutadiene | ND | 22.9 | 11.4 | 50.0 | 22.9 | 11.4 | 50.0 | 0 | 30 | 35 | 175 |
| Isopropylbenzene | ND | 22.9 | 17.2 | 75.0 | 22.9 | 16.0 | 70.0 | 6.90 | 30 | 35 | 175 |
| Methyl tert-butyl ether | ND | 22.9 | 20.6 | 90.0 | 22.9 | 20.6 | 90.0 | 0 | 30 | 35 | 175 |
| Methylene chloride | 10.3 | 22.9 | 33.2 | 100 | 22.9 | 32.0 | 95.0 | 3.51 | 30 | 35 | 175 |
| Naphthalene | ND | 22.9 | 12.6 | 55.0 | 22.9 | 11.4 | 50.0 | 9.52 | 30 | 20 | 175 |
| n-Butylbenzene | ND | 22.9 | 16.0 | 70.0 | 22.9 | 14.9 | 65.0 | 7.41 | 30 | 35 | 175 |
| n-Propylbenzene | ND | 22.9 | 18.3 | 75.0 | 22.9 | 17.2 | 70.0 | 6.45 | 30 | 35 | 175 |
| sec-Butylbenzene | ND | 22.9 | 17.2 | 75.0 | 22.9 | 17.2 | 75.0 | 0 | 30 | 35 | 175 |
| Styrene | ND | 22.9 | 14.9 | 65.0 | 22.9 | 14.9 | 65.0 | 0 | 30 | 35 | 175 |
| tert-Butylbenzene | ND | 22.9 | 19.5 | 85.0 | 22.9 | 18.3 | 80.0 | 6.06 | 30 | 35 | 175 |
| Tetrachloroethene | ND | 22.9 | 19.5 | 85.0 | 22.9 | 19.5 | 85.0 | 0 | 30 | 30 | 250 |
| Toluene | ND | 22.9 | 19.5 | 85.0 | 22.9 | 19.5 | 85.0 | 0 | 21 | 59 | 139 |
| Trichloroethene | ND | 22.9 | 20.6 | 90.0 | 22.9 | 21.7 | 95.0 | 5.41 | 24 | 60 | 140 |
| Trichlorofluoromethane | ND | 22.9 | 28.6 | 125 | 22.9 | 30.9 | 135 | 7.69 | 30 | 17 | 250 |
| Vinyl acetate | ND | 22.9 | 20.6 | 90.0 | 22.9 | 19.5 | 85.0 | 5.71 | 30 | 10 | 250 |
| Vinyl chloride | ND | 22.9 | 38.9 | 170 | 22.9 | 41.2 | 180 * | 5.71 | 30 | 30 | 175 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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

## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249104

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08080983-02
RunID: M_080821A-4640316 Units: ug/kg-dry
Analysis Date: 08/21/2008 15:09 Analyst: TLE
Preparation Date: 08/20/2008 17:20 Prep By: AG Method SW5030B

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | ND | 22.9 | 26.3 | 115 | 22.9 | 26.3 | 115 | 0 | 30 | 35 | 175 |
| cis-1,3-Dichloropropene | ND | 22.9 | 19.5 | 85.0 | 22.9 | 19.5 | 85.0 | 0 | 30 | 35 | 175 |
| m,p-Xylene | 8.01 | 45.8 | 46.9 | 85.0 | 45.8 | 45.8 | 82.5 | 2.47 | 30 | 35 | 175 |
| o-Xylene | ND | 22.9 | 18.3 | 80.0 | 22.9 | 17.2 | 75.0 | 6.45 | 30 | 35 | 175 |
| trans-1,2-Dichloroethene | ND | 22.9 | 28.6 | 125 | 22.9 | 28.6 | 125 | 0 | 30 | 35 | 175 |
| trans-1,3-Dichloropropene | ND | 22.9 | 19.5 | 85.0 | 22.9 | 19.5 | 85.0 | 0 | 30 | 35 | 175 |
| 1,2-Dichloroethene (total) | ND | 45.8 | 54.9 | 120 | 45.8 | 54.9 | 120 | 0 | 30 | 35 | 175 |
| Xylenes,Total | 8.01 | 68.6 | 65.2 | 83.3 | 68.6 | 63.0 | 80.0 | 3.57 | 30 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | ND | 57.2 | 56.1 | 98.0 | 57.2 | 57.2 | 100 | 2.02 | 30 | 64 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 57.2 | 59.5 | 104 | 57.2 | 58.4 | 102 | 1.94 | 30 | 62 | 130 |
| Surr: Toluene-d8 | ND | 57.2 | 59.5 | 104 | 57.2 | 58.4 | 102 | 1.94 | 30 | 70 | 140 |

**Qualifiers:**
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B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

## Quality Control Report

### Conoco Phillips
**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B
**Method:** SW8260B
**WorkOrder:** 08080981
**Lab Batch ID:** R249398

**Method Blank**

RunID: K_080825B-4645455 Units: ug/L
Analysis Date: 08/25/2008 14:21 Analyst: LU_L
Preparation Date: 08/25/2008 14:21 Prep By: Method

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-02A | MW-1 |

| Analyte | Result | Rep Limit |
|---|---|---|
| Benzene | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| Toluene | ND | 5.0 |
| m,p-Xylene | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Xylenes,Total | ND | 5.0 |
| Surr: 1,2-Dichloroethane-d4 | 100.0 | 62-130 |
| Surr: 4-Bromofluorobenzene | 104.0 | 70-130 |
| Surr: Toluene-d8 | 102.0 | 74-122 |

**Laboratory Control Sample (LCS)**

RunID: K_080825B-4645454 Units: ug/L
Analysis Date: 08/25/2008 13:54 Analyst: LU_L
Preparation Date: 08/25/2008 13:54 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Benzene | 20.0 | 18.0 | 90.0 | 76 | 126 |
| Ethylbenzene | 20.0 | 21.0 | 105 | 67 | 122 |
| Toluene | 20.0 | 20.0 | 100 | 70 | 131 |
| m,p-Xylene | 40.0 | 44.0 | 110 | 72 | 150 |
| o-Xylene | 20.0 | 21.0 | 105 | 78 | 141 |
| Xylenes,Total | 60 | 65 | 110 | 72 | 150 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 50 | 100 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 54 | 108 | 70 | 130 |
| Surr: Toluene-d8 | 50.0 | 52 | 104 | 74 | 122 |

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08080810-02
RunID: K_080825B-4645457 Units: ug/L
Analysis Date: 08/25/2008 15:46 Analyst: LU_L

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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(713) 660-0901

## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249398

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 20 | 18.0 | 90.0 | 20 | 18.0 | 90.0 | 0 | 22 | 76 | 127 |
| Ethylbenzene | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 20 | 35 | 175 |
| Toluene | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 24 | 70 | 131 |
| m,p-Xylene | ND | 40 | 38.0 | 95.0 | 40 | 38.0 | 95.0 | 0 | 20 | 35 | 175 |
| o-Xylene | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 20 | 35 | 175 |
| Xylenes,Total | ND | 60 | 57 | 95 | 60 | 57 | 95 | 0 | 20 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | ND | 50 | 50 | 100 | 50 | 50.0 | 100 | 0 | 30 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 50 | 54 | 108 | 50 | 53.0 | 106 | 1.87 | 30 | 70 | 130 |
| Surr: Toluene-d8 | ND | 50 | 51 | 102 | 50 | 51.0 | 102 | 0 | 30 | 74 | 122 |

**Qualifiers:**

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E - Estimated Value exceeds calibration curve
MI - Matrix Interference
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## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

**Analysis:** PERCENT MOISTURE
**Method:** D2216

**WorkOrder:** 08080981
**Lab Batch ID:** R249041B

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-01B | MW-2 (28-29.5) |
| 08080981-03B | MW-4 (28.5-30) |
| 08080981-04B | MW-3 (38-39.5) |

**Sample Duplicate**

Original Sample: 08081095-01
RunID: WET_080821X-4638965 Units: wt%
Analysis Date: 08/21/2008 18:25 Analyst: IAB

| Analyte | Sample Result | DUP Result | RPD | RPD Limit |
|---|---|---|---|---|
| Percent Moisture | 6.93 | 6.954 | 0.331 | 20 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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*Sample Receipt Checklist*

*And*

*Chain of Custody*

**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

## Sample Receipt Checklist

| | | | |
|---|---|---|---|
| Workorder: | **08080981** | Received By: | **L_C** |
| Date and Time Received: | **8/19/2008 9:30:00 AM** | Carrier name: | **Fedex-Priority** |
| Temperature: | **4.0°C** | Chilled by: | **Water Ice** |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | **Shipping container/cooler in good condition?** | Yes | ☑ | No | ☐ | Not Present ☐ |
| 2. | **Custody seals intact on shippping container/cooler?** | Yes | ☑ | No | ☐ | Not Present ☐ |
| 3. | **Custody seals intact on sample bottles?** | Yes | ☐ | No | ☐ | Not Present ☑ |
| 4. | **Chain of custody present?** | Yes | ☑ | No | ☐ | |
| 5. | **Chain of custody signed when relinquished and received?** | Yes | ☑ | No | ☐ | |
| 6. | **Chain of custody agrees with sample labels?** | Yes | ☑ | No | ☐ | |
| 7. | **Samples in proper container/bottle?** | Yes | ☑ | No | ☐ | |
| 8. | **Sample containers intact?** | Yes | ☑ | No | ☐ | |
| 9. | **Sufficient sample volume for indicated test?** | Yes | ☑ | No | ☐ | |
| 10. | **All samples received within holding time?** | Yes | ☑ | No | ☐ | |
| 11. | **Container/Temp Blank temperature in compliance?** | Yes | ☑ | No | ☐ | |
| 12. | **Water - VOA vials have zero headspace?** | Yes | ☑ | No | ☐ | VOA Vials Not Present ☐ |
| 13. | **Water - Preservation checked upon receipt (except VOA*)?** | Yes | ☐ | No | ☐ | Not Applicable ☑ |

***VOA Preservation Checked After Sample Analysis**

**SPL Representative:** _____ **Contact Date & Time:** _____

**Client Name Contacted:** _____

**Non Conformance Issues:** _____

**Client Instructions:** _____

# Chain of Custody Record

**Client:** Tetra Tech/ Conoco Phillips

**SPL Workorder Number:** 08080951

**Attention:** Kelly Blanchard/Tetra Tech

Phone: 505-237-8440 | email: kelly.blanchard@tetratech.c

Address: 6121 Indian School Road, NE Ste. 200

City: Albuquerque | State: NM | Zip Code: 87110

Project Name: Howell K-1

P.O. Number:

**Sampled By:** Christine Matthews (signature) / Christine Matthews (print) / Ana Moreno

| Sample ID | Collected Date | Collected Time | Sample Type Comp | Sample Type Grab | Matrix Water | Matrix Soil | Bottle Type | Preservative Type | # of Containers | Requested Analysis: 8260-voc | TPH-418.1 | SEMI-8270 | Full Metal List (See Below) | RCRA 8 METALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-2 (28-29.5) | 8/13 | 1230 | | X | | X | 6 | | 1 | X | | | | |
| 1L | 8/13 | 1230 | | X | | X | 7 | | 2 | | X | X | X | |
| MW-1 | 8/14 | 845 | | X | X | | 1 | 3 | 3 | X | | | | |
| MW-4 (28.5-30) | 8/14 | 915 | | X | | X | 6 | 1 | 1 | X | | | | |
| 1L | 8/14 | 915 | | X | | X | 7 | 1 | 2 | | X | X | X | |
| MW-3 (38-39.5) | 8/13 | 1530 | | X | | X | 6 | 1 | 1 | X | | | | |
| 1L | | | | | | X | 7 | 1 | 2 | | X | X | X | |
| | | | | | | X | | | | | | | | |
| | | | | | | X | | | | | | | | |
| | | | | | | X | | | | | | | | |

Turnaround Time Requirements
24 hr( ) 48 hr( )
72 hr( ) 5 wday( )
10 wday - Standard(X)

**Remarks:** LOGIN FULL METALS LIST: 6010/6020/7470

Intact? Yes or No

Temperature: 4.0°C

**Bottle Types:** 1: 3/40ml Vials 2. 1L Glass 3. 1L Plastic 4. 1L Amber Glass 5. 8oz Plastic 7.) 8oz Glass 6.) 4oz Glass

**Preservative Types:** 1: NONE 2. HNO3 3. HCL 4. H2SO4

| | Date | Time | |
|---|---|---|---|
| Relinquished by Sampler: | 8/18/08 | 8/18/08 | Received by: |
| Relinquished by: | Date | Time | Received by: |
| Relinquished by: | Date 8/19/08 | Time 9:30 | Received by SPL, Inc. |

# APPENDIX C

## GROUNDWATER SAMPLING FIELD FORMS

TETRA TECH, INC.

# WATER SAMPLING FIELD FORM

Project Name: Howell #1 — Page ____ of ____

Project No. ____

Site Location ____

Site/Well No.: MW-1 — Coded/Replicate No. ____ — Date: 3/19/08

Weather: Sunny ~55° — Time Sampling Began: 10:25 — Time Sampling Completed: 10 40

duplicate collected @ 1030
trip blank @ 1015

## EVACUATION DATA

Description of Measuring Point (MP): Top of Casing

Height of MP Above/Below Land Surface ____ — MP Elevation ____

Total Sounded Depth of Well Below MP: 39.55 — Water-Level Elevation ____

Held ____ — Depth to Water Below MP: 37.55 — Diameter of Casing ____

Wet ____ — Water Column in Well: 2.00 — Gallons Pumped/Bailed Prior to Sampling ____

Gallons per Foot: 0.16

Gallons in Well: 0.32 x 3 = 0.96 gallons — Sampling Pump Intake Setting (feet below land surface) ____

Purging Equipment ____

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature | pH | Conductivity | Turbidity | Other ORP | DO | DO% |
|---|---|---|---|---|---|---|---|
| 1032 | 15.91 | 6.28 | 3000 | 1.950 | -17.5 | 4.50 | 45.0 |
| 1036 | 16.10 | 6.48 | 3017 | 1.962 | -55.4 | 2.96 | 30.6 |
| 1040 | 15.99 | 6.59 | 3023 | 1.965 | -68.5 | 2.36 | 24.2 |
| | | | | | | | |
| | | | | | | | |

Sampling Equipment: Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 VOAs | HCl |
| | | |
| | | |

Remarks ____

Sampling Personnel: Ana Moreno/Mitch Crooks

### Well Casing Volumes

| | | | | |
|---|---|---|---|---|
| Gal./ft. | 1 ¼" = 0.077 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 |
| | 1 ½" = 0.10 | 2 ½" = 0.24 | 3" ½ = 0.50 | 6" = 1.46 |

TETRA TECH, INC.

# WATER SAMPLING FIELD FORM

Project Name Howell K-1 Page _____ of _____

Project No. _____

Site Location _____

Site/Well No. MW-1 Coded/ Replicate No. _____ Date 7/23/09

Weather Sunny, hot Time Sampling Began _____ Time Sampling Completed _____

## EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP ~~39.55~~ 37.5 Water-Level Elevation _____

Held _____ Depth to Water Below MP 28.46 Diameter of Casing 2" / 4.5 gal

Wet _____ Water Column in Well 9.04 Gallons Pumped/Bailed Prior to Sampling _____

Gallons per Foot .16 (1.45 = 1 vol 1.45 x 3 = 4.34 gal)

Gallons in Well 1.446 Sampling Pump Intake Setting (feet below land surface) _____

Purging Equipment _____

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature | pH | Conductivity | Turbidity | Other |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Sampling Equipment Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 VOAs | HCl |
| | | |
| | | |

Remarks * Obstruction in well @ about 20 ft. Could not sample will sample @ a later time

Sampling Personnel Kelly Blanchard and Christine Mathews

**Well Casing Volumes**

| | | | | |
|---|---|---|---|---|
| Gal./ft. | 1 ¼" = 0.077 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 |
| | 1 ½" = 0.10 | 2 ½" = 0.24 | 3" ½ = 0.50 | 6" = 1.46 |

TETRA TECH, INC.

# WATER SAMPLING FIELD FORM

Project Name Howell K-1 Page 1 of 1

Project No. 1158690104

Site Location Hwy 173, San Juan County NM, Near Aztec

Site/Well No. MW-1 Center Well Coded/ Replicate No. Duplicate Date 10-24-08

Weather warm, sunny Time Sampling Began 1345 Time Sampling Completed 1350

## EVACUATION DATA

Description of Measuring Point (MP) _____

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 37.47 Water-Level Elevation _____

Held _____ Depth to Water Below MP 29.91 Diameter of Casing 2"

Wet _____ Water Column in Well 7.56 Gallons Pumped/Bailed Prior to Sampling 1" bailer used to get past obstruction

Gallons per Foot 0.16

Gallons in Well 1.2096 Sampling Pump Intake Setting (feet below land surface) ~~3 gallons~~.

Purging Equipment bailer / purge pump X 3 = 3.63 15 gallons bailed prior to sampling.

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature (C°) | pH | Conductivity | TDS in g/L | ORP (mV) | DO |
|---|---|---|---|---|---|---|
| 1342 | 12.1 | 6.59 | 2947 | 1536 | | |
| 1348 | 12.9 | 6.42 | 2902 | 1508 | | |
| 1350 | 12.9 | 6.42 | 2898 | 1501 | | |
| | | | | | | |
| | | | | | | |

Sampling Equipment 1" → Disposable polyethylene bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 - 40 mL glass VOAs | HCL |
| Same as MW-2 | | |
| | | |

Remarks _____

Sampling Personnel ~~Christine Mathews, Ana Moreno~~ Kelly Blanchard

**Well Casing Volumes**

| Gal./ft. | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 ¼" = 0.077 | | 2" = 0.16 | | 3" = 0.37 | | 4" = 0.65 |
| | 1 ½" = 0.10 | | 2 ½" = 0.24 | | 3" ½ = 0.50 | | 6" = 1.46 |

TETRA TECH, INC.

# WATER SAMPLING FIELD FORM

Project Name Howell K-1 Page 1 of 1

Project No. 1158690104

Site Location Hwy 173, San Juan County NM, Near Aztec

Site/Well No. MW-2 upgradient well Coded/Replicate No. — Date 10-24-08

Weather Sunny, warm Time Sampling Began 1320 Time Sampling Completed 1330

## EVACUATION DATA

Description of Measuring Point (MP) Top of casing

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 39.81 Water-Level Elevation _____

Heid _____ Depth to Water Below MP 25.74 Diameter of Casing 2"

Wet _____ Water Column in Well 14.07 Gallons Pumped/Bailed Prior to Sampling 12

Gallons per Foot 0.16

Gallons in Well 2.25 Sampling Pump Intake Setting (feet below land surface) _____

Purging Equipment bailer / purge pump x 3 = 6.75

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature (C°) | pH | Conductivity | TDS in g/L | ORP (mV) | DO |
|---|---|---|---|---|---|---|
| 1320 | 58.7 | 6.59 | 1743 | 909 | NM | NM ← use Hermeh meter |
| 1322 | 56.8 | 6.42 | 1729 | 895 | NM | NM |
| 1325 | 57.4 | 6.47 | 1730 | 900 | | |
| 1327 | 57.4 | 6.39 | 1739 | 902 | | |
| | | | | | | |

Sampling Equipment Disposable polyethylene bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 - 40 mL glass VOAs | HCL |
| metals | | |
| General Chemistry (anions) | | |
| TPH GRO, DRO, # | | |

Remarks

Sampling Personnel Christine Mathews, Ana Moreno Kelly Blanchard

**Well Casing Volumes**

| Gal./ft. | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 ¼" = 0.077 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 |
| | 1 ½" = 0.10 | 2 ½" = 0.24 | 3" ½ = 0.50 | 6" = 1.46 |

TETRA TECH, INC.

# WATER SAMPLING FIELD FORM

Project Name Howell K-1 Page 1 of 1

Project No. 1158690104

Site Location Hwy 173, San Juan County NM, Near Aztec

Site/Well No. MW-3 Coded/ Replicate No. Date 10/24/08

Weather Sunny, warm Time Sampling Began 1615 Time Sampling Completed 1630

## EVACUATION DATA

Description of Measuring Point (MP)

Height of MP Above/Below Land Surface MP Elevation

Total Sounded Depth of Well Below MP 39.85 Water-Level Elevation

Held Depth to Water Below MP 26.95 Diameter of Casing 2"

Wet Water Column in Well 13.2 Gallons Pumped/Bailed Prior to Sampling 15 gallons

Gallons per Foot 0.16

Gallons in Well 2.11 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment bailer / purge pump X3 = 6.34

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature (C°) | pH | Conductivity | TDS in g/L | ORP (mV) | DO |
|---|---|---|---|---|---|---|
| 1620 | 15.57 | 7.39 | 3.351 | 2.179 | -165 | 6.08 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Sampling Equipment Disposable polyethylene bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 - 40 mL glass VOAs | HCL |
| Same as MW-2 | | |
| | | |

Remarks sample time 15:35

Sampling Personnel Christine Mathews, Ana Moreno, Kelly Blanchard

**Well Casing Volumes**

| Gal./ft. | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 ¼" = 0.077 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 |
| | 1 ½" = 0.10 | 2 ½" = 0.24 | 3" ½ = 0.50 | 6" = 1.46 |

TETRA TECH, INC.

# WATER SAMPLING FIELD FORM

Project Name Howell K-1 Page 1 of 1

Project No. 1158690104

Site Location Hwy 173, San Juan County NM, Near Aztec

Site/Well No. MW-4 Coded/ Replicate No. Date 10-24-08

Weather Sunny, warm Time Sampling Began Time Sampling Completed ~~1650~~ 1615

## EVACUATION DATA

Description of Measuring Point (MP)

Height of MP Above/Below Land Surface MP Elevation

Total Sounded Depth of Well Below MP Water-Level Elevation

Held ____ Depth to Water Below MP Diameter of Casing 2"

Wet ____ Water Column in Well Gallons Pumped/Bailed Prior to Sampling 13 gallons

Gallons per Foot 0.16

Gallons in Well Sampling Pump Intake Setting (feet below land surface)

Purging Equipment bailer / purge pump

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature (°C) | pH | Conductivity | TDS in g/L | ORP (mV) | DO |
|---|---|---|---|---|---|---|
| ~~1600~~ | ~~60.6~~ | | ~~3.298~~ | ~~1.776~~ | | |
| 1601 | 15.22 | 6.77 | 4.725 | 4.405 | 29.6 | 4.20 |
| 1602 | 15.80 | 6.72 | 7.024 | 4.532 | 17.0 | 4.50 |
| | | | | | | |
| | | | | | | |

Sampling Equipment Disposable polyethylene bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 - 40 mL glass VOAs | HCL |
| Same as MW-2 | | |
| | | |

Remarks

Sampling Personnel Christine Mathews, Ana Moreno, Kelly Blanchard

**Well Casing Volumes**

| Gal./ft. | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 ¼" = 0.077 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 |
| | 1 ½" = 0.10 | 2 ½" = 0.24 | 3" ½ = 0.50 | 6" = 1.46 |

# WATER SAMPLING FIELD FORM



Project No.

Site Location Howell K-1

Site/Well No. MW- 3 | Coded/ Replicate No. | Date 1130109

Weather Sunny/cold | Time Sampling Began | Time Sampling Completed 930

## EVACUATION DATA

Description of Measuring Pt (MP)

Height of MP Above/Below Land Surface | MP Elevation

Total Sounded Depth of Well Below MP 37.47 | Water-Level Elevation

Held ____ | Depth to Water Below MP 25.92 | Diameter of Casing 2 inch / 4 inch

Wet ____ | Water Column in Well 11.55 | Gallons Pumped/Bailed Prior to Sampling 7.5

Gallons per Foot .16

Gallons in Well 1.84 / 5.54

Sampling Pump Intake (feet below land surface)

Purging Equipment

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature | pH | Conductivity | TDS | DO | DO% | ORP | Other |
|---|---|---|---|---|---|---|---|---|
| 924 | 14.48 | 7.07 | 2.616 | 2.128 | 5.22 | 49.8 | 153.9 | |
| 926 | ~~14.70~~ 14.88 | 7.04 | 2.641 | 2.130 | 2.38 | 23.5 | 156.1 | |
| 928 | 14.92 | 7.05 | ~~2.657~~ | | | | | |
| | | | 2.6440 | 2.123 | 2.30 | 23.0 | 156.8 | |
| | | | | | | | | |

Sampling Equipment Low Flow Pump / Disposable Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | Voas | HCl |
| | | |
| | | |

Remarks $H_2O$ is brown & murky; no sheen

Sampling Personnel CM, CB

### Well Casing Volumes

| | | | | |
|---|---|---|---|---|
| Gal./ft. | 1 ¼" = 0.077 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 |
| | 1 ½" = 0.10 | 2 ½" = 0.24 | 3" ½ = 0.50 | 6" = 1.46 |

# WATER SAMPLING FIELD FORM

2 of 4

Project No. _____

Site Location Howell K-1

Site/Well No. MW- 4

Coded/ Replicate No. _____

Date 11/30/09

Weather Sunny Cold

Time Sampling Began _____

Time Sampling Completed ~~9:45~~ 9:50

## EVACUATION DATA

Description of Measuring Pt (MP) _____

Height of MP Above/Below Land Surface _____

MP Elevation _____

Total Sounded Depth of Well Below MP 34.66

Water-Level Elevation _____

Held _____ Depth to Water Below MP 26.00

Diameter of Casing (2 inch) / 4 inch

Wet _____ Water Column in Well 8.66

Gallons Pumped/Bailed Prior to Sampling 5 gallons

Gallons per Foot 16

Gallons in Well 1.38 4.15

Sampling Pump Intake (feet below land surface) _____

Purging Equipment _____

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature | pH | Conductivity | TDS | DO | DO% | ORP | Other |
|---|---|---|---|---|---|---|---|---|
| 9:42 | 15.48 | 6.96 | 5.769 | 4.582 | 1.30 | 13.4 | 174.2 | |
| 9:44 | 15.40 | 6.98 | 5.630 | 4.485 | 1.14 | 11.7 | 174.6 | |
| 9:45 | 15.50 | 6.97 | 5.540 | 4.402 | 1.09 | 11.4 | 175.0 | |
| | | | | | | | | |
| | | | | | | | | |

Sampling Equipment Low Flow Pump / Disposable Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | Vials | HCl |
| | | |
| | | |

Remarks Water is brown. No sheen or odor detected

Sampling Personnel C.M., C.B.

### Well Casing Volumes

| Gal./ft. | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 ¼" = 0.077 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 |
| | 1 ½" = 0.10 | 2 ½" = 0.24 | 3" ½ = 0.50 | 6" = 1.46 |

# WATER SAMPLING FIELD FORM

3 of 4

Project No. _____

Site Location Howell K-1

Site/Well No. MW- 2 | Coded/ Replicate No. _____ | Date 11/30/09

Weather Sunny Cold | Time Sampling Began _____ | Time Sampling Completed 10:25

## EVACUATION DATA

Description of Measuring Pt (MP) _____

Height of MP Above/Below Land Surface _____ | MP Elevation _____

Total Sounded Depth of Well Below MP 39.81 | Water-Level Elevation _____

Held _____ | Depth to Water Below MP 24.74 | Diameter of Casing (2 inch) / 4 inch

Wet _____ | Water Column in Well 15.07 | Gallons Pumped/Bailed Prior to Sampling 8

Gallons per Foot .16

Gallons in Well 2.411 / 7.23

Sampling Pump Intake (feet below land surface) —

Purging Equipment _____

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature | pH | Conductivity | TDS | DO | DO% | ORP | Other |
|---|---|---|---|---|---|---|---|---|
| 10:19 | 14.18 | 7.11 | 2.342 | 1.518 | 2.97 | 29.9 | 159.8 | |
| 10:21 | 14.19 | 7.08 | 2.341 | 1.518 | 2.42 | 23.6 | 161.9 | |
| 10:22 | 14.21 | 7.08 | 2.344 | 1.519 | 2.19 | 21.5 | 162.1 | |
| | | | | | | | | |
| | | | | | | | | |

Sampling Equipment Low Flow Pump / Disposable Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 VOAs | HCl |
| | | |
| | | |

Remarks $H_2O$ is brown, no sheen, no odor detected

Sampling Personnel C.T., C.B.

**Well Casing Volumes**

| Gal./ft. | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 ¼" = 0.077 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 |
| | 1 ½" = 0.10 | 2 ½" = 0.24 | 3" ½ = 0.50 | 6" = 1.46 |

# WATER SAMPLING FIELD FORM

Project No. _____ 4 of 4

Site Location Howell K-1

Site/Well No. MW- 1 Coded/ Replicate No. 1330 Date 11/30/09 ~~12/9/09~~

Weather Sunny Cold Time Sampling Began _____ Time Sampling Completed 1320

## EVACUATION DATA

Description of Measuring Pt (MP) _____

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 37.47 Water-Level Elevation _____

Held _____ Depth to Water Below MP 28.37 Diameter of Casing 2 inch / 4 inch

Wet _____ Water Column in Well 9.1 Gallons Pumped/Bailed Prior to Sampling 2.5 gallons

Gallons per Foot .16

Gallons in Well 1.456 4.368 Sampling Pump Intake (feet below land surface) _____

Purging Equipment _____

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature | pH | Conductivity | TDS | DO | DO% | ORP | Other |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Sampling Equipment Low Flow Pump / Disposable Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | Voas | HCl |
| | | |
| | | |

Remarks well is damaged, difficult to bail, low purge volume & no parameters.

Sampling Personnel CM, CB

**Well Casing Volumes**

| Gal./ft. | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 ¼" = 0.077 | 2" = 0.16 | 3" = 0.37 | 4" = 0.65 |
| | 1 ½" = 0.10 | 2 ½" = 0.24 | 3" ½ = 0.50 | 6" = 1.46 |

# APPENDIX D

## GROUNDWATER LAB ANALYSIS REPORTS

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

## Conoco, Inc.

**Certificate of Analysis Number:**

**08031209**

| Report To: | | Project Name: | COP Howell K-1/4930 |
|---|---|---|---|
| Tetra Tech EM, Inc. | | Site: | San Juan City,NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4509525247 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 3/31/2008 |
| ph: (505) 881-3188 | fax: | | |

This Report Contains A Total Of 12 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

4/4/2008

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

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

## Case Narrative for:

# Conoco, Inc.

## Certificate of Analysis Number:

## 08031209

| Report To: | | Project Name: | COP Howell K-1/4930 |
|---|---|---|---|
| Tetra Tech EM, Inc. | | Site: | San Juan City,NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4509525247 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 3/31/2008 |
| ph: (505) 881-3188 | fax: | | |

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.



SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Bethany Agarwal



Bethany A. Agarwal
Senior Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

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

# Conoco, Inc.

## Certificate of Analysis Number:

## 08031209

**Report To:** Tetra Tech EM, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 881-3188 fax: (505) 881-3283

**Fax To:**

**Project Name:** COP Howell K-1/4930
**Site:** San Juan City,NM
**Site Address:**
**PO Number:** 4509525247
**State:** New Mexico
**State Cert. No.:**
**Date Reported:** 3/31/2008

| Client Sample ID | Lab Sample ID | Matrix | Date Collected | Date Received | COC ID | HOLD |
|---|---|---|---|---|---|---|
| Trip Blank | 08031209-01 | Water | 3/19/2008 10:15:00 AM | 3/21/2008 10:00:00 AM | 278990 | ☐ |
| Duplicate | 08031209-02 | Water | 3/19/2008 10:30:00 AM | 3/21/2008 10:00:00 AM | 278990 | ☐ |
| MW-1 | 08031209-03 | Water | 3/19/2008 10:40:00 AM | 3/21/2008 10:00:00 AM | 278990 | ☐ |

Bethany Agarwal

4/4/2008

Bethany A. Agarwal
Senior Project Manager

Date

Richard R. Reed
Laboratory Director

Ted Yen
Quality Assurance Officer

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

**Client Sample ID:** Trip Blank **Collected:** 03/19/2008 10:15 **SPL Sample ID:** 08031209-01

**Site:** San Juan City,NM

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 5 | 1 | 03/24/08 19:42 | LT | 4344076 |
| Ethylbenzene | ND | | 5 | 1 | 03/24/08 19:42 | LT | 4344076 |
| Toluene | ND | | 5 | 1 | 03/24/08 19:42 | LT | 4344076 |
| m,p-Xylene | ND | | 5 | 1 | 03/24/08 19:42 | LT | 4344076 |
| o-Xylene | ND | | 5 | 1 | 03/24/08 19:42 | LT | 4344076 |
| Xylenes,Total | ND | | 5 | 1 | 03/24/08 19:42 | LT | 4344076 |
| Surr: 1,2-Dichloroethane-d4 | 104 | | % 62-130 | 1 | 03/24/08 19:42 | LT | 4344076 |
| Surr: 4-Bromofluorobenzene | 86.0 | | % 70-130 | 1 | 03/24/08 19:42 | LT | 4344076 |
| Surr: Toluene-d8 | 100 | | % 74-122 | 1 | 03/24/08 19:42 | LT | 4344076 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** Duplicate **Collected:** 03/19/2008 10:30 **SPL Sample ID:** 08031209-02

**Site:** San Juan City,NM

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 5 | 1 | 03/25/08 14:45 | LT | 4345748 |
| Ethylbenzene | ND | | 5 | 1 | 03/25/08 14:45 | LT | 4345748 |
| Toluene | ND | | 5 | 1 | 03/25/08 14:45 | LT | 4345748 |
| m,p-Xylene | ND | | 5 | 1 | 03/25/08 14:45 | LT | 4345748 |
| o-Xylene | ND | | 5 | 1 | 03/25/08 14:45 | LT | 4345748 |
| Xylenes,Total | ND | | 5 | 1 | 03/25/08 14:45 | LT | 4345748 |
| Surr: 1,2-Dichloroethane-d4 | 104 | | % 62-130 | 1 | 03/25/08 14:45 | LT | 4345748 |
| Surr: 4-Bromofluorobenzene | 92.0 | | % 70-130 | 1 | 03/25/08 14:45 | LT | 4345748 |
| Surr: Toluene-d8 | 96.0 | | % 74-122 | 1 | 03/25/08 14:45 | LT | 4345748 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-1 **Collected:** 03/19/2008 10:40 **SPL Sample ID:** 08031209-03

**Site:** San Juan City,NM

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | | 5 | 1 | 03/25/08 15:12 | LT | 4345749 |
| Ethylbenzene | ND | | | 5 | 1 | 03/25/08 15:12 | LT | 4345749 |
| Toluene | ND | | | 5 | 1 | 03/25/08 15:12 | LT | 4345749 |
| m,p-Xylene | ND | | | 5 | 1 | 03/25/08 15:12 | LT | 4345749 |
| o-Xylene | ND | | | 5 | 1 | 03/25/08 15:12 | LT | 4345749 |
| Xylenes,Total | ND | | | 5 | 1 | 03/25/08 15:12 | LT | 4345749 |
| Surr: 1,2-Dichloroethane-d4 | 102 | | % | 62-130 | 1 | 03/25/08 15:12 | LT | 4345749 |
| Surr: 4-Bromofluorobenzene | 88.0 | | % | 70-130 | 1 | 03/25/08 15:12 | LT | 4345749 |
| Surr: Toluene-d8 | 98.0 | | % | 74-122 | 1 | 03/25/08 15:12 | LT | 4345749 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

# *Quality Control Documentation*

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

# Quality Control Report

## Conoco, Inc.

**COP Howell K-1/4930**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08031209
**Method:** SW8260B **Lab Batch ID:** R231770

### Method Blank

RunID: N_080324A-4342057 Units: ug/L
Analysis Date: 03/24/2008 12:08 Analyst: LT
Preparation Date: 03/24/2008 12:08 Prep By: Method

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08031209-01A | Trip Blank |

| Analyte | Result | Rep Limit |
|---|---|---|
| Benzene | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| Toluene | ND | 5.0 |
| m,p-Xylene | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Xylenes,Total | ND | 5.0 |
| Surr: 1,2-Dichloroethane-d4 | 108.0 | 62-130 |
| Surr: 4-Bromofluorobenzene | 86.0 | 70-130 |
| Surr: Toluene-d8 | 98.0 | 74-122 |

### Laboratory Control Sample (LCS)

RunID: N_080324A-4342056 Units: ug/L
Analysis Date: 03/24/2008 11:01 Analyst: LT
Preparation Date: 03/24/2008 11:01 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Benzene | 20.0 | 20.0 | 100 | 76 | 126 |
| Ethylbenzene | 20.0 | 19.0 | 95.0 | 67 | 122 |
| Toluene | 20.0 | 18.0 | 90.0 | 70 | 131 |
| m,p-Xylene | 40.0 | 38.0 | 95.0 | 72 | 150 |
| o-Xylene | 20.0 | 19.0 | 95.0 | 78 | 141 |
| Xylenes,Total | 60 | 57 | 95 | 72 | 150 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 52 | 104 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 48 | 96.0 | 70 | 130 |
| Surr: Toluene-d8 | 50.0 | 50 | 100 | 74 | 122 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08031112-08
RunID: N_080324A-4344022 Units: ug/L
Analysis Date: 03/24/2008 15:44 Analyst: LT

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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

## Quality Control Report

### Conoco, Inc.

**COP Howell K-1/4930**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08031209
**Method:** SW8260B **Lab Batch ID:** R231770

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 20 | 24.0 | 120 | 20 | 22.0 | 110 | 8.70 | 22 | 76 | 127 |
| Ethylbenzene | ND | 20 | 22.0 | 110 | 20 | 20.0 | 100 | 9.52 | 20 | 35 | 175 |
| Toluene | ND | 20 | 22.0 | 110 | 20 | 20.0 | 100 | 9.52 | 24 | 70 | 131 |
| m,p-Xylene | ND | 40 | 44.0 | 110 | 40 | 41.0 | 102 | 7.06 | 20 | 35 | 175 |
| o-Xylene | ND | 20 | 22.0 | 110 | 20 | 20.0 | 100 | 9.52 | 20 | 35 | 175 |
| Xylenes,Total | ND | 60 | 66 | 110 | 60 | 61 | 100 | 7.9 | 20 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | ND | 50 | 51 | 102 | 50 | 51.0 | 102 | 0 | 30 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 50 | 52 | 104 | 50 | 50.0 | 100 | 3.92 | 30 | 70 | 130 |
| Surr: Toluene-d8 | ND | 50 | 52 | 104 | 50 | 50.0 | 100 | 3.92 | 30 | 74 | 122 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

# Quality Control Report

## Conoco, Inc.

**COP Howell K-1/4930**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08031209
**Method:** SW8260B **Lab Batch ID:** R232013

### Method Blank

RunID: N_080325D-4345747 Units: ug/L
Analysis Date: 03/25/2008 12:56 Analyst: LT
Preparation Date: 03/25/2008 12:56 Prep By: Method

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08031209-02A | Duplicate |
| 08031209-03A | MW-1 |

| Analyte | Result | Rep Limit |
|---|---|---|
| Benzene | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| Toluene | ND | 5.0 |
| m,p-Xylene | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Xylenes,Total | ND | 5.0 |
| Surr: 1,2-Dichloroethane-d4 | 100.0 | 62-130 |
| Surr: 4-Bromofluorobenzene | 88.0 | 70-130 |
| Surr: Toluene-d8 | 98.0 | 74-122 |

### Laboratory Control Sample (LCS)

RunID: N_080325D-4345746 Units: ug/L
Analysis Date: 03/25/2008 12:03 Analyst: LT
Preparation Date: 03/25/2008 12:03 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Benzene | 20.0 | 19.0 | 95.0 | 76 | 126 |
| Ethylbenzene | 20.0 | 20.0 | 100 | 67 | 122 |
| Toluene | 20.0 | 20.0 | 100 | 70 | 131 |
| m,p-Xylene | 40.0 | 41.0 | 102 | 72 | 150 |
| o-Xylene | 20.0 | 21.0 | 105 | 78 | 141 |
| Xylenes,Total | 60 | 62 | 100 | 72 | 150 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 50 | 100 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 49 | 98.0 | 70 | 130 |
| Surr: Toluene-d8 | 50.0 | 50 | 100 | 74 | 122 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08031224-02
RunID: N_080325D-4345751 Units: ug/L
Analysis Date: 03/25/2008 16:06 Analyst: LT

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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8880 INTERCHANGE DRIVE
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## Quality Control Report

### Conoco, Inc.

**COP Howell K-1/4930**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08031209
**Method:** SW8260B **Lab Batch ID:** R232013

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 20 | 21.0 | 105 | 20 | 20.0 | 100 | 4.88 | 22 | 76 | 127 |
| Ethylbenzene | ND | 20 | 22.0 | 110 | 20 | 21.0 | 105 | 4.65 | 20 | 35 | 175 |
| Toluene | ND | 20 | 23.0 | 115 | 20 | 21.0 | 105 | 9.09 | 24 | 70 | 131 |
| m,p-Xylene | ND | 40 | 47.0 | 118 | 40 | 44.0 | 110 | 6.59 | 20 | 35 | 175 |
| o-Xylene | ND | 20 | 23.0 | 115 | 20 | 22.0 | 110 | 4.44 | 20 | 35 | 175 |
| Xylenes,Total | ND | 60 | 70 | 120 | 60 | 66 | 110 | 5.9 | 20 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | ND | 50 | 52 | 104 | 50 | 51.0 | 102 | 1.94 | 30 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 50 | 51 | 102 | 50 | 52.0 | 104 | 1.94 | 30 | 70 | 130 |
| Surr: Toluene-d8 | ND | 50 | 50 | 100 | 50 | 51.0 | 102 | 1.98 | 30 | 74 | 122 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

*Sample Receipt Checklist*

*And*

*Chain of Custody*

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

## Sample Receipt Checklist

| | | | |
|---|---|---|---|
| Workorder: | 08031209 | Received By: | RE |
| Date and Time Received: | 3/21/2008 10:00:00 AM | Carrier name: | Fedex-Standard Overnight |
| Temperature: | 3.0°C | Chilled by: | Water Ice |

| | | | | |
|---|---|---|---|---|
| 1. Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ | |
| 2. Custody seals intact on shippping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ | |
| 3. Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ | |
| 4. Chain of custody present? | Yes ☑ | No ☐ | | |
| 5. Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | | |
| 6. Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | | |
| 7. Samples in proper container/bottle? | Yes ☑ | No ☐ | | |
| 8. Sample containers intact? | Yes ☑ | No ☐ | | |
| 9. Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | | |
| 10. All samples received within holding time? | Yes ☑ | No ☐ | | |
| 11. Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | | |
| 12. Water - VOA vials have zero headspace? | Yes ☑ | No ☐ | VOA Vials Not Present ☐ | |
| 13. Water - Preservation checked upon receipt (except VOA*)? | Yes ☐ | No ☐ | Not Applicable ☑ | |

*VOA Preservation Checked After Sample Analysis

SPL Representative: _____ Contact Date & Time: _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

# SPL, Inc.

## Analysis Request & Chain of Custody Record

SPL Workorder No. 278990

08031709

page 1 of 1

Client Name: Tetra Tech
Address: 6121 Indian School Rd. Ste. 200
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email: Kelly.blanchard@tetratech.com
Project Name/No.: 4930
Site Name: Howell K-1
Site Location: Navajo Dam, San Juan Cty, NM
Invoice To: Ph:

| SAMPLE ID | DATE | TIME | comp | grab | matrix (W=water S=soil O=oil SL=sludge X=other) | bottle (P=plastic A=amber glass G=glass V=vial X=other) | size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other) | pres. (1=HCl 2=HNO3 3=H2SO4 X=other) | Number of Containers | BTEX (8260B) | Requested Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trip Blank | 3/19/08 | 10:15 | | X | W | GV | 40 | 1 | 3 | X | |
| Duplicate | 3/19/08 | 10:30 | | X | W | GV | 40 | 1 | 3 | X | |
| MW-1 | 3/19/08 | 10:40 | | X | W | GV | 40 | 1 | 3 | X | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Client/Consultant Remarks:

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp: 3.0c

**Requested TAT**

Contract ☐ 72hr ☐
24hr ☐ Standard ☒
48hr ☐
Other ☐ _____

Special Reporting Requirements Results: Fax ☐ Email ☐ PDF ☒
Standard QC ☒ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial): PA (for)

| | date | time | |
|---|---|---|---|
| 1. Relinquished by Sampler: Michelle Crain | 3/20/08 | 10:15 | 2. Received by: |
| 3. Relinquished by: | date | time | 4. Received by: |
| 5. Relinquished by: | 3/21/08 | 1000 | 6. Received by Laboratory: |

☒ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775

☐ 459 Hughes Drive
Traverse City, MI 49686 (231) 947-5777

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

## Conoco Phillips

**Certificate of Analysis Number:**

**08080981**

| Report To: | | Project Name: | COP Howell K-1 |
|---|---|---|---|
| Tetra Tech EM, Inc. | | Site: | Aztec, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4510016701 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 9/4/2008 |
| ph: (505) 881-3188 | fax: | | |

This Report Contains A Total Of 51 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

9/8/2008

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

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

## Case Narrative for:

# Conoco Phillips

## Certificate of Analysis Number:

## 08080981

| Report To: | | Project Name: | COP Howell K-1 |
|---|---|---|---|
| Tetra Tech EM, Inc. | | Site: | Aztec, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4510016701 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 9/4/2008 |
| ph: (505) 881-3188 | fax: | | |

Per our conversation on August 6, 2008, samples requested for TPH analysis by Method 418.1 were analyzed at SPL for Gasoline Range Organics and Diesel Range Organics by SW846 Method 8015B.

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

Results for soils are reported on a dry-weight basis.

Per ConocoPhillips Central Region Environmental Contract Laboratory Program Technical Specifications Manual Revision 0, for Semivolatile Organic analysis by SW846 Method 8270B, the percent difference for target analytes in the continuing calibration verification standard must be less than 20%D. The CCV analyzed with the samples in QC Batch ID 82934 recovered low and did not meet the TSM criteria for the following compounds: 4,6-Dinitro-2-methylphenol=-26.969% Drift, 2,4-Dinitrophenol=-25.897% Drift, Benzyl alcohol=21.023% Drift, and Benzoic acid=76.520%Drift.

The samples submitted for Volatile Organics by SW846 Method 8260B and Gasoline Range Organics by SW846 Method 8015B were received in a vessel that is not stipulated in Method 5035A; the sample were preserved and/or analyzed within 48 hours of sample collection.

Samples analyzed for Total Metals by SW846 Method 6020A (Batch ID: 83008C-I) did not have a Laboratory Control Standard for Tungsten. The Matrix Spike and Matrix spike Duplicate were analyzed as quality control.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.



SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.



9/8/2008

Bethany A. Agarwal
Senior Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

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

# Conoco Phillips

## Certificate of Analysis Number:

## 08080981

**Report To:** Tetra Tech EM, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 881-3188 fax: (505) 881-3283

**Fax To:**

**Project Name:** COP Howell K-1
**Site:** Aztec, NM
**Site Address:**

**PO Number:** 4510016701
**State:** New Mexico
**State Cert. No.:**
**Date Reported:** 9/4/2008

| Client Sample ID | Lab Sample ID | Matrix | Date Collected | Date Received | COC ID | HOLD |
|---|---|---|---|---|---|---|
| MW-2 (28-29.5) | 08080981-01 | Soil | 8/13/2008 12:30:00 PM | 8/19/2008 9:30:00 AM | | ☐ |
| MW-1 | 08080981-02 | Water | 8/14/2008 8:45:00 AM | 8/19/2008 9:30:00 AM | | ☐ |
| MW-4 (28.5-30) | 08080981-03 | Soil | 8/14/2008 9:15:00 AM | 8/19/2008 9:30:00 AM | | ☐ |
| MW-3 (38-39.5) | 08080981-04 | Soil | 8/13/2008 3:30:00 PM | 8/19/2008 9:30:00 AM | | ☐ |

Bethany Agarwal

9/8/2008

Bethany A. Agarwal
Senior Project Manager

Date

Richard R. Reed
Laboratory Director

Ted Yen
Quality Assurance Officer

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

**Client Sample ID:** MW-1 **Collected:** 08/14/2008 8:45 **SPL Sample ID:** 08080981-02

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Ethylbenzene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Toluene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| m,p-Xylene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| o-Xylene | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Xylenes,Total | ND | | 5 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Surr: 1,2-Dichloroethane-d4 | 96.0 | | % 62-130 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Surr: 4-Bromofluorobenzene | 108 | | % 70-130 | 1 | 08/25/08 16:42 | LU_L | 4645459 |
| Surr: Toluene-d8 | 104 | | % 74-122 | 1 | 08/25/08 16:42 | LU_L | 4645459 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

# *Quality Control Documentation*

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

## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249398

**Method Blank**

RunID: K_080825B-4645455 Units: ug/L
Analysis Date: 08/25/2008 14:21 Analyst: LU_L
Preparation Date: 08/25/2008 14:21 Prep By: Method

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08080981-02A | MW-1 |

| Analyte | Result | Rep Limit |
|---|---|---|
| Benzene | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| Toluene | ND | 5.0 |
| m,p-Xylene | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Xylenes,Total | ND | 5.0 |
| Surr: 1,2-Dichloroethane-d4 | 100.0 | 62-130 |
| Surr: 4-Bromofluorobenzene | 104.0 | 70-130 |
| Surr: Toluene-d8 | 102.0 | 74-122 |

**Laboratory Control Sample (LCS)**

RunID: K_080825B-4645454 Units: ug/L
Analysis Date: 08/25/2008 13:54 Analyst: LU_L
Preparation Date: 08/25/2008 13:54 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Benzene | 20.0 | 18.0 | 90.0 | 76 | 126 |
| Ethylbenzene | 20.0 | 21.0 | 105 | 67 | 122 |
| Toluene | 20.0 | 20.0 | 100 | 70 | 131 |
| m,p-Xylene | 40.0 | 44.0 | 110 | 72 | 150 |
| o-Xylene | 20.0 | 21.0 | 105 | 78 | 141 |
| Xylenes,Total | 60 | 65 | 110 | 72 | 150 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 50 | 100 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 54 | 108 | 70 | 130 |
| Surr: Toluene-d8 | 50.0 | 52 | 104 | 74 | 122 |

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08080810-02
RunID: K_080825B-4645457 Units: ug/L
Analysis Date: 08/25/2008 15:46 Analyst: LU_L

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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

## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08080981
**Method:** SW8260B **Lab Batch ID:** R249398

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 20 | 18.0 | 90.0 | 20 | 18.0 | 90.0 | 0 | 22 | 76 | 127 |
| Ethylbenzene | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 20 | 35 | 175 |
| Toluene | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 24 | 70 | 131 |
| m,p-Xylene | ND | 40 | 38.0 | 95.0 | 40 | 38.0 | 95.0 | 0 | 20 | 35 | 175 |
| o-Xylene | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 20 | 35 | 175 |
| Xylenes,Total | ND | 60 | 57 | 95 | 60 | 57 | 95 | 0 | 20 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | ND | 50 | 50 | 100 | 50 | 50.0 | 100 | 0 | 30 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 50 | 54 | 108 | 50 | 53.0 | 106 | 1.87 | 30 | 70 | 130 |
| Surr: Toluene-d8 | ND | 50 | 51 | 102 | 50 | 51.0 | 102 | 0 | 30 | 74 | 122 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

# *Sample Receipt Checklist*

# *And*

# *Chain of Custody*

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

# Sample Receipt Checklist

| | | | |
|---|---|---|---|
| Workorder: | 08080981 | Received By: | L_C |
| Date and Time Received: | 8/19/2008 9:30:00 AM | Carrier name: | Fedex-Priority |
| Temperature: | 4.0°C | Chilled by: | Water Ice |

| | | | | |
|---|---|---|---|---|
| 1. | Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| 2. | Custody seals intact on shippping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| 3. | Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| 4. | Chain of custody present? | Yes ☑ | No ☐ | |
| 5. | Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| 6. | Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| 7. | Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| 8. | Sample containers intact? | Yes ☑ | No ☐ | |
| 9. | Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| 10. | All samples received within holding time? | Yes ☑ | No ☐ | |
| 11. | Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | |
| 12. | Water - VOA vials have zero headspace? | Yes ☑ | No ☐ | VOA Vials Not Present ☐ |
| 13. | Water - Preservation checked upon receipt (except VOA*)? | Yes ☐ | No ☐ | Not Applicable ☑ |

*VOA Preservation Checked After Sample Analysis

SPL Representative: _____ Contact Date & Time: _____

Client Name Contacted: _____

Non Conformance Issues: _____

Client Instructions: _____

# Chain of Custody Record

**Client:** Tetra Tech/ Conoco Phillips
**Attention:** Kelly Blanchard/Tetra Tech
Phone: 505-237-8440 | email: kelly.blanchard@tetratech.c
Address: 6121 Indian School Road, NE Ste. 200
City: Albuquerque | State: NM | Zip Code: 87110
Project Name: Howell K-1
P.O. Number:
**Sampled By:** signature: Christine Matthews | print: Christine Matthews / Ana Moreno

**SPL Workorder Number:** 08080951

**Requested Analysis**

| Sample ID | Collected Date | Collected Time | Sample Type Comp | Sample Type Grab | Matrix Water | Matrix Soil | Bottle Type | Preservative Type | # of Containers | 8260-voc | TPH-418.1 | SEMI-8270 | Full Metal List (See Below) | RCRA 8 METALS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-2 (28-29.5) | 8/13 | 1230 | | X | | X | 6 | 1 | 1 | X | | | | |
| " | 8/13 | 1230 | | X | | X | 7 | 1 | 2 | | X | X | X | |
| MW-1 | 8/14 | 845 | | X | X | | 1 | 3 | 3 | X | | | | |
| MW-4 (28.5-30) | 8/14 | 915 | | X | | X | 6 | 1 | 1 | X | | | | |
| " | 8/14 | 915 | | X | | X | 7 | 1 | 2 | | X | X | X | |
| MW-3 (38-39.5) | 8/13 | 1530 | | X | | X | 6 | 1 | 1 | X | | | | |
| " | | | | | | X | 7 | 1 | 2 | | X | X | X | |
| | | | | | | X | | | | | | | | |
| | | | | | | X | | | | | | | | |
| | | | | | | X | | | | | | | | |

Turnaround Time Requirements
24 hr( ) 48 hr( )
72 hr( ) 5 wday( )
10 wday - Standard(X)

**Remarks:** LOGIN FULL METALS LIST: 6010/6020/7470

Intact? Y or N
Temperature: 4.0°C

**Bottle Types:** 1: 3/40ml Vials 2. 1L Glass 3. 1L Plastic 4. 1L Amber Glass 5. 8oz Plastic 7.) 8oz Glass 6.) 4oz Glass
**Preservative Types:** 1: NONE 2. HNO3 3. HCL 4. H2SO4

| | Date | Time | Received by: |
|---|---|---|---|
| Relinquished by Sampler: | 8/18/08 | 8/18/08 | |
| Relinquished by: | Date | Time | Received by: |
| Relinquished by: | Date 8/19/08 | Time 9:30 | Received by SPL, Inc. |

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

## Conoco Phillips

**Certificate of Analysis Number:**

**08101597**

| Report To: | | Project Name: | COP Howell K-1 |
|---|---|---|---|
| Tetra Tech, Inc. | | Site: | Aztec, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4510016701 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 11/26/2008 |
| ph: (505) 237-8440 | fax: | | |

This Report Contains A Total Of 60 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

11/26/2008

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

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

## Case Narrative for:
## Conoco Phillips

### Certificate of Analysis Number:
### 08101597

| Report To: | | Project Name: | COP Howell K-1 |
|---|---|---|---|
| Tetra Tech, Inc. | | Site: | Aztec, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4510016701 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 11/26/2008 |
| ph: (505) 237-8440 | fax: | | |

All samples received outside the 48-hour hold time for Nitrate and Orthophosphate analysis. Per historical records SPL, Inc continued with analysis.

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Due to limited sample volume, a Matrix Spike (MS) or Matrix Spike Duplicate (MSD) was not extracted with Batch ID: 84920 and 84925 for the Diesel Range Organics analysis by Method 8015. A Laboratory Control Sample (LCS) and a Laboratory Control Sample Duplicate (LCSD) were extracted with the analytical batch and serve as the batch quality control (QC). The LCS and LCSD recovered acceptably and precision criteria were met.

Due to limited sample volume, a Matrix Spike (MS) or Matrix Spike Duplicate (MSD) was not extracted with Batch ID: 84949 for the Semivolatile Organics analysis by Method 8270. A Laboratory Control Sample (LCS) and a Laboratory Control Sample Duplicate (LCSD) were extracted with the analytical batch and serve as the batch quality control (QC). The LCS and LCSD recovered acceptably and precision criteria were met.

Your sample ID "MW-2" (SPL ID: 08101597-01) was randomly selected for use in SPL's quality control program for the Total Nitrate Nitrogen analysis by EPA Method 353.2. The Matrix Spike (MS) recovery was outside of the advisable quality control limits for Batch ID: R256285 due to matrix interference. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.



SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.



Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

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

# Conoco Phillips

## Certificate of Analysis Number:

## 08101597

**Report To:** Tetra Tech, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 237-8440 fax: (505) 881-3283

**Fax To:**

**Project Name:** COP Howell K-1
**Site:** Aztec, NM
**Site Address:**

**PO Number:** 4510016701
**State:** New Mexico
**State Cert. No.:**
**Date Reported:** 11/26/2008

| Client Sample ID | Lab Sample ID | Matrix | Date Collected | Date Received | COC ID | HOLD |
|---|---|---|---|---|---|---|
| MW-2 | 08101597-01 | Water | 10/24/2008 1:30:00 PM | 10/28/2008 9:30:00 AM | | ☐ |
| MW-1 | 08101597-02 | Water | 10/24/2008 1:50:00 PM | 10/28/2008 9:30:00 AM | | ☐ |
| Duplicate | 08101597-03 | Water | 10/24/2008 1:55:00 PM | 10/28/2008 9:30:00 AM | | ☐ |
| MW-4 | 08101597-04 | Water | 10/24/2008 4:15:00 PM | 10/28/2008 9:30:00 AM | | ☐ |
| MW-3 | 08101597-05 | Water | 10/24/2008 3:35:00 PM | 10/28/2008 9:30:00 AM | | ☐ |
| Trip Blank | 08101597-06 | Water | 10/24/2008 | 10/28/2008 9:30:00 AM | | ☐ |

Erica Cardenas
Project Manager

11/26/2008
Date

Richard R. Reed
Laboratory Director

Ted Yen
Quality Assurance Officer

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

**Client Sample ID:** MW-2 **Collected:** 10/24/2008 13:30 **SPL Sample ID:** 08101597-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/L** | |
| Diesel Range Organics (C10-C28) | ND | | 0.1 | 1 | 11/06/08 15:31 | NW | 4757249 |
| Surr: n-Pentacosane | 64.2 | % | 20-150 | 1 | 11/06/08 15:31 | NW | 4757249 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3510C | 10/29/2008 18:43 | N_M | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/L** | |
| Gasoline Range Organics | ND | | 0.1 | 1 | 11/02/08 4:45 | WLV | 4747578 |
| Surr: 1,4-Difluorobenzene | 88.9 | % | 60-155 | 1 | 11/02/08 4:45 | WLV | 4747578 |
| Surr: 4-Bromofluorobenzene | 90.4 | % | 50-158 | 1 | 11/02/08 4:45 | WLV | 4747578 |
| **ION CHROMATOGRAPHY** | | | | **MCL** | **E300.0** | **Units: mg/L** | |
| Chloride | 18.9 | | 2 | 4 | 11/10/08 18:03 | TW | 4766019 |
| Fluoride | ND | | 2 | 4 | 11/10/08 18:03 | TW | 4766019 |
| Ortho-phosphate (As P) | ND | | 5 | 10 | 11/20/08 4:52 | TW | 4780766 |
| Sulfate | 1480 | | 50 | 100 | 11/11/08 11:59 | TW | 4766436 |
| **MERCURY, TOTAL** | | | | **MCL** | **SW7470A** | **Units: mg/L** | |
| Mercury | ND | | 0.0002 | 1 | 11/06/08 14:00 | F_S | 4755682 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW7470A | 11/06/2008 13:18 | F_S | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6010B, TOTAL** | | | | **MCL** | **SW6010B** | **Units: mg/L** | |
| Calcium | 570 | | 0.5 | 5 | 11/07/08 10:45 | S_C | 4756572 |
| Iron | 3.28 | | 0.02 | 1 | 11/04/08 23:25 | S_C | 4752067 |
| Magnesium | 78.3 | | 0.1 | 1 | 11/04/08 23:25 | S_C | 4752067 |
| Potassium | ND | | 2 | 1 | 11/04/08 23:25 | S_C | 4752067 |
| Sodium | 144 | | 0.5 | 1 | 11/04/08 23:25 | S_C | 4752067 |
| Strontium | 10.5 | | 0.1 | 5 | 11/07/08 10:45 | S_C | 4756572 |
| Titanium | ND | | 0.1 | 5 | 11/07/08 10:45 | S_C | 4756572 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3010A | 10/31/2008 15:00 | BDG | 1.00 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-2 **Collected:** 10/24/2008 13:30 **SPL Sample ID:** 08101597-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6020A, TOTAL** | | | | **MCL** | **SW6020A** | **Units: mg/L** | |
| Aluminum | 3.61 | | 0.01 | 1 | 11/06/08 13:35 | AL_H | 4755585 |
| Antimony | ND | | 0.005 | 1 | 11/06/08 13:35 | AL_H | 4755585 |
| Arsenic | ND | | 0.005 | 1 | 11/04/08 15:10 | AL_H | 4751825 |
| Barium | 0.0321 | | 0.005 | 1 | 11/04/08 15:10 | AL_H | 4751825 |
| Beryllium | ND | | 0.004 | 1 | 11/06/08 13:35 | AL_H | 4755585 |
| Cadmium | ND | | 0.005 | 1 | 11/04/08 15:10 | AL_H | 4751825 |
| Chromium | ND | | 0.005 | 1 | 11/04/08 15:10 | AL_H | 4751825 |
| Cobalt | ND | | 0.005 | 1 | 11/04/08 15:10 | AL_H | 4751825 |
| Copper | 0.0105 | | 0.005 | 1 | 11/04/08 15:10 | AL_H | 4751825 |
| Lead | 0.0051 | | 0.005 | 1 | 11/04/08 15:10 | AL_H | 4751825 |
| Manganese | 0.231 | | 0.005 | 1 | 11/06/08 13:35 | AL_H | 4755585 |
| Molybdenum | ND | | 0.01 | 1 | 11/06/08 23:40 | AL_H | 4757049 |
| Nickel | 0.0144 | | 0.005 | 1 | 11/04/08 15:10 | AL_H | 4751825 |
| Selenium | ND | | 0.005 | 1 | 11/06/08 13:35 | AL_H | 4755585 |
| Silver | ND | | 0.005 | 1 | 11/06/08 13:35 | AL_H | 4755585 |
| Thallium | ND | | 0.005 | 1 | 11/06/08 13:35 | AL_H | 4755585 |
| Tungsten | ND | | 0.01 | 1 | 11/08/08 21:09 | BDG | 4759508 |
| Vanadium | 0.00964 | | 0.005 | 1 | 11/04/08 15:10 | AL_H | 4751825 |
| Zinc | 0.0215 | | 0.01 | 1 | 11/04/08 15:10 | AL_H | 4751825 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3010A | 10/31/2008 15:00 | BDG | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NITRATE NITROGEN (AS N), TOTAL** | | | | **MCL** | **E353.2** | **Units: mg/L** | |
| Nitrogen,Nitrate (As N) | ND | | 0.5 | 1 | 11/03/08 15:17 | TW | 4757594 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
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* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-2 **Collected:** 10/24/2008 13:30 **SPL Sample ID:** 08101597-01

**Site:** Aztec, NM

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **SEMIVOLATILE ORGANICS BY METHOD 8270C** | | | **MCL** | **SW8270C** | **Units: ug/L** | | |
| 1,2,4-Trichlorobenzene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 1,2-Dichlorobenzene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 1,2-Diphenylhydrazine | ND | | 10 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 1,3-Dichlorobenzene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 1,4-Dichlorobenzene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2,4,5-Trichlorophenol | ND | | 10 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2,4,6-Trichlorophenol | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2,4-Dichlorophenol | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2,4-Dimethylphenol | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2,4-Dinitrophenol | ND | | 25 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2,4-Dinitrotoluene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2,6-Dinitrotoluene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2-Chloronaphthalene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2-Chlorophenol | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2-Methylnaphthalene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2-Nitroaniline | ND | | 25 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2-Nitrophenol | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 3,3'-Dichlorobenzidine | ND | | 10 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 3-Nitroaniline | ND | | 25 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 4,6-Dinitro-2-methylphenol | ND | | 25 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 4-Bromophenyl phenyl ether | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 4-Chloro-3-methylphenol | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 4-Chloroaniline | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 4-Chlorophenyl phenyl ether | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 4-Nitroaniline | ND | | 25 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 4-Nitrophenol | ND | | 25 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Acenaphthene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Acenaphthylene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Aniline | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Anthracene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Benz(a)anthracene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Benzo(a)pyrene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Benzo(b)fluoranthene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Benzo(g,h,i)perylene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Benzo(k)fluoranthene | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Benzoic acid | ND | | 25 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Benzyl alcohol | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Bis(2-chloroethoxy)methane | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Bis(2-chloroethyl)ether | ND | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |

**Qualifiers:**

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B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
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TNTC - Too numerous to count
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D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-2 **Collected:** 10/24/2008 13:30 **SPL Sample ID:** 08101597-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroisopropyl)ether | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Bis(2-ethylhexyl)phthalate | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Butyl benzyl phthalate | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Carbazole | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Chrysene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Dibenz(a,h)anthracene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Dibenzofuran | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Diethyl phthalate | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Dimethyl phthalate | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Di-n-butyl phthalate | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Di-n-octyl phthalate | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Fluoranthene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Fluorene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Hexachlorobenzene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Hexachlorobutadiene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Hexachlorocyclopentadiene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Hexachloroethane | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Indeno(1,2,3-cd)pyrene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Isophorone | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Naphthalene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Nitrobenzene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| N-Nitrosodi-n-propylamine | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| N-Nitrosodiphenylamine | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Pentachlorophenol | ND | | | 25 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Phenanthrene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Phenol | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Pyrene | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Pyridine | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 2-Methylphenol | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| 3 & 4-Methylphenol | ND | | | 5 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Surr: 2,4,6-Tribromophenol | 81.3 | | % | 10-123 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Surr: 2-Fluorobiphenyl | 86.0 | | % | 23-116 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Surr: 2-Fluorophenol | 44.0 | | % | 16-110 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Surr: Nitrobenzene-d5 | 82.0 | | % | 21-114 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Surr: Phenol-d5 | 28.0 | | % | 10-110 | 1 | 11/06/08 12:27 | GY | 4755633 |
| Surr: Terphenyl-d14 | 80.0 | | % | 22-141 | 1 | 11/06/08 12:27 | GY | 4755633 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3510C | 10/30/2008 16:53 | LLL | 1.00 |

**Qualifiers:**

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J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-2 **Collected:** 10/24/2008 13:30 **SPL Sample ID:** 08101597-01

**Site:** Aztec, NM

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| 1,1,1,2-Tetrachloroethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,1,1-Trichloroethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,1,2,2-Tetrachloroethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,1,2-Trichloroethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,1-Dichloroethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,1-Dichloroethene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,1-Dichloropropene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2,3-Trichlorobenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2,3-Trichloropropane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2,4-Trichlorobenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2,4-Trimethylbenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2-Dibromo-3-chloropropane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2-Dibromoethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2-Dichloroethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2-Dichloropropane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,3,5-Trimethylbenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,3-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,3-Dichloropropane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,4-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 2,2-Dichloropropane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 2-Butanone | ND | | 20 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 2-Chloroethyl vinyl ether | ND | | 10 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 2-Chlorotoluene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 2-Hexanone | ND | | 10 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 4-Chlorotoluene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 4-Isopropyltoluene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 4-Methyl-2-pentanone | ND | | 10 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Acetone | ND | | 100 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Acrylonitrile | ND | | 50 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Benzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Bromobenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Bromochloromethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Bromodichloromethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Bromoform | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Bromomethane | ND | | 10 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Carbon disulfide | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Carbon tetrachloride | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Chlorobenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |

**Qualifiers:**

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J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-2 **Collected:** 10/24/2008 13:30 **SPL Sample ID:** 08101597-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| Chloroethane | ND | | 10 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Chloroform | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Chloromethane | ND | | 10 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Dibromochloromethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Dibromomethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Dichlorodifluoromethane | ND | | 10 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Ethylbenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Hexachlorobutadiene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Isopropylbenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Methyl tert-butyl ether | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Methylene chloride | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Naphthalene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| n-Butylbenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| n-Propylbenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| sec-Butylbenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Styrene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| tert-Butylbenzene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Tetrachloroethene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Toluene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Trichloroethene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Trichlorofluoromethane | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Vinyl acetate | ND | | 10 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Vinyl chloride | ND | | 10 | 1 | 11/05/08 19:35 | LT | 4754091 |
| cis-1,2-Dichloroethene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| cis-1,3-Dichloropropene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| m,p-Xylene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| o-Xylene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| trans-1,2-Dichloroethene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| trans-1,3-Dichloropropene | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| 1,2-Dichloroethene (total) | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Xylenes,Total | ND | | 5 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Surr: 1,2-Dichloroethane-d4 | 108 | | % 62-130 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Surr: 4-Bromofluorobenzene | 96.0 | | % 70-130 | 1 | 11/05/08 19:35 | LT | 4754091 |
| Surr: Toluene-d8 | 108 | | % 74-122 | 1 | 11/05/08 19:35 | LT | 4754091 |

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

**Client Sample ID:** MW-1 **Collected:** 10/24/2008 13:50 **SPL Sample ID:** 08101597-02

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/L** | |
| Diesel Range Organics (C10-C28) | 0.96 | | 0.1 | 1 | 11/02/08 16:16 | NW | 4750380 |
| Surr: n-Pentacosane | 53.6 | | % 20-150 | 1 | 11/02/08 16:16 | NW | 4750380 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3510C | 10/30/2008 10:38 | JDM | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/L** | |
| Gasoline Range Organics | ND | | 0.1 | 1 | 11/02/08 5:13 | WLV | 4747579 |
| Surr: 1,4-Difluorobenzene | 89.1 | | % 60-155 | 1 | 11/02/08 5:13 | WLV | 4747579 |
| Surr: 4-Bromofluorobenzene | 94.2 | | % 50-158 | 1 | 11/02/08 5:13 | WLV | 4747579 |
| **ION CHROMATOGRAPHY** | | | | **MCL** | **E300.0** | **Units: mg/L** | |
| Chloride | 144 | | 5 | 10 | 11/20/08 13:38 | TW | 4780798 |
| Fluoride | ND | | 2 | 4 | 11/10/08 18:53 | TW | 4766022 |
| Ortho-phosphate (As P) | ND | | 5 | 10 | 11/20/08 13:38 | TW | 4780798 |
| Sulfate | 2390 | | 125 | 250 | 11/11/08 19:23 | TW | 4766463 |
| **MERCURY, TOTAL** | | | | **MCL** | **SW7470A** | **Units: mg/L** | |
| Mercury | ND | | 0.0002 | 1 | 11/06/08 14:02 | F_S | 4755683 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW7470A | 11/06/2008 13:18 | F_S | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6010B, TOTAL** | | | | **MCL** | **SW6010B** | **Units: mg/L** | |
| Calcium | 593 | | 0.5 | 5 | 11/07/08 10:49 | S_C | 4756573 |
| Iron | 32.1 | | 0.02 | 1 | 11/04/08 23:30 | S_C | 4752068 |
| Magnesium | 278 | | 0.1 | 1 | 11/04/08 23:30 | S_C | 4752068 |
| Potassium | 4.54 | | 2 | 1 | 11/04/08 23:30 | S_C | 4752068 |
| Sodium | 544 | | 1 | 2 | 11/05/08 11:06 | S_C | 4752124 |
| Strontium | 7.09 | | 0.1 | 5 | 11/07/08 10:49 | S_C | 4756573 |
| Titanium | 0.103 | | 0.1 | 5 | 11/07/08 10:49 | S_C | 4756573 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3010A | 10/31/2008 15:00 | BDG | 1.00 |

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

**Client Sample ID:** MW-1 **Collected:** 10/24/2008 13:50 **SPL Sample ID:** 08101597-02

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6020A, TOTAL** | | | | **MCL** | **SW6020A** | **Units: mg/L** | |
| Aluminum | 0.284 | | 0.01 | 1 | 11/06/08 13:41 | AL_H | 4755586 |
| Antimony | ND | | 0.005 | 1 | 11/06/08 13:41 | AL_H | 4755586 |
| Arsenic | 0.0144 | | 0.005 | 1 | 11/04/08 15:15 | AL_H | 4751826 |
| Barium | 0.0222 | | 0.005 | 1 | 11/04/08 15:15 | AL_H | 4751826 |
| Beryllium | ND | | 0.004 | 1 | 11/06/08 13:41 | AL_H | 4755586 |
| Cadmium | ND | | 0.005 | 1 | 11/04/08 15:15 | AL_H | 4751826 |
| Chromium | ND | | 0.005 | 1 | 11/04/08 15:15 | AL_H | 4751826 |
| Cobalt | 0.0124 | | 0.005 | 1 | 11/04/08 15:15 | AL_H | 4751826 |
| Copper | 0.0105 | | 0.005 | 1 | 11/04/08 15:15 | AL_H | 4751826 |
| Lead | ND | | 0.005 | 1 | 11/04/08 15:15 | AL_H | 4751826 |
| Manganese | 13.4 | | 0.005 | 1 | 11/06/08 13:41 | AL_H | 4755586 |
| Molybdenum | ND | | 0.01 | 1 | 11/06/08 23:45 | AL_H | 4757050 |
| Nickel | 0.0153 | | 0.005 | 1 | 11/04/08 15:15 | AL_H | 4751826 |
| Selenium | ND | | 0.005 | 1 | 11/06/08 13:41 | AL_H | 4755586 |
| Silver | ND | | 0.005 | 1 | 11/06/08 13:41 | AL_H | 4755586 |
| Thallium | ND | | 0.005 | 1 | 11/06/08 13:41 | AL_H | 4755586 |
| Tungsten | ND | | 0.01 | 1 | 11/08/08 21:14 | BDG | 4759509 |
| Vanadium | ND | | 0.005 | 1 | 11/04/08 15:15 | AL_H | 4751826 |
| Zinc | 0.0195 | | 0.01 | 1 | 11/04/08 15:15 | AL_H | 4751826 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3010A | 10/31/2008 15:00 | BDG | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NITRATE NITROGEN (AS N), TOTAL** | | | | **MCL** | **E353.2** | **Units: mg/L** | |
| Nitrogen,Nitrate (As N) | 0.914 | | 0.5 | 1 | 11/03/08 15:17 | TW | 4757597 |

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

**Client Sample ID:** MW-1 **Collected:** 10/24/2008 13:50 **SPL Sample ID:** 08101597-02

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **SEMIVOLATILE ORGANICS BY METHOD 8270C** | | | **MCL** | **SW8270C** | **Units: ug/L** | | |
| 1,2,4-Trichlorobenzene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 1,2-Dichlorobenzene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 1,2-Diphenylhydrazine | ND | | 10 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 1,3-Dichlorobenzene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 1,4-Dichlorobenzene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2,4,5-Trichlorophenol | ND | | 10 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2,4,6-Trichlorophenol | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2,4-Dichlorophenol | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2,4-Dimethylphenol | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2,4-Dinitrophenol | ND | | 25 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2,4-Dinitrotoluene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2,6-Dinitrotoluene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2-Chloronaphthalene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2-Chlorophenol | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2-Methylnaphthalene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2-Nitroaniline | ND | | 25 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2-Nitrophenol | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 3,3'-Dichlorobenzidine | ND | | 10 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 3-Nitroaniline | ND | | 25 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 4,6-Dinitro-2-methylphenol | ND | | 25 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 4-Bromophenyl phenyl ether | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 4-Chloro-3-methylphenol | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 4-Chloroaniline | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 4-Chlorophenyl phenyl ether | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 4-Nitroaniline | ND | | 25 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 4-Nitrophenol | ND | | 25 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Acenaphthene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Acenaphthylene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Aniline | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Anthracene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Benz(a)anthracene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Benzo(a)pyrene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Benzo(b)fluoranthene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Benzo(g,h,i)perylene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Benzo(k)fluoranthene | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Benzoic acid | ND | | 25 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Benzyl alcohol | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Bis(2-chloroethoxy)methane | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Bis(2-chloroethyl)ether | ND | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |

**Qualifiers:**

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

**Client Sample ID:** MW-1 **Collected:** 10/24/2008 13:50 **SPL Sample ID:** 08101597-02

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroisopropyl)ether | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Bis(2-ethylhexyl)phthalate | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Butyl benzyl phthalate | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Carbazole | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Chrysene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Dibenz(a,h)anthracene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Dibenzofuran | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Diethyl phthalate | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Dimethyl phthalate | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Di-n-butyl phthalate | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Di-n-octyl phthalate | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Fluoranthene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Fluorene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Hexachlorobenzene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Hexachlorobutadiene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Hexachlorocyclopentadiene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Hexachloroethane | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Indeno(1,2,3-cd)pyrene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Isophorone | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Naphthalene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Nitrobenzene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| N-Nitrosodi-n-propylamine | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| N-Nitrosodiphenylamine | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Pentachlorophenol | ND | | | 25 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Phenanthrene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Phenol | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Pyrene | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Pyridine | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 2-Methylphenol | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| 3 & 4-Methylphenol | ND | | | 5 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Surr: 2,4,6-Tribromophenol | 77.3 | | % | 10-123 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Surr: 2-Fluorobiphenyl | 78.0 | | % | 23-116 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Surr: 2-Fluorophenol | 46.7 | | % | 16-110 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Surr: Nitrobenzene-d5 | 76.0 | | % | 21-114 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Surr: Phenol-d5 | 32.0 | | % | 10-110 | 1 | 11/06/08 12:57 | GY | 4755634 |
| Surr: Terphenyl-d14 | 68.0 | | % | 22-141 | 1 | 11/06/08 12:57 | GY | 4755634 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3510C | 10/30/2008 16:53 | LLL | 1.00 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-1 **Collected:** 10/24/2008 13:50 **SPL Sample ID:** 08101597-02

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| 1,1,1,2-Tetrachloroethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,1,1-Trichloroethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,1,2,2-Tetrachloroethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,1,2-Trichloroethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,1-Dichloroethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,1-Dichloroethene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,1-Dichloropropene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2,3-Trichlorobenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2,3-Trichloropropane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2,4-Trichlorobenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2,4-Trimethylbenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2-Dibromo-3-chloropropane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2-Dibromoethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2-Dichloroethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2-Dichloropropane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,3,5-Trimethylbenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,3-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,3-Dichloropropane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,4-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 2,2-Dichloropropane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 2-Butanone | ND | | 20 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 2-Chloroethyl vinyl ether | ND | | 10 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 2-Chlorotoluene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 2-Hexanone | ND | | 10 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 4-Chlorotoluene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 4-Isopropyltoluene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 4-Methyl-2-pentanone | ND | | 10 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Acetone | ND | | 100 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Acrylonitrile | ND | | 50 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Benzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Bromobenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Bromochloromethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Bromodichloromethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Bromoform | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Bromomethane | ND | | 10 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Carbon disulfide | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Carbon tetrachloride | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Chlorobenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |

**Qualifiers:**

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B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-1 **Collected:** 10/24/2008 13:50 **SPL Sample ID:** 08101597-02

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| Chloroethane | ND | | 10 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Chloroform | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Chloromethane | ND | | 10 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Dibromochloromethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Dibromomethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Dichlorodifluoromethane | ND | | 10 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Ethylbenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Hexachlorobutadiene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Isopropylbenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Methyl tert-butyl ether | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Methylene chloride | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Naphthalene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| n-Butylbenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| n-Propylbenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| sec-Butylbenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Styrene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| tert-Butylbenzene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Tetrachloroethene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Toluene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Trichloroethene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Trichlorofluoromethane | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Vinyl acetate | ND | | 10 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Vinyl chloride | ND | | 10 | 1 | 11/05/08 20:03 | LT | 4754092 |
| cis-1,2-Dichloroethene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| cis-1,3-Dichloropropene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| m,p-Xylene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| o-Xylene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| trans-1,2-Dichloroethene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| trans-1,3-Dichloropropene | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| 1,2-Dichloroethene (total) | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Xylenes,Total | ND | | 5 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Surr: 1,2-Dichloroethane-d4 | 112 | | % 62-130 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Surr: 4-Bromofluorobenzene | 96.0 | | % 70-130 | 1 | 11/05/08 20:03 | LT | 4754092 |
| Surr: Toluene-d8 | 106 | | % 74-122 | 1 | 11/05/08 20:03 | LT | 4754092 |

**Qualifiers:**

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E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
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MI - Matrix Interference

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

**Client Sample ID:** Duplicate **Collected:** 10/24/2008 13:55 **SPL Sample ID:** 08101597-03

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 5 | 1 | 11/05/08 20:31 | LT | 4754093 |
| Ethylbenzene | ND | | 5 | 1 | 11/05/08 20:31 | LT | 4754093 |
| Toluene | ND | | 5 | 1 | 11/05/08 20:31 | LT | 4754093 |
| m,p-Xylene | ND | | 5 | 1 | 11/05/08 20:31 | LT | 4754093 |
| o-Xylene | ND | | 5 | 1 | 11/05/08 20:31 | LT | 4754093 |
| Xylenes,Total | ND | | 5 | 1 | 11/05/08 20:31 | LT | 4754093 |
| Surr: 1,2-Dichloroethane-d4 | 108 | | % 62-130 | 1 | 11/05/08 20:31 | LT | 4754093 |
| Surr: 4-Bromofluorobenzene | 96.0 | | % 70-130 | 1 | 11/05/08 20:31 | LT | 4754093 |
| Surr: Toluene-d8 | 108 | | % 74-122 | 1 | 11/05/08 20:31 | LT | 4754093 |

**Qualifiers:**

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J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
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MI - Matrix Interference

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

**Client Sample ID:** MW-4 **Collected:** 10/24/2008 16:15 **SPL Sample ID:** 08101597-04

**Site:** Aztec, NM

| Analyses/Method | Result | QUAL | Rep.Limit | | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/L** | | |
| Diesel Range Organics (C10-C28) | 0.37 | | 0.1 | | 1 | 11/06/08 15:53 | NW | 4757250 |
| Surr: n-Pentacosane | 58.0 | | % 20-150 | | 1 | 11/06/08 15:53 | NW | 4757250 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3510C | 10/29/2008 18:43 | N_M | 1.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/L** | | |
| Gasoline Range Organics | 0.11 | | 0.1 | | 1 | 11/02/08 5:41 | WLV | 4747580 |
| Surr: 1,4-Difluorobenzene | 92.7 | | % 60-155 | | 1 | 11/02/08 5:41 | WLV | 4747580 |
| Surr: 4-Bromofluorobenzene | 94.5 | | % 50-158 | | 1 | 11/02/08 5:41 | WLV | 4747580 |
| **ION CHROMATOGRAPHY** | | | | **MCL** | **E300.0** | **Units: mg/L** | | |
| Chloride | 121 | | 50 | | 100 | 11/11/08 13:05 | TW | 4766440 |
| Fluoride | 2.43 | | 2 | | 4 | 11/10/08 19:09 | TW | 4766023 |
| Ortho-phosphate (As P) | ND | | 5 | | 10 | 11/20/08 5:42 | TW | 4780769 |
| Sulfate | 3400 | | 250 | | 500 | 11/11/08 19:39 | TW | 4766464 |
| **MERCURY, TOTAL** | | | | **MCL** | **SW7470A** | **Units: mg/L** | | |
| Mercury | ND | | 0.0002 | | 1 | 11/06/08 14:04 | F_S | 4755684 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW7470A | 11/06/2008 13:18 | F_S | 1.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6010B, TOTAL** | | | | **MCL** | **SW6010B** | **Units: mg/L** | | |
| Calcium | 438 | | 0.5 | | 5 | 11/07/08 10:54 | S_C | 4756574 |
| Iron | 2.7 | | 0.02 | | 1 | 11/04/08 23:34 | S_C | 4752069 |
| Magnesium | 456 | | 0.1 | | 1 | 11/04/08 23:34 | S_C | 4752069 |
| Potassium | ND | | 2 | | 1 | 11/04/08 23:34 | S_C | 4752069 |
| Sodium | 844 | | 2.5 | | 5 | 11/05/08 11:10 | S_C | 4752125 |
| Strontium | 9.44 | | 0.02 | | 1 | 11/04/08 23:34 | S_C | 4752069 |
| Titanium | 0.0206 | | 0.02 | | 1 | 11/04/08 23:34 | S_C | 4752069 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3010A | 10/31/2008 15:00 | BDG | 1.00 |

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J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-4 **Collected:** 10/24/2008 16:15 **SPL Sample ID:** 08101597-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6020A, TOTAL** | | | | **MCL** | **SW6020A** | **Units: mg/L** | |
| Aluminum | 4.17 | | 0.01 | 1 | 11/06/08 13:47 | AL_H | 4755587 |
| Antimony | ND | | 0.005 | 1 | 11/06/08 13:47 | AL_H | 4755587 |
| Arsenic | ND | | 0.005 | 1 | 11/04/08 15:20 | AL_H | 4751827 |
| Barium | 0.0273 | | 0.005 | 1 | 11/04/08 15:20 | AL_H | 4751827 |
| Beryllium | ND | | 0.004 | 1 | 11/06/08 13:47 | AL_H | 4755587 |
| Cadmium | ND | | 0.005 | 1 | 11/04/08 15:20 | AL_H | 4751827 |
| Chromium | ND | | 0.005 | 1 | 11/04/08 15:20 | AL_H | 4751827 |
| Cobalt | 0.021 | | 0.005 | 1 | 11/04/08 15:20 | AL_H | 4751827 |
| Copper | 0.017 | | 0.005 | 1 | 11/04/08 15:20 | AL_H | 4751827 |
| Lead | 0.00796 | | 0.005 | 1 | 11/04/08 15:20 | AL_H | 4751827 |
| Manganese | 7.79 | | 0.005 | 1 | 11/06/08 13:47 | AL_H | 4755587 |
| Molybdenum | ND | | 0.01 | 1 | 11/06/08 23:50 | AL_H | 4757051 |
| Nickel | 0.0222 | | 0.005 | 1 | 11/04/08 15:20 | AL_H | 4751827 |
| Selenium | 0.0122 | | 0.005 | 1 | 11/06/08 13:47 | AL_H | 4755587 |
| Silver | ND | | 0.005 | 1 | 11/06/08 13:47 | AL_H | 4755587 |
| Thallium | ND | | 0.005 | 1 | 11/06/08 13:47 | AL_H | 4755587 |
| Tungsten | ND | | 0.01 | 1 | 11/08/08 21:19 | BDG | 4759510 |
| Vanadium | 0.00785 | | 0.005 | 1 | 11/04/08 15:20 | AL_H | 4751827 |
| Zinc | 0.0302 | | 0.01 | 1 | 11/04/08 15:20 | AL_H | 4751827 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3010A | 10/31/2008 15:00 | BDG | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NITRATE NITROGEN (AS N), TOTAL** | | | | **MCL** | **E353.2** | **Units: mg/L** | |
| Nitrogen,Nitrate (As N) | 4.75 | | 0.5 | 1 | 11/03/08 15:17 | TW | 4757598 |

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

**Client Sample ID:** MW-4 **Collected:** 10/24/2008 16:15 **SPL Sample ID:** 08101597-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **SEMIVOLATILE ORGANICS BY METHOD 8270C** | | | **MCL** | **SW8270C** | **Units: ug/L** | | |
| 1,2,4-Trichlorobenzene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 1,2-Dichlorobenzene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 1,2-Diphenylhydrazine | ND | | 10 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 1,3-Dichlorobenzene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 1,4-Dichlorobenzene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2,4,5-Trichlorophenol | ND | | 10 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2,4,6-Trichlorophenol | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2,4-Dichlorophenol | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2,4-Dimethylphenol | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2,4-Dinitrophenol | ND | | 25 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2,4-Dinitrotoluene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2,6-Dinitrotoluene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2-Chloronaphthalene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2-Chlorophenol | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2-Methylnaphthalene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2-Nitroaniline | ND | | 25 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2-Nitrophenol | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 3,3'-Dichlorobenzidine | ND | | 10 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 3-Nitroaniline | ND | | 25 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 4,6-Dinitro-2-methylphenol | ND | | 25 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 4-Bromophenyl phenyl ether | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 4-Chloro-3-methylphenol | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 4-Chloroaniline | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 4-Chlorophenyl phenyl ether | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 4-Nitroaniline | ND | | 25 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 4-Nitrophenol | ND | | 25 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Acenaphthene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Acenaphthylene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Aniline | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Anthracene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Benz(a)anthracene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Benzo(a)pyrene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Benzo(b)fluoranthene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Benzo(g,h,i)perylene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Benzo(k)fluoranthene | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Benzoic acid | ND | | 25 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Benzyl alcohol | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Bis(2-chloroethoxy)methane | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Bis(2-chloroethyl)ether | ND | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |

**Qualifiers:**

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**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-4 **Collected:** 10/24/2008 16:15 **SPL Sample ID:** 08101597-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| Bis(2-chloroisopropyl)ether | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Bis(2-ethylhexyl)phthalate | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Butyl benzyl phthalate | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Carbazole | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Chrysene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Dibenz(a,h)anthracene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Dibenzofuran | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Diethyl phthalate | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Dimethyl phthalate | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Di-n-butyl phthalate | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Di-n-octyl phthalate | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Fluoranthene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Fluorene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Hexachlorobenzene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Hexachlorobutadiene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Hexachlorocyclopentadiene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Hexachloroethane | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Indeno(1,2,3-cd)pyrene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Isophorone | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Naphthalene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Nitrobenzene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| N-Nitrosodi-n-propylamine | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| N-Nitrosodiphenylamine | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Pentachlorophenol | ND | | | 25 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Phenanthrene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Phenol | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Pyrene | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Pyridine | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 2-Methylphenol | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| 3 & 4-Methylphenol | ND | | | 5 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Surr: 2,4,6-Tribromophenol | 66.7 | | % | 10-123 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Surr: 2-Fluorobiphenyl | 58.0 | | % | 23-116 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Surr: 2-Fluorophenol | 38.7 | | % | 16-110 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Surr: Nitrobenzene-d5 | 58.0 | | % | 21-114 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Surr: Phenol-d5 | 25.3 | | % | 10-110 | 1 | 11/06/08 13:27 | GY | 4755635 |
| Surr: Terphenyl-d14 | 60.0 | | % | 22-141 | 1 | 11/06/08 13:27 | GY | 4755635 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3510C | 10/30/2008 16:53 | LLL | 1.00 |

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E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-4 **Collected:** 10/24/2008 16:15 **SPL Sample ID:** 08101597-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/L** | |
| 1,1,1,2-Tetrachloroethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,1,1-Trichloroethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,1,2,2-Tetrachloroethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,1,2-Trichloroethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,1-Dichloroethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,1-Dichloroethene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,1-Dichloropropene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2,3-Trichlorobenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2,3-Trichloropropane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2,4-Trichlorobenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2,4-Trimethylbenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2-Dibromo-3-chloropropane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2-Dibromoethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2-Dichloroethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2-Dichloropropane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,3,5-Trimethylbenzene | 29 | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,3-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,3-Dichloropropane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,4-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 2,2-Dichloropropane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 2-Butanone | ND | | 20 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 2-Chloroethyl vinyl ether | ND | | 10 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 2-Chlorotoluene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 2-Hexanone | ND | | 10 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 4-Chlorotoluene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 4-Isopropyltoluene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 4-Methyl-2-pentanone | ND | | 10 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Acetone | ND | | 100 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Acrylonitrile | ND | | 50 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Benzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Bromobenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Bromochloromethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Bromodichloromethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Bromoform | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Bromomethane | ND | | 10 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Carbon disulfide | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Carbon tetrachloride | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Chlorobenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |

**Qualifiers:**

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J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-4 **Collected:** 10/24/2008 16:15 **SPL Sample ID:** 08101597-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| Chloroethane | ND | | 10 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Chloroform | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Chloromethane | ND | | 10 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Dibromochloromethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Dibromomethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Dichlorodifluoromethane | ND | | 10 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Ethylbenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Hexachlorobutadiene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Isopropylbenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Methyl tert-butyl ether | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Methylene chloride | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Naphthalene | 7 | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| n-Butylbenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| n-Propylbenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| sec-Butylbenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Styrene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| tert-Butylbenzene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Tetrachloroethene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Toluene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Trichloroethene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Trichlorofluoromethane | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Vinyl acetate | ND | | 10 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Vinyl chloride | ND | | 10 | 1 | 11/05/08 20:59 | LT | 4754094 |
| cis-1,2-Dichloroethene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| cis-1,3-Dichloropropene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| m,p-Xylene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| o-Xylene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| trans-1,2-Dichloroethene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| trans-1,3-Dichloropropene | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| 1,2-Dichloroethene (total) | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Xylenes,Total | ND | | 5 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Surr: 1,2-Dichloroethane-d4 | 108 | | % 62-130 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Surr: 4-Bromofluorobenzene | 98.0 | | % 70-130 | 1 | 11/05/08 20:59 | LT | 4754094 |
| Surr: Toluene-d8 | 104 | | % 74-122 | 1 | 11/05/08 20:59 | LT | 4754094 |

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E - Estimated Value exceeds calibration curve
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-3 **Collected:** 10/24/2008 15:35 **SPL Sample ID:** 08101597-05

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **DIESEL RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/L** | |
| Diesel Range Organics (C10-C28) | ND | | 0.1 | 1 | 11/06/08 16:14 | NW | 4757251 |
| Surr: n-Pentacosane | 55.4 | | % 20-150 | 1 | 11/06/08 16:14 | NW | 4757251 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3510C | 10/29/2008 18:43 | N_M | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **GASOLINE RANGE ORGANICS** | | | | **MCL** | **SW8015B** | **Units: mg/L** | |
| Gasoline Range Organics | ND | | 0.1 | 1 | 11/02/08 6:10 | WLV | 4747581 |
| Surr: 1,4-Difluorobenzene | 88.9 | | % 60-155 | 1 | 11/02/08 6:10 | WLV | 4747581 |
| Surr: 4-Bromofluorobenzene | 90.7 | | % 50-158 | 1 | 11/02/08 6:10 | WLV | 4747581 |
| **ION CHROMATOGRAPHY** | | | | **MCL** | **E300.0** | **Units: mg/L** | |
| Chloride | 10 | | 2 | 4 | 11/10/08 19:26 | TW | 4766024 |
| Fluoride | ND | | 2 | 4 | 11/10/08 19:26 | TW | 4766024 |
| Ortho-phosphate (As P) | ND | | 5 | 10 | 11/20/08 5:58 | TW | 4780770 |
| Sulfate | 1480 | | 50 | 100 | 11/11/08 13:21 | TW | 4766441 |
| **MERCURY, TOTAL** | | | | **MCL** | **SW7470A** | **Units: mg/L** | |
| Mercury | ND | | 0.0002 | 1 | 11/06/08 14:06 | F_S | 4755685 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW7470A | 11/06/2008 13:18 | F_S | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6010B, TOTAL** | | | | **MCL** | **SW6010B** | **Units: mg/L** | |
| Calcium | 609 | | 0.5 | 5 | 11/07/08 10:58 | S_C | 4756575 |
| Iron | 3.38 | | 0.02 | 1 | 11/04/08 23:39 | S_C | 4752070 |
| Magnesium | 86 | | 0.1 | 1 | 11/04/08 23:39 | S_C | 4752070 |
| Potassium | ND | | 2 | 1 | 11/04/08 23:39 | S_C | 4752070 |
| Sodium | 239 | | 0.5 | 1 | 11/04/08 23:39 | S_C | 4752070 |
| Strontium | 10.9 | | 0.02 | 1 | 11/04/08 23:39 | S_C | 4752070 |
| Titanium | 0.0248 | | 0.02 | 1 | 11/04/08 23:39 | S_C | 4752070 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3010A | 10/31/2008 15:00 | BDG | 1.00 |

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TNTC - Too numerous to count
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-3 **Collected:** 10/24/2008 15:35 **SPL Sample ID:** 08101597-05

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **METALS BY METHOD 6020A, TOTAL** | | | | **MCL** | **SW6020A** | **Units: mg/L** | |
| Aluminum | 5.01 | | 0.01 | 1 | 11/06/08 13:54 | AL_H | 4755588 |
| Antimony | ND | | 0.005 | 1 | 11/06/08 13:54 | AL_H | 4755588 |
| Arsenic | ND | | 0.005 | 1 | 11/04/08 15:25 | AL_H | 4751828 |
| Barium | 0.0396 | | 0.005 | 1 | 11/04/08 15:25 | AL_H | 4751828 |
| Beryllium | ND | | 0.004 | 1 | 11/06/08 13:54 | AL_H | 4755588 |
| Cadmium | ND | | 0.005 | 1 | 11/04/08 15:25 | AL_H | 4751828 |
| Chromium | ND | | 0.005 | 1 | 11/04/08 15:25 | AL_H | 4751828 |
| Cobalt | 0.00789 | | 0.005 | 1 | 11/04/08 15:25 | AL_H | 4751828 |
| Copper | 0.0128 | | 0.005 | 1 | 11/04/08 15:25 | AL_H | 4751828 |
| Lead | 0.00957 | | 0.005 | 1 | 11/04/08 15:25 | AL_H | 4751828 |
| Manganese | 1.31 | | 0.005 | 1 | 11/06/08 13:54 | AL_H | 4755588 |
| Molybdenum | ND | | 0.01 | 1 | 11/06/08 23:55 | AL_H | 4757052 |
| Nickel | 0.0189 | | 0.005 | 1 | 11/04/08 15:25 | AL_H | 4751828 |
| Selenium | ND | | 0.005 | 1 | 11/06/08 13:54 | AL_H | 4755588 |
| Silver | ND | | 0.005 | 1 | 11/06/08 13:54 | AL_H | 4755588 |
| Thallium | ND | | 0.005 | 1 | 11/06/08 13:54 | AL_H | 4755588 |
| Tungsten | ND | | 0.01 | 1 | 11/08/08 21:23 | BDG | 4759511 |
| Vanadium | 0.0107 | | 0.005 | 1 | 11/04/08 15:25 | AL_H | 4751828 |
| Zinc | 0.0209 | | 0.01 | 1 | 11/04/08 15:25 | AL_H | 4751828 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3010A | 10/31/2008 15:00 | BDG | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **NITRATE NITROGEN (AS N), TOTAL** | | | | **MCL** | **E353.2** | **Units: mg/L** | |
| Nitrogen,Nitrate (As N) | 0.825 | | 0.5 | 1 | 11/03/08 15:17 | TW | 4757599 |

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

**Client Sample ID:** MW-3 **Collected:** 10/24/2008 15:35 **SPL Sample ID:** 08101597-05

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **SEMIVOLATILE ORGANICS BY METHOD 8270C** | | | | **MCL** | **SW8270C** | **Units: ug/L** | |
| 1,2,4-Trichlorobenzene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 1,2-Dichlorobenzene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 1,2-Diphenylhydrazine | ND | | 410 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 1,3-Dichlorobenzene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 1,4-Dichlorobenzene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2,4,5-Trichlorophenol | ND | | 410 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2,4,6-Trichlorophenol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2,4-Dichlorophenol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2,4-Dimethylphenol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2,4-Dinitrophenol | ND | | 1000 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2,4-Dinitrotoluene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2,6-Dinitrotoluene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2-Chloronaphthalene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2-Chlorophenol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2-Methylnaphthalene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2-Nitroaniline | ND | | 1000 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2-Nitrophenol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 3,3'-Dichlorobenzidine | ND | | 410 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 3-Nitroaniline | ND | | 1000 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 4,6-Dinitro-2-methylphenol | ND | | 1000 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 4-Bromophenyl phenyl ether | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 4-Chloro-3-methylphenol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 4-Chloroaniline | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 4-Chlorophenyl phenyl ether | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 4-Nitroaniline | ND | | 1000 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 4-Nitrophenol | ND | | 1000 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Acenaphthene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Acenaphthylene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Aniline | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Anthracene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Benz(a)anthracene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Benzo(a)pyrene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Benzo(b)fluoranthene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Benzo(g,h,i)perylene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Benzo(k)fluoranthene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Benzoic acid | ND | | 1000 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Benzyl alcohol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Bis(2-chloroethoxy)methane | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Bis(2-chloroethyl)ether | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |

**Qualifiers:**

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J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** MW-3 **Collected:** 10/24/2008 15:35 **SPL Sample ID:** 08101597-05

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| Bis(2-chloroisopropyl)ether | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Bis(2-ethylhexyl)phthalate | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Butyl benzyl phthalate | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Carbazole | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Chrysene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Dibenz(a,h)anthracene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Dibenzofuran | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Diethyl phthalate | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Dimethyl phthalate | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Di-n-butyl phthalate | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Di-n-octyl phthalate | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Fluoranthene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Fluorene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Hexachlorobenzene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Hexachlorobutadiene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Hexachlorocyclopentadiene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Hexachloroethane | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Indeno(1,2,3-cd)pyrene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Isophorone | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Naphthalene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Nitrobenzene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| N-Nitrosodi-n-propylamine | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| N-Nitrosodiphenylamine | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Pentachlorophenol | ND | | 1000 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Phenanthrene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Phenol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Pyrene | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Pyridine | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 2-Methylphenol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| 3 & 4-Methylphenol | ND | | 200 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Surr: 2,4,6-Tribromophenol | D | | % 10-123 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Surr: 2-Fluorobiphenyl | D | | % 23-116 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Surr: 2-Fluorophenol | D | | % 16-110 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Surr: Nitrobenzene-d5 | D | | % 21-114 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Surr: Phenol-d5 | D | | % 10-110 | 1 | 11/06/08 13:57 | GY | 4755636 |
| Surr: Terphenyl-d14 | D | | % 22-141 | 1 | 11/06/08 13:57 | GY | 4755636 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3510C | 10/30/2008 16:53 | LLL | 41.00 |

**Qualifiers:**

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J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-3 **Collected:** 10/24/2008 15:35 **SPL Sample ID:** 08101597-05

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| 1,1,1,2-Tetrachloroethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,1,1-Trichloroethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,1,2,2-Tetrachloroethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,1,2-Trichloroethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,1-Dichloroethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,1-Dichloroethene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,1-Dichloropropene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2,3-Trichlorobenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2,3-Trichloropropane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2,4-Trichlorobenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2,4-Trimethylbenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2-Dibromo-3-chloropropane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2-Dibromoethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2-Dichloroethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2-Dichloropropane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,3,5-Trimethylbenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,3-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,3-Dichloropropane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,4-Dichlorobenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 2,2-Dichloropropane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 2-Butanone | ND | | 20 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 2-Chloroethyl vinyl ether | ND | | 10 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 2-Chlorotoluene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 2-Hexanone | ND | | 10 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 4-Chlorotoluene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 4-Isopropyltoluene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 4-Methyl-2-pentanone | ND | | 10 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Acetone | ND | | 100 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Acrylonitrile | ND | | 50 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Benzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Bromobenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Bromochloromethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Bromodichloromethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Bromoform | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Bromomethane | ND | | 10 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Carbon disulfide | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Carbon tetrachloride | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Chlorobenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |

**Qualifiers:**

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* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

**Client Sample ID:** MW-3 **Collected:** 10/24/2008 15:35 **SPL Sample ID:** 08101597-05

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| Chloroethane | ND | | 10 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Chloroform | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Chloromethane | ND | | 10 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Dibromochloromethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Dibromomethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Dichlorodifluoromethane | ND | | 10 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Ethylbenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Hexachlorobutadiene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Isopropylbenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Methyl tert-butyl ether | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Methylene chloride | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Naphthalene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| n-Butylbenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| n-Propylbenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| sec-Butylbenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Styrene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| tert-Butylbenzene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Tetrachloroethene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Toluene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Trichloroethene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Trichlorofluoromethane | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Vinyl acetate | ND | | 10 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Vinyl chloride | ND | | 10 | 1 | 11/05/08 21:27 | LT | 4754095 |
| cis-1,2-Dichloroethene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| cis-1,3-Dichloropropene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| m,p-Xylene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| o-Xylene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| trans-1,2-Dichloroethene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| trans-1,3-Dichloropropene | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| 1,2-Dichloroethene (total) | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Xylenes,Total | ND | | 5 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Surr: 1,2-Dichloroethane-d4 | 106 | | % 62-130 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Surr: 4-Bromofluorobenzene | 96.0 | | % 70-130 | 1 | 11/05/08 21:27 | LT | 4754095 |
| Surr: Toluene-d8 | 106 | | % 74-122 | 1 | 11/05/08 21:27 | LT | 4754095 |

**Qualifiers:**

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J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
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**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

**Client Sample ID:** Trip Blank **Collected:** 10/24/2008 0:00 **SPL Sample ID:** 08101597-06

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | | 5 | 1 | 11/05/08 18:11 | LT | 4754088 |
| Ethylbenzene | ND | | | 5 | 1 | 11/05/08 18:11 | LT | 4754088 |
| Toluene | ND | | | 5 | 1 | 11/05/08 18:11 | LT | 4754088 |
| m,p-Xylene | ND | | | 5 | 1 | 11/05/08 18:11 | LT | 4754088 |
| o-Xylene | ND | | | 5 | 1 | 11/05/08 18:11 | LT | 4754088 |
| Xylenes,Total | ND | | | 5 | 1 | 11/05/08 18:11 | LT | 4754088 |
| Surr: 1,2-Dichloroethane-d4 | 110 | | % | 62-130 | 1 | 11/05/08 18:11 | LT | 4754088 |
| Surr: 4-Bromofluorobenzene | 96.0 | | % | 70-130 | 1 | 11/05/08 18:11 | LT | 4754088 |
| Surr: Toluene-d8 | 108 | | % | 74-122 | 1 | 11/05/08 18:11 | LT | 4754088 |

**Qualifiers:**

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B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

# *Quality Control Documentation*

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

# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Diesel Range Organics
**Method:** SW8015B
**WorkOrder:** 08101597
**Lab Batch ID:** 84920

**Method Blank**

RunID: HP_Z_081106A-4757246 Units: mg/L
Analysis Date: 11/06/2008 14:26 Analyst: NW
Preparation Date: 10/29/2008 18:43 Prep By: N_M Method SW3510C

| Analyte | Result | Rep Limit |
|---|---|---|
| Diesel Range Organics (C10-C28) | ND | 0.10 |
| Surr: n-Pentacosane | 57.8 | 20-150 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01D | MW-2 |
| 08101597-04D | MW-4 |
| 08101597-05D | MW-3 |

**Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

RunID: HP_Z_081106A-4757247 Units: mg/L
Analysis Date: 11/06/2008 14:48 Analyst: NW
Preparation Date: 10/29/2008 18:43 Prep By: N_M Method SW3510C

| Analyte | LCS Spike Added | LCS Result | LCS Percent Recovery | LCSD Spike Added | LCSD Result | LCSD Percent Recovery | RPD | RPD Limit | Lower Limit | Upper Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (C10-C28) | 2.00 | 1.90 | 94.9 | 2.00 | 2.07 | 104 | 8.8 | 20 | 21 | 130 |
| Surr: n-Pentacosane | 0.0500 | 0.0443 | 88.6 | 0.0500 | 0.0478 | 95.6 | 7.6 | 30 | 20 | 150 |

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E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Diesel Range Organics
**Method:** SW8015B
**WorkOrder:** 08101597
**Lab Batch ID:** 84925

**Method Blank**

RunID: HP_Z_081102B-4750378 Units: mg/L
Analysis Date: 11/02/2008 15:11 Analyst: NW
Preparation Date: 10/30/2008 10:38 Prep By: JDM Method SW3510C

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-02D | MW-1 |

| Analyte | Result | Rep Limit |
|---|---|---|
| Diesel Range Organics (C10-C28) | ND | 0.10 |
| Surr: n-Pentacosane | 85.6 | 20-150 |

**Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

RunID: HP_Z_081102B-4750379 Units: mg/L
Analysis Date: 11/02/2008 15:33 Analyst: NW
Preparation Date: 10/30/2008 10:38 Prep By: JDM Method SW3510C

| Analyte | LCS Spike Added | LCS Result | LCS Percent Recovery | LCSD Spike Added | LCSD Result | LCSD Percent Recovery | RPD | RPD Limit | Lower Limit | Upper Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (C10-C28) | 2.00 | 2.09 | 104 | 2.00 | 2.03 | 102 | 2.7 | 20 | 21 | 130 |
| Surr: n-Pentacosane | 0.0500 | 0.0469 | 93.8 | 0.0500 | 0.0440 | 88.0 | 6.4 | 30 | 20 | 150 |

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E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Gasoline Range Organics
**Method:** SW8015B
**WorkOrder:** 08101597
**Lab Batch ID:** R255738

### Method Blank

RunID: HP_P_081102A-4747577 Units: mg/L
Analysis Date: 11/02/2008 4:16 Analyst: WLV
Preparation Date: 11/02/2008 4:16 Prep By: Method SW5030B

| Analyte | Result | Rep Limit |
|---|---|---|
| Gasoline Range Organics | ND | 0.10 |
| Surr: 1,4-Difluorobenzene | 89.3 | 60-155 |
| Surr: 4-Bromofluorobenzene | 90.4 | 50-158 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01B | MW-2 |
| 08101597-02C | MW-1 |
| 08101597-04B | MW-4 |
| 08101597-05B | MW-3 |

### Laboratory Control Sample (LCS)

RunID: HP_P_081102A-4747576 Units: mg/L
Analysis Date: 11/02/2008 3:19 Analyst: WLV
Preparation Date: 11/02/2008 3:19 Prep By: Method SW5030B

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Gasoline Range Organics | 1.00 | 0.812 | 81.2 | 42 | 136 |
| Surr: 1,4-Difluorobenzene | 0.100 | 0.0932 | 93.2 | 60 | 155 |
| Surr: 4-Bromofluorobenzene | 0.100 | 0.104 | 104 | 50 | 158 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101530-01
RunID: HP_P_081102A-4747588 Units: mg/L
Analysis Date: 11/02/2008 9:29 Analyst: WLV

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | ND | 1 | 0.672 | 67.2 | 1 | 0.470 | 47.0 | 35.4 | 36 | 22 | 174 |
| Surr: 1,4-Difluorobenzene | ND | 0.1 | 0.0942 | 94.2 | 0.1 | 0.0927 | 92.7 | 1.61 | 30 | 60 | 155 |
| Surr: 4-Bromofluorobenzene | ND | 0.1 | 0.0907 | 90.7 | 0.1 | 0.0918 | 91.8 | 1.21 | 30 | 50 | 158 |

**Qualifiers:**

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E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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8880 INTERCHANGE DRIVE
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6020A, Total
**Method:** SW6020A
**WorkOrder:** 08101597
**Lab Batch ID:** 85019b-I

### Method Blank

RunID: ICPMS_081108A-4759498 Units: mg/L
Analysis Date: 11/08/2008 20:19 Analyst: BDG
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Result | Rep Limit |
|---|---|---|
| Tungsten | ND | 0.01 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01C | MW-2 |
| 08101597-02B | MW-1 |
| 08101597-04C | MW-4 |
| 08101597-05C | MW-3 |

### Laboratory Control Sample (LCS)

RunID: ICPMS_081108A-4759499 Units: mg/L
Analysis Date: 11/08/2008 20:24 Analyst: BDG
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Tungsten | 0.1000 | 0.09737 | 97.37 | 80 | 120 |

### Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 08101725-02
RunID: ICPMS_081108A-4759504 Units: mg/L
Analysis Date: 11/08/2008 20:49 Analyst: BDG

| Analyte | Sample Result | PDS Spike Added | PDS Result | PDS % Recovery | PDSD Spike Added | PDSD Result | PDSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tungsten | ND | 0.1 | 0 | 10.05 * | 0.1 | D | 0 * | 200.0 * | 20 | 75 | 125 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101725-02
RunID: ICPMS_081108A-4759501 Units: mg/L
Analysis Date: 11/08/2008 20:34 Analyst: BDG
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tungsten | ND | 0.1 | 0.06335 | 63.35 * | 0.1 | 0.1042 | 104.2 | 48.76 * | 20 | 75 | 125 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

| | | | |
|---|---|---|---|
| **Analysis:** | **Metals by Method 6020A, Total** | **WorkOrder:** | **08101597** |
| **Method:** | **SW6020A** | **Lab Batch ID:** | **85019b-I** |

**Qualifiers:**

- ND/U - Not Detected at the Reporting Limit
- B/V - Analyte detected in the associated Method Blank
- J - Estimated value between MDL and PQL
- E - Estimated Value exceeds calibration curve
- MI - Matrix Interference
- D - Recovery Unreportable due to Dilution
- * - Recovery Outside Advisable QC Limits
- N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
- TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6010B, Total **WorkOrder:** 08101597
**Method:** SW6010B **Lab Batch ID:** 85019c

### Method Blank

RunID: TJA_081104A-4752057 Units: mg/L
Analysis Date: 11/04/2008 22:40 Analyst: S_C
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Result | Rep Limit |
|---|---|---|
| Calcium | ND | 0.1 |
| Iron | ND | 0.02 |
| Magnesium | ND | 0.1 |
| Potassium | ND | 2 |
| Sodium | ND | 0.5 |
| Strontium | ND | 0.02 |
| Titanium | ND | 0.02 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01C | MW-2 |
| 08101597-02B | MW-1 |
| 08101597-04C | MW-4 |
| 08101597-05C | MW-3 |

### Laboratory Control Sample (LCS)

RunID: TJA_081104A-4752058 Units: mg/L
Analysis Date: 11/04/2008 22:44 Analyst: S_C
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Calcium | 1.000 | 1.052 | 105.2 | 80 | 120 |
| Iron | 1.000 | 1.005 | 100.5 | 80 | 120 |
| Magnesium | 1.000 | 1.005 | 100.5 | 80 | 120 |
| Potassium | 10.00 | 11.33 | 113.3 | 80 | 120 |
| Sodium | 1.000 | 1.079 | 107.9 | 80 | 120 |
| Strontium | 1.000 | 0.9950 | 99.50 | 80 | 120 |
| Titanium | 1.000 | 0.9837 | 98.37 | 80 | 120 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101725-02
RunID: TJA_081104A-4752060 Units: mg/L
Analysis Date: 11/04/2008 22:53 Analyst: S_C
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 1026 | 1 | 1001 | N/C | 1 | 1055 | N/C | N/C | 20 | 75 | 125 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

**Analysis:** Metals by Method 6010B, Total
**Method:** SW6010B
**WorkOrder:** 08101597
**Lab Batch ID:** 85019c

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08101725-02
RunID: TJA_081104A-4752060 Units: mg/L
Analysis Date: 11/04/2008 22:53 Analyst: S_C
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Iron | 0.5156 | 1 | 1.480 | 96.44 | 1 | 1.502 | 98.59 | 1.440 | 20 | 75 | 125 |
| Magnesium | 1406 | 1 | 1370 | N/C | 1 | 1442 | N/C | N/C | 20 | 75 | 125 |
| Potassium | 75.52 | 10 | 84.67 | N/C | 10 | 88.61 | N/C | N/C | 20 | 75 | 125 |
| Sodium | 4678 | 1 | 4547 | N/C | 1 | 4751 | N/C | N/C | 20 | 75 | 125 |
| Strontium | 9.510 | 1 | 10.24 | N/C | 1 | 10.71 | N/C | N/C | 20 | 75 | 125 |
| Titanium | ND | 1 | 1.004 | 98.94 | 1 | 0.9944 | 97.94 | 1.001 | 20 | 75 | 125 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6020A, Total
**Method:** SW6020A
**WorkOrder:** 08101597
**Lab Batch ID:** 85019d-I

### Method Blank

RunID: ICPMS_081104A-4750503 Units: mg/L
Analysis Date: 11/04/2008 13:42 Analyst: AL_H
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Result | Rep Limit |
|---|---|---|
| Aluminum | ND | 0.01 |
| Antimony | ND | 0.005 |
| Arsenic | ND | 0.005 |
| Barium | ND | 0.005 |
| Beryllium | ND | 0.004 |
| Cadmium | ND | 0.005 |
| Chromium | ND | 0.005 |
| Cobalt | ND | 0.005 |
| Copper | ND | 0.005 |
| Lead | ND | 0.005 |
| Manganese | ND | 0.005 |
| Nickel | ND | 0.005 |
| Selenium | ND | 0.005 |
| Silver | ND | 0.005 |
| Thallium | ND | 0.005 |
| Vanadium | ND | 0.005 |
| Zinc | ND | 0.01 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01C | MW-2 |
| 08101597-02B | MW-1 |
| 08101597-04C | MW-4 |
| 08101597-05C | MW-3 |

### Laboratory Control Sample (LCS)

RunID: ICPMS_081104A-4750511 Units: mg/L
Analysis Date: 11/04/2008 14:41 Analyst: AL_H
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Aluminum | 0.1000 | 0.1152 | 115.2 | 80 | 120 |
| Antimony | 0.1000 | 0.09399 | 93.99 | 80 | 120 |
| Arsenic | 0.1000 | 0.1014 | 101.4 | 80 | 120 |
| Barium | 0.1000 | 0.09790 | 97.90 | 80 | 120 |
| Beryllium | 0.1000 | 0.08633 | 86.33 | 80 | 120 |
| Cadmium | 0.1000 | 0.09410 | 94.10 | 80 | 120 |
| Chromium | 0.1000 | 0.09262 | 92.62 | 80 | 120 |
| Cobalt | 0.1000 | 0.09695 | 96.95 | 80 | 120 |
| Copper | 0.1000 | 0.09632 | 96.32 | 80 | 120 |
| Lead | 0.1000 | 0.09830 | 98.30 | 80 | 120 |
| Manganese | 0.1000 | 0.1028 | 102.8 | 80 | 120 |
| Nickel | 0.1000 | 0.09447 | 94.47 | 80 | 120 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6020A, Total **WorkOrder:** 08101597
**Method:** SW6020A **Lab Batch ID:** 85019d-I

### Laboratory Control Sample (LCS)

RunID: ICPMS_081104A-4750511 Units: mg/L
Analysis Date: 11/04/2008 14:41 Analyst: AL_H
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Selenium | 0.1000 | 0.1038 | 103.8 | 80 | 120 |
| Silver | 0.1000 | 0.09411 | 94.11 | 80 | 120 |
| Thallium | 0.1000 | 0.09561 | 95.61 | 80 | 120 |
| Vanadium | 0.1000 | 0.09699 | 96.99 | 80 | 120 |
| Zinc | 0.1000 | 0.09526 | 95.26 | 80 | 120 |

### Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 08101725-02
RunID: ICPMS_081104A-4750512 Units: mg/L
Analysis Date: 11/04/2008 14:46 Analyst: AL_H

| Analyte | Sample Result | PDS Spike Added | PDS Result | PDS % Recovery | PDSD Spike Added | PDSD Result | PDSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.1 | 0.08224 | 82.24 | 0.1 | 0.08123 | 81.23 | 1.236 | 20 | 75 | 125 |
| Arsenic | 0.00857 | 0.1 | 0.08618 | 77.61 | 0.1 | 0.0854 | 76.83 | 0.9092 | 20 | 75 | 125 |
| Beryllium | ND | 0.1 | 0.06681 | 66.81 * | 0.1 | 0.064 | 64.00 * | 4.296 | 20 | 75 | 125 |
| Cadmium | ND | 0.1 | 0.06186 | 61.86 * | 0.1 | 0.06181 | 61.81 * | 0.08086 | 20 | 75 | 125 |
| Cobalt | 0.0152 | 0.1 | 0.0873 | 72.07 * | 0.1 | 0.08589 | 70.66 * | 1.628 | 20 | 75 | 125 |
| Copper | 0.00783 | 0.1 | 0.08386 | 76.03 | 0.1 | 0.08249 | 74.66 * | 1.647 | 20 | 75 | 125 |
| Nickel | 0.0187 | 0.1 | 0.08824 | 69.58 * | 0.1 | 0.08896 | 70.30 * | 0.8126 | 20 | 75 | 125 |
| Silver | ND | 0.1 | 0.06299 | 62.99 * | 0.1 | 0.06274 | 62.74 * | 0.3977 | 20 | 75 | 125 |
| Vanadium | ND | 0.1 | 0.08254 | 82.54 | 0.1 | 0.08095 | 80.95 | 1.945 | 20 | 75 | 125 |
| Zinc | 0.0157 | 0.1 | 0.07701 | 61.27 * | 0.1 | 0.07431 | 58.57 * | 3.569 | 20 | 75 | 125 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101725-02
RunID: ICPMS_081104A-4750505 Units: mg/L
Analysis Date: 11/04/2008 13:56 Analyst: AL_H
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6020A, Total **WorkOrder:** 08101597
**Method:** SW6020A **Lab Batch ID:** 85019d-I

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | ND | 0.1 | 0.09068 | 84.12 | 0.1 | 0.09121 | 84.65 | 0.5828 | 20 | 75 | 125 |
| Antimony | ND | 0.1 | 0.07431 | 74.31 * | 0.1 | 0.07191 | 71.91 * | 3.283 | 20 | 75 | 125 |
| Arsenic | 0.008570 | 0.1 | 0.08153 | 72.96 * | 0.1 | 0.08008 | 71.51 * | 1.794 | 20 | 75 | 125 |
| Barium | 0.03462 | 0.1 | 0.1285 | 93.88 | 0.1 | 0.1218 | 87.18 | 5.354 | 20 | 75 | 125 |
| Beryllium | ND | 0.1 | 0.06291 | 62.91 * | 0.1 | 0.05911 | 59.11 * | 6.228 | 20 | 75 | 125 |
| Cadmium | ND | 0.1 | 0.06051 | 60.51 * | 0.1 | 0.05932 | 59.32 * | 1.986 | 20 | 75 | 125 |
| Chromium | ND | 0.1 | 0.07857 | 78.57 | 0.1 | 0.07566 | 75.66 | 3.774 | 20 | 75 | 125 |
| Cobalt | 0.01523 | 0.1 | 0.08216 | 66.93 * | 0.1 | 0.08023 | 65.00 * | 2.377 | 20 | 75 | 125 |
| Copper | 0.007831 | 0.1 | 0.07688 | 69.05 * | 0.1 | 0.07571 | 67.88 * | 1.534 | 20 | 75 | 125 |
| Lead | ND | 0.1 | 0.1001 | 100.1 | 0.1 | 0.1008 | 100.8 | 0.6969 | 20 | 75 | 125 |
| Manganese | 14.05 | 0.1 | 14.51 | N/C | 0.1 | 13.94 | N/C | N/C | 20 | 75 | 125 |
| Nickel | 0.01866 | 0.1 | 0.08439 | 65.73 * | 0.1 | 0.08412 | 65.46 * | 0.3205 | 20 | 75 | 125 |
| Selenium | 0.02830 | 0.1 | 0.1066 | 78.30 | 0.1 | 0.1125 | 84.20 | 5.386 | 20 | 75 | 125 |
| Silver | ND | 0.1 | 0.06497 | 64.97 * | 0.1 | 0.06439 | 64.39 * | 0.8967 | 20 | 75 | 125 |
| Thallium | ND | 0.1 | 0.1096 | 106.7 | 0.1 | 0.1138 | 110.9 | 3.760 | 20 | 75 | 125 |
| Vanadium | ND | 0.1 | 0.07671 | 76.71 | 0.1 | 0.07391 | 73.91 * | 3.718 | 20 | 75 | 125 |
| Zinc | 0.01574 | 0.1 | 0.07097 | 55.23 * | 0.1 | 0.07069 | 54.95 * | 0.3953 | 20 | 75 | 125 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Metals by Method 6020A, Total
**Method:** SW6020A
**WorkOrder:** 08101597
**Lab Batch ID:** 85019-I

### Method Blank

RunID: ICPMS_081106A-4757039 Units: mg/L
Analysis Date: 11/06/2008 22:50 Analyst: AL_H
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Result | Rep Limit |
|---|---|---|
| Molybdenum | ND | 0.01 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01C | MW-2 |
| 08101597-02B | MW-1 |
| 08101597-04C | MW-4 |
| 08101597-05C | MW-3 |

### Laboratory Control Sample (LCS)

RunID: ICPMS_081106A-4757040 Units: mg/L
Analysis Date: 11/06/2008 22:55 Analyst: AL_H
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Molybdenum | 0.1000 | 0.1020 | 102.0 | 80 | 120 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101725-02
RunID: ICPMS_081106A-4757042 Units: mg/L
Analysis Date: 11/06/2008 23:05 Analyst: AL_H
Preparation Date: 10/31/2008 15:00 Prep By: BDG Method SW3010A

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | ND | 0.1 | 0.1032 | 98.59 | 0.1 | 0.1048 | 100.2 | 1.538 | 20 | 75 | 125 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Mercury, Total
**Method:** SW7470A
**WorkOrder:** 08101597
**Lab Batch ID:** 85178

### Method Blank

RunID: HGLC_081106A-4755670 Units: mg/L
Analysis Date: 11/06/2008 13:32 Analyst: F_S
Preparation Date: 11/06/2008 13:18 Prep By: F_S Method SW7470A

| Analyte | Result | Rep Limit |
|---|---|---|
| Mercury | ND | 0.0002 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01C | MW-2 |
| 08101597-02B | MW-1 |
| 08101597-04C | MW-4 |
| 08101597-05C | MW-3 |

### Laboratory Control Sample (LCS)

RunID: HGLC_081106A-4755671 Units: mg/L
Analysis Date: 11/06/2008 13:35 Analyst: F_S
Preparation Date: 11/06/2008 13:18 Prep By: F_S Method SW7470A

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Mercury | 0.002000 | 0.001983 | 99.15 | 80 | 120 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101734-09
RunID: HGLC_081106A-4755673 Units: mg/L
Analysis Date: 11/06/2008 13:39 Analyst: F_S
Preparation Date: 11/06/2008 13:18 Prep By: F_S Method SW7470A

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.002 | 0.001885 | 94.26 | 0.002 | 0.001843 | 92.14 | 2.266 | 20 | 75 | 125 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C
**Method:** SW8270C
**WorkOrder:** 08101597
**Lab Batch ID:** 84949

**Method Blank**

RunID: H_081106B-4755273 Units: ug/L
Analysis Date: 11/06/2008 10:56 Analyst: GY
Preparation Date: 10/30/2008 16:53 Prep By: LLL Method SW3510C

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01F | MW-2 |
| 08101597-02F | MW-1 |
| 08101597-04F | MW-4 |
| 08101597-05F | MW-3 |

| Analyte | Result | Rep Limit |
|---|---|---|
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Diphenylhydrazine | ND | 10 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| 2,4,5-Trichlorophenol | ND | 10 |
| 2,4,6-Trichlorophenol | ND | 5.0 |
| 2,4-Dichlorophenol | ND | 5.0 |
| 2,4-Dimethylphenol | ND | 5.0 |
| 2,4-Dinitrophenol | ND | 25 |
| 2,4-Dinitrotoluene | ND | 5.0 |
| 2,6-Dinitrotoluene | ND | 5.0 |
| 2-Chloronaphthalene | ND | 5.0 |
| 2-Chlorophenol | ND | 5.0 |
| 2-Methylnaphthalene | ND | 5.0 |
| 2-Nitroaniline | ND | 25 |
| 2-Nitrophenol | ND | 5.0 |
| 3,3'-Dichlorobenzidine | ND | 10 |
| 3-Nitroaniline | ND | 25 |
| 4,6-Dinitro-2-methylphenol | ND | 25 |
| 4-Bromophenyl phenyl ether | ND | 5.0 |
| 4-Chloro-3-methylphenol | ND | 5.0 |
| 4-Chloroaniline | ND | 5.0 |
| 4-Chlorophenyl phenyl ether | ND | 5.0 |
| 4-Nitroaniline | ND | 25 |
| 4-Nitrophenol | ND | 25 |
| Acenaphthene | ND | 5.0 |
| Acenaphthylene | ND | 5.0 |
| Aniline | ND | 5.0 |
| Anthracene | ND | 5.0 |
| Benz(a)anthracene | ND | 5.0 |
| Benzo(a)pyrene | ND | 5.0 |
| Benzo(b)fluoranthene | ND | 5.0 |
| Benzo(g,h,i)perylene | ND | 5.0 |
| Benzo(k)fluoranthene | ND | 5.0 |
| Benzoic acid | ND | 25 |
| Benzyl alcohol | ND | 5.0 |
| Bis(2-chloroethoxy)methane | ND | 5.0 |
| Bis(2-chloroethyl)ether | ND | 5.0 |
| Bis(2-chloroisopropyl)ether | ND | 5.0 |
| Bis(2-ethylhexyl)phthalate | ND | 5.0 |
| Butyl benzyl phthalate | ND | 5.0 |
| Carbazole | ND | 5.0 |
| Chrysene | ND | 5.0 |
| Dibenz(a,h)anthracene | ND | 5.0 |
| Dibenzofuran | ND | 5.0 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C
**Method:** SW8270C
**WorkOrder:** 08101597
**Lab Batch ID:** 84949

### Method Blank

RunID: H_081106B-4755273 Units: ug/L
Analysis Date: 11/06/2008 10:56 Analyst: GY
Preparation Date: 10/30/2008 16:53 Prep By: LLL Method SW3510C

| Analyte | Result | Rep Limit |
|---|---|---|
| Diethyl phthalate | ND | 5.0 |
| Dimethyl phthalate | ND | 5.0 |
| Di-n-butyl phthalate | ND | 5.0 |
| Di-n-octyl phthalate | ND | 5.0 |
| Fluoranthene | ND | 5.0 |
| Fluorene | ND | 5.0 |
| Hexachlorobenzene | ND | 5.0 |
| Hexachlorobutadiene | ND | 5.0 |
| Hexachlorocyclopentadiene | ND | 5.0 |
| Hexachloroethane | ND | 5.0 |
| Indeno(1,2,3-cd)pyrene | ND | 5.0 |
| Isophorone | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| Nitrobenzene | ND | 5.0 |
| N-Nitrosodi-n-propylamine | ND | 5.0 |
| N-Nitrosodiphenylamine | ND | 5.0 |
| Pentachlorophenol | ND | 25 |
| Phenanthrene | ND | 5.0 |
| Phenol | ND | 5.0 |
| Pyrene | ND | 5.0 |
| Pyridine | ND | 5.0 |
| 2-Methylphenol | ND | 5.0 |
| 3 & 4-Methylphenol | ND | 5.0 |
| Surr: 2,4,6-Tribromophenol | 76.0 | 10-123 |
| Surr: 2-Fluorobiphenyl | 82.0 | 23-116 |
| Surr: 2-Fluorophenol | 78.7 | 16-110 |
| Surr: Nitrobenzene-d5 | 76.0 | 21-114 |
| Surr: Phenol-d5 | 85.3 | 10-110 |
| Surr: Terphenyl-d14 | 80.0 | 22-141 |

### Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

RunID: H_081106B-4755274 Units: ug/L
Analysis Date: 11/06/2008 11:26 Analyst: GY
Preparation Date: 10/30/2008 16:53 Prep By: LLL Method SW3510C

| Analyte | LCS Spike Added | LCS Result | LCS Percent Recovery | LCSD Spike Added | LCSD Result | LCSD Percent Recovery | RPD | RPD Limit | Lower Limit | Upper Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene | 25.0 | 19.0 | 76.0 | 25.0 | 20.0 | 80.0 | 5.1 | 39 | 21 | 120 |
| 1,2-Dichlorobenzene | 25.0 | 20.0 | 80.0 | 25.0 | 20.0 | 80.0 | 0.0 | 50 | 20 | 150 |

**Qualifiers:**

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B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
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## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C
**Method:** SW8270C
**WorkOrder:** 08101597
**Lab Batch ID:** 84949

**Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

RunID: H_081106B-4755274 Units: ug/L
Analysis Date: 11/06/2008 11:26 Analyst: GY
Preparation Date: 10/30/2008 16:53 Prep By: LLL Method SW3510C

| Analyte | LCS Spike Added | LCS Result | LCS Percent Recovery | LCSD Spike Added | LCSD Result | LCSD Percent Recovery | RPD | RPD Limit | Lower Limit | Upper Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Diphenylhydrazine | 25.0 | 18.0 | 72.0 | 25.0 | 19.0 | 76.0 | 5.4 | 50 | 10 | 251 |
| 1,3-Dichlorobenzene | 25.0 | 19.0 | 76.0 | 25.0 | 20.0 | 80.0 | 5.1 | 50 | 20 | 150 |
| 1,4-Dichlorobenzene | 25.0 | 20.0 | 80.0 | 25.0 | 20.0 | 80.0 | 0.0 | 45 | 20 | 150 |
| 2,4,5-Trichlorophenol | 25.0 | 20.0 | 80.0 | 25.0 | 23.0 | 92.0 | 14.0 | 50 | 30 | 150 |
| 2,4,6-Trichlorophenol | 25.0 | 20.0 | 80.0 | 25.0 | 22.0 | 88.0 | 9.5 | 50 | 30 | 150 |
| 2,4-Dichlorophenol | 25.0 | 20.0 | 80.0 | 25.0 | 21.0 | 84.0 | 4.9 | 50 | 30 | 150 |
| 2,4-Dimethylphenol | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 50 | 32 | 140 |
| 2,4-Dinitrophenol | 25.0 | 14.0 | 56.0 | 25.0 | 15.0 | 60.0 | 6.9 | 50 | 10 | 160 |
| 2,4-Dinitrotoluene | 25.0 | 22.0 | 88.0 | 25.0 | 24.0 | 96.0 | 8.7 | 50 | 30 | 150 |
| 2,6-Dinitrotoluene | 25.0 | 20.0 | 80.0 | 25.0 | 23.0 | 92.0 | 14.0 | 50 | 30 | 150 |
| 2-Chloronaphthalene | 25.0 | 22.0 | 88.0 | 25.0 | 24.0 | 96.0 | 8.7 | 50 | 30 | 150 |
| 2-Chlorophenol | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 40 | 23 | 134 |
| 2-Methylnaphthalene | 25.0 | 22.0 | 88.0 | 25.0 | 23.0 | 92.0 | 4.4 | 50 | 20 | 170 |
| 2-Nitroaniline | 25.0 | 22.0 | 88.0 | 25.0 | 24.0 | 96.0 | 8.7 | 50 | 20 | 160 |
| 2-Nitrophenol | 25.0 | 19.0 | 76.0 | 25.0 | 22.0 | 88.0 | 14.6 | 50 | 29 | 182 |
| 3,3'-Dichlorobenzidine | 25.0 | 19.0 | 76.0 | 25.0 | 20.0 | 80.0 | 5.1 | 50 | 30 | 200 |
| 3-Nitroaniline | 25.0 | 19.0 | 76.0 | 25.0 | 22.0 | 88.0 | 14.6 | 50 | 20 | 160 |
| 4,6-Dinitro-2-methylphenol | 25.0 | 17.0 | 68.0 | 25.0 | 18.0 | 72.0 | 5.7 | 50 | 10 | 160 |
| 4-Bromophenyl phenyl ether | 25.0 | 22.0 | 88.0 | 25.0 | 22.0 | 88.0 | 0.0 | 50 | 30 | 150 |
| 4-Chloro-3-methylphenol | 25.0 | 20.0 | 80.0 | 25.0 | 22.0 | 88.0 | 9.5 | 42 | 25 | 160 |
| 4-Chloroaniline | 25.0 | 21.0 | 84.0 | 25.0 | 23.0 | 92.0 | 9.1 | 50 | 20 | 160 |
| 4-Chlorophenyl phenyl ether | 25.0 | 23.0 | 92.0 | 25.0 | 24.0 | 96.0 | 4.3 | 50 | 25 | 158 |
| 4-Nitroaniline | 25.0 | 20.0 | 80.0 | 25.0 | 24.0 | 96.0 | 18.2 | 50 | 20 | 160 |
| 4-Nitrophenol | 25.0 | 18.0 | 72.0 | 25.0 | 20.0 | 80.0 | 10.5 | 50 | 10 | 132 |
| Acenaphthene | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 31 | 30 | 150 |
| Acenaphthylene | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 50 | 33 | 250 |
| Aniline | 50.0 | 41.0 | 82.0 | 50.0 | 44.0 | 88.0 | 7.1 | 50 | 10 | 135 |
| Anthracene | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 50 | 27 | 133 |
| Benz(a)anthracene | 25.0 | 22.0 | 88.0 | 25.0 | 22.0 | 88.0 | 0.0 | 50 | 33 | 143 |
| Benzo(a)pyrene | 25.0 | 19.0 | 76.0 | 25.0 | 20.0 | 80.0 | 5.1 | 50 | 17 | 163 |
| Benzo(b)fluoranthene | 25.0 | 20.0 | 80.0 | 25.0 | 22.0 | 88.0 | 9.5 | 50 | 24 | 159 |
| Benzo(g,h,i)perylene | 25.0 | 22.0 | 88.0 | 25.0 | 23.0 | 92.0 | 4.4 | 50 | 30 | 160 |
| Benzo(k)fluoranthene | 25.0 | 23.0 | 92.0 | 25.0 | 22.0 | 88.0 | 4.4 | 50 | 11 | 162 |

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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C **WorkOrder:** 08101597
**Method:** SW8270C **Lab Batch ID:** 84949

**Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

RunID: H_081106B-4755274 Units: ug/L
Analysis Date: 11/06/2008 11:26 Analyst: GY
Preparation Date: 10/30/2008 16:53 Prep By: LLL Method SW3510C

| Analyte | LCS Spike Added | LCS Result | LCS Percent Recovery | LCSD Spike Added | LCSD Result | LCSD Percent Recovery | RPD | RPD Limit | Lower Limit | Upper Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzoic acid | 25.0 | 40.0 | 160 | 25.0 | 40.0 | 160 | 0.0 | 50 | 10 | 400 |
| Benzyl alcohol | 25.0 | 19.0 | 76.0 | 25.0 | 20.0 | 80.0 | 5.1 | 50 | 30 | 160 |
| Bis(2-chloroethoxy)methane | 25.0 | 33.0 | 132 | 25.0 | 36.0 | 144 | 8.7 | 50 | 33 | 184 |
| Bis(2-chloroethyl)ether | 25.0 | 22.0 | 88.0 | 25.0 | 22.0 | 88.0 | 0.0 | 50 | 12 | 158 |
| Bis(2-chloroisopropyl)ether | 25.0 | 23.0 | 92.0 | 25.0 | 24.0 | 96.0 | 4.3 | 50 | 20 | 160 |
| Bis(2-ethylhexyl)phthalate | 25.0 | 22.0 | 88.0 | 25.0 | 22.0 | 88.0 | 0.0 | 50 | 10 | 158 |
| Butyl benzyl phthalate | 25.0 | 22.0 | 88.0 | 25.0 | 23.0 | 92.0 | 4.4 | 50 | 30 | 160 |
| Carbazole | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 50 | 30 | 150 |
| Chrysene | 25.0 | 22.0 | 88.0 | 25.0 | 22.0 | 88.0 | 0.0 | 50 | 17 | 168 |
| Dibenz(a,h)anthracene | 25.0 | 22.0 | 88.0 | 25.0 | 22.0 | 88.0 | 0.0 | 50 | 30 | 160 |
| Dibenzofuran | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 50 | 30 | 150 |
| Diethyl phthalate | 25.0 | 21.0 | 84.0 | 25.0 | 23.0 | 92.0 | 9.1 | 50 | 30 | 160 |
| Dimethyl phthalate | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 50 | 30 | 160 |
| Di-n-butyl phthalate | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 50 | 30 | 160 |
| Di-n-octyl phthalate | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 50 | 20 | 150 |
| Fluoranthene | 25.0 | 21.0 | 84.0 | 25.0 | 22.0 | 88.0 | 4.7 | 50 | 26 | 137 |
| Fluorene | 25.0 | 21.0 | 84.0 | 25.0 | 23.0 | 92.0 | 9.1 | 50 | 30 | 150 |
| Hexachlorobenzene | 25.0 | 20.0 | 80.0 | 25.0 | 21.0 | 84.0 | 4.9 | 50 | 20 | 150 |
| Hexachlorobutadiene | 25.0 | 19.0 | 76.0 | 25.0 | 20.0 | 80.0 | 5.1 | 50 | 20 | 140 |
| Hexachlorocyclopentadiene | 25.0 | 17.0 | 68.0 | 25.0 | 18.0 | 72.0 | 5.7 | 50 | 10 | 150 |
| Hexachloroethane | 25.0 | 19.0 | 76.0 | 25.0 | 20.0 | 80.0 | 5.1 | 50 | 14 | 120 |
| Indeno(1,2,3-cd)pyrene | 25.0 | 23.0 | 92.0 | 25.0 | 24.0 | 96.0 | 4.3 | 50 | 30 | 160 |
| Isophorone | 25.0 | 22.0 | 88.0 | 25.0 | 24.0 | 96.0 | 8.7 | 50 | 21 | 196 |
| Naphthalene | 25.0 | 20.0 | 80.0 | 25.0 | 21.0 | 84.0 | 4.9 | 50 | 21 | 133 |
| Nitrobenzene | 25.0 | 20.0 | 80.0 | 25.0 | 21.0 | 84.0 | 4.9 | 50 | 20 | 160 |
| N-Nitrosodi-n-propylamine | 25.0 | 22.0 | 88.0 | 25.0 | 23.0 | 92.0 | 4.4 | 38 | 30 | 160 |
| N-Nitrosodiphenylamine | 50.0 | 51.0 | 102 | 50.0 | 52.0 | 104 | 1.9 | 50 | 30 | 150 |
| Pentachlorophenol | 25.0 | 14.0 | 56.0 | 25.0 | 15.0 | 60.0 | 6.9 | 50 | 14 | 176 |
| Phenanthrene | 25.0 | 20.0 | 80.0 | 25.0 | 21.0 | 84.0 | 4.9 | 50 | 10 | 140 |
| Phenol | 25.0 | 21.0 | 84.0 | 25.0 | 23.0 | 92.0 | 9.1 | 42 | 40 | 132 |
| Pyrene | 25.0 | 22.0 | 88.0 | 25.0 | 22.0 | 88.0 | 0.0 | 38 | 30 | 150 |
| Pyridine | 50.0 | 35.0 | 70.0 | 50.0 | 34.0 | 68.0 | 2.9 | 50 | 10 | 150 |
| 2-Methylphenol | 25.0 | 21.0 | 84.0 | 25.0 | 23.0 | 92.0 | 9.1 | 50 | 30 | 160 |

**Qualifiers:**

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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Semivolatile Organics by Method 8270C **WorkOrder:** 08101597
**Method:** SW8270C **Lab Batch ID:** 84949

**Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)**

RunID: H_081106B-4755274 Units: ug/L
Analysis Date: 11/06/2008 11:26 Analyst: GY
Preparation Date: 10/30/2008 16:53 Prep By: LLL Method SW3510C

| Analyte | LCS Spike Added | LCS Result | LCS Percent Recovery | LCSD Spike Added | LCSD Result | LCSD Percent Recovery | RPD | RPD Limit | Lower Limit | Upper Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 & 4-Methylphenol | 25.0 | 19.0 | 76.0 | 25.0 | 21.0 | 84.0 | 10.0 | 50 | 10 | 160 |
| Surr: 2,4,6-Tribromophenol | 75.0 | 64.0 | 85.3 | 75.0 | 70.0 | 93.3 | 9.0 | 30 | 10 | 123 |
| Surr: 2-Fluorobiphenyl | 50.0 | 42.0 | 84.0 | 50.0 | 41.0 | 82.0 | 2.4 | 30 | 23 | 116 |
| Surr: 2-Fluorophenol | 75.0 | 62.0 | 82.7 | 75.0 | 65.0 | 86.7 | 4.7 | 30 | 16 | 110 |
| Surr: Nitrobenzene-d5 | 50.0 | 40.0 | 80.0 | 50.0 | 42.0 | 84.0 | 4.9 | 30 | 21 | 114 |
| Surr: Phenol-d5 | 75.0 | 65.0 | 86.7 | 75.0 | 69.0 | 92.0 | 6.0 | 30 | 10 | 110 |
| Surr: Terphenyl-d14 | 50.0 | 42.0 | 84.0 | 50.0 | 42.0 | 84.0 | 0.0 | 30 | 22 | 141 |

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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B
**Method:** SW8260B
**WorkOrder:** 08101597
**Lab Batch ID:** R256099

**Method Blank**

RunID: N_081105B-4754087 Units: ug/L
Analysis Date: 11/05/2008 17:43 Analyst: LT
Preparation Date: 11/05/2008 17:43 Prep By: Method

| Analyte | Result | Rep Limit |
|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 5.0 |
| 1,1,1-Trichloroethane | ND | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 |
| 1,1,2-Trichloroethane | ND | 5.0 |
| 1,1-Dichloroethane | ND | 5.0 |
| 1,1-Dichloroethene | ND | 5.0 |
| 1,1-Dichloropropene | ND | 5.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 |
| 1,2,3-Trichloropropane | ND | 5.0 |
| 1,2,4-Trichlorobenzene | ND | 5.0 |
| 1,2,4-Trimethylbenzene | ND | 5.0 |
| 1,2-Dibromo-3-chloropropane | ND | 5.0 |
| 1,2-Dibromoethane | ND | 5.0 |
| 1,2-Dichlorobenzene | ND | 5.0 |
| 1,2-Dichloroethane | ND | 5.0 |
| 1,2-Dichloropropane | ND | 5.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 |
| 1,3-Dichlorobenzene | ND | 5.0 |
| 1,3-Dichloropropane | ND | 5.0 |
| 1,4-Dichlorobenzene | ND | 5.0 |
| 2,2-Dichloropropane | ND | 5.0 |
| 2-Butanone | ND | 20 |
| 2-Chloroethyl vinyl ether | ND | 10 |
| 2-Chlorotoluene | ND | 5.0 |
| 2-Hexanone | ND | 10 |
| 4-Chlorotoluene | ND | 5.0 |
| 4-Isopropyltoluene | ND | 5.0 |
| 4-Methyl-2-pentanone | ND | 10 |
| Acetone | ND | 100 |
| Acrylonitrile | ND | 50 |
| Benzene | ND | 5.0 |
| Bromobenzene | ND | 5.0 |
| Bromochloromethane | ND | 5.0 |
| Bromodichloromethane | ND | 5.0 |
| Bromoform | ND | 5.0 |
| Bromomethane | ND | 10 |
| Carbon disulfide | ND | 5.0 |
| Carbon tetrachloride | ND | 5.0 |
| Chlorobenzene | ND | 5.0 |
| Chloroethane | ND | 10 |
| Chloroform | ND | 5.0 |
| Chloromethane | ND | 10 |
| Dibromochloromethane | ND | 5.0 |
| Dibromomethane | ND | 5.0 |
| Dichlorodifluoromethane | ND | 10 |
| Ethylbenzene | ND | 5.0 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01A | MW-2 |
| 08101597-02A | MW-1 |
| 08101597-03A | Duplicate |
| 08101597-04A | MW-4 |
| 08101597-05A | MW-3 |
| 08101597-06A | Trip Blank |

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## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B
**Method:** SW8260B
**WorkOrder:** 08101597
**Lab Batch ID:** R256099

### Method Blank

RunID: N_081105B-4754087 Units: ug/L
Analysis Date: 11/05/2008 17:43 Analyst: LT
Preparation Date: 11/05/2008 17:43 Prep By: Method

| Analyte | Result | Rep Limit |
|---|---|---|
| Hexachlorobutadiene | ND | 5.0 |
| Isopropylbenzene | ND | 5.0 |
| Methyl tert-butyl ether | ND | 5.0 |
| Methylene chloride | ND | 5.0 |
| Naphthalene | ND | 5.0 |
| n-Butylbenzene | ND | 5.0 |
| n-Propylbenzene | ND | 5.0 |
| sec-Butylbenzene | ND | 5.0 |
| Styrene | ND | 5.0 |
| tert-Butylbenzene | ND | 5.0 |
| Tetrachloroethene | ND | 5.0 |
| Toluene | ND | 5.0 |
| Trichloroethene | ND | 5.0 |
| Trichlorofluoromethane | ND | 5.0 |
| Vinyl acetate | ND | 10 |
| Vinyl chloride | ND | 10 |
| cis-1,2-Dichloroethene | ND | 5.0 |
| cis-1,3-Dichloropropene | ND | 5.0 |
| m,p-Xylene | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| trans-1,2-Dichloroethene | ND | 5.0 |
| trans-1,3-Dichloropropene | ND | 5.0 |
| 1,2-Dichloroethene (total) | ND | 5.0 |
| Xylenes,Total | ND | 5.0 |
| Surr: 1,2-Dichloroethane-d4 | 104.0 | 62-130 |
| Surr: 4-Bromofluorobenzene | 92.0 | 70-130 |
| Surr: Toluene-d8 | 104.0 | 74-122 |

### Laboratory Control Sample (LCS)

RunID: N_081105B-4754086 Units: ug/L
Analysis Date: 11/05/2008 17:15 Analyst: LT
Preparation Date: 11/05/2008 17:15 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 20.0 | 19.0 | 95.0 | 71 | 136 |
| 1,1,1-Trichloroethane | 20.0 | 21.0 | 105 | 66 | 132 |
| 1,1,2,2-Tetrachloroethane | 20.0 | 19.0 | 95.0 | 55 | 139 |
| 1,1,2-Trichloroethane | 20.0 | 21.0 | 105 | 70 | 130 |
| 1,1-Dichloroethane | 20.0 | 21.0 | 105 | 67 | 131 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
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TNTC - Too numerous to count



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## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B
**Method:** SW8260B
**WorkOrder:** 08101597
**Lab Batch ID:** R256099

**Laboratory Control Sample (LCS)**

RunID: N_081105B-4754086 Units: ug/L
Analysis Date: 11/05/2008 17:15 Analyst: LT
Preparation Date: 11/05/2008 17:15 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| 1;1-Dichloroethene | 20.0 | 20.0 | 100 | 71 | 146 |
| 1,1-Dichloropropene | 20.0 | 21.0 | 105 | 59 | 138 |
| 1,2,3-Trichlorobenzene | 20.0 | 17.0 | 85.0 | 37 | 155 |
| 1,2,3-Trichloropropane | 20.0 | 22.0 | 110 | 70 | 145 |
| 1,2,4-Trichlorobenzene | 20.0 | 16.0 | 80.0 | 39 | 133 |
| 1,2,4-Trimethylbenzene | 20.0 | 19.0 | 95.0 | 53 | 147 |
| 1,2-Dibromo-3-chloropropane | 20.0 | 20.0 | 100 | 43 | 137 |
| 1,2-Dibromoethane | 20.0 | 20.0 | 100 | 63 | 126 |
| 1,2-Dichlorobenzene | 20.0 | 18.0 | 90.0 | 70 | 130 |
| 1,2-Dichloroethane | 20.0 | 20.0 | 100 | 64 | 150 |
| 1,2-Dichloropropane | 20.0 | 19.0 | 95.0 | 76 | 124 |
| 1,3,5-Trimethylbenzene | 20.0 | 18.0 | 90.0 | 57 | 146 |
| 1,3-Dichlorobenzene | 20.0 | 20.0 | 100 | 72 | 134 |
| 1,3-Dichloropropane | 20.0 | 19.0 | 95.0 | 78 | 130 |
| 1,4-Dichlorobenzene | 20.0 | 19.0 | 95.0 | 70 | 130 |
| 2,2-Dichloropropane | 20.0 | 21.0 | 105 | 45 | 156 |
| 2-Butanone | 120 | 84.0 | 70.0 | 20 | 235 |
| 2-Chloroethyl vinyl ether | 20.0 | 23.0 | 115 | 13 | 179 |
| 2-Chlorotoluene | 20.0 | 19.0 | 95.0 | 64 | 122 |
| 2-Hexanone | 20.0 | 18.0 | 90.0 | 34 | 182 |
| 4-Chlorotoluene | 20.0 | 18.0 | 90.0 | 64 | 142 |
| 4-Isopropyltoluene | 20.0 | 17.0 | 85.0 | 60 | 134 |
| 4-Methyl-2-pentanone | 20.0 | 18.0 | 90.0 | 11 | 145 |
| Acetone | 200 | 180 | 90.0 | 13 | 386 |
| Acrylonitrile | 100 | 110 | 110 | 43 | 194 |
| Benzene | 20.0 | 21.0 | 105 | 76 | 126 |
| Bromobenzene | 20.0 | 20.0 | 100 | 70 | 130 |
| Bromochloromethane | 20.0 | 20.0 | 100 | 63 | 131 |
| Bromodichloromethane | 20.0 | 20.0 | 100 | 77 | 138 |
| Bromoform | 20.0 | 19.0 | 95.0 | 55 | 129 |
| Bromomethane | 20.0 | 20.0 | 100 | 58 | 148 |
| Carbon disulfide | 20.0 | 20.0 | 100 | 46 | 146 |
| Carbon tetrachloride | 20.0 | 20.0 | 100 | 66 | 137 |
| Chlorobenzene | 20.0 | 19.0 | 95.0 | 67 | 136 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08101597
**Method:** SW8260B **Lab Batch ID:** R256099

**Laboratory Control Sample (LCS)**

RunID: N_081105B-4754086 Units: ug/L
Analysis Date: 11/05/2008 17:15 Analyst: LT
Preparation Date: 11/05/2008 17:15 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Chloroethane | 20.0 | 22.0 | 110 | 50 | 137 |
| Chloroform | 20.0 | 20.0 | 100 | 70 | 135 |
| Chloromethane | 20.0 | 25.0 | 125 | 51 | 140 |
| Dibromochloromethane | 20.0 | 20.0 | 100 | 69 | 127 |
| Dibromomethane | 20.0 | 20.0 | 100 | 74 | 130 |
| Dichlorodifluoromethane | 20.0 | 23.0 | 115 | 32 | 161 |
| Ethylbenzene | 20.0 | 19.0 | 95.0 | 67 | 122 |
| Hexachlorobutadiene | 20.0 | 16.0 | 80.0 | 43 | 144 |
| Isopropylbenzene | 20.0 | 16.0 | 80.0 | 60 | 135 |
| Methyl tert-butyl ether | 40.0 | 38.0 | 95.0 | 48 | 160 |
| Methylene chloride | 20.0 | 22.0 | 110 | 52 | 143 |
| Naphthalene | 20.0 | 18.0 | 90.0 | 24 | 150 |
| n-Butylbenzene | 20.0 | 16.0 | 80.0 | 50 | 140 |
| n-Propylbenzene | 20.0 | 17.0 | 85.0 | 62 | 137 |
| sec-Butylbenzene | 20.0 | 16.0 | 80.0 | 66 | 126 |
| Styrene | 20.0 | 18.0 | 90.0 | 60 | 139 |
| tert-Butylbenzene | 20.0 | 16.0 | 80.0 | 67 | 140 |
| Tetrachloroethene | 20.0 | 23.0 | 115 | 26 | 200 |
| Toluene | 20.0 | 22.0 | 110 | 70 | 131 |
| Trichloroethene | 20.0 | 19.0 | 95.0 | 64 | 137 |
| Trichlorofluoromethane | 20.0 | 21.0 | 105 | 46 | 167 |
| Vinyl acetate | 20.0 | 21.0 | 105 | 10 | 193 |
| Vinyl chloride | 20.0 | 21.0 | 105 | 31 | 147 |
| cis-1,2-Dichloroethene | 20.0 | 22.0 | 110 | 70 | 142 |
| cis-1,3-Dichloropropene | 20.0 | 19.0 | 95.0 | 61 | 134 |
| m,p-Xylene | 40.0 | 40.0 | 100 | 72 | 150 |
| o-Xylene | 20.0 | 20.0 | 100 | 78 | 141 |
| trans-1,2-Dichloroethene | 20.0 | 21.0 | 105 | 67 | 141 |
| trans-1,3-Dichloropropene | 20.0 | 18.0 | 90.0 | 56 | 136 |
| 1,2-Dichloroethene (total) | 40 | 43 | 110 | 73 | 139 |
| Xylenes,Total | 60 | 60 | 100 | 72 | 150 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 52 | 104 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 52 | 104 | 70 | 130 |
| Surr: Toluene-d8 | 50.0 | 53 | 106 | 74 | 122 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08101597
**Method:** SW8260B **Lab Batch ID:** R256099

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08101839-02
RunID: N_081105B-4754097 Units: ug/L
Analysis Date: 11/05/2008 22:50 Analyst: LT

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | 20 | 18.0 | 90.0 | 20 | 18.0 | 90.0 | 0 | 20 | 35 | 175 |
| 1,1,1-Trichloroethane | ND | 20 | 21.0 | 105 | 20 | 20.0 | 100 | 4.88 | 20 | 35 | 175 |
| 1,1,2,2-Tetrachloroethane | ND | 20 | 20.0 | 100 | 20 | 19.0 | 95.0 | 5.13 | 20 | 35 | 175 |
| 1,1,2-Trichloroethane | ND | 20 | 20.0 | 100 | 20 | 20.0 | 100 | 0 | 20 | 35 | 175 |
| 1,1-Dichloroethane | ND | 20 | 21.0 | 105 | 20 | 21.0 | 105 | 0 | 20 | 35 | 175 |
| 1,1-Dichloroethene | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 22 | 61 | 145 |
| 1,1-Dichloropropene | ND | 20 | 20.0 | 100 | 20 | 20.0 | 100 | 0 | 20 | 35 | 175 |
| 1,2,3-Trichlorobenzene | ND | 20 | 14.0 | 70.0 | 20 | 15.0 | 75.0 | 6.90 | 20 | 27 | 187 |
| 1,2,3-Trichloropropane | ND | 20 | 20.0 | 100 | 20 | 20.0 | 100 | 0 | 20 | 35 | 175 |
| 1,2,4-Trichlorobenzene | ND | 20 | 14.0 | 70.0 | 20 | 14.0 | 70.0 | 0 | 20 | 34 | 150 |
| 1,2,4-Trimethylbenzene | ND | 20 | 18.0 | 90.0 | 20 | 18.0 | 90.0 | 0 | 20 | 35 | 175 |
| 1,2-Dibromo-3-chloropropane | ND | 20 | 18.0 | 90.0 | 20 | 18.0 | 90.0 | 0 | 20 | 15 | 175 |
| 1,2-Dibromoethane | ND | 20 | 19.0 | 95.0 | 20 | 20.0 | 100 | 5.13 | 20 | 35 | 175 |
| 1,2-Dichlorobenzene | ND | 20 | 18.0 | 90.0 | 20 | 19.0 | 95.0 | 5.41 | 20 | 35 | 175 |
| 1,2-Dichloroethane | ND | 20 | 20.0 | 100 | 20 | 20.0 | 100 | 0 | 20 | 35 | 175 |
| 1,2-Dichloropropane | ND | 20 | 20.0 | 100 | 20 | 19.0 | 95.0 | 5.13 | 20 | 35 | 175 |
| 1,3,5-Trimethylbenzene | ND | 20 | 18.0 | 90.0 | 20 | 17.0 | 85.0 | 5.71 | 20 | 35 | 175 |
| 1,3-Dichlorobenzene | ND | 20 | 18.0 | 90.0 | 20 | 18.0 | 90.0 | 0 | 20 | 35 | 175 |
| 1,3-Dichloropropane | ND | 20 | 19.0 | 95.0 | 20 | 20.0 | 100 | 5.13 | 20 | 35 | 175 |
| 1,4-Dichlorobenzene | ND | 20 | 18.0 | 90.0 | 20 | 18.0 | 90.0 | 0 | 20 | 35 | 175 |
| 2,2-Dichloropropane | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 20 | 35 | 175 |
| 2-Butanone | ND | 20 | 28.0 | 140 | 20 | 22.0 | 110 | 24.0 * | 20 | 10 | 230 |
| 2-Chloroethyl vinyl ether | ND | 20 | 19.0 | 95.0 | 20 | 20.0 | 100 | 5.13 | 20 | 10 | 250 |
| 2-Chlorotoluene | ND | 20 | 18.0 | 90.0 | 20 | 18.0 | 90.0 | 0 | 20 | 31 | 175 |
| 2-Hexanone | ND | 20 | 19.0 | 95.0 | 20 | 22.0 | 110 | 14.6 | 20 | 10 | 250 |
| 4-Chlorotoluene | ND | 20 | 69.0 | 345 * | 20 | 40.0 | 200 * | 53.2 * | 20 | 31 | 175 |
| 4-Isopropyltoluene | ND | 20 | 17.0 | 85.0 | 20 | 16.0 | 80.0 | 6.06 | 20 | 35 | 175 |
| 4-Methyl-2-pentanone | ND | 20 | 16.0 | 80.0 | 20 | 18.0 | 90.0 | 11.8 | 20 | 10 | 175 |
| Acetone | ND | 100 | 160 | 160 | 100 | 130 | 130 | 20.7 * | 20 | 10 | 400 |
| Acrylonitrile | ND | 200 | 170 | 85.0 | 200 | 190 | 95.0 | 11.1 | 20 | 15 | 250 |

**Qualifiers:**
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## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B
**Method:** SW8260B
**WorkOrder:** 08101597
**Lab Batch ID:** R256099

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08101839-02
RunID: N_081105B-4754097 Units: ug/L
Analysis Date: 11/05/2008 22:50 Analyst: LT

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 20 | 20.0 | 100 | 20 | 19.0 | 95.0 | 5.13 | 22 | 76 | 127 |
| Bromobenzene | ND | 20 | 17.0 | 85.0 | 20 | 19.0 | 95.0 | 11.1 | 20 | 35 | 175 |
| Bromochloromethane | ND | 20 | 19.0 | 95.0 | 20 | 20.0 | 100 | 5.13 | 20 | 35 | 175 |
| Bromodichloromethane | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 20 | 35 | 175 |
| Bromoform | ND | 20 | 15.0 | 75.0 | 20 | 16.0 | 80.0 | 6.45 | 20 | 35 | 175 |
| Bromomethane | ND | 20 | 19.0 | 95.0 | 20 | 20.0 | 100 | 5.13 | 20 | 35 | 175 |
| Carbon disulfide | ND | 20 | 20.0 | 100 | 20 | 20.0 | 100 | 0 | 20 | 30 | 225 |
| Carbon tetrachloride | ND | 20 | 20.0 | 100 | 20 | 20.0 | 100 | 0 | 20 | 35 | 175 |
| Chlorobenzene | ND | 20 | 20.0 | 100 | 20 | 19.0 | 95.0 | 5.13 | 21 | 70 | 130 |
| Chloroethane | ND | 20 | 20.0 | 100 | 20 | 21.0 | 105 | 4.88 | 20 | 35 | 175 |
| Chloroform | ND | 20 | 19.0 | 95.0 | 20 | 20.0 | 100 | 5.13 | 20 | 35 | 175 |
| Chloromethane | ND | 20 | 21.0 | 105 | 20 | 24.0 | 120 | 13.3 | 20 | 35 | 175 |
| Dibromochloromethane | ND | 20 | 18.0 | 90.0 | 20 | 18.0 | 90.0 | 0 | 20 | 35 | 175 |
| Dibromomethane | ND | 20 | 20.0 | 100 | 20 | 20.0 | 100 | 0 | 20 | 35 | 175 |
| Dichlorodifluoromethane | ND | 20 | 18.0 | 90.0 | 20 | 23.0 | 115 | 24.4 * | 20 | 35 | 175 |
| Ethylbenzene | ND | 20 | 19.0 | 95.0 | 20 | 18.0 | 90.0 | 5.41 | 20 | 35 | 175 |
| Hexachlorobutadiene | ND | 20 | 22.0 | 110 | 20 | 21.0 | 105 | 4.65 | 20 | 43 | 144 |
| Isopropylbenzene | ND | 20 | 18.0 | 90.0 | 20 | 17.0 | 85.0 | 5.71 | 20 | 35 | 175 |
| Methyl tert-butyl ether | ND | 20 | 18.0 | 90.0 | 20 | 20.0 | 100 | 10.5 | 20 | 35 | 175 |
| Methylene chloride | ND | 20 | 21.0 | 105 | 20 | 21.0 | 105 | 0 | 20 | 35 | 175 |
| Naphthalene | ND | 20 | 16.0 | 80.0 | 20 | 17.0 | 85.0 | 6.06 | 20 | 20 | 210 |
| n-Butylbenzene | ND | 20 | 17.0 | 85.0 | 20 | 16.0 | 80.0 | 6.06 | 20 | 35 | 175 |
| n-Propylbenzene | ND | 20 | 15.0 | 75.0 | 20 | 15.0 | 75.0 | 0 | 20 | 35 | 175 |
| sec-Butylbenzene | ND | 20 | 17.0 | 85.0 | 20 | 16.0 | 80.0 | 6.06 | 20 | 35 | 175 |
| Styrene | ND | 20 | 20.0 | 100 | 20 | 18.0 | 90.0 | 10.5 | 20 | 35 | 175 |
| tert-Butylbenzene | ND | 20 | 17.0 | 85.0 | 20 | 17.0 | 85.0 | 0 | 20 | 35 | 175 |
| Tetrachloroethene | ND | 20 | 20.0 | 100 | 20 | 18.0 | 90.0 | 10.5 | 20 | 30 | 250 |
| Toluene | ND | 20 | 20.0 | 100 | 20 | 20.0 | 100 | 0 | 24 | 70 | 131 |
| Trichloroethene | ND | 20 | 19.0 | 95.0 | 20 | 19.0 | 95.0 | 0 | 21 | 60 | 140 |
| Trichlorofluoromethane | ND | 20 | 21.0 | 105 | 20 | 21.0 | 105 | 0 | 20 | 17 | 250 |
| Vinyl acetate | ND | 20 | 19.0 | 95.0 | 20 | 20.0 | 100 | 5.13 | 20 | 10 | 250 |
| Vinyl chloride | ND | 20 | 18.0 | 90.0 | 20 | 20.0 | 100 | 10.5 | 20 | 35 | 175 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
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## Quality Control Report

**Conoco Phillips**
**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 08101597
**Method:** SW8260B **Lab Batch ID:** R256099

**Matrix Spike (MS) / Matrix Spike Duplicate (MSD)**

Sample Spiked: 08101839-02
RunID: N_081105B-4754097 Units: ug/L
Analysis Date: 11/05/2008 22:50 Analyst: LT

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | ND | 20 | 21.0 | 105 | 20 | 20.0 | 100 | 4.88 | 20 | 35 | 175 |
| cis-1,3-Dichloropropene | ND | 20 | 17.0 | 85.0 | 20 | 18.0 | 90.0 | 5.71 | 20 | 35 | 175 |
| m,p-Xylene | ND | 40 | 38.0 | 95.0 | 40 | 37.0 | 92.5 | 2.67 | 20 | 35 | 175 |
| o-Xylene | ND | 20 | 20.0 | 100 | 20 | 18.0 | 90.0 | 10.5 | 20 | 35 | 175 |
| trans-1,2-Dichloroethene | ND | 20 | 20.0 | 100 | 20 | 19.0 | 95.0 | 5.13 | 20 | 35 | 175 |
| trans-1,3-Dichloropropene | ND | 20 | 16.0 | 80.0 | 20 | 17.0 | 85.0 | 6.06 | 20 | 35 | 175 |
| 1,2-Dichloroethene (total) | ND | 40 | 41 | 100 | 40 | 39 | 98 | 5.0 | 20 | 35 | 175 |
| Xylenes,Total | ND | 60 | 58 | 97 | 60 | 55 | 92 | 5.3 | 20 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | ND | 50 | 48 | 96.0 | 50 | 49.0 | 98.0 | 2.06 | 30 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 50 | 52 | 104 | 50 | 52.0 | 104 | 0 | 30 | 70 | 130 |
| Surr: Toluene-d8 | ND | 50 | 54 | 108 | 50 | 54.0 | 108 | 0 | 30 | 74 | 122 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Nitrate Nitrogen (as N), Total **WorkOrder:** 08101597
**Method:** E353.2 **Lab Batch ID:** R256285

### Method Blank

RunID: WET_081103ZD-4757587 Units: mg/L
Analysis Date: 11/03/2008 15:17 Analyst: TW

| Analyte | Result | Rep Limit |
|---|---|---|
| Nitrogen,Nitrate (As N) | ND | 0.50 |

### Samples in Analytical Batch:

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01E | MW-2 |
| 08101597-02E | MW-1 |
| 08101597-04E | MW-4 |
| 08101597-05E | MW-3 |

### Laboratory Control Sample (LCS)

RunID: WET_081103ZD-4757590 Units: mg/L
Analysis Date: 11/03/2008 15:17 Analyst: TW

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Nitrogen,Nitrate (As N) | 5.000 | 5.372 | 107.4 | 90 | 110 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101597-01
RunID: WET_081103ZD-4757595 Units: mg/L
Analysis Date: 11/03/2008 15:17 Analyst: TW

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrogen,Nitrate (As N) | ND | 5 | 4.895 | 89.96 * | 5 | 4.942 | 90.90 | 0.9576 | 20 | 90 | 110 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Ion Chromatography **WorkOrder:** 08101597
**Method:** E300.0 **Lab Batch ID:** R256813A

### Method Blank

RunID: IC1_081110B-4766069 Units: mg/L
Analysis Date: 11/10/2008 16:35 Analyst: TW

| Analyte | Result | Rep Limit |
|---|---|---|
| Chloride | ND | 0.50 |
| Fluoride | ND | 0.50 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01E | MW-2 |
| 08101597-02E | MW-1 |
| 08101597-04E | MW-4 |
| 08101597-05E | MW-3 |

### Laboratory Control Sample (LCS)

RunID: IC1_081110B-4766017 Units: mg/L
Analysis Date: 11/10/2008 16:51 Analyst: TW

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Chloride | 10.00 | 9.409 | 94.09 | 85 | 115 |
| Fluoride | 10.00 | 10.03 | 100.3 | 85 | 115 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101597-01
RunID: IC1_081110B-4766020 Units: mg/L
Analysis Date: 11/10/2008 18:20 Analyst: TW

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 18.90 | 40 | 58.79 | 99.73 | 40 | 56.56 | 94.14 | 3.874 | 20 | 80 | 120 |
| Fluoride | ND | 40 | 40.16 | 98.60 | 40 | 38.85 | 95.32 | 3.324 | 20 | 80 | 120 |

**Qualifiers:**

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B/V - Analyte detected in the associated Method Blank
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E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Ion Chromatography
**Method:** E300.0
**WorkOrder:** 08101597
**Lab Batch ID:** R256827

### Method Blank

RunID: IC1_081111A-4766432 Units: mg/L
Analysis Date: 11/11/2008 10:53 Analyst: TW

| Analyte | Result | Rep Limit |
|---|---|---|
| Chloride | ND | 0.50 |
| Sulfate | ND | 0.50 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01E | MW-2 |
| 08101597-02E | MW-1 |
| 08101597-04E | MW-4 |
| 08101597-05E | MW-3 |

### Laboratory Control Sample (LCS)

RunID: IC1_081111A-4766433 Units: mg/L
Analysis Date: 11/11/2008 11:10 Analyst: TW

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Chloride | 10.00 | 9.251 | 92.51 | 85 | 115 |
| Sulfate | 10.00 | 9.448 | 94.48 | 85 | 115 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101597-01
RunID: IC1_081111A-4766437 Units: mg/L
Analysis Date: 11/11/2008 12:16 Analyst: TW

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 1000 | 859.8 | 84.70 | 1000 | 846.8 | 83.40 | 1.521 | 20 | 80 | 120 |
| Sulfate | 1482 | 1000 | 2451 | 96.96 | 1000 | 2461 | 97.94 | 0.4013 | 20 | 80 | 120 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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

# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Ion Chromatography **WorkOrder:** 08101597
**Method:** E300.0 **Lab Batch ID:** R257651A

### Method Blank

RunID: IC1_081119A-4780752 Units: mg/L
Analysis Date: 11/19/2008 18:44 Analyst: TW

| Analyte | Result | Rep Limit |
|---|---|---|
| Ortho-phosphate (As P) | ND | 0.50 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-01E | MW-2 |
| 08101597-04E | MW-4 |
| 08101597-05E | MW-3 |

### Laboratory Control Sample (LCS)

RunID: IC1_081119A-4780753 Units: mg/L
Analysis Date: 11/19/2008 19:01 Analyst: TW

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Ortho-phosphate (As P) | 10.00 | 9.167 | 91.67 | 85 | 115 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08101597-01
RunID: IC1_081119A-4780767 Units: mg/L
Analysis Date: 11/20/2008 5:09 Analyst: TW

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ortho-phosphate (As P) | ND | 100 | 101.9 | 101.9 | 100 | 100.9 | 100.9 | 0.9614 | 20 | 80 | 120 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Ion Chromatography
**Method:** E300.0
**WorkOrder:** 08101597
**Lab Batch ID:** R257651C

### Method Blank

RunID: IC1_081119A-4780789 Units: mg/L
Analysis Date: 11/20/2008 11:10 Analyst: TW

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 08101597-02E | MW-1 |

| Analyte | Result | Rep Limit |
|---|---|---|
| Chloride | ND | 0.50 |
| Ortho-phosphate (As P) | ND | 0.50 |

### Laboratory Control Sample (LCS)

RunID: IC1_081119A-4780790 Units: mg/L
Analysis Date: 11/20/2008 11:27 Analyst: TW

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Chloride | 10.00 | 9.246 | 92.46 | 85 | 115 |
| Ortho-phosphate (As P) | 10.00 | 9.481 | 94.81 | 85 | 115 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 08110148-01
RunID: IC1_081119A-4780792 Units: mg/L
Analysis Date: 11/20/2008 12:00 Analyst: TW

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 137.0 | 100 | 230.2 | 93.15 | 100 | 232.1 | 95.09 | 0.8393 | 20 | 80 | 120 |
| Ortho-phosphate (As P) | ND | 100 | 98.71 | 98.71 | 100 | 98.73 | 98.73 | 0.02127 | 20 | 80 | 120 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

*Sample Receipt Checklist*

*And*

*Chain of Custody*

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HOUSTON, TX 77054
(713) 660-0901

## Sample Receipt Checklist

| | | | |
|---|---|---|---|
| Workorder: | **08101597** | Received By: | **RE** |
| Date and Time Received: | **10/28/2008 9:30:00 AM** | Carrier name: | **Fedex-Priority** |
| Temperature: | **4.0°C** | Chilled by: | **Water Ice** |

| | | | | |
|---|---|---|---|---|
| 1. **Shipping container/cooler in good condition?** | Yes ☑ | No ☐ | Not Present ☐ | |
| 2. **Custody seals intact on shippping container/cooler?** | Yes ☑ | No ☐ | Not Present ☐ | |
| 3. **Custody seals intact on sample bottles?** | Yes ☐ | No ☐ | Not Present ☑ | |
| 4. **Chain of custody present?** | Yes ☑ | No ☐ | | |
| 5. **Chain of custody signed when relinquished and received?** | Yes ☑ | No ☐ | | |
| 6. **Chain of custody agrees with sample labels?** 1.Received 2-16oz plastic preserved with HNO3, 1-extra set of vials 1-amber liter unpreserve, 1-amber liter w/HCL and 1-32oz plastic unpreserve for MW-1 analysis no requested on chain. | Yes ☐ | No ☑ | | |
| 7. **Samples in proper container/bottle?** | Yes ☑ | No ☐ | | |
| 8. **Sample containers intact?** | Yes ☑ | No ☐ | | |
| 9. **Sufficient sample volume for indicated test?** | Yes ☑ | No ☐ | | |
| 10. **All samples received within holding time?** 2.Received all Nitrates and Ortho-PO4 expired collected on 10/24/08. | Yes ☐ | No ☑ | | |
| 11. **Container/Temp Blank temperature in compliance?** | Yes ☑ | No ☐ | | |
| 12. **Water - VOA vials have zero headspace?** | Yes ☑ | No ☐ | VOA Vials Not Present ☐ | |
| 13. **Water - Preservation checked upon receipt (except VOA*)?** | Yes ☑ | No ☐ | Not Applicable ☐ | |

***VOA Preservation Checked After Sample Analysis**

**SPL Representative:** Elder, Allen
**Contact Date & Time:** 10/29/2008 3:00:00 PM
**Client Name Contacted:** Kelley Blanchard

**Non Conformance Issues:** 1.Logged in for analysis for "MW-1" until client can be notified.2.Continue with Nitrate and Ortho-PO4 per historicals.

**Client Instructions:** Notified client via email of expirations and that we will continue with analysis per historicals.

# Chain of Custody Record

**Client:** Tetra Tech/ Conoco Phillips — **SPL Workorder Number:** 08101597

**Attention:** Kelly Blanchard/Tetra Tech

Phone: 505-237-8440 | email: kelly.blanchard@tetratech.c

Address: 6121 Indian School Road, NE Ste. 200

City: Albuquerque | State: NM | Zip Code: 87110

Project Name: Howell K-1

P.O. Number:

Sampled By: signature Christine Mathews print Christine Mathews

| Sample ID | Collected Date | Collected Time | Sample Type Comp | Sample Type Grab | Matrix Water | Matrix Soil | Bottle Type | Preservative Type | # of Containers | Requested Analysis: BTEX 8260 VOCs | Full List Metals 6020 | TPH GRO-8015 | TPH DRO-8015 | Gen Chem | Sm Vols | BTEX only |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-2 | 10/24 | 1330 | | X | x | | 1 | 3 | 3 | X | | | | | | |
| MW-2 | 10/24 | 1330 | | X | x | | 1 | 3 | 3 | | | X | | | | |
| MW-2 | 10/24 | 1330 | | X | x | | 6 | 2 | 2 | | X | | | | | |
| MW-2 | 10/24 | 1330 | | X | x | | 4 | 3 | 1 | | | | X | | | |
| MW-2 | 10/24 | 1330 | | X | x | | 3 | 1 | 2 | | | | | X | | |
| MW-2 | 10/24 | 1330 | | X | x | | 5 | 1 | 1 | | | | | | X | |
| MW-1 | 10/24 | 1350 | | X | x | | 1 | 3 | 3 | X | | | | | | |
| ~~MW~~ Duplicate | 10/24 | 1355 | | X | x | | 1 | 3 | 3 | | | | | | | X |
| MW-4 | 10/24 | 1616 | | X | x | | 1 | 3 | 3 | X | | | | | | |
| MW-4 | 10/24 | 1615 | | X | x | | 1 | 3 | 3 | | | X | | | | |

Turnaround Time Requirements
24 hr( ) 48 hr( )
72 hr( ) 5 wday( )
10 wday - Standard( )

**Remarks:** LOGIN FULL METALS LIST: 6010/6020/7470
Gen Chem: Ca, Na, mg, Cl, $SO_4$

**Intact?** Y or N **Temperature:** 4.0c

**Bottle Types:** 1: 3/40mL Vials 2. 1L Glass 3. 1L Plastic 4. 1L Amber Glass 5. 8oz Plastic 6. 16oz Plastic

**Preservative Types:** 1: NONE 2. HNO3 3. HCL 4. H2SO4

| | Date | Time | |
|---|---|---|---|
| Relinquished by Sampler: Christine Mathews | 10/27/08 | 1500 | Received by: |
| Relinquished by: | Date | Time | Received by: |
| Relinquished by: | Date 10/28/08 | Time 0830 | Received by SPL Inc. |

# Chain of Custody Record

**Client: Tetra Tech/ Conoco Phillips** — **SPL Workorder Number:** 0810159?

**Attention: Kelly Blanchard/Tetra Tech**

Phone: 505-237-8440 | e-mail: kelly.blanchard@tetratech.c

Address: 6121 Indian School Road, NE Ste. 200

City: Albuquerque | State: NM | Zip Code: 87110

Project Name: Howell K-1

P.O. Number:

Sampled By: (print) Christine Mathews

signature: Christine Mathews

| Sample ID | Collected Date | Collected Time | Sample Type Comp | Sample Type Grab | Matrix Water | Matrix Soil | Bottle Type | Preservative Type | # of Containers | Requested Analysis: B260-BTEX / VOCs | Full List Metals | TPH GRO-8015 | TPH DRO-8015 | Gen Chem | Semi Vols |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-4 | 10/24 | 1615 | | X | x | | 3 | 3 | 1 | | X | | | | |
| MW-4 | 10/24 | 1615 | | X | x | | 4 | 3 | 1 | | | | X | | |
| MW-4 | 10/24 | 1615 | | X | x | | 3 | 1 | 2 | | | | | X | |
| MW-4 | 10/24 | 1615 | | X | x | | 4 | 1 | 1 | | | | | | X |
| MW-3 | 10/24 | 1535 | | X | x | | 1 | 3 | 3 | X | | | | | |
| MW-3 | 10/24 | 1535 | | X | x | | 1 | 3 | 3 | | | X | | | |
| MW-3 | 10/24 | 1536 | | X | x | | 6 | 2 | 2 | | X | | | | |
| MW-3 | 10/24 | 1535 | | X | x | | 4 | 3 | 1 | | | | X | | |
| MW-3 | 10/24 | 1535 | | X | x | | 3 | 1 | 2 | | | | | X | |
| MW-3 | 10/24 | 1535 | | X | x | | 4 | 1 | 1 | | | | | | X |

Turnaround Time Requirements
24 hr( ) 48 hr( )
72 hr( ) 5 wday( )
10 wday - Standard( )

**Remarks:** LOGIN FULL METALS LIST: 6010/6020/7470
Gen Chem: Ca, Na, Mg, Cl, SO4

Intact? Y or N
Temperature:

**Bottle Types:** 1: 3/40ml Vials 2. 1L Glass 3. 1L Plastic 4. 1L Amber Glass 5. 8oz Plastic
**Preservative Types:** 1: NONE 2. HNO3 3. HCL 4. H2SO4 6) 1L or Plastic

| | Date | Time | |
|---|---|---|---|
| Relinquished by Sampler: Christine Mathews | 10/27/08 | 1500 | Received by: |
| Relinquished by: | Date | Time | Received by: |
| Relinquished by: | Date 10/28/08 | Time 0930 | Received by SPL, Inc. |

# SPL, Inc.

## Analysis Request & Chain of Custody Record

SPL Workorder No.: 08107597 — 320231 — page ____ of ____

Client Name: Tetra Tech / ConocoPhillips
Address: 6121 Indian School Rd Ste 200
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Howell K-1
Site Name:
Site Location: Farmington / Aztec
Invoice To: ConocoPhillips Ph:

| SAMPLE ID | DATE | TIME | comp | grab | matrix (W=water S=soil O=oil SL=sludge X=other) | bottle (P=plastic A=amber glass G=glass V=vial X=other) | size (1=1 liter 4=4oz 40=vial 8=8oz 16=16oz X=other) | pres. (1=HCl 2=HNO3 3=H2SO4 X=other) | Number of Containers | Requested Analysis: BTEX ONLY |
|---|---|---|---|---|---|---|---|---|---|---|
| Trip Blank | 10/27 | 1430 | | | W | V | 40 | 1 | 2 | |

Client/Consultant Remarks:

Laboratory remarks:

Intact? Y N
Ice? Y N
Temp: 4.0c

### Requested TAT

Contract ☐ 72hr ☐
24hr ☐ Standard ☐
48hr ☐
Other ☐ _____

Special Reporting Requirements Results: Fax ☐ Email ☐ PDF ☐
Standard QC ☐ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐

Special Detection Limits (specify):

PM review (initial):

| | date | time |
|---|---|---|
| 1. Relinquished by Sampler: Chris Medina | 10/27/08 | 1500 |
| 3. Relinquished by: | date | time |
| 5. Relinquished by: | 10/28/08 | 0930 |

2. Received by:
4. Received by:
6. Received by Laboratory:

☐ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0901

☐ 500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775

☐ 459 Hughes Drive
Traverse City, MI 49686 (231) 947-5777

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

## Conoco Phillips

**Certificate of Analysis Number:**

**09011224**

| Report To: | | Project Name: | COP Howell K-1 |
|---|---|---|---|
| Tetra Tech, Inc. | | Site: | Aztec, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4510016701 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 2/24/2009 |
| ph: (505) 237-8440 | fax: | | |

This Report Contains A Total Of 17 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

2/25/2009

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

**HOUSTON LABORATORY**
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

## Case Narrative for:
## Conoco Phillips

### Certificate of Analysis Number:
### 09011224

| Report To: | | Project Name: | COP Howell K-1 |
|---|---|---|---|
| Tetra Tech, Inc. | | Site: | Aztec, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | 4510016701 |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 2/24/2009 |
| ph: (505) 237-8440 | fax: | | |

Due to laboratory error, this report was revised on February 24, 2009 to edit the reported results for sample ID "MW-1" (SPL ID: 09011224-01).

Per the Conoco Phillips TSM Revision 0, a copy of the internal chain of custody is to be included in final data package. However, due to LIMS limitations, this cannot be provided at this time.

Matrix spike (MS) and matrix spike duplicate (MSD) samples are chosen and tested at random from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. Since the MS and MSD are chosen at random from an analytical batch, the sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The Laboratory Control Sample (LCS) and the Method Blank (MB) are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

Some of the percent recoveries and RPD's on the QC report for the MS/MSD may be different than the calculated recoveries and RPD's using the sample result and the MS/MSD results that appear on the report because, the actual raw result is used to perform the calculations for percent recovery and RPD.

Any other exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.



SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.



Erica Cardenas
Project Manager

Date

Test results meet all requirements of NELAC, unless specified in the narrative.

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

# Conoco Phillips

## Certificate of Analysis Number:

## 09011224

**Report To:** Tetra Tech, Inc.
Kelly Blanchard
6121 Indian School Road, N.E.
Suite 200
Albuquerque
NM
87110-
ph: (505) 237-8440 fax: (505) 881-3283

**Fax To:**

**Project Name:** COP Howell K-1
**Site:** Aztec, NM
**Site Address:**

**PO Number:** 4510016701
**State:** New Mexico
**State Cert. No.:**
**Date Reported:** 2/24/2009

| Client Sample ID | Lab Sample ID | Matrix | Date Collected | Date Received | COC ID | HOLD |
|---|---|---|---|---|---|---|
| MW-1 | 09011224-01 | Water | 1/30/2009 1:40:00 PM | 1/31/2009 11:00:00 AM | | ☐ |
| MW-2 | 09011224-02 | Water | 1/30/2009 10:25:00 AM | 1/31/2009 11:00:00 AM | | ☐ |
| MW-3 | 09011224-03 | Water | 1/30/2009 9:30:00 AM | 1/31/2009 11:00:00 AM | | ☐ |
| MW-4 | 09011224-04 | Water | 1/30/2009 9:50:00 AM | 1/31/2009 11:00:00 AM | | ☐ |
| DUPLICATE | 09011224-05 | Water | 1/30/2009 1:30:00 PM | 1/31/2009 11:00:00 AM | | ☐ |
| TRIP BLANK | 09011224-06 | Water | 1/30/2009 2:30:00 PM | 1/31/2009 11:00:00 AM | | ☐ |

Erica Cardenas
Project Manager

2/25/2009
Date

Richard R. Reed
Laboratory Director

Ted Yen
Quality Assurance Officer

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**Client Sample ID:** MW-1 **Collected:** 01/30/2009 13:40 **SPL Sample ID:** 09011224-01

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 5 | 1 | 02/08/09 6:11 | LU_L | 4899612 |
| Ethylbenzene | ND | | 5 | 1 | 02/08/09 6:11 | LU_L | 4899612 |
| Toluene | ND | | 5 | 1 | 02/08/09 6:11 | LU_L | 4899612 |
| m,p-Xylene | ND | | 5 | 1 | 02/08/09 6:11 | LU_L | 4899612 |
| o-Xylene | ND | | 5 | 1 | 02/08/09 6:11 | LU_L | 4899612 |
| Xylenes,Total | ND | | 5 | 1 | 02/08/09 6:11 | LU_L | 4899612 |
| Surr: 1,2-Dichloroethane-d4 | 94.0 | | % 62-130 | 1 | 02/08/09 6:11 | LU_L | 4899612 |
| Surr: 4-Bromofluorobenzene | 106 | | % 70-130 | 1 | 02/08/09 6:11 | LU_L | 4899612 |
| Surr: Toluene-d8 | 100 | | % 74-122 | 1 | 02/08/09 6:11 | LU_L | 4899612 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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**Client Sample ID:** MW-2 **Collected:** 01/30/2009 10:25 **SPL Sample ID:** 09011224-02

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 5 | 1 | 02/10/09 3:10 | LT | 4900764 |
| Ethylbenzene | ND | | 5 | 1 | 02/10/09 3:10 | LT | 4900764 |
| Toluene | ND | | 5 | 1 | 02/10/09 3:10 | LT | 4900764 |
| m,p-Xylene | ND | | 5 | 1 | 02/10/09 3:10 | LT | 4900764 |
| o-Xylene | ND | | 5 | 1 | 02/10/09 3:10 | LT | 4900764 |
| Xylenes,Total | ND | | 5 | 1 | 02/10/09 3:10 | LT | 4900764 |
| Surr: 1,2-Dichloroethane-d4 | 104 | | % 62-130 | 1 | 02/10/09 3:10 | LT | 4900764 |
| Surr: 4-Bromofluorobenzene | 100 | | % 70-130 | 1 | 02/10/09 3:10 | LT | 4900764 |
| Surr: Toluene-d8 | 108 | | % 74-122 | 1 | 02/10/09 3:10 | LT | 4900764 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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**Client Sample ID:** MW-3 **Collected:** 01/30/2009 9:30 **SPL Sample ID:** 09011224-03

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 5 | 1 | 02/07/09 10:46 | LT | 4899344 |
| Ethylbenzene | ND | | 5 | 1 | 02/07/09 10:46 | LT | 4899344 |
| Toluene | ND | | 5 | 1 | 02/07/09 10:46 | LT | 4899344 |
| m,p-Xylene | ND | | 5 | 1 | 02/07/09 10:46 | LT | 4899344 |
| o-Xylene | ND | | 5 | 1 | 02/07/09 10:46 | LT | 4899344 |
| Xylenes,Total | ND | | 5 | 1 | 02/07/09 10:46 | LT | 4899344 |
| Surr: 1,2-Dichloroethane-d4 | 96.0 | | % 62-130 | 1 | 02/07/09 10:46 | LT | 4899344 |
| Surr: 4-Bromofluorobenzene | 94.0 | | % 70-130 | 1 | 02/07/09 10:46 | LT | 4899344 |
| Surr: Toluene-d8 | 102 | | % 74-122 | 1 | 02/07/09 10:46 | LT | 4899344 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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**Client Sample ID:** MW-4 **Collected:** 01/30/2009 9:50 **SPL Sample ID:** 09011224-04

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | | 5 | 1 | 02/07/09 11:14 | LT | 4899345 |
| Ethylbenzene | ND | | | 5 | 1 | 02/07/09 11:14 | LT | 4899345 |
| Toluene | ND | | | 5 | 1 | 02/07/09 11:14 | LT | 4899345 |
| m,p-Xylene | ND | | | 5 | 1 | 02/07/09 11:14 | LT | 4899345 |
| o-Xylene | ND | | | 5 | 1 | 02/07/09 11:14 | LT | 4899345 |
| Xylenes,Total | ND | | | 5 | 1 | 02/07/09 11:14 | LT | 4899345 |
| Surr: 1,2-Dichloroethane-d4 | 100 | | % | 62-130 | 1 | 02/07/09 11:14 | LT | 4899345 |
| Surr: 4-Bromofluorobenzene | 98.0 | | % | 70-130 | 1 | 02/07/09 11:14 | LT | 4899345 |
| Surr: Toluene-d8 | 104 | | % | 74-122 | 1 | 02/07/09 11:14 | LT | 4899345 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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**Client Sample ID:** DUPLICATE **Collected:** 01/30/2009 13:30 **SPL Sample ID:** 09011224-05

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 5 | 1 | 02/07/09 7:56 | LT | 4899339 |
| Ethylbenzene | ND | | 5 | 1 | 02/07/09 7:56 | LT | 4899339 |
| Toluene | ND | | 5 | 1 | 02/07/09 7:56 | LT | 4899339 |
| m,p-Xylene | ND | | 5 | 1 | 02/07/09 7:56 | LT | 4899339 |
| o-Xylene | ND | | 5 | 1 | 02/07/09 7:56 | LT | 4899339 |
| Xylenes,Total | ND | | 5 | 1 | 02/07/09 7:56 | LT | 4899339 |
| Surr: 1,2-Dichloroethane-d4 | 96.0 | | % 62-130 | 1 | 02/07/09 7:56 | LT | 4899339 |
| Surr: 4-Bromofluorobenzene | 104 | | % 70-130 | 1 | 02/07/09 7:56 | LT | 4899339 |
| Surr: Toluene-d8 | 100 | | % 74-122 | 1 | 02/07/09 7:56 | LT | 4899339 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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**Client Sample ID:** TRIP BLANK **Collected:** 01/30/2009 14:30 **SPL Sample ID:** 09011224-06

**Site: Aztec, NM**

| Analyses/Method | Result | QUAL | | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | | 5 | 1 | 02/07/09 9:21 | LT | 4899342 |
| Ethylbenzene | ND | | | 5 | 1 | 02/07/09 9:21 | LT | 4899342 |
| Toluene | ND | | | 5 | 1 | 02/07/09 9:21 | LT | 4899342 |
| m,p-Xylene | ND | | | 5 | 1 | 02/07/09 9:21 | LT | 4899342 |
| o-Xylene | ND | | | 5 | 1 | 02/07/09 9:21 | LT | 4899342 |
| Xylenes,Total | ND | | | 5 | 1 | 02/07/09 9:21 | LT | 4899342 |
| Surr: 1,2-Dichloroethane-d4 | 100 | | % | 62-130 | 1 | 02/07/09 9:21 | LT | 4899342 |
| Surr: 4-Bromofluorobenzene | 96.0 | | % | 70-130 | 1 | 02/07/09 9:21 | LT | 4899342 |
| Surr: Toluene-d8 | 106 | | % | 74-122 | 1 | 02/07/09 9:21 | LT | 4899342 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

# *Quality Control Documentation*

HOUSTON LABORATORY
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(713) 660-0901

# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 09011224
**Method:** SW8260B **Lab Batch ID:** R264737

### Method Blank

RunID: N_090206C-4899336 Units: ug/L
Analysis Date: 02/07/2009 6:31 Analyst: LT
Preparation Date: 02/07/2009 6:31 Prep By: Method

| Analyte | Result | Rep Limit |
|---|---|---|
| Benzene | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| Toluene | ND | 5.0 |
| m,p-Xylene | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Xylenes,Total | ND | 5.0 |
| Surr: 1,2-Dichloroethane-d4 | 100.0 | 62-130 |
| Surr: 4-Bromofluorobenzene | 96.0 | 70-130 |
| Surr: Toluene-d8 | 104.0 | 74-122 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 09011224-03A | MW-3 |
| 09011224-04A | MW-4 |
| 09011224-05A | DUPLICATE |
| 09011224-06A | TRIP BLANK |

### Laboratory Control Sample (LCS)

RunID: N_090206C-4899335 Units: ug/L
Analysis Date: 02/07/2009 5:35 Analyst: LT
Preparation Date: 02/07/2009 5:35 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Benzene | 20.0 | 19.0 | 95.0 | 76 | 126 |
| Ethylbenzene | 20.0 | 19.0 | 95.0 | 67 | 122 |
| Toluene | 20.0 | 21.0 | 105 | 70 | 131 |
| m,p-Xylene | 40.0 | 40.0 | 100 | 72 | 150 |
| o-Xylene | 20.0 | 21.0 | 105 | 78 | 141 |
| Xylenes,Total | 60 | 61 | 100 | 72 | 150 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 46 | 92.0 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 54 | 108 | 70 | 130 |
| Surr: Toluene-d8 | 50.0 | 52 | 104 | 74 | 122 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09011224-05
RunID: N_090206C-4899340 Units: ug/L
Analysis Date: 02/07/2009 8:24 Analyst: LT

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 09011224
**Method:** SW8260B **Lab Batch ID:** R264737

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 20 | 20.0 | 100 | 20 | 19.0 | 95.0 | 5.13 | 22 | 76 | 127 |
| Ethylbenzene | ND | 20 | 20.0 | 100 | 20 | 19.0 | 95.0 | 5.13 | 20 | 35 | 175 |
| Toluene | ND | 20 | 21.0 | 105 | 20 | 20.0 | 100 | 4.88 | 24 | 70 | 131 |
| m,p-Xylene | ND | 40 | 40.0 | 100 | 40 | 40.0 | 100 | 0 | 20 | 35 | 175 |
| o-Xylene | ND | 20 | 21.0 | 105 | 20 | 21.0 | 105 | 0 | 20 | 35 | 175 |
| Xylenes,Total | ND | 60 | 61 | 100 | 60 | 61 | 100 | 0 | 20 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | ND | 50 | 49 | 98.0 | 50 | 48.0 | 96.0 | 2.06 | 30 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 50 | 55 | 110 | 50 | 54.0 | 108 | 1.83 | 30 | 70 | 130 |
| Surr: Toluene-d8 | ND | 50 | 53 | 106 | 50 | 50.0 | 100 | 5.83 | 30 | 74 | 122 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 09011224
**Method:** SW8260B **Lab Batch ID:** R264763

### Method Blank

RunID: K_090207E-4899611 Units: ug/L
Analysis Date: 02/08/2009 2:19 Analyst: LU_L
Preparation Date: 02/08/2009 2:19 Prep By: Method

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 09011224-01A | MW-1 |

| Analyte | Result | Rep Limit |
|---|---|---|
| Benzene | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| Toluene | ND | 5.0 |
| m,p-Xylene | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Xylenes,Total | ND | 5.0 |
| Surr: 1,2-Dichloroethane-d4 | 90.0 | 62-130 |
| Surr: 4-Bromofluorobenzene | 104.0 | 70-130 |
| Surr: Toluene-d8 | 100.0 | 74-122 |

### Laboratory Control Sample (LCS)

RunID: K_090207E-4899610 Units: ug/L
Analysis Date: 02/08/2009 1:20 Analyst: LU_L
Preparation Date: 02/08/2009 1:20 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Benzene | 20.0 | 21.0 | 105 | 76 | 126 |
| Ethylbenzene | 20.0 | 23.0 | 115 | 67 | 122 |
| Toluene | 20.0 | 22.0 | 110 | 70 | 131 |
| m,p-Xylene | 40.0 | 46.0 | 115 | 72 | 150 |
| o-Xylene | 20.0 | 22.0 | 110 | 78 | 141 |
| Xylenes,Total | 60 | 68 | 110 | 72 | 150 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 48 | 96.0 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 53 | 106 | 70 | 130 |
| Surr: Toluene-d8 | 50.0 | 50 | 100 | 74 | 122 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09011224-01
RunID: K_090207E-4899613 Units: ug/L
Analysis Date: 02/08/2009 6:40 Analyst: LU_L

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 09011224
**Method:** SW8260B **Lab Batch ID:** R264763

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 20 | 21.0 | 105 | 20 | 21.0 | 105 | 0 | 22 | 76 | 127 |
| Ethylbenzene | ND | 20 | 22.0 | 110 | 20 | 22.0 | 110 | 0 | 20 | 35 | 175 |
| Toluene | ND | 20 | 20.0 | 100 | 20 | 21.0 | 105 | 4.88 | 24 | 70 | 131 |
| m,p-Xylene | ND | 40 | 42.0 | 105 | 40 | 42.0 | 105 | 0 | 20 | 35 | 175 |
| o-Xylene | ND | 20 | 22.0 | 110 | 20 | 22.0 | 110 | 0 | 20 | 35 | 175 |
| Xylenes,Total | ND | 60 | 64 | 110 | 60 | 64 | 110 | 0 | 20 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | ND | 50 | 49 | 98.0 | 50 | 47.0 | 94.0 | 4.17 | 30 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 50 | 54 | 108 | 50 | 54.0 | 108 | 0 | 30 | 70 | 130 |
| Surr: Toluene-d8 | ND | 50 | 50 | 100 | 50 | 50.0 | 100 | 0 | 30 | 74 | 122 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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HOUSTON, TX 77054
(713) 660-0901

# Quality Control Report

## Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 09011224
**Method:** SW8260B **Lab Batch ID:** R264828

### Method Blank

RunID: N_090209C-4900763 Units: ug/L
Analysis Date: 02/10/2009 2:15 Analyst: LT
Preparation Date: 02/10/2009 2:15 Prep By: Method

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 09011224-02A | MW-2 |

| Analyte | Result | Rep Limit |
|---|---|---|
| Benzene | ND | 5.0 |
| Ethylbenzene | ND | 5.0 |
| Toluene | ND | 5.0 |
| m,p-Xylene | ND | 5.0 |
| o-Xylene | ND | 5.0 |
| Xylenes,Total | ND | 5.0 |
| Surr: 1,2-Dichloroethane-d4 | 100.0 | 62-130 |
| Surr: 4-Bromofluorobenzene | 98.0 | 70-130 |
| Surr: Toluene-d8 | 104.0 | 74-122 |

### Laboratory Control Sample (LCS)

RunID: N_090209C-4900762 Units: ug/L
Analysis Date: 02/10/2009 1:46 Analyst: LT
Preparation Date: 02/10/2009 1:46 Prep By: Method

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Benzene | 20.0 | 20.0 | 100 | 76 | 126 |
| Ethylbenzene | 20.0 | 21.0 | 105 | 67 | 122 |
| Toluene | 20.0 | 22.0 | 110 | 70 | 131 |
| m,p-Xylene | 40.0 | 42.0 | 105 | 72 | 150 |
| o-Xylene | 20.0 | 22.0 | 110 | 78 | 141 |
| Xylenes,Total | 60 | 64 | 110 | 72 | 150 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 45 | 90.0 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 52 | 104 | 70 | 130 |
| Surr: Toluene-d8 | 50.0 | 52 | 104 | 74 | 122 |

### Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 09011224-02
RunID: N_090209C-4900765 Units: ug/L
Analysis Date: 02/10/2009 3:39 Analyst: LT

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



QC results presented on the QC Summary Report have been rounded. RPD and percent recovery values calculated by the SPL LIMS system are derived from QC data prior to the application of rounding rules.

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## Quality Control Report

### Conoco Phillips

**COP Howell K-1**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 09011224
**Method:** SW8260B **Lab Batch ID:** R264828

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 20 | 20.0 | 100 | 20 | 20.0 | 100 | 0 | 22 | 76 | 127 |
| Ethylbenzene | ND | 20 | 20.0 | 100 | 20 | 19.0 | 95.0 | 5.13 | 20 | 35 | 175 |
| Toluene | ND | 20 | 24.0 | 120 | 20 | 20.0 | 100 | 18.2 | 24 | 70 | 131 |
| m,p-Xylene | ND | 40 | 42.0 | 105 | 40 | 40.0 | 100 | 4.88 | 20 | 35 | 175 |
| o-Xylene | ND | 20 | 22.0 | 110 | 20 | 21.0 | 105 | 4.65 | 20 | 35 | 175 |
| Xylenes,Total | ND | 60 | 64 | 110 | 60 | 61 | 100 | 4.8 | 20 | 35 | 175 |
| Surr: 1,2-Dichloroethane-d4 | ND | 50 | 47 | 94.0 | 50 | 46.0 | 92.0 | 2.15 | 30 | 62 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 50 | 53 | 106 | 50 | 54.0 | 108 | 1.87 | 30 | 70 | 130 |
| Surr: Toluene-d8 | ND | 50 | 54 | 108 | 50 | 52.0 | 104 | 3.77 | 30 | 74 | 122 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B/V - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
* - Recovery Outside Advisable QC Limits
N/C - Not Calculated - Sample concentration is greater than 4 times the amount of spike added. Control limits do not apply.
TNTC - Too numerous to count



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*Sample Receipt Checklist*

*And*

*Chain of Custody*

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8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

# Sample Receipt Checklist

| | | | |
|---|---|---|---|
| Workorder: | **09011224** | Received By: | **L_C** |
| Date and Time Received: | **1/31/2009 11:00:00 AM** | Carrier name: | **Fedex-Priority** |
| Temperature: | **4.0°C** | Chilled by: | **Water Ice** |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. | **Shipping container/cooler in good condition?** | Yes | ☑ | No | ☐ | Not Present ☐ |
| 2. | **Custody seals intact on shippping container/cooler?** | Yes | ☑ | No | ☐ | Not Present ☐ |
| 3. | **Custody seals intact on sample bottles?** | Yes | ☐ | No | ☐ | Not Present ☑ |
| 4. | **Chain of custody present?** | Yes | ☑ | No | ☐ | |
| 5. | **Chain of custody signed when relinquished and received?** | Yes | ☑ | No | ☐ | |
| 6. | **Chain of custody agrees with sample labels?** | Yes | ☑ | No | ☐ | |
| 7. | **Samples in proper container/bottle?** | Yes | ☑ | No | ☐ | |
| 8. | **Sample containers intact?** | Yes | ☑ | No | ☐ | |
| 9. | **Sufficient sample volume for indicated test?** | Yes | ☑ | No | ☐ | |
| 10. | **All samples received within holding time?** | Yes | ☑ | No | ☐ | |
| 11. | **Container/Temp Blank temperature in compliance?** | Yes | ☑ | No | ☐ | |
| 12. | **Water - VOA vials have zero headspace?** | Yes | ☑ | No | ☐ | VOA Vials Not Present ☐ |
| 13. | **Water - Preservation checked upon receipt (except VOA*)?** | Yes | ☐ | No | ☐ | Not Applicable ☑ |

***VOA Preservation Checked After Sample Analysis**

**SPL Representative:** _____ **Contact Date & Time:** _____

**Client Name Contacted:** _____

**Non Conformance Issues:** _____

**Client Instructions:** _____

# Analysis Request and Chain of Custody Record

8880 Interchange Drive, Houston, TX 77054

SPL Workorder No.: 0901224

| | |
|---|---|
| Company Name: Tetra Tech / Conoco Phillips | |
| Contact: Kelly Blanchard | |
| Address: 6121 Indian School Rd. NE, Ste. 200 | |
| Phone/Fax: (505) 237-8440 / (505) 237-8606 | |
| Email Address: kelly.blanchard@tetratech.com | |
| Invoice To: Conoco Phillips | |
| Purchase Order No. | |
| Project Name/No: Howell K-1 | |
| Site Address: | |
| Sampled By: Christine Mathews | |

**Sampling Event Description**

- Quarterly: X
- Semi-Annual:
- WC-Waste Char.:
- Other (describe below):

**QA/QC Level**

- TRRP: LVL 3:
- SID: Other:

| SAMPLE ID | DATE | TIME | Water | Soil | Sludge | Other | Number Containers | Container Type | Preservative | VOC | BTEX | Sulfate, Nitrate | GRO | DRO | CHC | Pb, Ca, Na, Mg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 1.30.09 | 1340 | X | | | | 3 | VOAs | HCL | | X | | | | | |
| ~~MW-1~~ | | | ~~X~~ | | | | ~~1~~ | ~~1L Plastic~~ | ~~HNO3~~ | | | | | | | X |
| MW-2 | 1.30.09 | 1025 | X | | | | 3 | VOAs | HCL | | X | | | | | |
| ~~MW-2~~ | | | ~~X~~ | | | | ~~1~~ | ~~1L Plastic~~ | ~~HNO3~~ | | | | | | | X |
| MW-3 | 1.30.09 | 930 | X | | | | 3 | VOAs | HCL | | X | | | | | |
| ~~MW-3~~ | | | ~~X~~ | | | | ~~1~~ | ~~1L Plastic~~ | ~~HNO3~~ | | | | | | | X |
| MW-4 | 1.30.09 | 950 | X | | | | 3 | VOAs | HCL | | X | | | | | |
| ~~MW-4~~ | | | X | | | | ~~1~~ | ~~1L Plastic~~ | ~~HNO3~~ | | | | | | | X |
| Duplicate | 1.30.09 | 1330 | X | | | | 3 | VOAs | HCL | | X | | | | | |
| Trip Blank | 1.30.09 | 1430 | X | | | | 2 | VOAs | HCL | | X | | | | | |

**REQUESTED ANALYSIS**

**TAT**

- 24hr:
- 72hr:
- 48hr:
- 10 day: X
- Other:

Special Detection Limits (Specify): Please analyze to the lowest detectable limit

Special Reporting Requirements (Specify):

Consultant Remarks:

Laboratory Remarks: 4 oz

PM review:

| | Date | Time | |
|---|---|---|---|
| Relinquished by Sampler: Christine Mathews | 1.30.09 | 1500 | Received by: |
| Relinquished by: | Date | Time | Received by: |
| Relinquished by: | Date: 1/31/09 | Time: 11:00 | Received by ELOT: |