# 3R - 427

# CLOSURE REQUEST

# 04/13/2011

**Terry S. Lauck**
Site Manager

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ConocoPhillips

Mr. Glenn von Gonten
State of New Mexico
Oil Conservation Division
Environmental Bureau
1220 South Saint Francis Drive
Santa Fe, NM 87505

April 13, 2011

**Re: Formal Request for Site Closure and No Further Action Status**
Site Name: El Paso No. 1A
API Number: 30-045-22778

Dear Mr. von Gonten:

ConocoPhillips Company (ConocoPhillips) submits this letter as a formal request for remediation project closure and no further action status for the El Paso No. 1A gas well (Site), operated by Burlington Resources Oil & Gas Company LP, a wholly-owned subsidiary of ConocoPhillips. The Site is located on federal land in San Juan County.

Enclosed is a report presenting the results of the most recent groundwater monitoring event from December 2010. That sampling event represented the eighth consecutive quarter of results with concentrations of BTEX in all four monitoring wells below New Mexico Water Quality Control Commission (NMWQCC) groundwater standards. Fluoride, sulfate, manganese and total dissolved solids, however, are still present in concentrations exceeding NMWQCC standards. The Site is located in the northwest portion of the Blanco Canyon watershed, adjacent to Canon Largo. According to the San Juan Water Commission's 2003 report, *San Juan Hydrologic Unit Regional Water Plan Supply Assessment, Volume III*, surface water (and presumably alluvial groundwater) in this area is known to have high levels of TDS. A USGS gauging station (09356565) located approximately 3 miles up Canon Largo from the Site, frequently produced samples with analytical values for sulfate, manganese, and dissolved solids in excess of NMWQCC standards. The results for fluoride were often right at the NMWQCC standard.

Because of the high background concentrations of fluoride, sulfate, manganese, and total dissolved solids in the vicinity of the Site, ConocoPhillips respectfully requests a "no further action" determination from NMOCD for the Site. Upon approval of closure by the NMOCD, ConocoPhillips will plug and abandon all monitoring wells at the Site.

Sincerely,

Terry S. Lauck

Cc: Brandon Powell, NMOCD – Aztec (w/enc)
Kelly Blanchard, Tetra Tech, Inc.

Enc (1)

# DECEMBER 2010 QUARTERLY GROUNDWATER MONITORING REPORT

# CONOCOPHILLIPS COMPANY

# EL PASO NO.1A
# NATURAL GAS PRODUCTION SITE
# SAN JUAN COUNTY, NEW MEXICO

API # 30-045-22778

**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. 96900122.100

April 2011

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## APPENDICES

# QUARTERLY GROUNDWATER MONITORING REPORT CONOCOPHILLIPS COMPANY EL PASO NO.1A SAN JUAN COUNTY, NEW MEXICO

## 1.0 INTRODUCTION

This report details the results of quarterly groundwater monitoring completed by Tetra Tech, Inc. (Tetra Tech) on December 15, 2010 at the ConocoPhillips Company El Paso No. 1A site in San Juan County, New Mexico (Site). This sampling event represents the ninth quarter of groundwater monitoring conducted by Tetra Tech at the Site, eight of which include all four Site monitor wells.

The Site is located on BLM land east of Blanco, NM near the intersection of New Mexico Highway 64 and County Road 4450 in Section 20, Township 29 North, Range 9 West. The Site consists of the El Paso No. 1S and El Paso No. 1A natural gas production wellheads and includes all associated equipment and installations. A site location map is included as **Figure 1**, a site detail map is included as **Figure 2**, and a generalized geologic cross section is included as **Figure 3**.

### 1.1 Site History

The history of the Site is outlined in **Table 1**.

## 2.0 METHODOLOGY AND RESULTS

### 2.1 Groundwater Monitoring Methodology

Groundwater Elevation Measurements

On December 15, 2010 groundwater elevation measurements were recorded in Monitor Wells MW-1, MW-2, MW-3, and MW-4 using a dual interface probe. Groundwater elevations are detailed in **Table 2**. A groundwater elevation contour map is presented as **Figure 4.** Based on December 2010 monitoring event data, groundwater flow is southwest and consistent with historic records at this site. The San Juan River is approximately 1 mile from the site and flows west.

Groundwater sampling

Each monitor well was sampled after three well casing volumes had been purged; or until measured groundwater parameters including temperature, pH, conductivity, total dissolved solids (TDS), oxidation-reduction potential (ORP), and dissolved oxygen (DO) had stabilized. Parameters were collected using a YSI 556 multi-parameter sonde and were recorded on Tetra Tech Groundwater Sampling Field Forms (**Appendix A**).

Purged groundwater was disposed of in the Site produced water tank (**Figure 2**). A dedicated 1.5-inch polyethylene bailer was used to purge and collect groundwater samples. The samples were then placed in laboratory prepared bottles, packed on ice, and shipped with chain of custody documentation to Southern Petroleum Laboratory (SPL) located in Houston, Texas. The samples were analyzed for

presence of volatile organic compounds (VOC) including benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8260B, ion chromatography by EPA Method E300.0, total dissolved solids (TDS) by EPA Method 2540C, and dissolved metals for manganese by EPA Method 6010B.

## 2.3 Groundwater Sampling Analytical Results

Groundwater collected from Site monitoring wells during the December 2010 monitoring event was below the New Mexico Water Quality Control Commission (NMWQCC) standards for BTEX. Exceedances of NMWQCC standards were detected for the following constituents:

- **Fluoride**

  The NMWQCC groundwater quality standard for fluoride is 1.6 milligrams per liter (mg/L). Groundwater collected from MW-1 contained a fluoride concentration of 2.02mg/L; groundwater collected from MW-3 contained a fluoride concentration of 1.56 mg/L; while groundwater collected from MW-4 contained a fluoride concentration of 2.37 mg/L.

- **Sulfate**

  The NMWQCC groundwater quality standard for sulfate is 600 mg/L. Groundwater collected from Monitor Well MW-1 contained sulfate at 7,140 mg/L; groundwater collected from MW-2 contained sulfate at 14,500 mg/L; groundwater collected from MW-3 contained sulfate at 6,950 mg/L; and groundwater collected from MW-4 contained sulfate at 4,870 mg/L. The highest concentration of sulfate was found in groundwater collected from MW-2, the up-gradient monitoring well.

- **Manganese**

  The NMWQCC groundwater quality standard for dissolved manganese is 0.2 mg/L. Groundwater collected from Monitor Well MW-1 contained dissolved manganese at 1.36 mg/L, groundwater collected from MW-2 contained dissolved manganese at 1.34 mg/L, and groundwater collected from MW-3 contained dissolved manganese at 0.423 mg/L. Groundwater collected from MW-4 was found to contain dissolved manganese below the NMWQCC standard.

- **Total Dissolved Solids**

  The NMWQCC groundwater quality standard for total dissolved solids (TDS) is 1,000 mg/L. Groundwater collected from Monitor Well MW-1 contained TDS at 9,980 mg/L; groundwater collected from MW-2 contained a concentration of 20,300 mg/L; groundwater collected from MW-3 contained a concentration of 9,480 mg/L; and groundwater collected from MW-4 contained a concentration of 4,380 mg/L. The highest concentration of TDS was found in groundwater collected from MW-2, the up-gradient monitoring well.

Groundwater laboratory analytical results are summarized in **Table 3**. A NMWQCC standard exceedances map is presented as **Figure 5**. The laboratory analytical report for the December 2010 groundwater sampling event is included as **Appendix B**.

## 3.0 CONCLUSIONS

To date, groundwater samples collected from Site monitor wells have never exceeded NMWQCC groundwater quality standards for BTEX. Furthermore, BTEX concentrations have consistently been below the minimum laboratory detection limits in Monitor Wells MW-1, MW-2 and MW-4 since monitoring began. Monitoring Wells MW-1, MW-2, MW-3, and MW-4 were found to have concentrations exceeding the NMWQCC standard for fluoride, sulfate and total dissolved solids. Groundwater collected from Monitoring Wells MW-1, MW-2, and MW-3 were also found to exceed the NMWQCC standard for dissolved manganese. The concentrations of sulfate and TDS appear to come from an up-gradient location since MW-2 consistently contains the highest levels of these constituents. Fluoride concentrations appear to be stable.

Based on information obtained from the United States Geological Survey (USGS), specifically data from USGS Gauging Station 0935656 located approximately three miles up-gradient of the El Paso No. 1A site (**Figure 6**), historic analytical data shows elevated concentrations of sulfate, dissolved manganese and TDS above NMWQCC standards in the Canyon Largo area. A summary of the USGS historic analytical data has been included and summarized on **Table 4**. It is likely that the elevated concentrations of sulfate, manganese and TDS that have been reported in El Paso No. 1A site monitoring wells are associated with regional background levels of these constituents. In addition, the document *San Juan Hydrologic Unit Regional Water Plan Water Supply Assessment, Volume III,* groundwater in the vicinity of the El Paso No. 1A site is noted in figure 1-6 (**Appendix C**) as having levels of TDS above 1,200 mg/L (San Juan Water Commission, 2003).

Since BTEX is below standards in all four monitoring wells, and the other constituents of concern that are above NMWQCC standards appear to be coming from up-gradient of the site, are at background levels, or are stable; Tetra Tech recommends the discontinuation of quarterly groundwater monitoring and requests no further action status be granted for the Site. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

## References

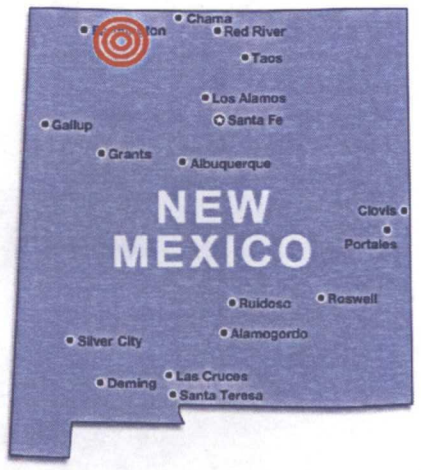
San Juan Water Commission, September 2003. San Juan Hydrologic Unit Regional Water Plan, Water Supply Assessment, Volume III.

# FIGURES


ConocoPhillips High Resolution Aerial Imagery

**FIGURE 1.**

Site Location Map
ConocoPhillips
Company
El Paso 1A
San Juan County, NM




Directions from HW 64 to ConocoPhillips El Paso 1A site Location

Approximate ConocoPhillips El Paso 1A Site location

N

TETRA TECH, INC.

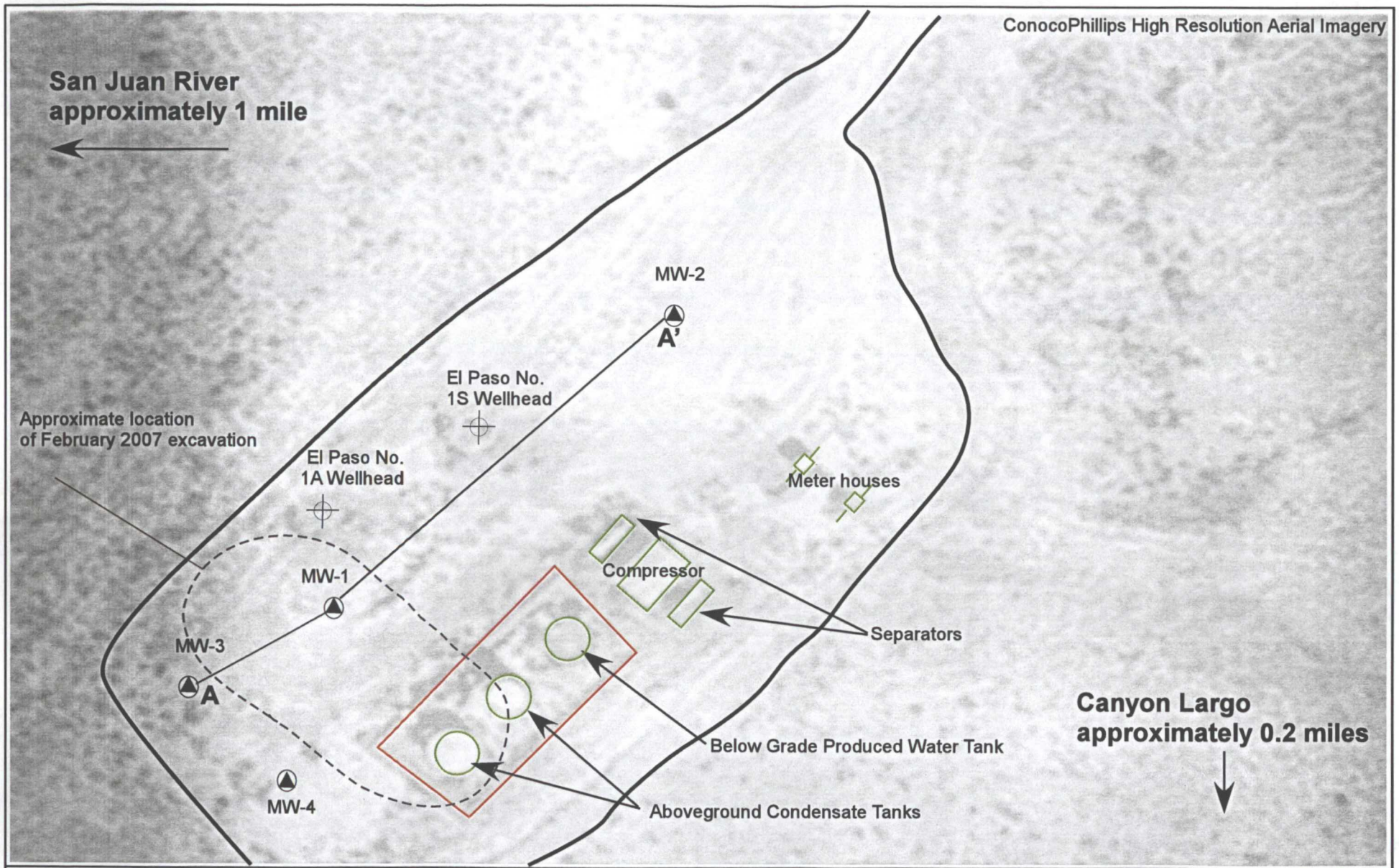



**FIGURE 2:**
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
EL PASO NO. 1A
Sec 20, Twp 29N, Rng 09W
San Juan County, New Mexico

**LEGEND**

- WELLHEAD
- MONITOR WELL
- GENERAL SITE BOUNDARY
- BERM
- EQUIPMENT

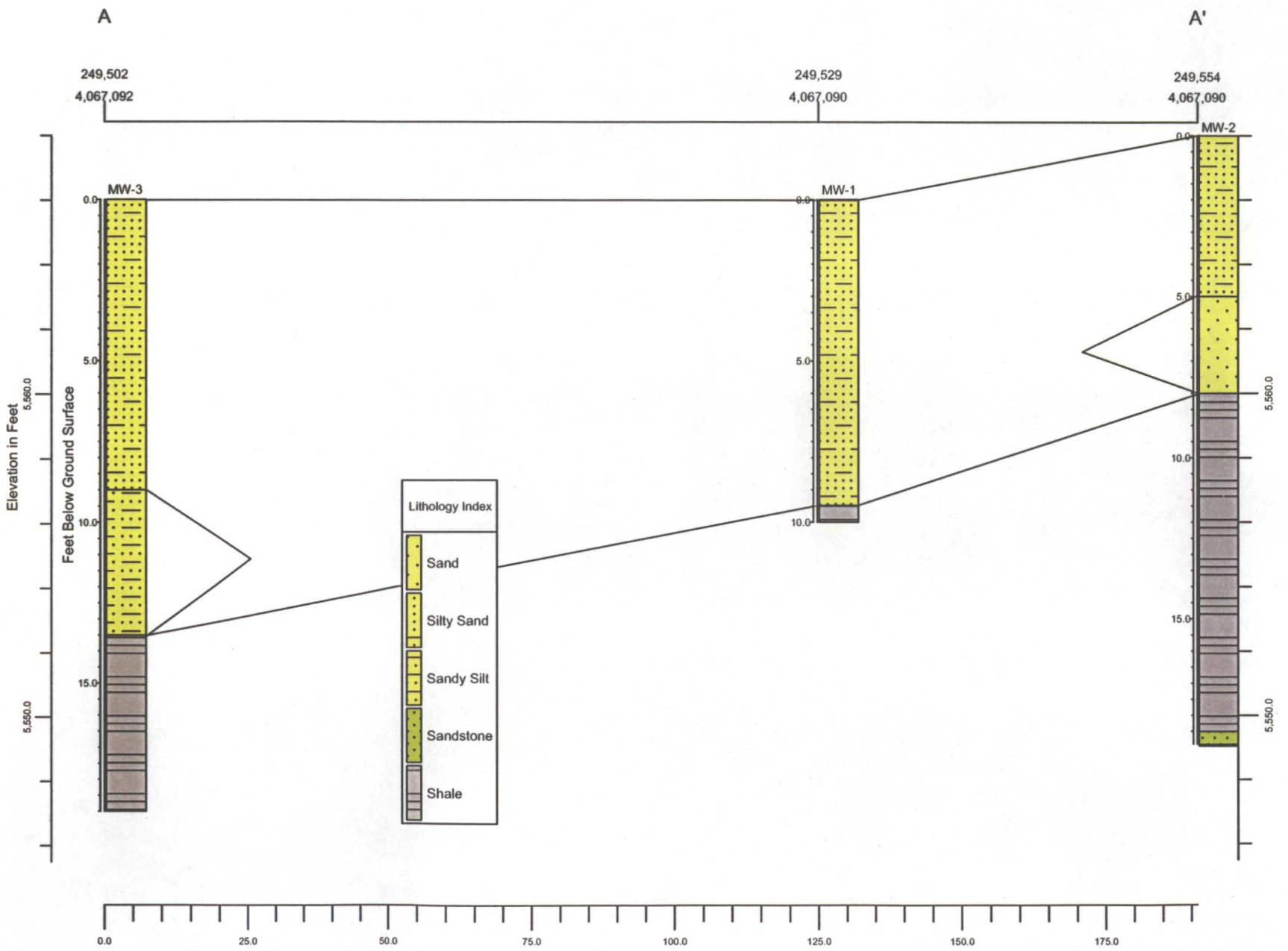
0 45 90
FEET

N

TETRA TECH, INC.

Figure 3

El Paso No. 1A - Cross-Section A-A'




5/24/2010

TETRA TECH

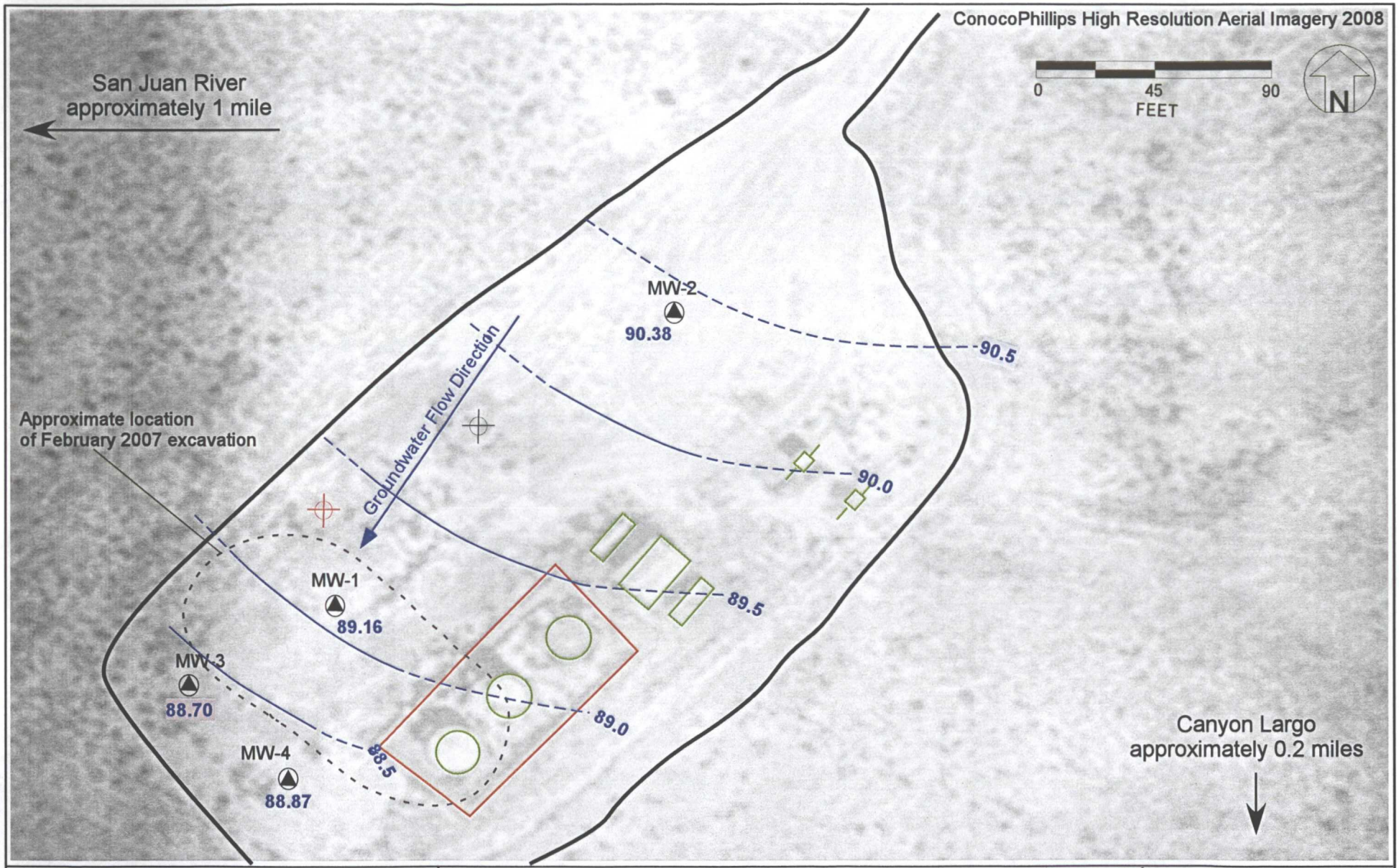



**FIGURE 4:**
GROUNDWATER ELEVATION MAP
DECEMBER 2010
CONOCOPHILLIPS COMPANY
EL PASO NO. 1A
Sec 20, Twp 29N, Rng 09W
San Juan County, New Mexico

**LEGEND**

- EL PASO 1A WELLHEAD
- EL PASO 1S WELLHEAD
- MONITOR WELL
- BERM
- EQUIPMENT
- GROUNDWATER ELEVATION LINE (FEET)
- GENERAL SITE BOUNDARY

TETRA TECH, INC.

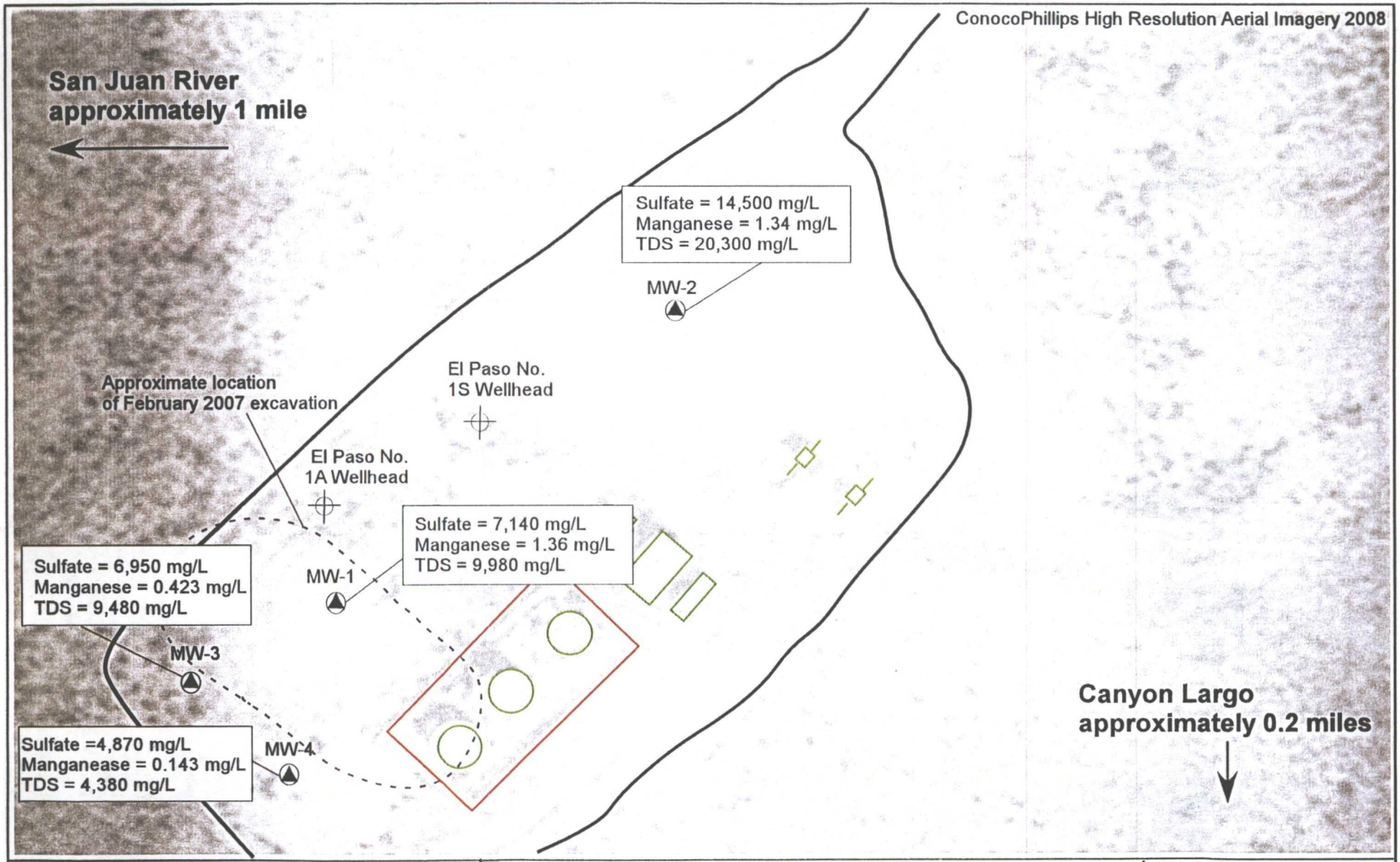
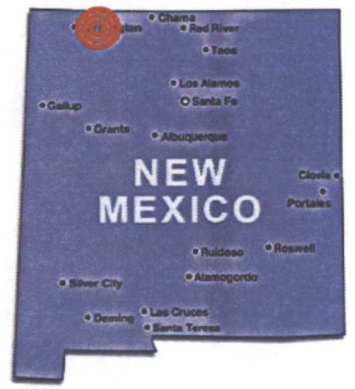



**FIGURE 5:**
GROUNDWATER QUALITY STANDARD
EXCEEDENCES CONCENTRATION MAP
DECEMBER 2010
CONOCOPHILLIPS COMPANY
EL PASO NO. 1A
Sec 20, Twp 29N, Rng 09W
San Juan County, New Mexico

TETRA TECH, INC.


**FIGURE 6.**

USGS Gauging Station
Location Map
ConocoPhillips Company
El Paso 1A
San Juan County, NM




Approximate ConocoPhillips El Paso 1A Site location

Approximate USGS Gauging Station 0935656 Location, Canyon Largo, NR Blanco, NM

N

0 0.5
Mile

TETRA TECH, INC.

# TABLES

**Table 1. Site History Timeline - ConocoPhillips Company El Paso No. 1A**

| DATE | ACTIVITY |
|---|---|
| 5-Jan-78 | Well spudded by El Paso Natural Gas Co. |
| 1-Nov-86 | Meridian Oil, Inc. becomes the operator under El Paso Production Company |
| 31-Dec-00 | Operator name change from Burlington Resources Oil and Gas Company to Burlington Resources Oil and Gas Company LP. |
| 31-Mar-06 | ConocoPhillips Company completed the aquistion of Burlington Resources. |
| Feb-07 | Hydrocarbon-impacted soils discovered during trench work being conducted for a new flowline. Original source of contamination is unknown. |
| Feb-07 | Contaminated soil excavated from the Site. Soil samples collected and analyzed for benzene, toluene, ethylbenzene and total xylenes (BTEX) were below NMOCD regulations. |
| 21-Sep-07 | Groundwater monitoring well installed to a depth of ten (10) feet below ground surface (bgs) by Envirotech Inc. of Farmington, NM (Envirotech). A soil sample obtained from the well boring was analyzed for benzene, BTEX and total petroleum hydrocarbons (TPH). Results were below NMOCD regulations of 10 parts per million (ppm), 50 ppm, and 100 ppm, respectively. |
| 21-Sep-07 | A ground water sample was collected from the temporary monitoring well and analyzed for BTEX; results were below the State of New Mexico drinking water standard for this constituent. |
| 27-Sep-07 | Depth to groundwater measured at seven (7) feet bgs. |
| Sep-07 | Envirotech report recommends plugging and abandonment of the temporary ground water monitoring well and a No Further Action determination for the Site (Envirotech, 2007). |
| Apr-08 | Oil Conservation 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. |
| 25-Oct-08 | 1st quarter sampling of MW-1 by Tetra Tech. |
| Jan-09 | Attempt to install additional monitoring wells; roads inaccessible by drill rig due to winter weather conditions. |
| 3 and 4-March-09 | Monitoring wells MW-2, MW-3, MW-4 installed and developed by WDC overseen by Tetra Tech. Soil samples were collected from MW-3 and MW-2 boring locations. |
| 2-Apr-09 | First quarter of sampling to include all 4 monitoring wells. A baseline suite was collected for MW-1, MW-2, MW-3 and MW-4. BTEX constituents under NMWQCC standards in all site monitor wells. |
| 18-Jun-09 | 2nd quarter of groundwater sampling conducted by Tetra Tech to include wells MW-1, MW-2, MW-3 and MW-4. Second consecutive quarter of BTEX constituents being under NMWQCC standards in all site monitor wells. |
| 29-Sep-09 | 3rd quarter of groundwater sampling conducted by Tetra Tech to include wells MW-1, MW-2, MW-3 and MW-4. Samples collected for dissolved metals exceeding standards that were previously run by the total metals test method; Al, Mn, Fe. Dissolved manganese was found in concentrations above NMWQCC standard. Third consecutive quarter of BTEX constituents being under NMWQCC standards in all site monitor wells. |
| 15-Dec-09 | 4th quarter groundwater sampling conducted by Tetra Tech to include wells MW-1, MW-2, MW-3 and MW-4. Analytical results for fluoride are inconclusive. Fourth consecutive quarter of BTEX constituents being under NMWQCC standards in all site monitor wells. |
| 28-Apr-10 | 5th quarter groundwater sampling conducted by Tetra Tech to include wells MW-1, MW-2, MW-3 and MW-4. Fifth consecutive quarter of BTEX constituents being under NMWQCC standards in all site monitor wells. |
| 8-Jun-10 | 6th quarter groundwater sampling conducted by Tetra Tech to include wells MW-1, MW-2, MW-3 and MW-4. Sixth consecutive quarter of BTEX constituents being under NMWQCC standards in all site monitor wells. |
| 23-Sep-10 | 7th quarter groundwater sampling conducted by Tetra Tech to include wells MW-1, MW-2, MW-3 and MW-4. Seventh consecutive quarter of BTEX constituents being under NMWQCC standards in all site monitor wells. |
| 15-Dec-10 | 8th quarter groundwater sampling conducted by Tetra Tech to include wells MW-1, MW-2, MW-3 and MW-4. Eighth consecutive quarter of BTEX constituents being under NMWQCC standards in all site monitor wells. |

Table 2. Groundwater Elevation Data Summary - ConocoPhillips Company El Paso No. 1A

| 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 | 13.55 | 4.75-9.75 | 99.52 | 9/21/2007 | 7.00 | 92.52 |
| | | | | 10/25/2008 | 10.92 | 88.60 |
| | | | | 1/30/2009 | NM | NM |
| | | | | 4/2/2009 | 10.33 | 89.19 |
| | | | | 6/18/2009 | 10.65 | 88.87 |
| | | | | 9/29/2009 | 10.96 | 88.56 |
| | | | | 12/15/2009 | 10.99 | 88.53 |
| | | | | 4/28/2010 | 10.53 | 88.99 |
| | | | | 6/8/2010 | 10.48 | 89.04 |
| | | | | 9/23/2010 | 10.47 | 89.05 |
| | | | | 12/15/2010 | 10.36 | 89.16 |
| MW-2 | 20.75 | 3-17.9 | 98.72 | 4/2/2009 | 8.49 | 90.23 |
| | | | | 6/18/2009 | 8.71 | 90.01 |
| | | | | 9/29/2009 | 8.70 | 90.02 |
| | | | | 12/15/2009 | 8.75 | 89.97 |
| | | | | 4/28/2010 | 8.38 | 90.34 |
| | | | | 6/8/2010 | 8.30 | 90.42 |
| | | | | 9/23/2010 | 8.39 | 90.33 |
| | | | | 12/15/2010 | 8.34 | 90.38 |
| MW-3 | 21.15 | 3.1-18.1 | 98.175 | 4/2/2009 | 9.71 | 88.47 |
| | | | | 6/18/2009 | 9.75 | 88.43 |
| | | | | 9/29/2009 | 10.10 | 88.08 |
| | | | | 12/15/2009 | 10.07 | 88.11 |
| | | | | 4/28/2010 | 9.66 | 88.52 |
| | | | | 6/8/2010 | 9.62 | 88.56 |
| | | | | 9/23/2010 | 9.59 | 88.59 |
| | | | | 12/15/2010 | 9.48 | 88.70 |
| MW-4 | 20.83 | 2.9-17.9 | 98.28 | 4/2/2009 | 9.74 | 88.54 |
| | | | | 6/18/2009 | 9.78 | 88.50 |
| | | | | 9/29/2009 | 10.04 | 88.24 |
| | | | | 12/15/2009 | 10.06 | 88.22 |
| | | | | 4/28/2010 | 9.70 | 88.58 |
| | | | | 6/8/2010 | 9.61 | 88.67 |
| | | | | 9/23/2010 | 9.45 | 88.83 |
| | | | | 12/15/2010 | 9.41 | 88.87 |

ft = Feet

TOC = Top of casing

bgs = below ground surface

* Elevation relative to wellhead, set at an arbitrary elevation of 100 feet above mean sea level

NM = Not Measured

**Table 3. Groundwater Laboratory Analytical Results Summary - ConocoPhillips Company El Paso No. 1A**

| Well ID | Date | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | Fluoride (mg/L) | Sulfate (mg/L) | Aluminum (mg/L) | Iron (mg/L) | Manganese (mg/L) | Total Dissolved Solids (mg/L) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 9/21/2007 | 1.4 | 0.5 | <0.2 | 0.3 | NS | NS | NS | NS | NS | NA |
| | 10/25/2008 | <0.5 | <0.5 | <0.5 | <0.5 | <2 | 6400 | NS | 26* | 5.49* | NA |
| | 1/30/2009 | NA(1) | NA(1) | NA(1) | NA(1) | NA(1) | NA(1) | NA(1) | NA(1) | NA(1) | NA(1) |
| | 4/2/2009 | <0.5 | <0.5 | <0.5 | <0.5 | 1.92 | 7580 | 2.21* | 29.6* | 3.14* | 10000 |
| | 6/18/2009 | <5 | <5 | <5 | <5 | 2.04 | 7970 | 2.1* | 7.66* | 3.06* | NA |
| | 9/29/2009 | <1 | <1 | <1 | <1 | 1.56 | 8030 | <0.1 | 0.0237 | 1.42 | 10600 |
| | 12/15/2009 | <1 | <1 | <1 | <1 | <50 | 10100 | NA | NA | 1.68 | 10400 |
| | 4/28/2010 | <1 | <1 | <1 | <1 | 2.14 | 8100 | NA | NA | 2.37 | 10300 |
| | 6/8/2010 | <1 | <1 | <1 | <1 | < 5.0 | 6690 | NA | NA | 2.17 | 10600 |
| | 9/23/2010 | <1 | <1 | <1 | <1 | 2.46 | 7080 | NA | NA | 1.8 | 10400 |
| | 12/15/2010 | <1 | <1 | <1 | <1 | 2.02 | 7140 | NA | NA | 1.36 | 9980 |
| MW-2 | 4/2/2009 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | 15900 | 0.705* | 0.751* | 1.16* | 22500 |
| | 6/18/2009 | <5 | <5 | <5 | <5 | 0.67 | 17000 | 1.49* | 1.23* | 1.92* | NA |
| | 9/29/2009 | <1 | <1 | <1 | <1 | <0.5 | 29800 | <0.1 | <0.02 | 2.03 | 31800 |
| | 12/15/2009 | <1 | <1 | <1 | <1 | <100 | 22100 | NA | NA | 1.54 | 25100 |
| | 4/28/2010 | <1 | <1 | <1 | <1 | 2.18 | 8350 | NA | NA | 0.941 | 12300 |
| | 6/8/2010 | <1 | <1 | <1 | <1 | < 5.0 | 12200 | NA | NA | 1.38 | 19000 |
| | 9/23/2010 | <1 | <1 | <1 | <1 | 2.09 | 12400 | NA | NA | 1.74 | 19500 |
| | 12/15/2010 | <1 | <1 | <1 | <1 | < 0.5 | 14500 | NA | NA | 1.34 | 20300 |
| MW-3 | 4/2/2009 | <0.5 | <0.5 | 52 | 362 | 1.68 | 4090 | 5.47* | 9.31* | 0.788* | 7530 |
| | 6/18/2009 | <5 | <5 | 15 | 87 | 1.68 | 5750 | 3.75* | 5.3* | 0.454* | NA |
| | 9/29/2009 | <1 | <1 | 2.7 | 20 | 1.47 | 6890 | 0.224 | 0.14 | 0.432 | 8630 |
| | 12/15/2009 | <1 | <1 | 3 | 24 | <50 | 7490 | NA | NA | 0.583 | 9230 |
| | 4/28/2010 | 2 | <1 | 15 | 124 | 1.53 | 5680 | NA | NA | 0.519 | 6610 |
| | 6/8/2010 | <1 | <1 | 5.4 | 45.7 | < 5.0 | 4740 | NA | NA | 0.409 | 6620 |
| | 9/23/2010 | <1 | <1 | 1.3 | 10.5 | 2.52 | 4490 | NA | NA | 0.385 | 12600 |
| | 12/15/2010 | <1 | <1 | < 1.0 | 3.7 | 1.56 | 6950 | NA | NA | 0.423 | 9480 |
| MW-4 | 4/2/2009 | <0.5 | <0.5 | <0.5 | <0.5 | 2.42 | 4750 | 2.1* | 2.12* | 0.396* | 6660 |
| | 6/18/2009 | <5 | <5 | <5 | <5 | 2.25 | 5300 | 5.52* | 6.91* | 0.333* | NA |
| | 9/29/2009 | <1 | <1 | <1 | <1 | 2.26 | 5340 | 0.943 | 0.393 | 0.134 | 6760 |
| | 12/15/2009 | <1 | <1 | <1 | <1 | <50 | 5660 | NA | NA | 0.201 | 6500 |
| | 4/28/2010 | <1 | <1 | <1 | <1 | 2.38 | 4820 | NA | NA | 0.198 | 8320 |
| | 6/8/2010 | <1 | <1 | <1 | <1 | 2.78 | 3910 | NA | NA | 0.177 | 3380 |
| | 9/23/2010 | <1 | <1 | <1 | <1 | 1.8 | 6200 | NA | NA | 0.157 | 8600 |
| | 12/15/2010 | <1 | <1 | <1 | <1 | 2.37 | 4870 | NA | NA | 0.143 | 4380 |
| NMWQCC Standards | | 10 (µg/L) | 750 (µg/L) | 750 (µg/L) | 620 (µg/L) | 1.6 (mg/L) | 600 (mg/L) | 5 (mg/L) | 1 (mg/L) | 0.2 (mg/L) | 1000 (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(1) = Not analyzed due to laboratory error
NA = Not Analyzed
<0.7 = Below laboratory detection limit of 0.7 ug/L
**Bold** = concentrations that exceed the NMWQCC limits
* = Results reported for total metals analysis, results can not be compared to NMWQCC Standards for dissolved metals

**Table 4. USGS Gauging Station 0935656, Canyon Largo NR Blanco, NM - Historic Water Quality Analytical Data Summary**

| Sample Date and Time (MST) | Sulfate (Filtered) mg/L | Fluoride (Filtered) mg/L | Dissolved Solids (Filtered) mg/L | Dissolved Solids Sum of Constituents mg/L |
|---|---|---|---|---|
| 1979-10-31 13:45 | **5800** | 1.60 | **8920** | **8640** |
| 1979-11-08 12:30 | **6000** | 1.20 | **10200** | **9410** |
| 1979-12-03 11:30 | **4800** | 1.60 | **8890** | **7480** |
| 1980-01-04 13:00 | **3600** | 1.40 | **6990** | **5840** |
| 1980-02-05 11:30 | **4000** | 1.20 | **6670** | **6200** |
| 1980-03-03 12:30 | 390 | 0.90 | 729 | 643 |
| 1980-04-04 11:30 | **4400** | 1.40 | **7540** | **6750** |
| **NMWQCC Standards** | **600 (mg/L)** | **1.6 (mg/L)** | **1000 (mg/L)** | **1000 (mg/L)** |

| Sample Date and Time (MST) | Manganese (Filtered) mg/L |
|---|---|
| 9/14/1958 15:00 | 0 |
| 5/2/1978 14:30 | 0.02 |
| 7/19/1979 12:00 | < 0.010 |
| 8/15/1979 10:15 | < 0.010 |
| 1/13/1981 9:35 | 0.18 |
| 3/3/1981 15:45 | **0.41** |
| 7/1/1981 20:00 | **1.9** |
| 7/1/1981 20:15 | **4.4** |
| 7/2/1981 15:00 | 0 |
| 7/15/1981 7:00 | **2.7** |
| 7/26/1981 20:15 | **3.5** |
| 9/9/1981 10:15 | < 0.001 |
| **NMWQCC Standards** | **0.2 (mg/L)** |

Notes:
NMWQCC = New Mexico Water Quality Control Commission
mg/L = milligrams per liter (parts per million)
**Bold** = concentrations that exceed the NMWQCC Standards

All data was obtained from the United States Geological Survey, National Water Information System, at http://waterdata.usgs.gov/nwis/qwdata. All available data points were included in the historic summary.

# APPENDIX A

## GROUNDWATER SAMPLING FIELD FORMS

TETRA TECH, INC.

# WATER SAMPLING FIELD FORM

Project Name El Paso 1A — Page 1 of 4

Project No.

Site Location Blanco, NM

Site/Well No. MW-1 — Coded/Replicate No. 1625 — Date 12.15.10

Weather overcast, cold 350 — Time Sampling Began 1611 — Time Sampling Completed 1620

## EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation 99.52

Total Sounded Depth of Well Below MP 13.58 — Water-Level Elevation 89.16

Held ____ Depth to Water Below MP 10.36 — Diameter of Casing 2"

Wet ____ Water Column in Well 3.22 — Gallons Pumped/Bailed Prior to Sampling pumped/bailed

Gallons per Foot 0.16

Gallons in Well 0.515 x 3 = 1.54 — Sampling Pump Intake Setting (feet below land surface) 1.75

Purging Equipment Purge pump / Bailer

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature (°C) | pH | Conductivity (µS/cm) | TDS (g/L) | DO (mg/L) | DO % | ORP (mV) | Volume (gal.) |
|---|---|---|---|---|---|---|---|---|
| 1614 | 13.23 | 8.07 | 5958 | 5.011 | 2.22 | 21.5 | 5.3 | 0.5 |
| 1616 | 13.53 | 8.13 | 5994 | 4.992 | 1.72 | 16.9 | -76.2 | 1.0 |
| 1617 | 13.57 | 8.15 | 5985 | 4.976 | 1.53 | 15.0 | -132.6 | 1.5 |
| | | | | | | | | |
| | | | | | | | | |

Sampling Equipment Purge Pump/Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 40mL VOA's | HCl |
| Total Metals | plastic | none |
| Flouride, Sulfate | plastic | none |

Remarks good recharge H2O is clear/black specs; slight hydrocarbon odor

Sampling Personnel Cassie Brown, ~~Christine Mathews~~ & Craig Brown

**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 |

TETRATECH, INC.

# WATER SAMPLING FIELD FORM

Project Name El Paso 1A — Page 2 of 4

Project No.

Site Location Blanco, NM

Site/Well No. MW-2 — Coded/ Replicate No. — Date 12.15.10

Weather Overcast, cold, 35° — Time Sampling Began — Time Sampling Completed 1632

## EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation 98.72

Total Sounded Depth of Well Below MP 20.75 — Water-Level Elevation 90.88

Held — Depth to Water Below MP 8.34 — Diameter of Casing 2"

Wet — Water Column in Well 12.41 — Gallons Pumped/Bailed Prior to Sampling pumped/bailed

Gallons per Foot 0.16

Gallons in Well 1.98 x 3 = 5.95 — Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature (°C) | pH | Conductivity (µS/cm³) | TDS (g/L) | DO (mg/L) | DO % | ORP (mV) | Volume (gal.) |
|---|---|---|---|---|---|---|---|---|
| 1626 | 14.98 | 7.79 | 11100 | 8.955 | 1.79 | 18.4 | -125.9 | 6.25 |
| 1629 | 15.08 | 7.77 | 10534 | 8.447 | 1.85 | 19.1 | -129.6 | 6.5 |
| 1630 | 15.10 | 7.80 | 10202 | 8.177 | 1.72 | 17.8 | -131.0 | 6.75 |
| | | | | | | | | |
| | | | | | | | | |

Sampling Equipment Purge Pump/Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 40mL VOA's | HCl |
| Total Metals | plastic | none |
| Flouride, Sulfate | plastic | none |

Remarks $H_2O$ is light Murky

Sampling Personnel Cassie Brown, ~~Christine Mathews~~ Craig Brown

**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 El Paso 1A — Page 3 of 4

Project No.

Site Location Blanco, NM

Site/Well No. MW-3 — Coded/ Replicate No. — Date 12·15·10

Weather Overcast cold 35° — Time Sampling Began — Time Sampling Completed 1605 1655

## EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation 98.175

Total Sounded Depth of Well Below MP 21.11 — Water-Level Elevation 88.695

Held ____ Depth to Water Below MP 9.48 — Diameter of Casing 2"

Wet ____ Water Column in Well 11.63 — Gallons Pumped/Bailed Prior to Sampling pumped/bailed

Gallons per Foot 0.16

Gallons in Well 1.86 x 3 = (5.58)

Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature (°C) | pH | Conductivity (µS/cm³) | TDS (g/L) | DO (mg/L) | DO % | ORP (mV) | Volume (gal.) |
|---|---|---|---|---|---|---|---|---|
| 1604 | 13.84 | 8.43 | 5617 | 4.640 | 1.56 | 15.4 | -200.0 | 4.5 |
| 1649 | 13.74 | 8.52 | 5630 | 4.662 | 1.54 | 15.3 | -216.0 | 5.0 |
| 1651 | 13.80 | 8.54 | 5636 | 4.661 | 1.47 | 14.5 | -223.0 | 5.5 |
| | | | | | | | | |
| | | | | | | | | |

Sampling Equipment Purge Pump/Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 40mL VOA's | HCl |
| Total Metals | plastic | none |
| Flouride, Sulfate | plastic | none |

Remarks $H_2O$ is Black. Strong hydrocarbon odor but No Sheen..

Sampling Personnel Cassie Brown, ~~Christine Mathews~~ & Craig Brown

**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 El Paso 1A — Page 4 of 4

Project No.

Site Location Blanco, NM

Site/Well No. MW-4 — Coded/ Replicate No. — Date 12.15.10

Weather overcast, cold 35° — Time Sampling Began 1040 — Time Sampling Completed 1703

## EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation 98.28

Total Sounded Depth of Well Below MP 20.86 — Water-Level Elevation 88.87

Held — Depth to Water Below MP 9.41 — Diameter of Casing 2"

Wet — Water Column in Well 11.45 — Gallons Pumped/Bailed Prior to Sampling pumped/bailed 3

Gallons per Foot 0.16

Gallons in Well 1.83 x 3 = 6.49

Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump/ Bailer

## SAMPLING DATA/FIELD PARAMETERS

| Time | Temperature (°C) | pH | Conductivity (µS/cm³) | TDS (g/L) | DO (mg/L) | DO % | ORP (mV) | Volume (gal.) |
|---|---|---|---|---|---|---|---|---|
| 1677 | 15.20 | 8.34 | 4533 | 3.623 | 1.08 | 10.9 | -191.0 | 5.75 |
| 1659 | 15.44 | 8.29 | 4545 | 3.613 | .88 | 8.8 | -193.6 | 6.0 |
| 1700 | 15.44 | 8.29 | 4530 | 3.602 | 1.19 | 12.1 | -186.2 | 6.2 |
| | | | | | | | | |
| | | | | | | | | |

Sampling Equipment Purge Pump/Bailer

| Constituents Sampled | Container Description | Preservative |
|---|---|---|
| BTEX | 3 40mL VOA's | HCl |
| Total Metals | plastic | none |
| Flouride, Sulfate | plastic | none |

Remarks $H_2O$ is Grey / Brown

Sampling Personnel Cassie Brown, ~~Christine Mathews~~ Craig Brown

**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 B

## GROUNDWATER LABORATORY ANALYTICAL REPORT

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

## Conoco Phillips

**Certificate of Analysis Number:**

**10120588**

| Report To: | | Project Name: | COP ElPaso1A |
|---|---|---|---|
| Tetra Tech, Inc. | | Site: | Blanco, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 12/27/2010 |
| ph (505) 237-8440 | fax: | | |

This Report Contains A Total Of 17 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

12/27/2010

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:
### 10120588

| Report To: | | Project Name: | COP ElPaso1A |
|---|---|---|---|
| Tetra Tech, Inc. | | Site: | Blanco, NM |
| Kelly Blanchard | | Site Address: | |
| 6121 Indian School Road, N.E. | | | |
| Suite 200 | | PO Number: | |
| Albuquerque | | State: | New Mexico |
| NM | | State Cert. No.: | |
| 87110- | | Date Reported: | 12/27/2010 |
| ph (505) 237-8440 | fax: | | |

I. SAMPLE RECEIPT:

All samples were received intact. The internal ice chest temperatures were measured on receipt and are recorded on the attached Sample Receipt Checklist.

II: ANALYSES AND EXCEPTIONS:

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.

III. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report (" mg\kg-dry " or " ug\kg-dry " ).

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.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or by his designee, as verified by the following signature.


12/27/2010

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:

## 10120588

**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 ElPaso1A
**Site:** Blanco, NM
**Site Address:**
**PO Number:**
**State:** New Mexico
**State Cert. No.:**
**Date Reported:** 12/27/2010

| Client Sample ID | Lab Sample ID | Matrix | Date Collected | Date Received | COC ID | HOLD |
|---|---|---|---|---|---|---|
| MW-1 | 10120588-01 | Water | 12/15/2010 0:00 | 12/17/2010 9:05:00 AM | 303429 | ☐ |
| MW-2 | 10120588-02 | Water | 12/15/2010 0:00 | 12/17/2010 9:05:00 AM | 303429 | ☐ |
| MW-3 | 10120588-03 | Water | 12/15/2010 0:00 | 12/17/2010 9:05:00 AM | 303429 | ☐ |
| MW-4 | 10120588-04 | Water | 12/15/2010 17:03 | 12/17/2010 9:05:00 AM | 303430 | ☐ |
| Duplicate | 10120588-05 | Water | 12/15/2010 16:25 | 12/17/2010 9:05:00 AM | 303430 | ☐ |
| Trip Blank | 10120588-06 | Water | 12/15/2010 21:55 | 12/17/2010 9:05:00 AM | 303430 | ☐ |

E Cardenas

12/27/2010

Erica Cardenas
Project Manager

Date

Kesavalu M. Bagawandoss Ph.D., J.D.
Laboratory Director

Ted Yen
Quality Assurance Officer

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

**Client Sample ID** MW-1 **Collected:** 12/15/2010 0:00 **SPL Sample ID:** 10120588-01

**Site: Blanco, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|---|
| **ION CHROMATOGRAPHY** | | | | **MCL** | **E300.0** | **Units: mg/L** | | |
| Fluoride | 2.02 | | 0.5 | | 1 | 12/18/10 0:56 | ESK | 5677659 |
| Sulfate | 7140 | | 500 | | 1000 | 12/19/10 17:27 | ESK | 5678093 |
| **METALS BY METHOD 6010B, DISSOLVED** | | | | **MCL** | **SW6010B** | **Units: mg/L** | | |
| Manganese | 1.36 | | 0.005 | | 1 | 12/22/10 0:20 | EG | 5680494 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3005A | 12/17/2010 12:45 | M_W | 1.00 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **TOTAL DISSOLVED SOLIDS** | | | | **MCL** | **SM2540 C** | **Units: mg/L** | | |
| Total Dissolved Solids (Residue,Filterable) | 9980 | | 100 | | 10 | 12/17/10 16:00 | MM1 | 5677485 |
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/L** | | |
| Benzene | ND | | 1 | | 1 | 12/22/10 20:29 | LU_L | 5683410 |
| Ethylbenzene | ND | | 1 | | 1 | 12/22/10 20:29 | LU_L | 5683410 |
| Toluene | ND | | 1 | | 1 | 12/22/10 20:29 | LU_L | 5683410 |
| m,p-Xylene | ND | | 2 | | 1 | 12/22/10 20:29 | LU_L | 5683410 |
| o-Xylene | ND | | 1 | | 1 | 12/22/10 20:29 | LU_L | 5683410 |
| Xylenes,Total | ND | | 1 | | 1 | 12/22/10 20:29 | LU_L | 5683410 |
| Surr: 1,2-Dichloroethane-d4 | 88.0 | | % 70-130 | | 1 | 12/22/10 20:29 | LU_L | 5683410 |
| Surr: 4-Bromofluorobenzene | 102 | | % 74-125 | | 1 | 12/22/10 20:29 | LU_L | 5683410 |
| Surr: Toluene-d8 | 105 | | % 82-118 | | 1 | 12/22/10 20:29 | LU_L | 5683410 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B - 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:** 12/15/2010 0:00 **SPL Sample ID:** 10120588-02

**Site: Blanco, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **ION CHROMATOGRAPHY** | | | | **MCL** | **E300.0** | **Units: mg/L** | |
| Fluoride | ND | | 0.5 | 1 | 12/18/10 1:12 | ESK | 5677660 |
| Sulfate | 14500 | | 500 | 1000 | 12/19/10 17:43 | ESK | 5678094 |
| **METALS BY METHOD 6010B, DISSOLVED** | | | | **MCL** | **SW6010B** | **Units: mg/L** | |
| Manganese | 1.34 | | 0.005 | 1 | 12/22/10 0:26 | EG | 5680495 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3005A | 12/17/2010 12:45 | M_W | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **TOTAL DISSOLVED SOLIDS** | | | | **MCL** | **SM2540 C** | **Units: mg/L** | |
| Total Dissolved Solids (Residue,Filterable) | 20300 | | 200 | 20 | 12/17/10 16:00 | MM1 | 5677486 |
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/L** | |
| Benzene | ND | | 1 | 1 | 12/22/10 20:55 | LU_L | 5683411 |
| Ethylbenzene | ND | | 1 | 1 | 12/22/10 20:55 | LU_L | 5683411 |
| Toluene | ND | | 1 | 1 | 12/22/10 20:55 | LU_L | 5683411 |
| m,p-Xylene | ND | | 2 | 1 | 12/22/10 20:55 | LU_L | 5683411 |
| o-Xylene | ND | | 1 | 1 | 12/22/10 20:55 | LU_L | 5683411 |
| Xylenes,Total | ND | | 1 | 1 | 12/22/10 20:55 | LU_L | 5683411 |
| Surr: 1,2-Dichloroethane-d4 | 87.1 | % | 70-130 | 1 | 12/22/10 20:55 | LU_L | 5683411 |
| Surr: 4-Bromofluorobenzene | 95.0 | % | 74-125 | 1 | 12/22/10 20:55 | LU_L | 5683411 |
| Surr: Toluene-d8 | 96.8 | % | 82-118 | 1 | 12/22/10 20:55 | LU_L | 5683411 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B - 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 **Collected:** 12/15/2010 0:00 **SPL Sample ID:** 10120588-03

**Site: Blanco, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **ION CHROMATOGRAPHY** | | | | **MCL** | **E300.0** | **Units: mg/L** | |
| Fluoride | 1.56 | | 0.5 | 1 | 12/18/10 1:28 | ESK | 5677661 |
| Sulfate | 6950 | | 500 | 1000 | 12/19/10 17:59 | ESK | 5678095 |
| **METALS BY METHOD 6010B, DISSOLVED** | | | | **MCL** | **SW6010B** | **Units: mg/L** | |
| Manganese | 0.423 | | 0.005 | 1 | 12/22/10 0:32 | EG | 5680496 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3005A | 12/17/2010 12:45 | M_W | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **TOTAL DISSOLVED SOLIDS** | | | | **MCL** | **SM2540 C** | **Units: mg/L** | |
| Total Dissolved Solids (Residue,Filterable) | 9480 | | 50 | 5 | 12/17/10 16:00 | MM1 | 5677487 |
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/L** | |
| Benzene | ND | | 1 | 1 | 12/22/10 21:22 | LU_L | 5683412 |
| Ethylbenzene | ND | | 1 | 1 | 12/22/10 21:22 | LU_L | 5683412 |
| Toluene | ND | | 1 | 1 | 12/22/10 21:22 | LU_L | 5683412 |
| m,p-Xylene | 3.7 | | 2 | 1 | 12/22/10 21:22 | LU_L | 5683412 |
| o-Xylene | ND | | 1 | 1 | 12/22/10 21:22 | LU_L | 5683412 |
| Xylenes,Total | 3.7 | | 1 | 1 | 12/22/10 21:22 | LU_L | 5683412 |
| Surr: 1,2-Dichloroethane-d4 | 84.9 | % | 70-130 | 1 | 12/22/10 21:22 | LU_L | 5683412 |
| Surr: 4-Bromofluorobenzene | 99.6 | % | 74-125 | 1 | 12/22/10 21:22 | LU_L | 5683412 |
| Surr: Toluene-d8 | 95.7 | % | 82-118 | 1 | 12/22/10 21:22 | LU_L | 5683412 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B - 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 **Collected:** 12/15/2010 17:03 **SPL Sample ID:** 10120588-04

**Site: Blanco, NM**

| Analyses/Method | Result | QUAL | Rep.Limit | Dil. Factor | Date Analyzed | Analyst | Seq. # |
|---|---|---|---|---|---|---|---|
| **ION CHROMATOGRAPHY** | | | | **MCL** | **E300.0** | **Units: mg/L** | |
| Fluoride | 2.37 | | 0.5 | 1 | 12/18/10 1:44 | ESK | 5677662 |
| Sulfate | 4870 | | 500 | 1000 | 12/19/10 18:15 | ESK | 5678096 |
| **METALS BY METHOD 6010B, DISSOLVED** | | | | **MCL** | **SW6010B** | **Units: mg/L** | |
| Manganese | 0.143 | | 0.005 | 1 | 12/22/10 0:56 | EG | 5680500 |

| Prep Method | Prep Date | Prep Initials | Prep Factor |
|---|---|---|---|
| SW3005A | 12/17/2010 12:45 | M_W | 1.00 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **TOTAL DISSOLVED SOLIDS** | | | | **MCL** | **SM2540 C** | **Units: mg/L** | |
| Total Dissolved Solids (Residue,Filterable) | 4380 | | 50 | 5 | 12/17/10 16:00 | MM1 | 5677488 |
| **VOLATILE ORGANICS BY METHOD 8260B** | | | | **MCL** | **SW8260B** | **Units: ug/L** | |
| Benzene | ND | | 1 | 1 | 12/22/10 21:48 | LU_L | 5683413 |
| Ethylbenzene | ND | | 1 | 1 | 12/22/10 21:48 | LU_L | 5683413 |
| Toluene | ND | | 1 | 1 | 12/22/10 21:48 | LU_L | 5683413 |
| m,p-Xylene | ND | | 2 | 1 | 12/22/10 21:48 | LU_L | 5683413 |
| o-Xylene | ND | | 1 | 1 | 12/22/10 21:48 | LU_L | 5683413 |
| Xylenes,Total | ND | | 1 | 1 | 12/22/10 21:48 | LU_L | 5683413 |
| Surr: 1,2-Dichloroethane-d4 | 85.6 | % | 70-130 | 1 | 12/22/10 21:48 | LU_L | 5683413 |
| Surr: 4-Bromofluorobenzene | 99.4 | % | 74-125 | 1 | 12/22/10 21:48 | LU_L | 5683413 |
| Surr: Toluene-d8 | 104 | % | 82-118 | 1 | 12/22/10 21:48 | LU_L | 5683413 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B - 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:** 12/15/2010 16:25 **SPL Sample ID:** 10120588-05

**Site: Blanco, 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 | | | 1 | 1 | 12/22/10 16:30 | LU_L | 5683406 |
| Ethylbenzene | ND | | | 1 | 1 | 12/22/10 16:30 | LU_L | 5683406 |
| Toluene | ND | | | 1 | 1 | 12/22/10 16:30 | LU_L | 5683406 |
| m,p-Xylene | ND | | | 2 | 1 | 12/22/10 16:30 | LU_L | 5683406 |
| o-Xylene | ND | | | 1 | 1 | 12/22/10 16:30 | LU_L | 5683406 |
| Xylenes,Total | ND | | | 1 | 1 | 12/22/10 16:30 | LU_L | 5683406 |
| Surr: 1,2-Dichloroethane-d4 | 88.4 | | % | 70-130 | 1 | 12/22/10 16:30 | LU_L | 5683406 |
| Surr: 4-Bromofluorobenzene | 98.3 | | % | 74-125 | 1 | 12/22/10 16:30 | LU_L | 5683406 |
| Surr: Toluene-d8 | 106 | | % | 82-118 | 1 | 12/22/10 16:30 | LU_L | 5683406 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B - 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:** 12/15/2010 21:55 **SPL Sample ID:** 10120588-06

**Site: Blanco, 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 | | | 1 | 1 | 12/22/10 17:49 | LU_L | 5683409 |
| Ethylbenzene | ND | | | 1 | 1 | 12/22/10 17:49 | LU_L | 5683409 |
| Toluene | ND | | | 1 | 1 | 12/22/10 17:49 | LU_L | 5683409 |
| m,p-Xylene | ND | | | 2 | 1 | 12/22/10 17:49 | LU_L | 5683409 |
| o-Xylene | ND | | | 1 | 1 | 12/22/10 17:49 | LU_L | 5683409 |
| Xylenes,Total | ND | | | 1 | 1 | 12/22/10 17:49 | LU_L | 5683409 |
| Surr: 1,2-Dichloroethane-d4 | 85.3 | | % | 70-130 | 1 | 12/22/10 17:49 | LU_L | 5683409 |
| Surr: 4-Bromofluorobenzene | 99.2 | | % | 74-125 | 1 | 12/22/10 17:49 | LU_L | 5683409 |
| Surr: Toluene-d8 | 104 | | % | 82-118 | 1 | 12/22/10 17:49 | LU_L | 5683409 |

**Qualifiers:**

ND/U - Not Detected at the Reporting Limit
B - 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 ElPaso1A**

**Analysis:** Metals by Method 6010B, Dissolved
**Method:** SW6010B
**WorkOrder:** 10120588
**Lab Batch ID:** 103991

### Method Blank

RunID: ICP2_101221C-5680478 Units: mg/L
Analysis Date: 12/21/2010 22:43 Analyst: EG
Preparation Date: 12/17/2010 12:45 Prep By: M_ Method SW3005A

| Analyte | Result | Rep Limit |
|---|---|---|
| Manganese | ND | 0.005 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 10120588-01B | MW-1 |
| 10120588-02B | MW-2 |
| 10120588-03B | MW-3 |
| 10120588-04B | MW-4 |

### Laboratory Control Sample (LCS)

RunID: ICP2_101221C-5680479 Units: mg/L
Analysis Date: 12/21/2010 22:49 Analyst: EG
Preparation Date: 12/17/2010 12:45 Prep By: M_ Method SW3005A

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Manganese | 0.1000 | 0.09500 | 95.00 | 80 | 120 |

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

Sample Spiked: 10120587-03
RunID: ICP2_101221C-5680481 Units: mg/L
Analysis Date: 12/21/2010 23:01 Analyst: EG
Preparation Date: 12/17/2010 12:45 Prep By: M_ Method SW3005A

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Manganese | 8.643 | 0.1 | 8.779 | N/C | 0.1 | 8.936 | N/C | N/C | 20 | 75 | 125 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B - 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 ElPaso1A**

**Analysis:** Volatile Organics by Method 8260B
**Method:** SW8260B
**WorkOrder:** 10120588
**Lab Batch ID:** R313328

### Method Blank

RunID: MSDVOA3_101222D-5683405 Units: ug/L
Analysis Date: 12/22/2010 12:30 Analyst: LU_L

| Analyte | Result | Rep Limit |
|---|---|---|
| Benzene | ND | 1.0 |
| Ethylbenzene | ND | 1.0 |
| Toluene | ND | 1.0 |
| m,p-Xylene | ND | 2.0 |
| o-Xylene | ND | 1.0 |
| Xylenes,Total | ND | 1.0 |
| Surr: 1,2-Dichloroethane-d4 | 82.1 | 70-130 |
| Surr: 4-Bromofluorobenzene | 90.5 | 74-125 |
| Surr: Toluene-d8 | 99.8 | 82-118 |

### Samples in Analytical Batch:

| Lab Sample ID | Client Sample ID |
|---|---|
| 10120588-01A | MW-1 |
| 10120588-02A | MW-2 |
| 10120588-03A | MW-3 |
| 10120588-04A | MW-4 |
| 10120588-05A | Duplicate |
| 10120588-06A | Trip Blank |

### Laboratory Control Sample (LCS)

RunID: MSDVOA3_101222D-5683 Units: ug/L
Analysis Date: 12/22/2010 11:36 Analyst: LU_L

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Benzene | 20.0 | 19.7 | 98.5 | 74 | 123 |
| Ethylbenzene | 20.0 | 19.7 | 98.4 | 72 | 127 |
| Toluene | 20.0 | 19.0 | 95.1 | 74 | 126 |
| m,p-Xylene | 40.0 | 40.2 | 101 | 71 | 129 |
| o-Xylene | 20.0 | 19.9 | 99.6 | 74 | 130 |
| Xylenes,Total | 60.0 | 60.1 | 100 | 71 | 130 |
| Surr: 1,2-Dichloroethane-d4 | 50.0 | 40.2 | 80.5 | 70 | 130 |
| Surr: 4-Bromofluorobenzene | 50.0 | 52.7 | 105 | 74 | 125 |
| Surr: Toluene-d8 | 50.0 | 51.4 | 103 | 82 | 118 |

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

Sample Spiked: 10120588-05
RunID: MSDVOA3_101222D-5683 Units: ug/L
Analysis Date: 12/22/2010 16:56 Analyst: LU_L

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B - 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 ElPaso1A**

**Analysis:** Volatile Organics by Method 8260B **WorkOrder:** 10120588
**Method:** SW8260B **Lab Batch ID:** R313328

| 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 | 19.7 | 98.3 | 20 | 19.4 | 96.8 | 1.49 | 22 | 70 | 124 |
| Ethylbenzene | ND | 20 | 18.5 | 92.4 | 20 | 18.9 | 94.6 | 2.36 | 20 | 76 | 122 |
| Toluene | ND | 20 | 18.0 | 90.0 | 20 | 18.4 | 92.1 | 2.27 | 24 | 80 | 117 |
| m,p-Xylene | ND | 40 | 38.3 | 95.7 | 40 | 38.7 | 96.8 | 1.23 | 20 | 69 | 127 |
| o-Xylene | ND | 20 | 19.1 | 95.7 | 20 | 18.8 | 94.1 | 1.69 | 20 | 84 | 114 |
| Xylenes,Total | ND | 60 | 57.4 | 95.7 | 60 | 57.5 | 95.9 | 0.265 | 20 | 69 | 127 |
| Surr: 1,2-Dichloroethane-d4 | ND | 50 | 44.4 | 88.9 | 50 | 40.3 | 80.5 | 9.87 | 30 | 70 | 130 |
| Surr: 4-Bromofluorobenzene | ND | 50 | 51.1 | 102 | 50 | 52.4 | 105 | 2.48 | 30 | 74 | 125 |
| Surr: Toluene-d8 | ND | 50 | 47.7 | 95.4 | 50 | 48.1 | 96.2 | 0.791 | 30 | 82 | 118 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B - 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 ElPaso1A**

**Analysis:** Total Dissolved Solids
**Method:** SM2540 C

**WorkOrder:** 10120588
**Lab Batch ID:** R313000A

### Method Blank

RunID: WET_101217O-5677470 Units: mg/L
Analysis Date: 12/17/2010 16:00 Analyst: MM1

| Analyte | Result | Rep Limit |
|---|---|---|
| Total Dissolved Solids (Residue,Filterable) | ND | 10 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 10120588-01C | MW-1 |
| 10120588-02C | MW-2 |
| 10120588-03C | MW-3 |
| 10120588-04C | MW-4 |

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

RunID: WET_101217O-5677472 Units: mg/L
Analysis Date: 12/17/2010 16:00 Analyst: MM1

| Analyte | LCS Spike Added | LCS Result | LCS Percent Recovery | LCSD Spike Added | LCSD Result | LCSD Percent Recovery | RPD | RPD Limit | Lower Limit | Upper Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue,Filterabl | 200.0 | 198.0 | 99.00 | 200.0 | 202.0 | 101.0 | 2.0 | 10 | 95 | 107 |

### Sample Duplicate

Original Sample: 10120589-01
RunID: WET_101217O-5677489 Units: mg/L
Analysis Date: 12/17/2010 16:00 Analyst: MM1

| Analyte | Sample Result | DUP Result | RPD | RPD Limit |
|---|---|---|---|---|
| Total Dissolved Solids (Residue,Filterabl | 770 | 775 | 0.647 | 10 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B - 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 ElPaso1A**

**Analysis:** Ion Chromatography
**Method:** E300.0
**WorkOrder:** 10120588
**Lab Batch ID:** R313006D

### Method Blank

RunID: IC1_101217C-5677650 Units: mg/L
Analysis Date: 12/17/2010 22:31 Analyst: ESK

| Analyte | Result | Rep Limit |
|---|---|---|
| Fluoride | ND | 0.50 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 10120588-01C | MW-1 |
| 10120588-02C | MW-2 |
| 10120588-03C | MW-3 |
| 10120588-04C | MW-4 |

### Laboratory Control Sample (LCS)

RunID: IC1_101217C-5677651 Units: mg/L
Analysis Date: 12/17/2010 22:47 Analyst: ESK

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Fluoride | 10.00 | 9.825 | 98.25 | 90 | 110 |

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

Sample Spiked: 10120587-01
RunID: IC1_101217C-5677655 Units: mg/L
Analysis Date: 12/17/2010 23:51 Analyst: ESK

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluoride | ND | 5 | 5.140 | 102.8 | 5 | 5.260 | 105.2 | 2.308 | 15 | 80 | 120 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B - 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 ElPaso1A**

**Analysis:** Ion Chromatography
**Method:** E300.0
**WorkOrder:** 10120588
**Lab Batch ID:** R313024

### Method Blank

RunID: IC1_101219A-5678068 Units: mg/L
Analysis Date: 12/19/2010 9:55 Analyst: ESK

| Analyte | Result | Rep Limit |
|---|---|---|
| Sulfate | ND | 0.50 |

**Samples in Analytical Batch:**

| Lab Sample ID | Client Sample ID |
|---|---|
| 10120588-01C | MW-1 |
| 10120588-02C | MW-2 |
| 10120588-03C | MW-3 |
| 10120588-04C | MW-4 |

### Laboratory Control Sample (LCS)

RunID: IC1_101219A-5678069 Units: mg/L
Analysis Date: 12/19/2010 10:11 Analyst: ESK

| Analyte | Spike Added | Result | Percent Recovery | Lower Limit | Upper Limit |
|---|---|---|---|---|---|
| Sulfate | 10.00 | 9.924 | 99.24 | 90 | 110 |

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

Sample Spiked: 10120639-02
RunID: IC1_101219A-5678086 Units: mg/L
Analysis Date: 12/19/2010 15:34 Analyst: ESK

| Analyte | Sample Result | MS Spike Added | MS Result | MS % Recovery | MSD Spike Added | MSD Result | MSD % Recovery | RPD | RPD Limit | Low Limit | High Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 1418 | 5000 | 6522 | 102.1 | 5000 | 6523 | 102.1 | 0.01504 | 15 | 80 | 120 |

**Qualifiers:**
ND/U - Not Detected at the Reporting Limit
B - 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: | 10120588 | Received By: | NB |
| Date and Time Received: | 12/17/2010 9:05:00 AM | Carrier name: | Fedex-Standard Overnight |
| Temperature: | 3.5/3.5/3.5/3.0/4.0/4.0 | 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.: 303429
1012058B
page 1 of 2

Client Name: Tetratech, inc.
Address: 1121 Indian School Rd NE #200
City: Albuquerque, State: NM Zip: 87112
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email: Kelly.blanchard@tetratech.com
Project Name/No.: El Paso #1A
Site Name:
Site Location: Blanco, NM
Invoice To: Ph:

| SAMPLE ID | DATE | TIME | comp | grab | matrix (W=water S=soil O=oil A=air SL=sludge E=core 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 | dissolved Mn | Fluoride, Sulfate, TDS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 12:15:10 | | | X | W | V | 40 | 1 | 3 | X | | | | | | | | | |
| MW-1 | 12:15:10 | | | X | W | P | 16 | NA | 1 | | X | | | | | | | | |
| MW-1 | 12:15:10 | | | X | W | P | X | NA | 1 | | | X | | | | | | | |
| MW-2 | 12:15:10 | | | X | W | V | 40 | 1 | 3 | X | | | | | | | | | |
| MW-2 | 12:15:10 | | | X | W | P | 16 | NA | 1 | | X | | | | | | | | |
| MW-2 | 12:15:10 | | | X | W | P | X | NA | 1 | | | X | | | | | | | |
| MW-3 | 12:15:10 | | | X | W | V | 40 | 1 | 3 | X | | | | | | | | | |
| MW-3 | 12:15:10 | | | X | W | P | 16 | NA | 1 | | X | | | | | | | | |
| MW-3 | 12:15:10 | | | X | W | P | X | NA | 1 | | | X | | | | | | | |
| MW-4 | 12:15:10 | | | X | W | V | 40 | 1 | 3 | X | | | | | | | | | |

Client/Consultant Remarks: Please filter & preserve metals @ lab
* special detection limit: Fluoride = 1.6 mg/L

Laboratory remarks:

Intact? Y N
Ice? Y N
Temp: 3.5°C

**Requested TAT**
- 1 Business Day
- 2 Business Days
- 3 Business Days
- Contract
- Standard
- Other
- Rush TAT requires prior notice

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: | 0800 | | 2. Received by: |
| 3. Relinquished by: | | | 4. Received by: |
| 5. Relinquished by: | 12/17/10 | 0905 | 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

**SPL, Inc.**
Analysis Request & Chain of Custody Record

SPL Workorder No.: 303430
10120588
page 2 of 2

Client Name: Tetra tech, inc
Address: 6121 Indian School Rd #200
City: Albuquerque State: NM Zip: 87110
Phone/Fax: 888-237-8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: El Paso #1A
Site Name:
Site Location: Blanco, NM
Invoice To: Ph:

| SAMPLE ID | DATE | TIME | comp | grab | matrix (W=water S=soil O=oil A=air SL=sludge E=encore 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 | dissolved Mn | Fluoride, Sulfate, TDS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-4 | 12.15.10 | 1703 | | X | W | P | 16 | N4 | 1 | | X | |
| MW-4 | 12.15.10 | 1703 | | X | W | P | X | Na | 1 | | | X |
| duplicate | 12.15.10 | 1625 | | X | W | V | 40 | 1 | 3 | X | | |
| trip blank | 12.15.10 | 2155 | | X | W | V | 40 | 1 | 2 | X | | |

Client/Consultant Remarks: Please filter & preserve metals @ lab.
*Special detection limits: Fluoride = 1.6mg/L

Laboratory remarks:

Intact? ☐ Y ☐ N
Ice? ☐ Y ☐ N
Temp: 3.5°C

**Requested TAT**
☐ 1 Business Day ☐ Contract
☐ 2 Business Days ☐ Standard
☐ 3 Business Days
☐ Other _____
Rush TAT requires prior notice

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: Cassie Braun | 0800 | | 2. Received by: |
| 3. Relinquished by: | date | time | 4. Received by: |
| 5. Relinquished by: | date 12/17/10 | time 0905 | 6. Received by Laboratory: |

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

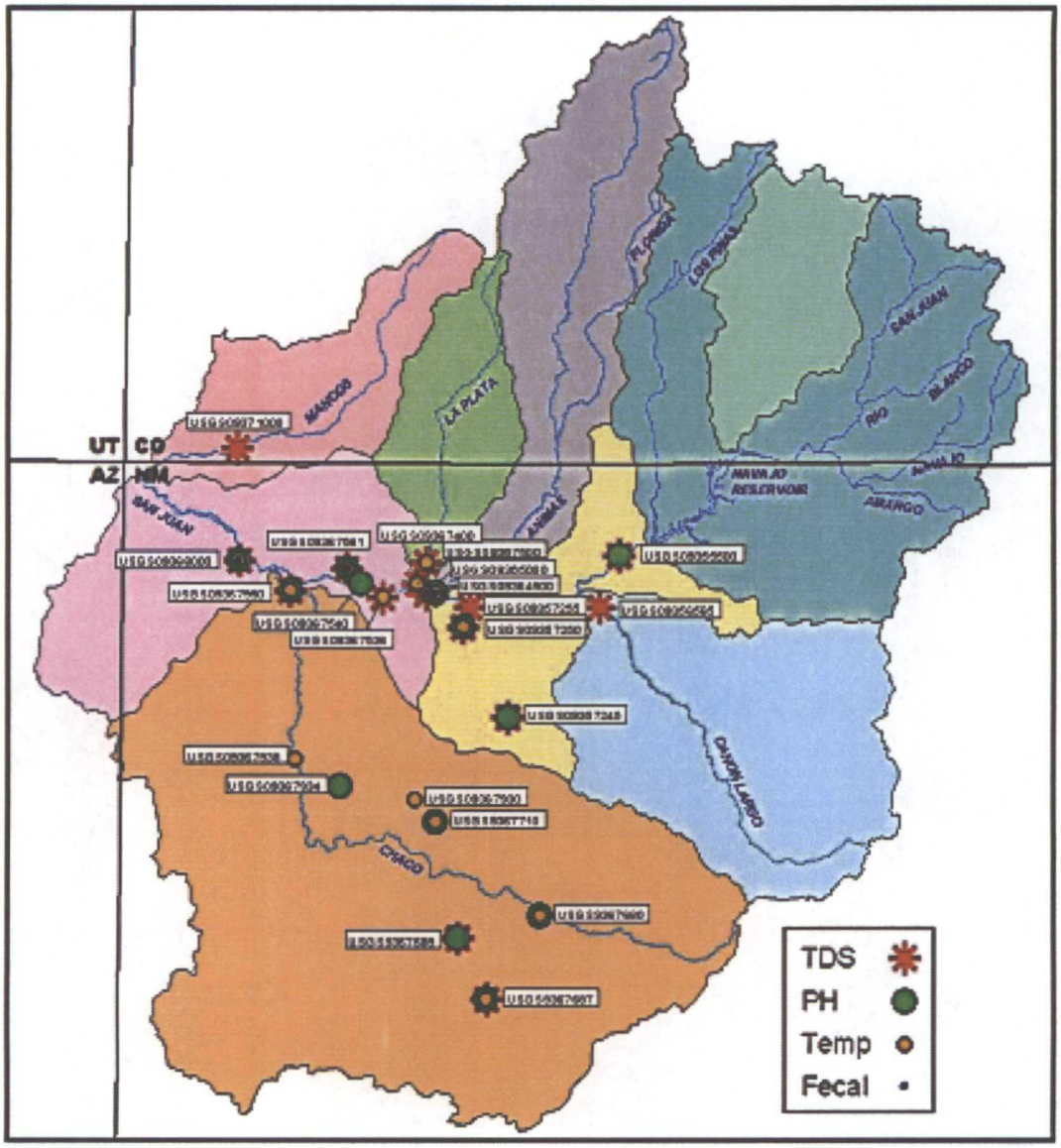
☐ 500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775

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

# APPENDIX C

## SAN JUAN WATER COMMISSION, SAN JUAN HYDROLOGIC UNIT REGIONAL WATER PLAN, WATER SUPPLY ASSESSMENT, VOLUME III. FIGURE 1-6 (SEPTEMBER 2003)

**Figure 1-6 Water Quality Standards Exceedance Locations**




The exceedances for pH, temperature, fecal coliform, and turbidity are included in Appendix B. Phosphorus standards were not exceeded.

### 1.3.3. Total Dissolved Solids

Total Dissolved Solids (TDS) is a frequently used parameter for evaluating water quality. Municipal uses are typically limited to waters with less than 1,000 mg/l TDS. Agricultural uses are frequently limited to 800 to 1,200 mg/l depending on the ability of the soils to drain and move salts away from root zones. Crop types determine the root zone depths.

The water quality issues section of the 1994 40-Year Regional Water Plan, Planning and Development District 1 identifies salinity as a "long-term water quality issue." Much of this long-term issue is related to the salt loading (1.2 million tons per year) at Bluff, Utah.

However, there is a difference between loading and concentration. Loading has significance to downstream uses but concentration has significance to the uses within the San Juan Hydrologic Unit. Although there are instances of extremely high concentrations associated with return flows from NIIP lands in the Gallegos and Ojo Amarillo Washes (3,000 mg/l) and the Hogback area (15,000 mg/l), the principal surface water supplies – San Juan, Animas, and La Plata Rivers, have exhibited few instances of moderate to high salinity concentrations. Implementation plans to mitigate pollutants from these return flow areas should be included in the TMDL study to be completed in 2004.

A review of the water quality data identified the stations that experience TDS readings greater than 1,200 mg. Figure 1.6 shows the location of those stations.

The frequency of the TDS exceedance represents 7.5% of the TDS measurements (249 of 3,334 records).

### 1.3.4. Polynuclear Aromatic Hydrocarbon (PAH)

Because of the significant oil and gas industry in the San Juan Hydrologic Unit, there have been questions about the impact of PAH from these industries on the water quality of the region. The Bureau of Land Management (BLM) issued a draft Resource Management Plan and Environmental Impact Statement on oil and gas leasing. This document resulted in an on-going PAH study being conducted by the BLM Farmington Field Office. The fiscal year 2002 project proposal for this study states:

> "The sediment and water sampling program has been relatively ineffective. The Reasons for this may be attributed to the short life of PAHs, which are quickly partitioned either to sediment or biota, sediment cycling and removal, the complete absence of PAHs from the San Juan or Animas Rivers, or a combination of all these factors."

It was concluded by the study participants that monitoring of the rivers will be discontinued and their efforts focused on storm water collection and air monitoring. Therefore, it can be concluded for this regional plan that the principal water supplies for the San Juan Hydrologic Unit are not impaired by PAH.

### 1.3.5. Surface Water Quality Summary

The following conclusions were developed from the data evaluated for this study:

- The surface water quality throughout the San Juan Hydrologic Unit supports all uses except for fisheries according to 303(d) List for assessed streams.
- The State of New Mexico Standards for Surface Waters are exceeded primarily in the San Juan River below the confluence with the Animas River.
- TDS exceeds 1,200 mg/l at several locations but their frequency of exceedance is only 7.5 percent of the samples.
- Generally, the water quality of surface water supplies do not impair the uses in the basin and do not reduce the available water supply.