

**3R - 434**

**DEC 2010**  
**GWMR**

**06/10/2011**



TETRATECH, INC.

3R 434  
6121 Indian School Rd. NE Suite 200  
Albuquerque, NM 87110  
(505) 237-8440

June 10, 2011

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

RE: ConocoPhillips Company Faye Burdette No. 1 – December 2010 Groundwater Monitoring Report  
San Juan County, New Mexico

Dear Mr. von Gonten:

Enclosed please find one copy of the above-referenced document as compiled by Tetra Tech, Inc. for this San Juan County 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  
Project Manager/Geologist

Enclosures (1)

Cc: Brandon Powell, NMOCD (hardcopy)  
Terry Lauck, ConocoPhillips Company (electronic)

RECEIVED OGD  
2011 JUN 15 P 2:52

**DECEMBER 2010 QUARTERLY GROUNDWATER  
MONITORING REPORT**

**CONOCOPHILLIPS COMPANY**

**FAYE BURDETTE NO. 1  
NATURAL GAS PRODUCTION SITE  
SAN JUAN COUNTY, NEW MEXICO**

API No. 30-045-09725

OCD No. TBD

Prepared for:



Risk Management and Remediation  
420 South Keeler Avenue  
Bartlesville, OK 74004

Prepared by:



TETRATECH, INC.

6121 Indian School Rd. NE Suite 200  
Albuquerque, NM 87110  
Tetra Tech Project No. 114-690157

March 2010

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2. Groundwater Elevation Data Summary (October 2008 through December 2010)
3. Groundwater Laboratory Analytical Results Summary (October 2008 through December 2010)

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# DECEMBER 2010 QUARTERLY GROUNDWATER MONITORING REPORT FAYE BURDETTE NO. 1, SAN JUAN COUNTY, NEW MEXICO

## 1.0 INTRODUCTION

This report presents the results of quarterly groundwater monitoring completed by Tetra Tech, Inc. (Tetra Tech) on December 17, 2010, at the ConocoPhillips Company Faye Burdette No. 1 natural gas well site located on private land in Unit Letter G, Section 9, Township 30N, Range 11W of San Juan County, New Mexico (Site). This event represents the tenth quarter of groundwater sampling conducted by Tetra Tech at the Site.

The Site is located near the intersection of Highway 550 and Pioneer Avenue in Aztec, NM. The Site consists of a gas production well head and associated equipment and installations. The location and general features of the Site are presented as **Figures 1 and 2**, respectively. A generalized geologic cross section of the site is included as **Figure 3**.

### 1.1 Site History

The Faye Burdette No. 1 wellhead was spudded by Southwest Production Company in April 1962. Ownership was transferred to Beta Development Company in September 1963 and again to Mesa Operating Limited Partnership in August 1988. Conoco Inc., predecessor to ConocoPhillips Company, acquired the well in July 1991. A release occurred in May 2007 from a rusted portion of the on-site produced water tank. Evidence of pre-existing hydrocarbon impacted soil was encountered during excavation; possibly related to a former earthen pit. Temporary Monitor Well, MW-1, was drilled by Envirotech in September 2007. Groundwater samples from MW-1 indicate that benzene, toluene, ethylbenzene, and xylenes (BTEX) were below the New Mexico Water Quality Control Commission (NMWQCC) standards. Subsequently, Envirotech recommended plugging and abandoning MW-1 (Envirotech, 2007).

To complete additional investigation and sampling of the Site, Monitor Wells MW-2, MW-3, and MW-4 were installed under the supervision of Tetra Tech during January 2009 at the request of the New Mexico Oil Conservation Division (OCD). All four monitor wells have been incorporated into a quarterly monitoring program that was initiated on January 29, 2009. Site history is outlined in **Table 1**.

## 2.0 MONITORING SUMMARY, SAMPLING METHODOLOGY, AND RESULTS

### 2.1 Monitoring Summary

On December 17, 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 the December 2010

monitoring event data, groundwater flow is to the northwest and is consistent with historic records at this site. The Animas River is approximately 1/3 mile from the site and flows west.

## 2.2 Groundwater Sampling Methodology

Monitor Wells MW-1, MW-2, MW-3, and MW-4 were sampled, representing the tenth round of consecutive quarterly groundwater monitoring at the Site. Approximately three well volumes were purged from each monitor well with a dedicated polyethylene 1.5-inch disposable bailer. Purge water was placed in the on-site produced water tank. Groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped under chain of custody documentation to Southern Petroleum Laboratories in Houston, Texas. The samples were analyzed for the presence of BTEX in accordance with Environmental Protection Agency (EPA) Method 8260B and dissolved manganese according to EPA Method 6010B. Groundwater sampling field forms are included as **Appendix A**.

## 2.3 Groundwater Sampling Analytical Results

Groundwater quality samples collected during the December 17, 2010 monitoring event indicate that Monitor Well MW-1 exceeds the NMWQCC standard for dissolved manganese at 0.773 milligrams per liter (mg/L). The NMWQCC standard for dissolved manganese is 0.2 mg/L. BTEX concentrations were below laboratory detection limits for all site monitor wells. **Table 3** summarizes the laboratory analytical results for the December 2010 groundwater sampling event. The corresponding laboratory analytical report is included in **Appendix B**.

## 3.0 CONCLUSIONS

Groundwater samples collected from MW-1 have continually exceeded NMWQCC groundwater quality standards for manganese constituents from October 2008 to December 2010. Based on the historical groundwater quality data, groundwater samples collected from MW-1, MW-2, MW-3, and MW-4 have never exceeded NMWQCC groundwater quality standards for BTEX constituents during sampling conducted from October 2008 to December 2010.

Tetra Tech recommends continued quarterly groundwater sampling at the Site in order to provide sufficient data for Site closure. Site closure will be requested when groundwater quality results begin to indicate that all constituents of concern are consistently below NMWQCC groundwater quality standards; or are representative of background conditions at the Site. Please contact Kelly Blanchard at 505-237-8440 or [kelly.blanchard@tetratech.com](mailto:kelly.blanchard@tetratech.com) if you have any questions or require additional information.

## REFERENCES

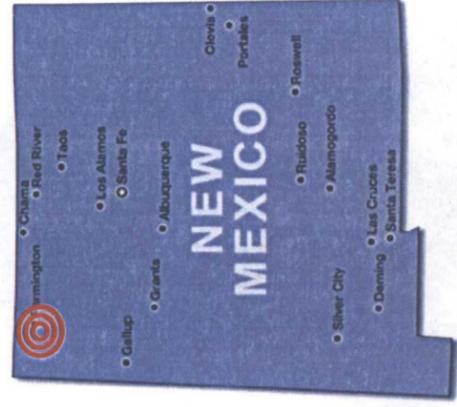
Envirotech, Inc. (2007). *Drilling and Groundwater Sampling Report at Faye Burdette No. 1 Aztec, NM*. Prepared for ConocoPhillips, dated December 12, 2007.

## **FIGURES**

1. Site Location Map
2. Site Layout Map
3. Generalized Geologic Cross Section
4. Groundwater Elevation Contour Map – December 2010



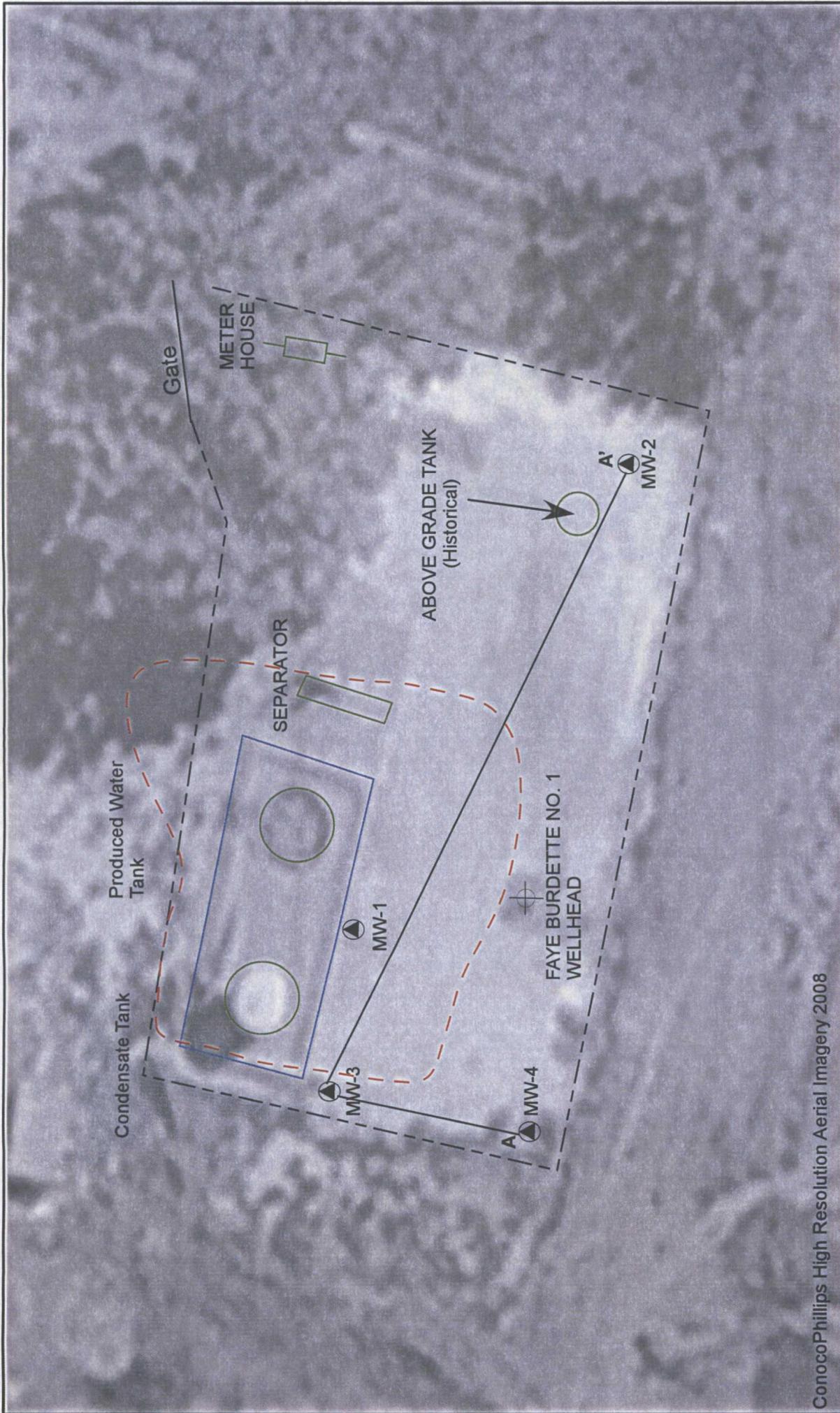
**FIGURE 1.**  
Site Location Map  
CONOCOPhillips COMPANY  
FAYE BURDETTE NO.1 GAS  
PRODUCTION WELL SITE  
Sec 9, T30N, R11W  
Aztec, New Mexico



Approximate ConocoPhillips  
Faye Burdette No.1 Site  
location



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ConocoPhillips High Resolution Aerial Imagery 2008

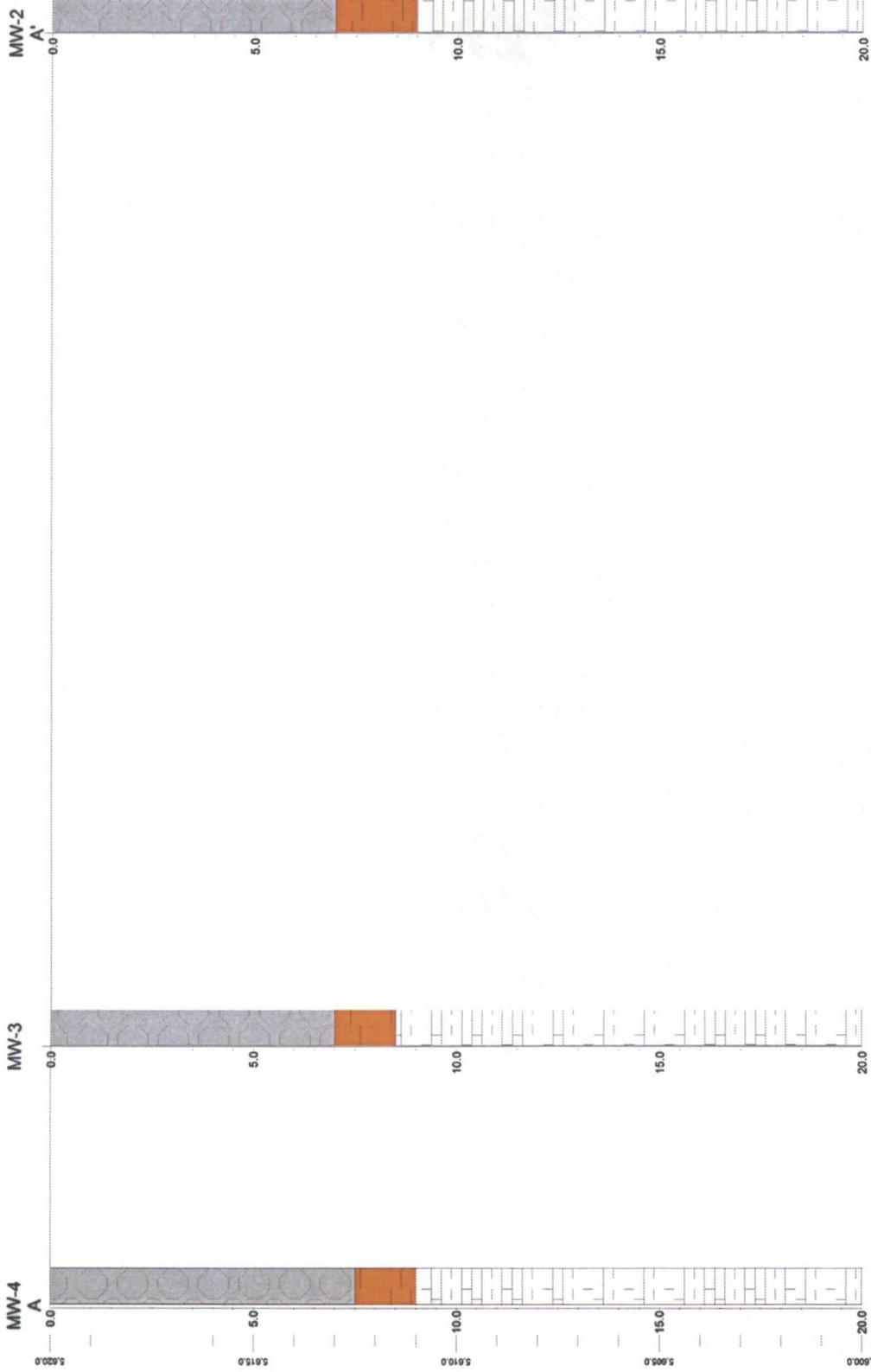
**FIGURE 2.**  
**Site Layout Map**  
**CONOCOPHILLIPS COMPANY**  
**FAYE BURDETTE NO.1 GAS**  
**PRODUCTION WELL SITE**  
 Sec 9, T30N, R11W  
 Aztec, New Mexico

**LEGEND**

- MONITORING WELL
- BERM
- - - FENCE LINE
- EQUIPMENT
- - - APPROXIMATE 2007 EXCAVATION AREA



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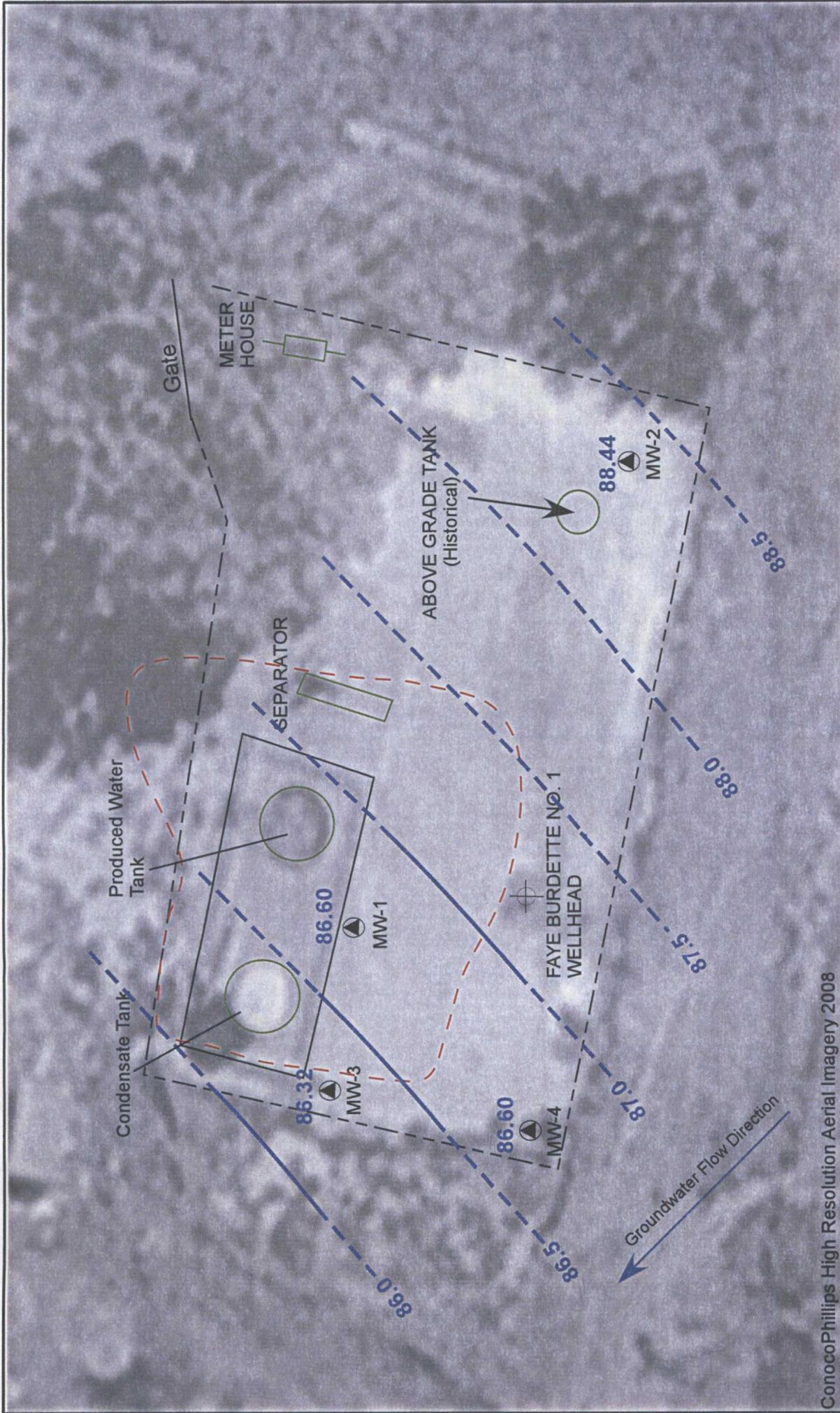
**FIGURE 3:**  
**Geologic Cross Section**  
 CONOCOPHILLIPS COMPANY  
 FAYE BURDETTE NO. 1 GAS  
 PRODUCTION WELL SITE  
 Sec 9, T30N, R11W  
 San Juan County, New Mexico

**LEGEND**

-  Medium grained sand
-  Silty Sand
-  Undefined



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ConocoPhillips High Resolution Aerial Imagery 2008

**FIGURE 4:  
 DECEMBER 2010 GROUNDWATER  
 ELEVATION CONTOUR MAP  
 CONOCOPHILLIPS COMPANY  
 FAYE BURDETTE NO. 1  
 Unit G - Sec 9, T30N, R11W  
 San Juan County, New Mexico**

**LEGEND**

- MONITORING WELL
- BERM
- FENCE LINE
- EQUIPMENT
- APPROXIMATE 2007 EXCAVATION AREA
- GROUNDWATER ELEVATION CONTOUR (dashed where inferred)
- GROUNDWATER FLOW DIRECTION

0 25 50 FEET



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## **TABLES**

- I. Site History Timeline
2. Groundwater Elevation Data Summary (October 2008 through December 2010)
3. Groundwater Laboratory Analytical Results Summary (October 2008 through December 2010)

**Table 1. ConocoPhillips Company, Faye Burdette No. - 1 Site History Timeline**

DATE	ACTIVITY
29-Apr-1962	Well was spudded by Southwest Production Company.
1-Sep-1963	Ownership of well transferred to Beta Development Company.
21-Feb-1983	NMOCD inspection noted a leaky 2-inch valve on a storage tank.
15-Aug-1988	Ownership of well transferred to Mesa Operating Limited Partnership.
1-Jul-1991	Ownership of well transferred to Conoco Inc.
24-May-2007	A small (<25 gallons) release occurred from the produced water tank after a rusty spot was scraped off. Follow-up excavation encountered evidence of pre-existing hydrocarbon-impacted soil, apparently related to a former earthen pit beneath the tank.
Jul-07	Contaminated soil excavated from the Site. Two ground water samples were obtained at the time of this excavation, and one (1) of these samples was found to contain total xylenes above the State of New Mexico drinking water standard.
26-Sep-07	Ground water monitoring well installed to a depth of 15 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.
	A ground water sample was collected from the temporary monitoring well (MW-1) and analyzed for BTEX; results were below the State of New Mexico drinking water standard for this constituent. Depth to ground water recorded at 9.5 feet bgs.
Nov-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.
22-Oct-08	1st quarter sampling of MW-1 by Tetra Tech.
Jan-09	WDC installed additional Monitoring Wells MW-2, MW-3 and MW-4 under the supervision of Tetra Tech.
29-Jan-09	Second quarter sampling of MW-1 by Tetra Tech. Initial sampling of Monitoring Wells MW-2, MW-3, and MW-4.
31-Mar-09	Third consecutive quarter of sampling MW-1 by Tetra Tech. Second quarter sampling of Monitoring Wells MW-2, MW-3, and MW-4.
17-Jun-09	Fourth consecutive quarter of sampling MW-1 by Tetra Tech. Third quarter of sampling Monitoring Wells MW-2, MW-3, and MW-4.
22-Sep-09	Fifth consecutive quarter of sampling MW-1 by Tetra Tech. Fourth consecutive quarter of sampling Monitoring Wells MW-2, MW-3, and MW-4. Sampling for total metals discontinued as approved by NMOCD. Sampling for select dissolved metals based on total metals analyses begins.
16-Dec-09	Sixth consecutive quarter sampling of MW-1 by Tetra Tech. Fifth consecutive quarter sampling of Monitoring Wells MW-2, MW-3, and MW-4 for BTEX and dissolved manganese only.
1-Apr-10	Seventh consecutive quarter sampling of MW-1 by Tetra Tech. Sixth consecutive quarter sampling of Monitoring Wells MW-2, MW-3, and MW-4 for BTEX and dissolved manganese only.
9-Jun-10	Eighth consecutive quarter sampling of MW-1 by Tetra Tech. Seventh consecutive quarter sampling of Monitoring Wells MW-2, MW-3, and MW-4 for BTEX and dissolved manganese only.
20-Sep-10	Ninth consecutive quarter sampling of MW-1 by Tetra Tech. Eighth consecutive quarter sampling of Monitoring Wells MW-2, MW-3, and MW-4 for BTEX and dissolved manganese only.
17-Dec-10	Tenth consecutive quarter sampling of MW-1 by Tetra Tech. Ninth consecutive quarter sampling of Monitoring Wells MW-2, MW-3, and MW-4 for BTEX and dissolved manganese only.

**Table 2. ConocoPhillips Company, Faye Burdette No. 1 - 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	17.52	4.8 - 14.8	97.66	10/22/2008	10.91	86.75
				1/29/2009	11.72	85.94
				3/31/2009	11.88	85.78
				6/17/2009	11.24	86.42
				9/22/2009	10.87	86.79
				12/16/2009	11.56	86.10
				4/1/2010	11.91	85.75
				6/9/2010	11.31	86.35
				9/20/2010	11.39	86.27
				12/17/2010	11.06	86.60
MW-2	19.45	5.0 - 20.0	98.54	1/29/2009	10.91	87.63
				3/31/2009	11.12	87.42
				6/17/2009	10.48	88.06
				9/22/2009	10.76	87.78
				12/16/2009	10.61	87.93
				4/1/2010	11.20	87.34
				6/9/2010	10.35	88.19
				9/20/2010	10.35	88.19
				12/17/2010	10.10	88.44
MW-3	22.96	5.0 - 20.0	97.16	1/29/2009	11.44	85.72
				3/31/2009	11.62	85.54
				6/17/2009	10.97	86.19
				9/22/2009	10.57	86.59
				12/16/2009	11.32	85.84
				4/1/2010	11.66	85.50
				6/9/2010	11.10	86.06
				9/20/2010	11.17	85.99
				12/17/2010	10.84	86.32
MW-4	22.28	5.0 - 20.0	97.06	1/29/2009	11.02	86.04
				3/31/2009	11.18	85.88
				6/17/2009	10.59	86.47
				9/22/2009	10.16	86.90
				12/16/2009	10.87	86.19
				4/1/2010	11.04	86.02
				6/9/2010	10.65	86.41
				9/20/2010	10.72	86.34
				12/17/2010	10.46	86.60

ft = Feet

TOC = Top of casing

bgs = below ground surface

\* Elevation relative to an arbitrary point set at 100 feet

Table 3. ConocoPhillips Company, Faye Burdette No. 1 - Groundwater Laboratory Analytical Results

Well ID	Date	Aluminum (mg/L)	Iron (mg/L)	Manganese (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	
MW-1	10/22/2008	NA	3.74*	2.09*	<5	<5	<5	<5	
	1/29/2009	2.14*	2.77*	1.41*	<5	<5	<5	<5	
	3/31/2009	3.64*	4.83*	1.24*	<5	<5	<5	<5	
	6/17/2009	2.5*	5.58*	2.47*	<5	<5	<5	<5	
	9/22/2009	0.443	0.445	1.44	<1	<1	<1	<1	
	12/16/2009	NA	NA	0.732	<1	<1	<1	<1	
	4/1/2010	NA	NA	1.71	<1	<1	<1	<1	
	6/9/2010	NA	NA	1.61	<1	<1	<1	<1	
	9/20/2010	NA	NA	0.895	<1	<1	<1	<1	
	12/17/2010	NA	NA	0.773	<1	<1	<1	<1	
MW-1 Duplicate	1/29/2009	NA	NA	NA	<5	<5	<5	<5	
	3/31/2009	NA	NA	NA	<5	<5	<5	<5	
	6/17/2009	2.83	6.13*	2.52*	<5	<5	<5	<5	
	9/22/2009	NA	NA	NA	<1	<1	<1	<1	
	12/16/2009	NA	NA	NA	<1	<1	<1	<1	
	4/1/2010	NA	NA	NA	<1	<1	<1	<1	
	6/9/2010	NA	NA	NA	<1	<1	<1	<1	
	9/20/2010	NA	NA	NA	<1	<1	<1	<1	
	12/17/2010	NA	NA	NA	<1	<1	<1	<1	
	1/29/2009	4.15*	3.15*	1.79*	<5	<5	<5	<5	
MW-2	3/31/2009	1.17*	1.02*	0.326*	<5	<5	<5	<5	
	6/17/2009	3.4*	2.8*	1.37*	<5	<5	<5	<5	
	9/22/2009	<0.1	<0.02	0.0264	<1	<1	<1	<1	
	12/16/2009	NA	NA	0.0654	<1	<1	<1	<1	
	4/1/2010	NA	NA	0.16	<1	<1	<1	<1	
	6/9/2010	NA	NA	0.0323	<1	<1	<1	<1	
	9/20/2010	NA	NA	0.0455	<1	<1	<1	<1	
	12/17/2010	NA	NA	0.0332	<1	<1	<1	<1	
	1/29/2009	1.82*	2.24*	0.374*	<5	<5	<5	<5	
	3/31/2009	1.64*	1.91*	0.271*	<5	<5	<5	<5	
MW-3	6/17/2009	1.68*	2.14*	0.628*	<5	<5	<5	<5	
	9/22/2009	<0.1	0.0291	0.0201	<1	<1	<1	<1	
	12/16/2009	NA	NA	0.0607	<1	<1	<1	<1	
	4/1/2010	NA	NA	0.0232	<1	<1	<1	<1	
	6/9/2010	NA	NA	<0.005	<1	<1	<1	<1	
	9/20/2010	NA	NA	<0.005	<1	<1	<1	<1	
	12/17/2010	NA	NA	0.178	<1	<1	<1	<1	
	1/29/2009	6.92*	3.17*	4.15*	<5	<5	<5	<5	
	3/31/2009	4.21*	3.22*	1.45*	<5	<5	<5	<5	
	MW-4	6/17/2009	2.43*	2.05*	0.854*	<5	<5	<5	<5
9/22/2009		<0.1	0.108	0.476	<1	<1	<1	<1	
12/16/2009		NA	NA	0.0149	<1	<1	<1	<1	
4/1/2010		NA	NA	<0.005	<1	<1	<1	<1	
6/9/2010		NA	NA	<0.005	<1	<1	<1	<1	
9/20/2010		NA	NA	0.0152	<1	<1	<1	<1	
12/17/2010		NA	NA	0.0502	<1	<1	<1	<1	
<b>Method</b>		SW6010B	SW6010B	SW6010B	8260B	8260B	8260B	8260B	
<b>NMWWQC Groundwater Quality Standard</b>		<b>5.0</b>	<b>1.0</b>	<b>0.2</b>	<b>10</b>	<b>750</b>	<b>750</b>	<b>620</b>	

**Notes:**  
 MW = monitoring well  
 NMWWQC = New Mexico Water Quality Control Commission  
 Constituents in **BOLD** exceed NMWWQC groundwater quality standards  
 mg/L = milligrams per liter  
 µg/L = micrograms per liter  
 NA = not analyzed  
 <5 = result below laboratory detection limit  
 Total Metals analysis run for all samples through June 2009; September 2009 dissolved metals analysis run in order to compare to standards  
 \* = total metals analysis result (NMWWQC standards do not apply)

**APPENDIX A**



# WATER SAMPLING FIELD FORM

Project Name Faye Burdette No. 1

Page 2 of 4

ct No. \_\_\_\_\_

Site Location Aztec, NM

Site/Well No. MW-2 Coded/ Replicate No. \_\_\_\_\_

Date 12-17-10

Weather overcast, cold 25° Time Sampling Began 0825

Time Sampling Completed 0845

### 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 19.45

Water-Level Elevation \_\_\_\_\_

Held \_\_\_\_\_ Depth to Water Below MP 10.10

Diameter of Casing 2"

Wet \_\_\_\_\_ Water Column in Well 9.35

Gallons Pumped/Bailed Prior to Sampling Pumped/Bailed

Gallons per Foot 0.16

9.73

Gallons in Well 1.49 x 3 = 4.48

Sampling Pump Intake (feet below land) \_\_\_\_\_

Purging Equipment Purge pump / Bailer

### SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm <sup>3</sup> )	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
<u>0840</u>	<u>14.66</u>	<u>7.44</u>	<u>1118</u>	<u>0.906</u>	<u>2.12</u>	<u>20.7</u>	<u>-82.0</u>	<u>4.26</u>
<u>0841</u>	<u>14.78</u>	<u>7.39</u>	<u>1129</u>	<u>0.912</u>	<u>4.66</u>	<u>16.3</u>	<u>-21.8</u>	<u>4.6</u>
<u>0842</u>	<u>14.76</u>	<u>7.39</u>	<u>1131</u>	<u>0.914</u>	<u>4.93</u>	<u>19.2</u>	<u>-15.3</u>	<u>4.75</u>

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
<u>BTEX</u>	<u>3 40mL VOA's</u>	<u>HCl</u>
<u>Dissolved Mn</u>	<u>16 oz Plastic</u>	<u>None</u>

Remarks H<sub>2</sub>O is light tan. No odor or string

Sampling Personnel Christine Mathews, Cassie Brown

Well Casing Volumes			
Gal./ft.	<u>1 ¼" = 0.077</u>	<u>2" = 0.16</u>	<u>3" = 0.37</u>
	<u>1 ½" = 0.10</u>	<u>2 ½" = 0.24</u>	<u>3 ½" = 0.50</u>
			<u>4" = 0.65</u>
			<u>6" = 1.46</u>

**WATER SAMPLING FIELD FORM**

Project Name Faye Burdette No. 1

Page 1 of 4

Plot No. \_\_\_\_\_

Site Location Aztec, NM

Site/Well No. MW-1

Coded/  
Replicate No. 0837

Date 12-17-10

Weather overcast, cold  
250

Time Sampling  
Began 0825

Time Sampling  
Completed 0837

**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 17.52

Water-Level Elevation \_\_\_\_\_

Held \_\_\_\_\_ Depth to Water Below MP 17.52

Diameter of Casing 2"

Wet \_\_\_\_\_ Water Column in Well 16.46

Gallons Pumped/Bailed  
Prior to Sampling Pumped/Bailed

Gallons per Foot \_\_\_\_\_ 0.16

Gallons in Well 1.0343 =

Sampling Pump Intake Setting  
(feet below land surface) \_\_\_\_\_

Purging Equipment Purge pump / Bailer

**SAMPLING DATA/FIELD PARAMETERS**

Time	Temperature (°C)	pH	Conductivity (µS/cm <sup>3</sup> )	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
<u>0833</u>	<u>14.05</u>	<u>7.31</u>	<u>1246</u>	<u>1.028</u>	<u>3.07</u>	<u>29.8</u>	<u>-75.5</u>	<u>2</u>
<u>0834</u>	<u>14.93</u>	<u>7.26</u>	<u>1258</u>	<u>1.03</u>	<u>1.41</u>	<u>13.8</u>	<u>-67.5</u>	<u>2.5</u>
<u>0836</u>	<u>14.92</u>	<u>7.24</u>	<u>1260</u>	<u>1.016</u>	<u>1.32</u>	<u>13.1</u>	<u>-66.0</u>	<u>3.0</u>

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
<u>BTEX</u>	<u>3 40mL VOA's</u>	<u>HCl</u>
<u>Dissolved Mn</u>	<u>16 oz Plastic</u>	<u>None</u>

Remarks H<sub>2</sub>O LIGHT BROWN

Sampling Personnel Christine Mathews, Cassie Brown, & Craig Brown

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



# WATER SAMPLING FIELD FORM

Project Name Faye Burdette No. 1

Page 3 of 4

Site No. \_\_\_\_\_

Site Location Aztec, NM

Site/Well No. MW-3 Coded/ Replicate No. \_\_\_\_\_

Date 12-17-10

Weather Overcast, cold 26° Time Sampling Began 0800

Time Sampling Completed 0821

### 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 22.96

Water-Level Elevation \_\_\_\_\_

Held \_\_\_\_\_ Depth to Water Below MP 10.84

Diameter of Casing 2"

Wet \_\_\_\_\_ Water Column in Well 12.12

Gallons Pumped/Bailed Prior to Sampling Pumped/Bailed

Gallons per Foot 5 0.16

Gallons in Well 1.937 x 3 = 5.8

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.)
<u>0817</u>	<u>15.28</u>	<u>7.4</u>	<u>1191</u>	<u>.918</u>	<u>2.12</u>	<u>20.9</u>	<u>44.6</u>	<u>5.5</u>
<u>0818</u>	<u>15.24</u>	<u>7.39</u>	<u>1150</u>	<u>.918</u>	<u>1.77</u>	<u>17.7</u>	<u>40.5</u>	<u>6.0</u>

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
<u>BTEX</u>	<u>3 40mL VOA's</u>	<u>HCl</u>
<u>Dissolved Mn</u>	<u>16 oz Plastic</u>	<u>None</u>

Remarks \_\_\_\_\_

Sampling Personnel Christine Mathews, Cassie Brown, & Craig Brown

Well Casing Volumes			
Gal./ft.	<u>1 ¼" = 0.077</u>	<u>2" = 0.16</u>	<u>3" = 0.37</u>
	<u>1 ½" = 0.10</u>	<u>2 ½" = 0.24</u>	<u>3 ½" = 0.50</u>
			<u>6" = 1.46</u>



# WATER SAMPLING FIELD FORM

Project Name Faye Burdette No. 1

Page 4 of 4

act No. \_\_\_\_\_

Site Location Aztec, NM

Site/Well No. MW-4 Coded/ Replicate No. \_\_\_\_\_

Date 12-17-10

Weather overcast cold 250 Time Sampling Began 0800

Time Sampling Completed 0811

### 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 22.28

Water-Level Elevation \_\_\_\_\_

Held \_\_\_\_\_ Depth to Water Below MP 10.46

Diameter of Casing 2"

Wet \_\_\_\_\_ Water Column in Well 11.82

Gallons Pumped/Bailed Prior to Sampling Pumped

Gallons per Foot ~~8~~ 0.16

Gallons in Well 1.89 x 3 =

Sampling Pump Intake Setting (feet below land surface) 7.25

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.)
<u>0809</u>	<u>13.68</u>	<u>7.12</u>	<u>1169</u>	<u>0.95</u>	<u>82.6</u>	<u>69.6</u>	<u>62.1</u>	<u>6.75</u>
<u>0810</u>	<u>13.33</u>	<u>7.41</u>	<u>1178</u>	<u>0.989</u>	<u>4.29</u>	<u>39.5</u>	<u>59.9</u>	<u>7.00</u>
<u>0811</u>	<u>13.44</u>	<u>7.60</u>	<u>1192</u>	<u>0.989</u>	<u>3.39</u>	<u>32.5</u>	<u>80.9</u>	<u>7.25</u>

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
<u>BTEX</u>	<u>3 40mL VOA's</u>	<u>HCl</u>
<u>Dissolved Mn</u>	<u>16 oz Plastic</u>	<u>None</u>

Remarks \_\_\_\_\_

Sampling Personnel Christine Mathews, Cassie Brown & Craig Brown

Well Casing Volumes			
Gal./ft.	<u>1 ¼" = 0.077</u>	<u>2" = 0.16</u>	<u>3" = 0.37</u>
	<u>1 ½" = 0.10</u>	<u>2 ½" = 0.24</u>	<u>3 ½" = 0.50</u>
			<u>4" = 0.65</u>
			<u>6" = 1.46</u>

**APPENDIX B**



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

**Conoco Phillips**

**Certificate of Analysis Number:**  
**10120638**

<b>Report To:</b>  Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110- ph: (505) 237-8440      fax:	<b>Project Name:</b> COP Faye-Burdette <b>Site:</b> Aztec, NM <b>Site Address:</b>  <b>PO Number:</b> <b>State:</b> New Mexico <b>State Cert. No.:</b> <b>Date Reported:</b> 12/28/2010
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This Report Contains A Total Of 18 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

12/28/2010

Date

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

Version 2.0 - Modified December 23, 2010



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

Case Narrative for:  
**Conoco Phillips**

Certificate of Analysis Number:  
10120638

<p><b>Report To:</b></p> <p>Tetra Tech, Inc.          Kelly Blanchard          6121 Indian School Road, N.E.          Suite 200          Albuquerque          NM          87110-          ph: (505) 237-8440      fax:</p>	<p><b>Project Name:</b> COP Faye-Burdette</p> <p><b>Site:</b> Aztec, NM</p> <p><b>Site Address:</b></p> <p><b>PO Number:</b></p> <p><b>State:</b> New Mexico</p> <p><b>State Cert. No.:</b></p> <p><b>Date Reported:</b> 12/28/2010</p>
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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.

SW6010B - Dissolved Metals analysis:

Sample ID "MW-3" (SPL ID:10120638-03) was randomly selected for use in SPL's quality control program for (Batch ID:104030). The MSD recovery was outside of the advisable quality control limits for the target analyte manganese due to matrix interference. A Post Digestion Spike (PDS) and Post Digestion Spike Duplicate (PDSD) were performed and recoveries were outside quality control limits. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

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.

This report shall not be reproduced except in full, without the written approval of the laboratory. The reported results are only representative of the

*Erica Cardenas*

Erica Cardenas  
 Project Manager

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

Date



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

Case Narrative for:  
**Conoco Phillips**

---

Certificate of Analysis Number:

10120638

---

samples submitted for testing.

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.

*Erica Cardenas*

10120638 Page 2

12/28/2010

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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:  
10120638**

**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

**Project Name:** COP Faye-Burdette  
**Site:** Aztec, NM  
**Site Address:**  
**PO Number:**  
**State:** New Mexico  
**State Cert. No.:**  
**Date Reported:** 12/28/2010

**Fax To:**

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	10120638-01	Water	12/17/2010 8:37	12/18/2010 10:30:00 AM	303426	<input type="checkbox"/>
MW-2	10120638-02	Water	12/17/2010 8:45	12/18/2010 10:30:00 AM	303426	<input type="checkbox"/>
MW-3	10120638-03	Water	12/17/2010 8:21	12/18/2010 10:30:00 AM	303426	<input type="checkbox"/>
MW-4	10120638-04	Water	12/17/2010 8:11	12/18/2010 10:30:00 AM	303426	<input type="checkbox"/>
Duplicate	10120638-05	Water	12/17/2010 8:37	12/18/2010 10:30:00 AM	303426	<input type="checkbox"/>
Trip Blank	10120638-06	Water	12/17/2010 8:00	12/18/2010 10:30:00 AM	303426	<input type="checkbox"/>

*Erica Cardenas*

12/28/2010

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: 12/17/2010 8:37

SPL Sample ID: 10120638-01

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
<b>METALS BY METHOD 6010B, DISSOLVED</b>				<b>MCL</b>	<b>SW6010B</b>	<b>Units: mg/L</b>	
Manganese	0.773		0.005	1	12/23/10 13:24	EG	5683180

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/20/2010 17:00	M_W	1.00

<b>VOLATILE ORGANICS BY METHOD 8260B</b>				<b>MCL</b>	<b>SW8260B</b>	<b>Units: ug/L</b>	
Benzene	ND		1	1	12/20/10 20:35	DY	5679802
Ethylbenzene	ND		1	1	12/20/10 20:35	DY	5679802
Toluene	ND		1	1	12/20/10 20:35	DY	5679802
m,p-Xylene	ND		2	1	12/20/10 20:35	DY	5679802
o-Xylene	ND		1	1	12/20/10 20:35	DY	5679802
Xylenes, Total	ND		1	1	12/20/10 20:35	DY	5679802
Surr: 1,2-Dichloroethane-d4	110	%	71-140	1	12/20/10 20:35	DY	5679802
Surr: 4-Bromofluorobenzene	91.8	%	70-130	1	12/20/10 20:35	DY	5679802
Surr: Toluene-d8	100	%	61-121	1	12/20/10 20:35	DY	5679802

**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  
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Client Sample ID: MW-2

Collected: 12/17/2010 8:45

SPL Sample ID: 10120638-02

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
<b>METALS BY METHOD 6010B, DISSOLVED</b>				<b>MCL</b>	<b>SW6010B</b>	<b>Units: mg/L</b>	
Manganese	0.0332		0.005	1	12/23/10 13:48	EG	5683184

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/20/2010 17:00	M_W	1.00

<b>VOLATILE ORGANICS BY METHOD 8260B</b>				<b>MCL</b>	<b>SW8260B</b>	<b>Units: ug/L</b>	
Benzene	ND		1	1	12/20/10 20:58	DY	5679803
Ethylbenzene	ND		1	1	12/20/10 20:58	DY	5679803
Toluene	ND		1	1	12/20/10 20:58	DY	5679803
m,p-Xylene	ND		2	1	12/20/10 20:58	DY	5679803
o-Xylene	ND		1	1	12/20/10 20:58	DY	5679803
Xylenes, Total	ND		1	1	12/20/10 20:58	DY	5679803
Surr: 1,2-Dichloroethane-d4	110	%	71-140	1	12/20/10 20:58	DY	5679803
Surr: 4-Bromofluorobenzene	90.9	%	70-130	1	12/20/10 20:58	DY	5679803
Surr: Toluene-d8	99.3	%	61-121	1	12/20/10 20:58	DY	5679803

**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  
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Client Sample ID: MW-3      Collected: 12/17/2010 8:21      SPL Sample ID: 10120638-03

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
<b>METALS BY METHOD 6010B, DISSOLVED</b>				<b>MCL</b>	<b>SW6010B</b>	<b>Units: mg/L</b>	
Manganese	0.178		0.005	1	12/23/10 12:47	EG	5683174

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/20/2010 17:00	M_W	1.00

<b>VOLATILE ORGANICS BY METHOD 8260B</b>				<b>MCL</b>	<b>SW8260B</b>	<b>Units: ug/L</b>	
Benzene	ND		1	1	12/20/10 21:22	DY	5679804
Ethylbenzene	ND		1	1	12/20/10 21:22	DY	5679804
Toluene	ND		1	1	12/20/10 21:22	DY	5679804
m,p-Xylene	ND		2	1	12/20/10 21:22	DY	5679804
o-Xylene	ND		1	1	12/20/10 21:22	DY	5679804
Xylenes, Total	ND		1	1	12/20/10 21:22	DY	5679804
Surr: 1,2-Dichloroethane-d4	111	%	71-140	1	12/20/10 21:22	DY	5679804
Surr: 4-Bromofluorobenzene	91.5	%	70-130	1	12/20/10 21:22	DY	5679804
Surr: Toluene-d8	99.5	%	61-121	1	12/20/10 21:22	DY	5679804

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



HOUSTON LABORATORY  
 8880 INTERCHANGE DRIVE  
 HOUSTON, TX 77054  
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Client Sample ID: MW-4

Collected: 12/17/2010 8:11

SPL Sample ID: 10120638-04

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
<b>METALS BY METHOD 6010B, DISSOLVED</b>				<b>MCL</b>	<b>SW6010B</b>	<b>Units: mg/L</b>	
Manganese	0.0502		0.005	1	12/23/10 13:54	EG	5683185

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	12/20/2010 17:00	M_W	1.00

<b>VOLATILE ORGANICS BY METHOD 8260B</b>				<b>MCL</b>	<b>SW8260B</b>	<b>Units: ug/L</b>	
Benzene	ND		1	1	12/20/10 21:46	DY	5679805
Ethylbenzene	ND		1	1	12/20/10 21:46	DY	5679805
Toluene	ND		1	1	12/20/10 21:46	DY	5679805
m,p-Xylene	ND		2	1	12/20/10 21:46	DY	5679805
o-Xylene	ND		1	1	12/20/10 21:46	DY	5679805
Xylenes, Total	ND		1	1	12/20/10 21:46	DY	5679805
Surr: 1,2-Dichloroethane-d4	112	%	71-140	1	12/20/10 21:46	DY	5679805
Surr: 4-Bromofluorobenzene	90.8	%	70-130	1	12/20/10 21:46	DY	5679805
Surr: Toluene-d8	99.8	%	61-121	1	12/20/10 21:46	DY	5679805

**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: Duplicate

Collected: 12/17/2010 8:37

SPL Sample ID: 10120638-05

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
<b>VOLATILE ORGANICS BY METHOD 8260B</b>				<b>MCL</b>	<b>SW8260B</b>	<b>Units: ug/L</b>	
Benzene	ND		1	1	12/20/10 22:09	DY	5679806
Ethylbenzene	ND		1	1	12/20/10 22:09	DY	5679806
Toluene	ND		1	1	12/20/10 22:09	DY	5679806
m,p-Xylene	ND		2	1	12/20/10 22:09	DY	5679806
o-Xylene	ND		1	1	12/20/10 22:09	DY	5679806
Xylenes, Total	ND		1	1	12/20/10 22:09	DY	5679806
Surr: 1,2-Dichloroethane-d4	.112		% 71-140	1	12/20/10 22:09	DY	5679806
Surr: 4-Bromofluorobenzene	90.7		% 70-130	1	12/20/10 22:09	DY	5679806
Surr: Toluene-d8	100		% 61-121	1	12/20/10 22:09	DY	5679806

**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

10120638 Page 8  
12/28/2010 5:02:55 PM



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

Client Sample ID: Trip Blank

Collected: 12/17/2010 8:00

SPL Sample ID: 10120638-06

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
<b>VOLATILE ORGANICS BY METHOD 8260B</b>				<b>MCL</b>	<b>SW8260B</b>	<b>Units: ug/L</b>	
Benzene	ND		1	1	12/23/10 17:06	D_R	5683679
Ethylbenzene	ND		1	1	12/23/10 17:06	D_R	5683679
Toluene	ND		1	1	12/23/10 17:06	D_R	5683679
m,p-Xylene	ND		2	1	12/23/10 17:06	D_R	5683679
o-Xylene	ND		1	1	12/23/10 17:06	D_R	5683679
Xylenes, Total	ND		1	1	12/23/10 17:06	D_R	5683679
Surr: 1,2-Dichloroethane-d4	113		% 71-140	1	12/23/10 17:06	D_R	5683679
Surr: 4-Bromofluorobenzene	88.9		% 70-130	1	12/23/10 17:06	D_R	5683679
Surr: Toluene-d8	99.6		% 61-121	1	12/23/10 17:06	D_R	5683679

**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*



Quality Control Report

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

Conoco Phillips
COP Faye-Burdette

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 10120638
Lab Batch ID: R313122

Method Blank

Samples in Analytical Batch:

RunID: MSDVOA4\_101220A-5679799 Units: ug/L
Analysis Date: 12/20/2010 18:14 Analyst: DY

Lab Sample ID Client Sample ID
10120638-01A MW-1
10120638-02A MW-2
10120638-03A MW-3
10120638-04A MW-4
10120638-05A Duplicate

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, m,p-Xylene, o-Xylene, Xylenes, Total, and various Surr: entries.

Laboratory Control Sample (LCS)

RunID: MSDVOA4\_101220A-56797 Units: ug/L
Analysis Date: 12/20/2010 17:02 Analyst: DY

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, m,p-Xylene, o-Xylene, Xylenes, Total, and various Surr: entries.

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

Sample Spiked: H1012037600
RunID: MSDVOA4\_101220A-56798 Units: ug/L
Analysis Date: 12/20/2010 23:46 Analyst: DY

- 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
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
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
\* - Recovery Outside Advisable QC Limits

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.



Quality Control Report

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

Conoco Phillips
COP Faye-Burdette

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 10120638
Lab Batch ID: R313122

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, m,p-Xylene, o-Xylene, Xylenes, Total, and various surrogates.

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
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

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HOUSTON, TX 77054
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Conoco Phillips
COP Faye-Burdette

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 10120638
Lab Batch ID: R313344

Method Blank

Samples in Analytical Batch:

RunID: MSDVOA4\_101223D-5683678 Units: ug/L
Analysis Date: 12/23/2010 14:40 Analyst: D\_R

Lab Sample ID: 10120638-06A
Client Sample ID: Trip Blank

Table with 3 columns: Analyte, Result, Rep Limit. Rows include Benzene, Ethylbenzene, Toluene, m,p-Xylene, o-Xylene, Xylenes, Total, and various Surr. (Surrogate) compounds.

Laboratory Control Sample (LCS)

RunID: MSDVOA4\_101223D-56836 Units: ug/L
Analysis Date: 12/23/2010 13:29 Analyst: D\_R

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Rows include Benzene, Ethylbenzene, Toluene, m,p-Xylene, o-Xylene, Xylenes, Total, and various Surr. (Surrogate) compounds.

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

Sample Spiked: 10120619-04
RunID: MSDVOA4\_101223D-56848 Units: ug/L
Analysis Date: 12/27/2010 13:57 Analyst: D\_R

- 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
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
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
\* - Recovery Outside Advisable QC Limits

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Quality Control Report

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

Conoco Phillips
COP Faye-Burdette

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 10120638
Lab Batch ID: R313344

Table with 12 columns: Analyte, Sample Result, MS Spike Added, MS Result, MS % Recovery, MSD Spike Added, MSD Result, MSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Rows include Benzene, Ethylbenzene, Toluene, m,p-Xylene, o-Xylene, Xylenes, Total, and various surrogates.

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
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
MI - Matrix Interference
D - Recovery Unreportable due to Dilution
\* - Recovery Outside Advisable QC Limits

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.



Quality Control Report

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

Conoco Phillips
COP Faye-Burdette

Analysis: Metals by Method 6010B, Dissolved
Method: SW6010B

WorkOrder: 10120638
Lab Batch ID: 104030

Method Blank

Samples in Analytical Batch:

RunID: ICP2\_101223A-5683172 Units: mg/L
Analysis Date: 12/23/2010 12:35 Analyst: EG
Preparation Date: 12/20/2010 17:00 Prep By: M\_ Method: SW3005A

Lab Sample ID Client Sample ID
10120638-01B MW-1
10120638-02B MW-2
10120638-03B MW-3
10120638-04B MW-4

Table with 3 columns: Analyte, Result, Rep Limit. Row: Manganese, ND, 0.005

Laboratory Control Sample (LCS)

RunID: ICP2\_101223A-5683173 Units: mg/L
Analysis Date: 12/23/2010 12:41 Analyst: EG
Preparation Date: 12/20/2010 17:00 Prep By: M\_ Method: SW3005A

Table with 6 columns: Analyte, Spike Added, Result, Percent Recovery, Lower Limit, Upper Limit. Row: Manganese, 0.1000, 0.09750, 97.50, 80, 120

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

Sample Spiked: 10120638-03
RunID: ICP2\_101223A-5683178 Units: mg/L
Analysis Date: 12/23/2010 13:12 Analyst: EG

Table with 12 columns: Analyte, Sample Result, PDS Spike Added, PDS Result, PDS % Recovery, PDSD Spike Added, PDSD Result, PDSD % Recovery, RPD, RPD Limit, Low Limit, High Limit. Row: Manganese, 0.178, 0.1, 0.297, 119.5, 0.1, 0.2996, 122.1\*, 0.8716, 20, 80, 120

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

Sample Spiked: 10120638-03
RunID: ICP2\_101223A-5683175 Units: mg/L
Analysis Date: 12/23/2010 12:53 Analyst: EG
Preparation Date: 12/20/2010 17:00 Prep By: M\_ Method: SW3005A

Qualifiers: ND/U - Not Detected at the Reporting Limit MI - Matrix Interference
B - Analyte Detected In The Associated Method Blank D - Recovery Unreportable due to Dilution
J - Estimated Value Between MDL And PQL \* - Recovery Outside Advisable QC Limits
E - Estimated Value exceeds calibration curve
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.



Quality Control Report

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

Conoco Phillips  
COP Faye-Burdette

Analysis: Metals by Method 6010B, Dissolved  
Method: SW6010B

WorkOrder: 10120638  
Lab Batch ID: 104030

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	0.1775	0.1	0.3006	123.1	0.1	0.3040	126.5 *	1.125	20	75	125

Qualifiers: ND/U - Not Detected at the Reporting Limit  
 B - Analyte Detected In The Associated Method Blank  
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 E - Estimated Value exceeds calibration curve  
 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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 D - Recovery Unreportable due to Dilution  
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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:	10120638	Received By:	T_B
Date and Time Received:	12/18/2010 10:30:00 AM	Carrier name:	Fedex-Priority
Temperature:	4.5°C	Chilled by:	Water Ice

1. Shipping container/cooler in good condition? Yes  No  Not Present
2. Custody seals intact on shipping 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:

