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MARCH 2011 QUARTERLY GWMR

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MARCH 2011 QUARTERLY GROUNDWATER MONITORING REPORT

CONOCOPHILLIPS COMPANY

CHARLES ET AL. NO. 1
NATURAL GAS PRODUCTION SITE
SAN JUAN COUNTY, NEW MEXICO

API # 30-045-06623

Prepared for:

ConocoPhillips

Risk Management and Remediation
420 South Keeler Avenue
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May 2011

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MARCH 2011 QUARTERLY GROUNDWATER MONITORING REPORT CHARLES ET AL. NO.1, SAN JUAN COUNTY, NEW MEXICO

1.0 INTRODUCTION

This report discusses the groundwater sampling event performed by Tetra Tech, Inc. (Tetra Tech) on March 18, 2011 at the ConocoPhillips Company Charles et al. No. 1 remediation site located near the Angel Peak area of northwestern New Mexico (Site). The Site is situated on Navajo Nation land in Section 12, Township 27N, Range 9W, of San Juan County, New Mexico. A site location map and detail map are included as **Figures 1** and **2**, respectively.

1.1 Site Background

The historical timeline for the Site is summarized below, and is also presented in **Table 1**.

The Charles et al. No. 1 natural gas production well was spudded in April 1965 by the Austral Oil Company of Houston, TX. Operatorship of the well was transferred several times before a subsidiary of Burlington Resources became the operator in August 1992. The well was abandoned shortly thereafter due to low production. The well was recompleted and production was restored on May 20, 2003. ConocoPhillips acquired Burlington Resources on March 30, 2006.

A ConocoPhillips employee discovered an area of dead vegetation approximately 100 feet from the Blanco Wash while investigating a pipeline release on June 23, 2008 (**Figure 2**). ConocoPhillips reported the release to the NMOCD by phone and E-mail on June 24, 2008 and followed-up with submittal of a Form C-141 to NMOCD on June 30, 2008. Envirotech, Inc. (Envirotech) advanced several soil borings and installed seven piezometer/monitor wells using a hand auger between the dates of June 25 and 26, 2008. Solar-powered soil vapor extraction (SVE) equipment was installed over Monitor Well MW-1 on August 14, 2008 to facilitate the remediation of the area (Envirotech, 2009).

Envirotech conducted quarterly groundwater sampling events beginning June 25, 2008 and recommended discontinuing sampling Monitor Wells MW-5, MW-6, and MW-7 in March 2009. Tetra Tech began monitoring the Charles et al. No. 1 remediation site in March, 2010. This report represents the fifth round of groundwater monitoring conducted by Tetra Tech at the Site.

2.0 GROUNDWATER MONITORING SUMMARY, SAMPLING METHODOLOGY, AND RESULTS

2.1 Groundwater Monitoring Summary

A groundwater sampling event was conducted at the Site on March 18, 2011. Prior to collection of groundwater samples from Monitor Wells MW-1, MW-2, MW-3 and MW-4, depth to groundwater was measured in all Site monitor wells using a dual interface probe (**Table 2**). A groundwater elevation map reflecting March 18, 2011 groundwater elevations is presented as **Figure 3**. A historical groundwater elevation summary is included in **Table 2**.

2.2 Groundwater Sampling Methodology

During the March 18, 2011 groundwater monitoring event, Monitor Wells MW-1, MW-2, MW-3, and MW-4 were purged of at least 3 casing volumes of groundwater using a 1.5-inch diameter, polyethylene dedicated bailer. While bailing Monitor Wells MW-2, MW-3, and MW-4, groundwater parameters were collected using a YSI 556 multi-parameter sonde and results were recorded on a Tetra Tech Water Sampling Field Form (**Appendix A**). Parameters were not collected at Monitor Well MW-1 due to a light non-aqueous phase liquid (LNAPL) sheen present in purge water. Groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped under chain-of-custody documentation to Southern Petroleum Laboratory (SPL) of Houston, Texas. March 2011 groundwater samples were analyzed for BTEX by EPA Method 8260B (**Table 3**). The Laboratory analytical report is included as **Appendix B**.

2.3 Groundwater Sampling Analytical Results

The Navajo Nation Environmental Protection Agency (NNEPA) has not established groundwater quality standards; however drinking water quality on Navajo Nation land is mandated in Part II the Navajo Nation Primary Drinking Water Regulations (NNPDWR). Drinking water quality standards have been set for the protection of human health, domestic water supply, and irrigation use. Exceedences of NNPDWR water quality standards in Site monitoring wells are discussed below.

- **Benzene**
    - The NNPDWR drinking water quality standard for benzene is 5 µg/L. The laboratory analysis of groundwater samples collected from Monitor Well MW-1 revealed a concentration of 150 µg/L.

The corresponding laboratory analytical report for the March 2011 groundwater sampling event is included as **Appendix B**. A historical laboratory analytical summary is available as **Table 3**. A Site map showing the concentration of benzene present in groundwater is included as **Figure 4**. A hydrograph showing benzene concentration vs. groundwater level over time in MW-1 is included as **Figure 5**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Groundwater samples collected from MW-1 have continually exceeded NNPDWR drinking water quality standards for benzene from June 2008 to March 2011. Monitoring Well MW-1 was also found to exceed NNPDWR drinking water quality standards for toluene in September of 2010. Tetra Tech placed an oil absorbent sock in MW-1 during the September 2010 monitoring event. The sock could be contributing to a significant decrease of benzene between the September 2010 and March 2011 monitoring events. Based on

the historical groundwater quality data, groundwater samples collected from MW-3 and MW-4 have never exceeded NNPDWR drinking water quality standards for BTEX constituents during sampling conducted from June 2008 to March 2011.

Tetra Tech recommends continued quarterly groundwater sampling at the Site. Site closure will be requested when groundwater analytical results indicate that all constituents of concern are consistently below NNPDWR drinking water quality standards. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetratech.com if you have any questions or require additional information.

4.0 REFERENCES

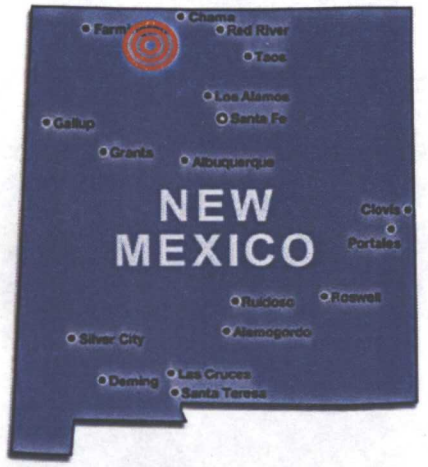
Envirotech Incorporated (2009). *June 2009 Groundwater Monitoring Report.* Prepared for ConocoPhillips. Report Dated August 2009.

State of New Mexico Energy Minerals and Natural Resources Form C-141 (2003). *Release Notification and Corrective Action.* Dated June 30, 2008.

FIGURES

FIGURE 1.

Site Location Map
ConocoPhillips
Company
Charles et al. No. 1
San Juan County, NM



ConocoPhillips Company
Charles et al. No. 1
Remediation Site Location

0 50 100
Feet

Latitude: 36.58643° N
Longitude: -107.73593° W

N

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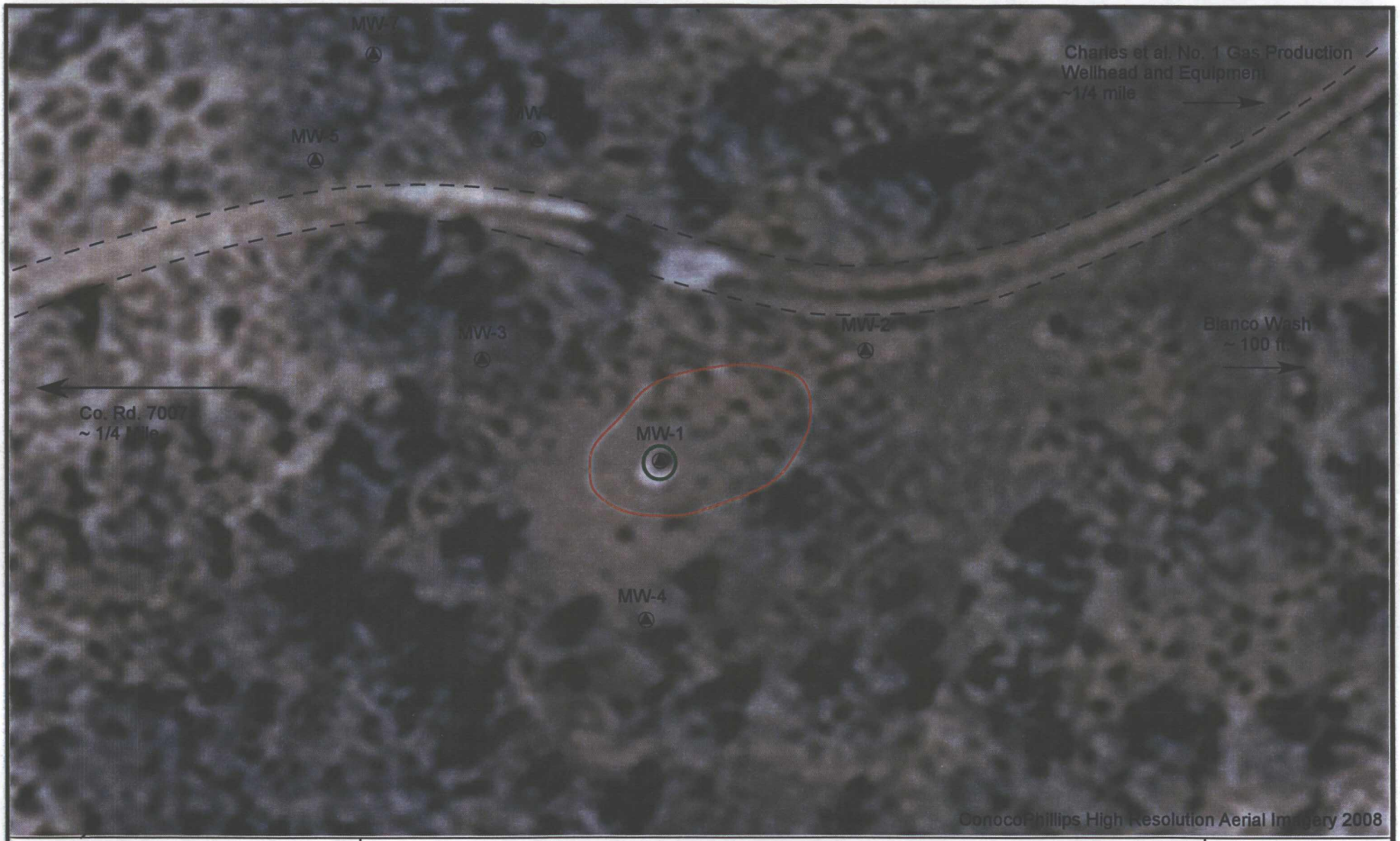


FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
Charles et al. No. 1
GAS PRODUCTION WELL
Sec 12, T27N, R9W
San Juan County, New Mexico

LEGEND

- MONITORING WELL
- SOLAR POWERED SVE EQUIPMENT
- ACCESS ROAD
- APPROXIMATE AREA OF DEAD VEGETATION IN JUNE 2008

0 15 30
Feet

N

TETRA TECH, INC.

FIGURE 3:
GROUNDWATER ELEVATION MAP
MARCH 2011
CONOCOPHILLIPS COMPANY
Charles et al. No. 1
GAS PRODUCTION WELL
Sec 12, T27N, R9W
San Juan County, New Mexico

LEGEND

- MONITORING WELL
- SOLAR POWERED SVE EQUIPMENT
- ACCESS ROAD
- GROUNDWATER ELEVATION CONTOUR LINE (DASHED WHERE INFERRED)
- APPROXIMATE AREA OF DEAD VEGETATION IN JUNE 2008

0 15 30
Feet

N

TETRA TECH, INC.

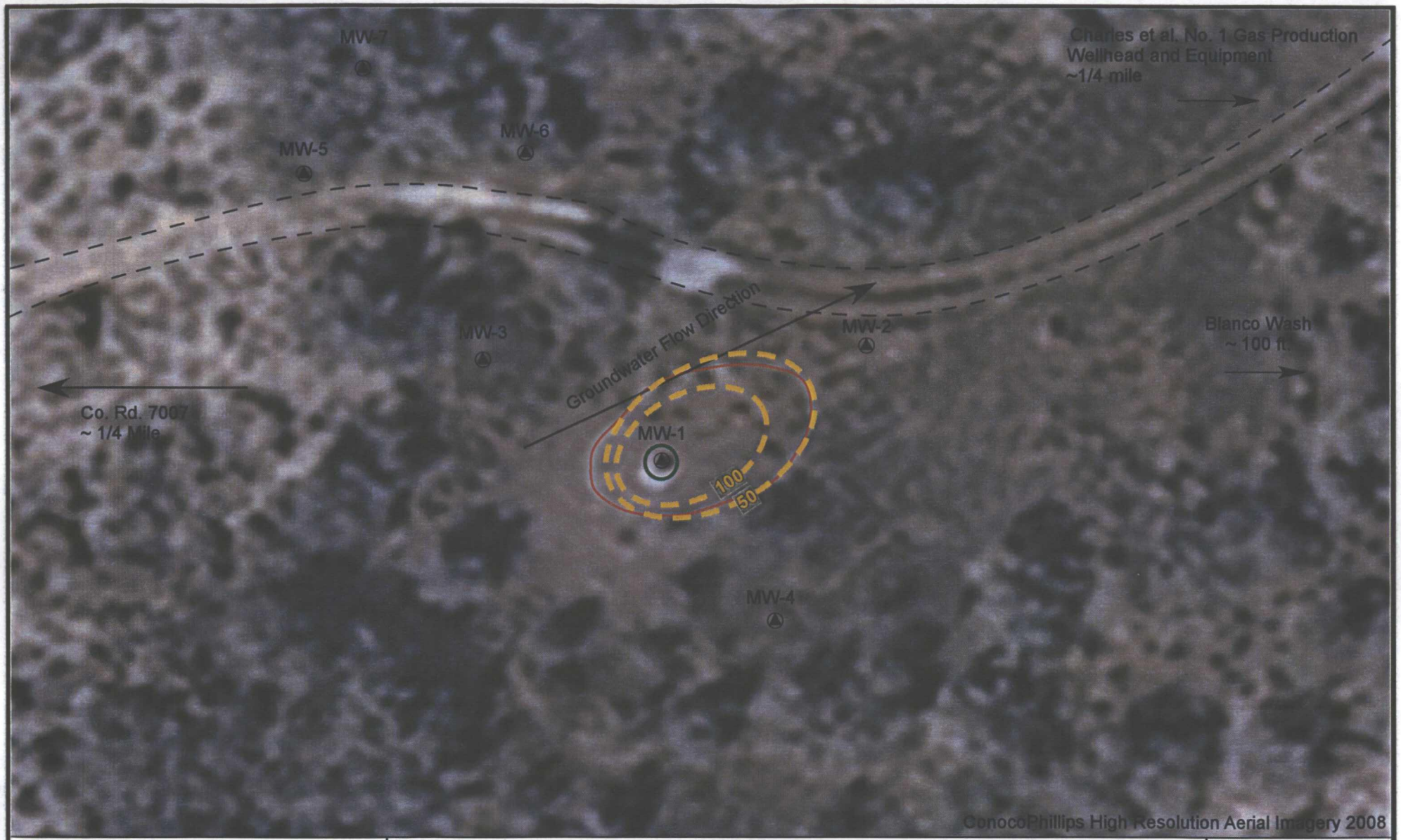


FIGURE 4:
BENZENE CONCENTRATION MAP
MARCH 2010
CONOCOPHILLIPS COMPANY
Charles et al. No. 1
GAS PRODUCTION WELL
Sec 12, T27N, R9W
San Juan County, New Mexico

LEGEND

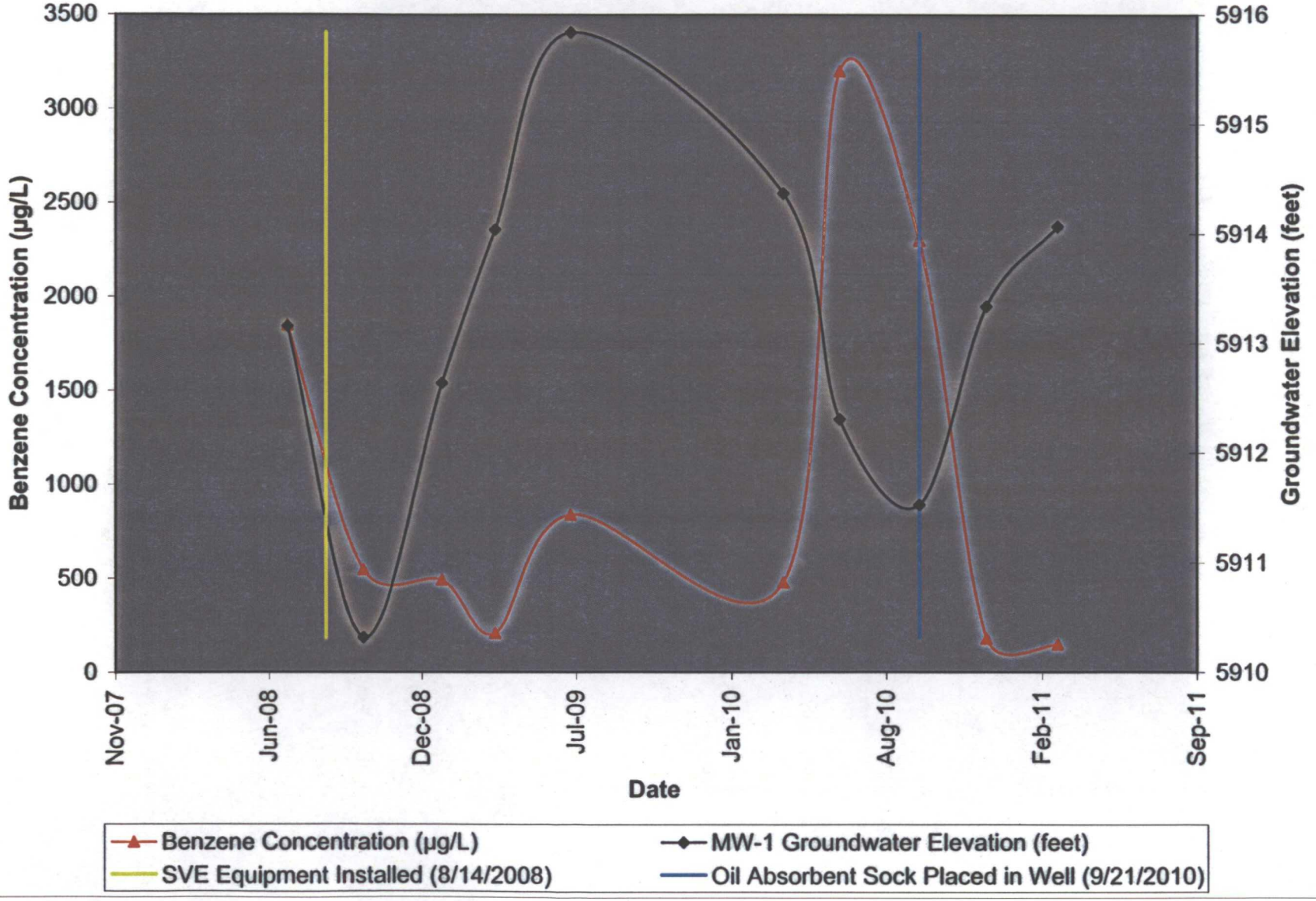
- MONITORING WELL
- SOLAR POWERED SVE EQUIPMENT
- ACCESS ROAD
- BENZENE CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- APPROXIMATE AREA OF DEAD VEGETATION IN JUNE 2008

0 15 30
Feet

N

TETRA TECH, INC.

Figure 5. ConocoPhillips Charles et al. No. 1 Benzene Concentration vs. Groundwater Elevation Over Time in MW-1



TABLES

Table 1. ConocoPhillips Company, Charles et al. No. 1 - Site History Timeline

DATE	ACTIVITY
April 12, 1965	Well spudded by Austral Oil Company Inc.
March 30, 1978	Change in operatorship to the Superior Oil Company.
September 1, 1986	Change in operatorship to Mobil Producing TX and NM Inc.
August 1, 1992	Change in operatorship to Meridian Oil Inc, a subsidiary of Burlington Resources.
August 1, 2001	Burlington Resources abandons well due to low production.
May 20, 2003	The Charles et al. No. 1 natural gas Well returned to production.
March 31, 2006	ConocoPhillips acquired Burlington Resources.
June 23, 2008	A release was discovered from the pipe running from the wellhead to the meter house; upon walking the pipeline, an area of dead vegetation was also discovered approximately 100 feet from Blanco Wash.
June 24, 2008	ConocoPhillips reported the release to the New Mexico Oil Conservation Division (NMOCD) via phone and email.
June 25-26, 2008	Envirotech, Inc. of Farmington, NM advances several soil borings and installed piezometers using a hand auger to determine the extent of impact (Envirotech, 2009). Envirotech also installed Monitoring Wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, and MW-7; and obtained water level measurements and samples from all of the wells.
August 14, 2008	Envirotech, Inc. installed solar-powered Soil Vapor Extraction (SVE) equipment over the existing Monitor Well, MW-1; and obtained water level measurements and samples from all of the wells.
October 2, 2008	Envirotech, Inc. completed the third round of groundwater sampling.
January 13, 2009	Envirotech, Inc. completed the fourth round of groundwater sampling.
March 23, 2009	Envirotech, Inc. completed the fifth round of groundwater sampling and recommended sampling only Monitor Wells MW-1, MW-2, MW-3, and MW-4.
June 29, 2009	Envirotech, Inc. completed the sixth round of groundwater sampling and recommended drilling additional monitoring wells down-gradient of MW-2.
March 30, 2010	Tetra Tech, Inc. completed the seventh round of groundwater sampling.
June 11, 2010	Tetra Tech, Inc. completed the eighth round of groundwater sampling.
September 21, 2010	Tetra Tech, Inc. completed the ninth round of groundwater sampling.
December 16, 2010	Tetra Tech, Inc. completed the tenth round of groundwater sampling. Benzene levels in MW-1 exceeded the Navajo Nation Environmental Protection Agency (NNEPA) standard.
March 18, 2011	Tetra Tech, Inc. completed the eleventh round of groundwater sampling. Benzene levels in MW-1 exceeded the NNEPA standard.

Table 2. ConocoPhillips Company, Charles et al. No. 1 - Groundwater Elevation Summary

Monitor Well	TOC Elevation* (ft AMSL)	Sample Date	Depth to Water (ft)	GW Elevation (ft AMSL)
MW-1	5917.87	6/25/2008	4.71	5913.16
		8/14/2008	5.21	5912.66
	5917.05	10/2/2008	5.13	5911.92
		1/13/2009	4.41	5912.64
		3/23/2009	3.01	5914.04
		6/29/2009	2.12	5914.93
		3/30/2010	2.68	5914.37
		6/11/2010	4.74	5912.31
		9/21/2010	5.52	5911.53
		12/16/2010	3.71	5913.34
		3/18/2011	2.98	5914.07
MW-2	5917.33	6/25/2008	4.66	5912.67
		8/14/2008	5.35	5911.98
	5916.53	10/2/2008	5.12	5911.41
		1/13/2009	3.15	5913.38
		3/23/2009	2.65	5913.88
		6/29/2009	4.20	5912.33
		3/30/2010	2.57	5913.96
		6/11/2010	4.63	5911.90
		9/21/2010	5.53	5911.00
		12/16/2010	3.53	5913.00
		3/18/2011	2.70	5913.83
MW-3	5920.57	6/25/2008	7.16	5913.41
		8/14/2008	8.86	5911.71
	5919.8	10/2/2008	7.63	5912.17
		1/13/2009	5.56	5914.24
		3/23/2009	5.56	5914.24
		6/29/2009	1.10	5918.70
		3/30/2010	5.38	5914.42
		6/11/2010	7.44	5912.36
		9/21/2010	8.22	5911.58
		12/16/2010	6.06	5913.74
		3/18/2011	5.42	5914.38
MW-4	5920.48	6/25/2008	4.27	5916.21
		8/14/2008	7.89	5912.59
	5919.69	10/2/2008	7.73	5911.96
		1/13/2009	5.94	5913.75
		3/23/2009	5.64	5914.05
		6/29/2009	6.84	5912.85
		3/30/2010	5.40	5914.29
		6/11/2010	7.23	5912.46
		9/21/2010	8.17	5911.52
		12/16/2010	6.24	5913.45
		3/18/2011	5.50	5914.19
MW-5	5923.63	6/26/2008	8.23	5915.4
		8/14/2008	8.68	5914.95
	5921.55	10/2/2008	8.70	5912.85
		1/13/2009	6.96	5914.59
		3/23/2009	6.58	5914.97
		6/29/2009	4.10	5917.45
		3/30/2010	NM	NA
		6/11/2010	8.20	5913.35
		9/21/2010	9.25	5912.30
		12/16/2010	7.40	5914.15
		3/18/2011	6.74	5914.81

Table 2. ConocoPhillips Company, Charles et al. No. 1 - Groundwater Elevation Summary

Monitor Well	TOC Elevation* (ft AMSL)	Sample Date	Depth to Water (ft)	GW Elevation (ft AMSL)
MW-6	5920.68	6/26/2008	6.75	5913.93
		8/14/2008	6.97	5913.71
	5918.64	10/2/2008	6.83	5911.81
		1/13/2009	4.89	5913.75
		3/23/2009	4.12	5914.52
		6/29/2009	1.80	5916.84
		3/30/2010	NM	NA
		6/11/2010	6.63	5912.01
		9/21/2010	7.41	5911.23
		12/16/2010	5.12	5913.52
		3/15/2011	4.49	5914.15
MW-7	5920.75	6/26/2008	6.32	5914.43
		8/14/2008	7.17	5913.58
	5918.74	10/2/2008	6.42	5912.32
		1/13/2009	NM	NA
		3/23/2009	4.67	5914.07
		6/29/2009	1.56	5917.18
		3/30/2010	NM	NA
		6/11/2010	NM	NA
		9/21/2010	NM	NA
		12/16/2010	4.91	5913.83
		3/18/2011	4.4 (dry)(1)	--

Explanation

ft = feet
AMSL = Above mean sea level
DTW = Depth to water
NA = Not available
NM = Not measured
* = Elevation Measurements obtained from 2009 Envirotech investigation
(1) = Indication of well being dry is inconsistent with perviously recorded levels. Will continue to monitor depth to groundwater and total depth to determine a potential cause.
Note: Measurements between 6/25/2008 and 6/29/2009 obtained by Envirotech, Inc.

Table 3. ConocoPhillips Company, Charles et al. No. 1 - Groundwater Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
MW-1	6/25/2008	**1850**	486	**971**	379
	9/25/2008	**575**	660	293	1547
	1/13/2009	**494**	581	474	3572
	3/23/2009	**210**	311	378	1418
	6/29/2009	**839**	107	674	3404
	3/30/2010	**480**	110	250	1573
	6/11/2010	**3,200**	450	690	4,510
	9/21/2010	**2,300**	**1100**	250	4,840
	12/16/2010	**180**	200	250	1,790
	3/18/2011	**150**	140	160	1,083
MW-2	6/25/2008	4.2	4.6	1.6	1.1
	9/25/2008	19.5	25.8	5.1	100.8
	1/13/2009	2.1	2	2.2	28.1
	3/23/2009	1.4	0.4	0.6	7.3
	6/29/2009	1.5	ND	0.2	0.4
	3/30/2010	< 1.0	< 1.0	< 1.0	< 1.0
	6/11/2010	< 1.0	< 1.0	< 1.0	< 1.0
	9/21/2010	< 1.0	< 1.0	< 1.0	< 1.0
	12/16/2010	< 1.0	< 1.0	< 1.0	< 1.0
	3/18/2011	< 1.0	< 1.0	< 1.0	< 1.0
MW-3	6/25/2008	ND	ND	ND	ND
	9/25/2008	ND	2.3	0.9	12.1
	1/13/2009	ND	ND	ND	ND
	3/23/2009	ND	0.2	0.2	1.4
	6/29/2009	ND	1.7	0.7	8.2
	3/30/2010	< 1.0	< 1.0	< 1.0	< 1.0
	6/11/2010	< 1.0	< 1.0	< 1.0	< 1.0
	9/21/2010	< 1.0	< 1.0	< 1.0	< 1.0
	12/16/2010	< 1.0	< 1.0	< 1.0	< 1.0
	3/18/2011	<1.0	<1.0	<1.0	<1.0
MW-4	6/25/2008	3.8	19.9	1.4	7
	9/25/2008	ND	ND	ND	ND
	1/13/2009	ND	ND	ND	ND
	3/23/2009	ND	ND	ND	ND
	6/29/2009	ND	ND	0.2	2.9
	3/30/2010	< 1.0	< 1.0	< 1.0	< 1.0
	6/11/2010	< 1.0	< 1.0	< 1.0	< 1.0
	9/21/2010	< 1.0	< 1.0	< 1.0	< 1.0
	12/16/2010	< 1.0	< 1.0	< 1.0	< 1.0
	3/18/2011	<1.0	<1.0	<1.0	<1.0

Table 3. ConocoPhillips Company, Charles et al. No. 1 - Groundwater Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
MW-5	6/26/2008	ND	ND	ND	ND
	9/25/2008	ND	ND	ND	ND
	1/13/2009	ND	ND	ND	ND
	3/23/2009	ND	ND	ND	ND
	6/29/2009	NS	NS	NS	NS
	3/30/2010	NS	NS	NS	NS
	6/11/2010	NS	NS	NS	NS
	9/21/2010	NS	NS	NS	NS
	12/16/2010	NS	NS	NS	NS
	3/18/2011	NS	NS	NS	NS
MW-6	6/26/2008	ND	ND	ND	ND
	9/25/2008	ND	ND	ND	ND
	1/13/2009	ND	ND	ND	ND
	3/23/2009	ND	ND	ND	ND
	6/29/2009	NS	NS	NS	NS
	3/30/2010	NS	NS	NS	NS
	6/11/2010	NS	NS	NS	NS
	9/21/2010	NS	NS	NS	NS
	12/16/2010	NS	NS	NS	NS
	3/18/2011	NS	NS	NS	NS
MW-7	6/26/2008	ND	ND	ND	ND
	9/25/2008	ND	ND	ND	ND
	1/13/2009	NS	NS	NS	NS
	3/23/2009	ND	ND	ND	ND
	6/29/2009	NS	NS	NS	NS
	3/30/2010	NS	NS	NS	NS
	6/11/2010	NS	NS	NS	NS
	9/21/2010	NS	NS	NS	NS
	12/16/2010	NS	NS	NS	NS
	3/18/2011	NS	NS	NS	NS
NNEPA Standards		**5 (µg/L)**	**1000 (µg/L)**	**700 (µg/L)**	**10,000 (µg/L)**

Explanation
ND = Not Detected
NS = Not Sampled
NNEPA = Navajo Nation Environmental Protection Agency
mg/L = milligrams per liter (parts per million)
µg/L = micrograms per liter (parts per billion)
< 1.0= Below laboratory detection limit of 1.0 ug/L
Bold = concentrations that exceed the NNEPA limits

Note: Analytes sampled between 6/25/2008 and 6/29/2009 obtained by Envirotech, Inc.

APPENDIX A

March 2011 Quarterly Groundwater Sampling Field Forms

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Charles Et Al #1 Page 1 of 4

Project No.

Site Location Angel Peak area, NM

Site/Well No. MW-1 Coded/ Replicate No. 1555 Date 3-18-11

Weather cloudy, warm 70° Time Sampling Began 1545 Time Sampling Completed 1550

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation 5917.05

Total Sounded Depth of Well Below MP 7.27 Water-Level Elevation 5914.07

Heid ____ Depth to Water Below MP 2.98 Diameter of Casing 2"

Wet ____ Water Column in Well 4.29 Gallons Pumped/Bailed Prior to Sampling pumped/bailed 2.25

Gallons per Foot 0.16

Gallons in Well 0.686 Sampling Pump Intake Setting (feet below land surface)

Purging Equipment Purge pump / Bailer X3 = 2.059

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)

Sampling Equipment Purge Pump/Bailer No parameters collected due to sheen.

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl

Remarks Removed sock before sampling. Bottom 1/3 of sock is black. sampled well. H20 is black w/ strong odor and a spotty discontinuous sheen flipped sock and placed it back into well

Sampling Personnel Cassie Brown, Christine Mathews

Well Casing Volumes

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

MW5 = 6.74
MW-7 = 4.4 (DRY TD)
MW-6 = 4.49

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Charles Et Al #1 Page 2 of 4

ect No.

Site Location Angel Peak area, NM

Site/Well No. MW-2 Coded/ Replicate No. Date 3.18.11

Weather Cloudy, ~~sun~~ warm 70° Time Sampling Began 1620 Time Sampling Completed 1625

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation 5916.53

Total Sounded Depth of Well Below MP 7.49 Water-Level Elevation 5913.83

Held ____ Depth to Water Below MP 2.70 Diameter of Casing 2"

Wet ____ Water Column in Well 4.79 Gallons Pumped/Bailed Prior to Sampling pumped/bailed 1.25

Gallons per Foot 0.16

Gallons in Well 0.7664 Sampling Pump Intake Setting (feet below land surface) ____

Purging Equipment Purge pump / Bailer X3= 2.29

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1622	5.34	7.57	3651	3.790	7.85	58.4	-141.4	.5
1624	5.06	7.63	3602	3.781	~~7.80~~ 2.80	22.2	-174.7	1.0

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl

Remarks Well bailed dry, will sample @ 1.25 gallons. H_2O is back w/ sulfur odor

Sampling Personnel Cassie Brown, Christine Mathews

no sheen observed

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 Charles Et Al #1 Page 3 of 4

,ect No.

Site Location Angel Peak area, NM

Site/Well No. MW-3 Coded/ Replicate No. Date 8·18·11

Weather ~~Sunny~~ Cloudy, warm 70° Time Sampling Began 1630 Time Sampling Completed 1640

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface MP Elevation 5919.8

Total Sounded Depth of Well Below MP 10.38 Water-Level Elevation 5914.38

Held ____ Depth to Water Below MP 5.42 Diameter of Casing 2"

Wet ____ Water Column in Well 4.96 Gallons Pumped/Bailed Prior to Sampling pumped/bailed 2.5

Gallons per Foot 0.16

Gallons in Well 0.7936 Sampling Pump Intake Setting (feet below land surface) ____

Purging Equipment Purge pump / Bailer X3= 2.3808

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1635	10.04	7.46	4044	3.680	3.85	34.8	-73.5	1.0
1637	10.63	7.48	4082	3.65	~~3.75~~	35.2	-72.3	1.5
1639	12.19	7.53	4326	~~3.92~~	~~41.8~~	—	-70.7	2.0
				3.738	4.32	41.8		

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl

Remarks

Sampling Personnel Cassie Brown, Christine Mathews

Well Casing Volumes

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

TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Charles Et Al #1 Page 4 of 4

ect No.

Site Location Angel Peak area, NM

Site/Well No. MW-4 Coded/ Replicate No. — Date 3.18.11

Weather Cloudy warm 70° Time Sampling Began 1610 Time Sampling Completed 16:15

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface — MP Elevation 5919.69

Total Sounded Depth of Well Below MP 10.38 Water-Level Elevation 6914.19

Held — Depth to Water Below MP 5.50 Diameter of Casing 2"

Wet — Water Column in Well 4.88 Gallons Pumped/Bailed Prior to Sampling pumped/bailed 2.5

Gallons per Foot 0.16

Gallons in Well 0.7808 Sampling Pump Intake Setting (feet below land surface) —

Purging Equipment Purge pump / Bailer X3 = 2.34

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
1606	5.26	7.24	4231	~~9.9~~ 4402	9.9	82.98	-121.7	.75
1607	5.12	7.02	4207	4.375	5.49	43.3	-131.6	1.0
1609	5.01	6.98	4138	4.359	4.31	34.4	-130.8	1.5
1616	4.97	6.95	4180	4.402	3.95	31.7	-128.9	2.0

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
BTEX	3 40mL VOA's	HCl

Remarks H_2O is gray with strong sulfur odor. no sheen observed.

Sampling Personnel Cassie Brown, Christine Mathews

Well Casing Volumes

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

APPENDIX B

March 2011 Quarterly Groundwater Laboratory Analytical Report

ACCUTEST LABORATORIES

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

Conoco Phillips

Certificate of Analysis Number:

11030500

Report To:		Project Name:	Charles Et al No. 1
Tetra Tech, Inc.		Site:	San Juan County, 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:	3/31/2011
ph (505) 237-8440	fax: (505) 881-3283		

This Report Contains A Total Of 18 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

4/1/2011

Date

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

Version 2.1 - Modified February 11, 2011

ACCUTEST LABORATORIES

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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:
11030500

Report To:		Project Name:	Charles Et al No. 1
Tetra Tech, Inc.		Site:	San Juan County, 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:	3/31/2011
ph (505) 237-8440	fax: (505) 881-3283		

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.

SW8260B Volatile Organics:

Sample ID "MW-3" (Accutest ID:11030500-03) was selected for use in Accutest's quality control program for Batch ID: R317555. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries were outside of the advisory quality control limits for the target analyte o-Xylene due to possible matrix interference. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

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.

Erica Cardenas
Project Manager

Date

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

ACCUTEST LABORATORIES

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

Case Narrative for:

Conoco Phillips

Certificate of Analysis Number:

11030500

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

4/1/2011

Erica Cardenas
Project Manager

Date

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

ACCUTEST LABORATORIES

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

Conoco Phillips

Certificate of Analysis Number:

11030500

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: Charles Et al No. 1
Site: San Juan County, NM
Site Address:
PO Number:
State: New Mexico
State Cert. No.:
Date Reported: 3/31/2011

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	11030500-01	Water	03/18/2011 15:50	3/22/2011 9:26:00 AM	302869	☐
MW-2	11030500-02	Water	03/18/2011 16:25	3/22/2011 9:26:00 AM	302869	☐
MW-3	11030500-03	Water	03/18/2011 16:40	3/22/2011 9:26:00 AM	302869	☐
MW-4	11030500-04	Water	03/18/2011 16:15	3/22/2011 9:26:00 AM	302869	☐
Duplicate	11030500-05	Water	03/18/2011 15:55	3/22/2011 9:26:00 AM	302869	☐
Trip Blank	11030500-06	Water	03/21/2011 0:00	3/22/2011 9:26:00 AM	302869	☐

Erica Cardenas
Project Manager

4/1/2011
Date

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

Ted Yen
Quality Assurance Officer

ACCUTEST LABORATORIES

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

Client Sample ID MW-1 **Collected:** 03/18/2011 15:50 **SPL Sample ID:** 11030500-01

Site: San Juan County, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	150			1	1	03/24/11 21:07	LU_L	5751507
Ethylbenzene	160			1	1	03/24/11 21:07	LU_L	5751507
Toluene	140			1	1	03/24/11 21:07	LU_L	5751507
m,p-Xylene	1000			20	10	03/25/11 12:42	LU_L	5752006
o-Xylene	83			1	1	03/24/11 21:07	LU_L	5751507
Xylenes,Total	1083			10	10	03/25/11 12:42	LU_L	5752006
Surr: 1,2-Dichloroethane-d4	98.8		%	70-130	10	03/25/11 12:42	LU_L	5752006
Surr: 1,2-Dichloroethane-d4	98.7		%	70-130	1	03/24/11 21:07	LU_L	5751507
Surr: 4-Bromofluorobenzene	89.7		%	74-125	10	03/25/11 12:42	LU_L	5752006
Surr: 4-Bromofluorobenzene	96.9		%	74-125	1	03/24/11 21:07	LU_L	5751507
Surr: Toluene-d8	95.0		%	82-118	10	03/25/11 12:42	LU_L	5752006
Surr: Toluene-d8	90.4		%	82-118	1	03/24/11 21:07	LU_L	5751507

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

ACCUTEST LABORATORIES

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

Client Sample ID MW-2 **Collected:** 03/18/2011 16:25 **SPL Sample ID:** 11030500-02

Site: San Juan County, 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	03/24/11 20:08	LU_L	5751505
Ethylbenzene	ND		1	1	03/24/11 20:08	LU_L	5751505
Toluene	ND		1	1	03/24/11 20:08	LU_L	5751505
m,p-Xylene	ND		2	1	03/24/11 20:08	LU_L	5751505
o-Xylene	ND		1	1	03/24/11 20:08	LU_L	5751505
Xylenes,Total	ND		1	1	03/24/11 20:08	LU_L	5751505
Surr: 1,2-Dichloroethane-d4	98.5		% 70-130	1	03/24/11 20:08	LU_L	5751505
Surr: 4-Bromofluorobenzene	87.0		% 74-125	1	03/24/11 20:08	LU_L	5751505
Surr: Toluene-d8	90.3		% 82-118	1	03/24/11 20:08	LU_L	5751505

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

ACCUTEST LABORATORIES

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

Client Sample ID MW-3 **Collected:** 03/18/2011 16:40 **SPL Sample ID:** 11030500-03

Site: San Juan County, 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	03/24/11 18:11	LU_L	5751501
Ethylbenzene	ND			1	1	03/24/11 18:11	LU_L	5751501
Toluene	ND			1	1	03/24/11 18:11	LU_L	5751501
m,p-Xylene	ND			2	1	03/24/11 18:11	LU_L	5751501
o-Xylene	ND			1	1	03/24/11 18:11	LU_L	5751501
Xylenes,Total	ND			1	1	03/24/11 18:11	LU_L	5751501
Surr: 1,2-Dichloroethane-d4	98.5		%	70-130	1	03/24/11 18:11	LU_L	5751501
Surr: 4-Bromofluorobenzene	86.9		%	74-125	1	03/24/11 18:11	LU_L	5751501
Surr: Toluene-d8	91.1		%	82-118	1	03/24/11 18:11	LU_L	5751501

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

ACCUTEST LABORATORIES

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

Client Sample ID MW-4 **Collected:** 03/18/2011 16:15 **SPL Sample ID:** 11030500-04

Site: San Juan County, 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	03/24/11 19:39	LU_L	5751504
Ethylbenzene	ND			1	1	03/24/11 19:39	LU_L	5751504
Toluene	ND			1	1	03/24/11 19:39	LU_L	5751504
m,p-Xylene	ND			2	1	03/24/11 19:39	LU_L	5751504
o-Xylene	ND			1	1	03/24/11 19:39	LU_L	5751504
Xylenes,Total	ND			1	1	03/24/11 19:39	LU_L	5751504
Surr: 1,2-Dichloroethane-d4	100		%	70-130	1	03/24/11 19:39	LU_L	5751504
Surr: 4-Bromofluorobenzene	87.9		%	74-125	1	03/24/11 19:39	LU_L	5751504
Surr: Toluene-d8	90.8		%	82-118	1	03/24/11 19:39	LU_L	5751504

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

ACCUTEST LABORATORIES

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

Client Sample ID Duplicate **Collected:** 03/18/2011 15:55 **SPL Sample ID:** 11030500-05

Site: San Juan County, NM

Analyses/Method	Result	QUAL		Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B				**MCL**	**SW8260B**	**Units: ug/L**		
Benzene	160			1	1	03/24/11 20:37	LU_L	5751506
Ethylbenzene	160			1	1	03/24/11 20:37	LU_L	5751506
Toluene	150			1	1	03/24/11 20:37	LU_L	5751506
m,p-Xylene	1100			20	10	03/25/11 13:12	LU_L	5752007
o-Xylene	82			1	1	03/24/11 20:37	LU_L	5751506
Xylenes,Total	1182			10	10	03/25/11 13:12	LU_L	5752007
Surr: 1,2-Dichloroethane-d4	97.8		%	70-130	10	03/25/11 13:12	LU_L	5752007
Surr: 1,2-Dichloroethane-d4	97.9		%	70-130	1	03/24/11 20:37	LU_L	5751506
Surr: 4-Bromofluorobenzene	90.0		%	74-125	10	03/25/11 13:12	LU_L	5752007
Surr: 4-Bromofluorobenzene	93.7		%	74-125	1	03/24/11 20:37	LU_L	5751506
Surr: Toluene-d8	95.3		%	82-118	10	03/25/11 13:12	LU_L	5752007
Surr: Toluene-d8	90.4		%	82-118	1	03/24/11 20:37	LU_L	5751506

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

ACCUTEST LABORATORIES

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

Client Sample ID Trip Blank **Collected:** 03/21/2011 0:00 **SPL Sample ID:** 11030500-06

Site: San Juan County, 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	03/23/11 14:09	LU_L	5750448
Ethylbenzene	ND		1	1	03/23/11 14:09	LU_L	5750448
Toluene	ND		1	1	03/23/11 14:09	LU_L	5750448
m,p-Xylene	ND		2	1	03/23/11 14:09	LU_L	5750448
o-Xylene	ND		1	1	03/23/11 14:09	LU_L	5750448
Xylenes,Total	ND		1	1	03/23/11 14:09	LU_L	5750448
Surr: 1,2-Dichloroethane-d4	92.9		% 70-130	1	03/23/11 14:09	LU_L	5750448
Surr: 4-Bromofluorobenzene	88.9		% 74-125	1	03/23/11 14:09	LU_L	5750448
Surr: Toluene-d8	92.6		% 82-118	1	03/23/11 14:09	LU_L	5750448

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

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Charles Et al No. 1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030500
Lab Batch ID: R317481

Method Blank

RunID: N_110323B-5750447 Units: ug/L
Analysis Date: 03/23/2011 12:11 Analyst: LU_L

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030500-06A	Trip Blank

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	92.0	70-130
Surr: 4-Bromofluorobenzene	91.0	74-125
Surr: Toluene-d8	91.3	82-118

Laboratory Control Sample (LCS)

RunID: N_110323B-5750446 Units: ug/L
Analysis Date: 03/23/2011 11:13 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	19.0	95.0	74	123
Ethylbenzene	20.0	17.6	87.8	72	127
Toluene	20.0	17.2	86.1	74	126
m,p-Xylene	40.0	35.6	89.1	71	129
o-Xylene	20.0	18.0	90.1	74	130
Xylenes,Total	60.0	53.6	89.4	71	130
Surr: 1,2-Dichloroethane-d4	50.0	46.3	92.7	70	130
Surr: 4-Bromofluorobenzene	50.0	46.8	93.7	74	125
Surr: Toluene-d8	50.0	44.1	88.2	82	118

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

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.

4/1/2011 11:50:45 AM

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Charles Et al No. 1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030500
Lab Batch ID: R317481

Sample Spiked: 11030515-01
RunID: N_110323B-5750453 Units: ug/L
Analysis Date: 03/23/2011 16:35 Analyst: LU_L

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	196	20	209	N/C	20	207	N/C	N/C	22	70	124
Ethylbenzene	78.7	20	91.0	61.5 *	20	91.5	64.2 *	0.580	20	76	122
Toluene	675	20	649	N/C	20	650	N/C	N/C	24	80	117
m,p-Xylene	325	40	337	N/C	40	340	N/C	N/C	20	69	127
o-Xylene	261	20	263	N/C	20	264	N/C	N/C	20	84	114
Xylenes,Total	590	60	600	N/C	60	600	N/C	N/C	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	48.6	97.3	50	47.8	95.6	1.73	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	47	94.0	50	47.1	94.3	0.299	30	74	125
Surr: Toluene-d8	ND	50	44.8	89.7	50	45.1	90.2	0.544	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.

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Charles Et al No. 1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030500
Lab Batch ID: R317550

Method Blank

RunID: N_110325A-5752005 Units: ug/L
Analysis Date: 03/25/2011 12:13 Analyst: LU_L

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030500-01A	MW-1
11030500-05A	Duplicate

Analyte	Result	Rep Limit
m,p-Xylene	ND	2.0
Xylenes,Total	ND	1.0
Surr: 1,2-Dichloroethane-d4	95.8	70-130
Surr: 4-Bromofluorobenzene	88.5	74-125
Surr: Toluene-d8	94.4	82-118

Laboratory Control Sample (LCS)

RunID: N_110325A-5751457 Units: ug/L
Analysis Date: 03/25/2011 11:44 Analyst: LU_L

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
m,p-Xylene	40.0	34.8	87.0	71	129
Xylenes,Total	60.0	52.5	87.5	71	130
Surr: 1,2-Dichloroethane-d4	50.0	48.8	97.6	70	130
Surr: 4-Bromofluorobenzene	50.0	47.8	95.7	74	125
Surr: Toluene-d8	50.0	46.2	92.4	82	118

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

Sample Spiked: 11030500-05
RunID: N_110325A-5752008 Units: ug/L
Analysis Date: 03/25/2011 13:41 Analyst: LU_L

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit

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.

4/1/2011 11:50:46 AM

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Charles Et al No. 1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030500
Lab Batch ID: R317550

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

Sample Spiked: 11030500-05
RunID: N_110325A-5752008 Units: ug/L
Analysis Date: 03/25/2011 13:41 Analyst: LU_L

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
m,p-Xylene	1060	400	1430	92.1	400	1420	90.9	0.355	20	69	127
Xylenes,Total	1147	600	1705	93.05	600	1699	92.81	0.08643	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	500	492	98.4	500	495	99.1	0.637	30	70	130
Surr: 4-Bromofluorobenzene	ND	500	472	94.4	500	483	96.6	2.25	30	74	125
Surr: Toluene-d8	ND	500	471	94.2	500	468	93.6	0.539	30	82	118

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
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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ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Charles Et al No. 1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B
WorkOrder: 11030500
Lab Batch ID: R317555

Method Blank

RunID: N_110324D-5751499 Units: ug/L
Analysis Date: 03/24/2011 12:19 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	95.1	70-130
Surr: 4-Bromofluorobenzene	88.0	74-125
Surr: Toluene-d8	91.9	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030500-01A	MW-1
11030500-02A	MW-2
11030500-03A	MW-3
11030500-04A	MW-4
11030500-05A	Duplicate

Laboratory Control Sample (LCS)

RunID: N_110324D-5751498 Units: ug/L
Analysis Date: 03/24/2011 11:20 Analyst: LU_L

	Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene		20.0	18.8	94.1	74	123
Ethylbenzene		20.0	16.8	84.2	72	127
Toluene		20.0	17.4	87.2	74	126
m,p-Xylene		40.0	33.9	84.8	71	129
o-Xylene		20.0	17.1	85.3	74	130
Xylenes,Total		60	51	85	71	130
Surr: 1,2-Dichloroethane-d4		50.0	47.2	94.3	70	130
Surr: 4-Bromofluorobenzene		50.0	44.9	89.7	74	125
Surr: Toluene-d8		50.0	45.5	91.0	82	118

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

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.

4/1/2011 11:50:46 AM

ACCUTEST LABORATORIES

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

Quality Control Report

Conoco Phillips

Charles Et al No. 1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030500
Lab Batch ID: R317555

Sample Spiked: 11030500-03
RunID: N_110324D-5751502 Units: ug/L
Analysis Date: 03/24/2011 18:40 Analyst: LU_L

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	20.2	101	20	20.4	102	0.797	22	70	124
Ethylbenzene	ND	20	15.6	78.0	20	15.3	76.5	2.03	20	76	122
Toluene	ND	20	17.5	87.4	20	17.2	85.9	1.65	24	80	117
m,p-Xylene	ND	40	31.2	77.9	40	30.9	77.3	0.825	20	69	127
o-Xylene	ND	20	16.1	80.7 *	20	15.9	79.6 *	1.38	20	84	114
Xylenes,Total	ND	60	47.3	78.8	60	46.8	78.0	1.01	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	50.2	100	50	49.3	98.5	1.79	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	45.1	90.2	50	45.2	90.4	0.204	30	74	125
Surr: Toluene-d8	ND	50	44.7	89.5	50	44.8	89.7	0.263	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.
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Sample Receipt Checklist

And

Chain of Custody

ACCUTEST LABORATORIES

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

Sample Receipt Checklist

Workorder:	11030500	Received By:	NB
Date and Time Received:	3/22/2011 9:26:00 AM	Carrier name:	Fedex-Standard Overnight
Temperature:	3.5/3.5°C	Chilled by:	Water Ice

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

*VOA Preservation Checked After Sample Analysis

SPL Representative: | Contact Date & Time:

Client Name Contacted:

Non Conformance Issues:

Client Instructions:

SPL, Inc.
Analysis Request & Chain of Custody Record

SPL Workorder No. 302869
1103500 page 1 of 1

Client Name: Tetra Tech
Address: 6121 Indian School Rd NE #200
City Albuquerque State NM Zip 87110
Phone/Fax: 505-237-8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@tetratech.com
Project Name/No.: Charles et al No. 1
Site Name:
Site Location: San Juan County, NM
Invoice To: ConocoPhillips 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
MW-1	3.18.11	1550		X	W	V	40	1	3	X
MW-2	3.18.11	1625		X	W	V	40	1	3	X
MW-3	3.18.11	1640		X	W	V	40	1	3	X
MW-4	3.18.11	1615		X	W	V	40	1	3	X
Duplicate	3.18.11	1555		X	W	V	40	1	3	X
~~Trip Blank~~	~~3.21~~ CM									
Trip Blank	3.21.11	1100			W	V	40	1	2	X

Client/Consultant Remarks:

Laboratory remarks:

Intact? Y N
Ice? Y N
Temp:

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

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

Special Detection Limits (specify):

PM review (initial):

	date	time	
1. Relinquished by Sampler:	3.21.11	1130	2. Received by:
3. Relinquished by:	date	time	4. Received by:
5. Relinquished by:	date 3/22/11	time 0926	6. Received by Laboratory:

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

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Scott, LA 70583 (337) 237-4775

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