

3R - 430

**MARCH 2011
QUARTERLY
GWMR**

06/03/2011



TETRA TECH, INC.

June 3, 2011

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

RECEIVED OGD

2011 JUN -7 A 10:59

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

RE: (1 and 2) ConocoPhillips Company, Nell Hall No. 1, San Juan County, New Mexico -
September 2010 and March 2011 Semi-Annual Groundwater Monitoring Reports
(3) ConocoPhillips Company Randleman No. 1 Site, San Juan County, New Mexico -
September 2010 Quarterly Groundwater Monitoring Report
(4) ConocoPhillips Company, San Juan 27-5 No. 34A, Rio Arriba County, New Mexico -
March 2011 Quarterly Groundwater Monitoring Report
(5) ConocoPhillips Company, Sategna No. 2E, San Juan County, New Mexico - March
2011 Quarterly Groundwater Monitoring Report
(6) ConocoPhillips Company, Shepherd & Kelsey No. 1E, San Juan County, New Mexico -
March 2011 Quarterly Groundwater Monitoring Report
(7 and 8) ConocoPhillips Company Wilmuth No. 1 Site, San Juan County, New Mexico -
December 2010 and March 2011 Quarterly Groundwater Monitoring Reports

Dear Mr. von Gonten:

Enclosed please find a copy of the above-referenced documents as compiled by Tetra Tech, Inc., for these San Juan Basin sites.

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 (8)

Cc: Brandon Powell, New Mexico Oil Conservation Division (Aztec, NM Office)
Terry Lauck, ConocoPhillips Company Risk Management and Remediation (electronic only)
Chris Jaquez, Landowner (Nell Hall No. 1 only)

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**MARCH 2011 GROUNDWATER
MONITORING REPORT**

**CONOCOPHILLIPS COMPANY
WILMUTH NO. 1
NATURAL GAS PRODUCTION SITE
SAN JUAN COUNTY, NEW MEXICO**

OCD Order # TBD

API # 30-045-10370

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. 114-690153

May 2011

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3. Groundwater Laboratory Analytical Results Summary (April 2010 – March 2011)

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MARCH 2011 GROUNDWATER MONITORING REPORT WILMUTH NO. 1, SAN JUAN COUNTY, NEW MEXICO

1.0 INTRODUCTION

This report discusses the groundwater monitoring event conducted by Tetra Tech, Inc. (Tetra Tech) on March 16, 2011 at the ConocoPhillips Company (ConocoPhillips) Wilmuth No. 1 site located north of Aztec, New Mexico (Site). This report also presents the analytical results of the quarterly groundwater monitoring event.

The Site is located on private land leased to ConocoPhillips and is situated in Section 26, Township 31N, Range 11W, of San Juan County, New Mexico (**Figure 1**). A Site detail map is included as **Figure 2**.

1.1 Site Background

The Wilmuth No. 1 natural gas production well was spudded in 1958 by El Paso Natural Gas Company. Meridian Oil, Inc., a subsidiary of Burlington Resources, Inc. (Burlington), took over operation of the well on November 1, 1986. ConocoPhillips acquired Burlington on March 31, 2006.

A release of approximately 22 barrels (bbls) of produced water occurred within the bermed area around the produced water tank on May 17, 2001. Twenty bbls were later recovered. A release of condensate occurred on December 17, 2002 from a corrosion hole in the condensate tank. Burlington excavated a total of 85 cubic yards of impacted soil and disposed of it at JFJ landfarm, located in Aztec, NM.

ConocoPhillips personnel notified the New Mexico Oil Conservation Division (NMOCD) in December 2009 of groundwater seeping into two separate areas that were undergoing excavation to remove stained soil discovered during line tie-in procedures. Four groundwater monitoring wells were subsequently installed under the supervision of Tetra Tech in April, 2010. A generalized geologic cross section was produced using boring logs from monitoring well installation at the Site. The cross section is presented as **Figure 3**.

Tetra Tech began quarterly sampling immediately following development of the wells by collecting a baseline round of groundwater samples on April 8, 2010. The most recent sampling event took place on March 16, 2011, and represents the fifth round of quarterly sampling conducted by Tetra Tech at the Site. The historical timeline is also presented in **Table 1**.

2.0 MONITORING SUMMARY, SAMPLING METHODOLOGY, AND ANALYTICAL RESULTS

2.1 Monitoring Summary

A groundwater quality monitoring event was conducted on March 16, 2011 at the Wilmuth No. 1 site. Prior to collection of groundwater samples from Monitor Wells MW-1, MW-2, MW-3 and MW-4, depth to

groundwater in each well was determined. The casings for Site monitoring wells were surveyed on April 8, 2010 using an arbitrary reference-elevation of 100 feet above mean sea level (amsl). The data obtained from the Site survey and groundwater elevations collected during the March 2011 sampling event were used to create a groundwater elevation contour map for the Site (**Figure 4**). Using these data, it was determined that the groundwater flow direction at the Site is to the southwest. Numerical groundwater elevation information from March 2011 is also included in **Table 2**.

2.2 Groundwater Sampling Methodology

During the March 2011 groundwater monitoring event, Site monitor wells were purged of at least 3 casing volumes of groundwater using a 1.5-inch diameter, polyethylene, dedicated bailer. While bailing each well, groundwater parameter data such as temperature, pH, conductivity, total dissolved solids (TDS), oxidation-reduction potential (ORP) and dissolved oxygen (DO) were collected using a YSI 556 multi-parameter sonde and results were recorded on a Tetra Tech Water Sampling Field Form (**Appendix A**). Groundwater samples were placed in laboratory prepared bottles, packed on ice, and shipped under chain-of-custody documentation. Analysis of all groundwater samples collected during the March 2011 event was performed by Southern Petroleum Laboratory (SPL) of Houston, Texas.

Samples collected during the March 2011 sampling event were analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX) by EPA Method 8260B; sulfate by EPA Method 300.0; and dissolved manganese by EPA Method 6010B. This list of constituents was determined based on the analytical results from the groundwater baseline and initial Site groundwater concerns. Results of the March 2011 groundwater monitoring event are summarized in **Table 3** and discussed in more detail in the following section.

2.3 Groundwater Sampling Analytical Results

The New Mexico Water Quality Control Commission (NMWQCC) mandates that groundwater quality in New Mexico be protected, and has issued groundwater quality standards in Title 20, Chapter 6, Part 2, Section 3103 of the New Mexico Administrative Code (20.6.2.3103 NMAC). Groundwater quality standards have been set for the protection of human health, domestic water supply, and irrigation use. Exceedences of NMWQCC groundwater quality standards in Site monitor wells are discussed below. Results are summarized in **Table 3**.

- **Dissolved Manganese**

- The groundwater quality standard for dissolved manganese is 0.2 micrograms per liter (mg/L). Groundwater collected from all Site monitoring wells was found to be above the standard for dissolved manganese during March 2011. Manganese concentrations were 2.36 mg/L, 1.57 mg/L, 1.57 mg/L, and 2.18 mg/L for wells MW-1, MW-2, MW-3, and MW-4, respectively.

- **Total Dissolved Solids**

- The groundwater quality standard for Total Dissolved Solids (TDS) is 1,000 mg/L. Groundwater collected from Monitor Well MW-1 was found to contain TDS at a

concentration of 1,200 mg/L during the March 2011 quarterly sampling event. All other Site monitor wells contained concentrations of TDS below the NMWQCC standard.

No other analyzed constituents, including BTEX, were found above NMWQCC groundwater quality standards in Site monitor wells during the March 2011 monitoring event.

The corresponding laboratory analytical report for the March 2011 groundwater sampling event, including a quality control summary, is included in **Appendix B**.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Tetra Tech conducted the fifth round of quarterly groundwater monitoring at the Wilmuth No. 1 site on March 16, 2011. The groundwater monitoring wells will continue to be sampled on a quarterly monitoring schedule, and the next groundwater monitoring event at the Site is scheduled for June 2011. The groundwater flow direction at the Site was determined to be to the southwest as of March 2011. Tetra Tech will continue to monitor the groundwater flow direction at the Site and will note any changes should they occur.

In order to move toward NMOCD remediation project closure, Tetra Tech will continue to monitor for BTEX, chloride, sulfate, TDS and dissolved manganese. Tetra Tech recommends the continuation of quarterly groundwater monitoring until these constituents are all below NMWQCC standards, appear stable or reach regional background levels. Please contact Kelly Blanchard at 505-237-8440 or kelly.blanchard@tetrattech.com if you have any questions or require additional information.

FIGURES

1. Site Location Map
2. Site Detail Map
3. Generalized Geologic Cross Section
4. Groundwater Elevation Contour Map – March 2011



FIGURE 1.

Site Location Map

ConocoPhillips Company
Wilmuth No. 1
Aztec, NM



ConocoPhillips Company
Wilmuth No. 1 Site
Location



Latitude: 36.864630° N
Longitude: -107.963910° W



ConocoPhillips



TETRA TECH, INC.



ConocoPhillips High Resolution Aerial Imagery 2008

FIGURE 2:
SITE LAYOUT MAP
CONOCOPHILLIPS COMPANY
WILMUTH NO. 1
GAS PRODUCTION WELL
 Sec 26, T31N, R11W
 Aztec, New Mexico

LEGEND

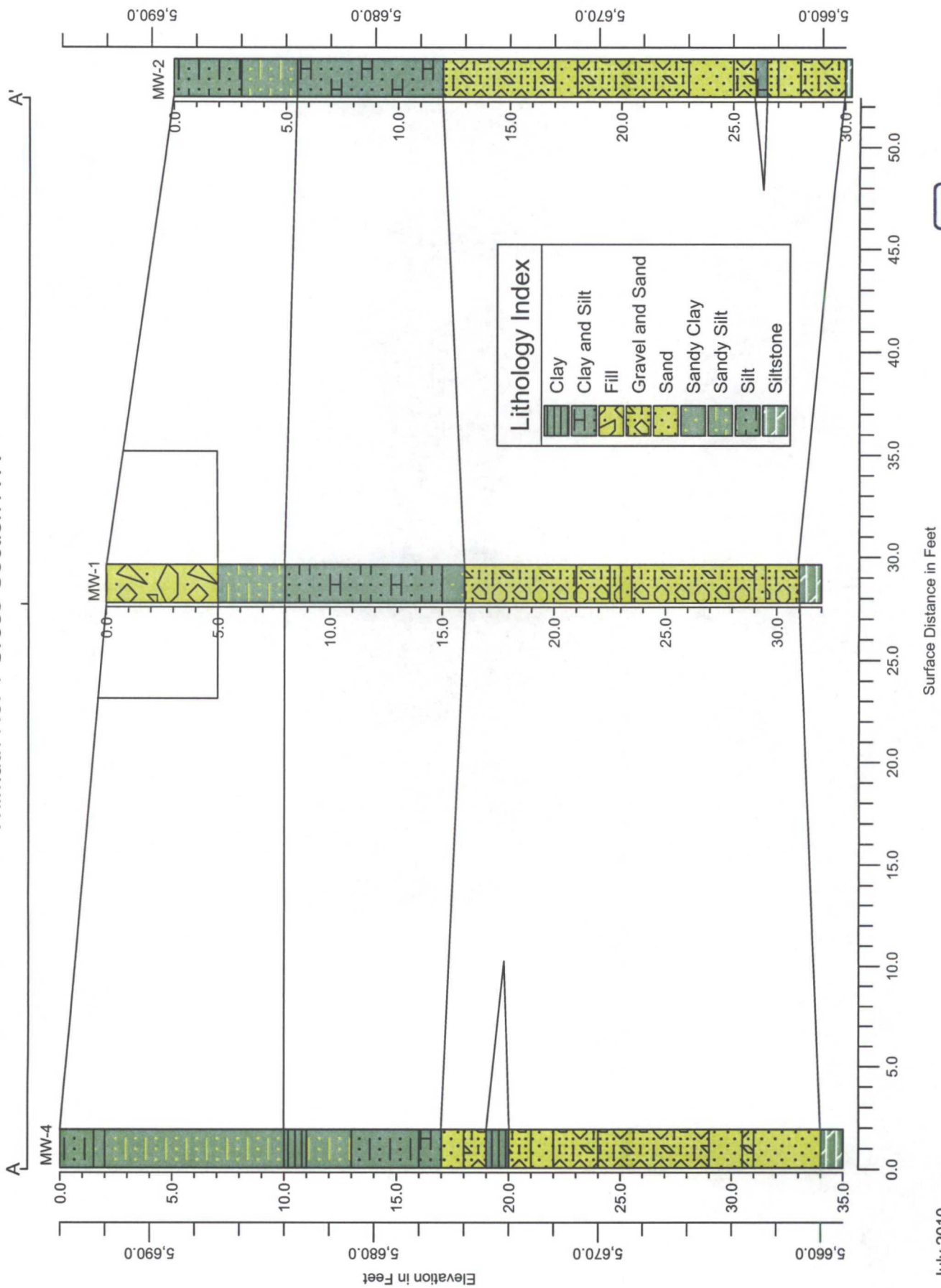
- ⊕ XTO Wilmuth No. 2 Wellhead
- ⊕ ConocoPhillips Wilmuth No. 1 Wellhead
- ⊕ Monitoring Well
- - - Approximate 2009 Excavation Location
- - - Approximate 2002 Excavation Location
- ConocoPhillips Production Equipment
- XTO Production Equipment
- - - Berm
- Site Boundary Fence

ConocoPhillips



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Figure 3
Wilmuth No. 1 Cross-Section A-A'





ConocoPhillips High Resolution Aerial Imagery 2008

FIGURE 4:

GROUNDWATER CONTOUR MAP

MARCH 2011

CONOCOPHILLIPS COMPANY

WILMUTH NO. 1

NATURAL GAS PRODUCTION WELL

Sec 26, T31N, R11W

Aztec, New Mexico

LEGEND

- XTO Wilmuth No. 2 Wellhead
- ConocoPhillips Wilmuth No. 1 Wellhead
- Monitoring Well
- Approximate 2009 Excavation Location
- Approximate 2002 Excavation Location
- Groundwater Elevation Contour Line (dashed where inferred)
- ConocoPhillips Production Equipment
- XTO Production Equipment
- Berm
- 92.12 Groundwater Elevation (Feet)
- Site Boundary Fence

ConocoPhillips



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TABLES

1. Site History Timeline
2. Groundwater Elevation Data Summary (April 2010 – March 2011)
3. Groundwater Laboratory Analytical Results Summary (April 2010 – March 2011)

Table 1. ConocoPhillips Company, Wilmuth No. 1 - Site History Timeline

Date/Time Period	Event/Action	Description/Comments
July 24, 1958 to August 11, 1958	Production Well Completion	Well spudded and completed by El Paso Natural Gas Company.
November 1, 1986	Change of Operator	Operator changed from El Paso Natural Gas Company to Meridian Oil Inc. (a subsidiary of Burlington Resources, Inc.)
May 17, 2001	Release	Due to a broken dump arm, 22 barrels (bbbls) of produced water was released within the bermed area around the produced water tank. 20 bbls were reported to be recovered.
December 17, 2002	Release	A corrosion hole in the bottom of a steel pit tank that collected fluids from the separator and condensate tank drain allowed an unknown volume of produced water and condensate to leak onto the ground. All fluids were contained inside the tank berm. Impacted gravel and soils were excavated and disposed of at JFJ Landfarm. Excavation dimensions were approximately 30 feet by 25 feet by 3 feet for a total of 85 cubic yards.
May 21, 2004	Workover Pit Proposal Approved	A lined workover pit was approved by Denny Faust of the NMOCD as detailed in Burlington Resources general pit construction plan dated April 26, 2004 which was also approved by the NMOCD.
March 31, 2006	Change of Operator	ConocoPhillips Company completed acquisition of Burlington Resources.
December 22 and 23, 2009	Potential for Groundwater Impacts Discovered	ConocoPhillips company notified Brandon Powell and Kelly Roberts of the OCD about groundwater seeping into two excavated areas on Site where discolored soils had been found during line tie-in procedures. The type, volume and origin of the initial release was unknown. Groundwater samples were collected from the two areas and analyzed by Envirotech Inc. of Farmington, NM for benzene, toluene, ethylbenzene and total xylenes (BTEX), total petroleum hydrocarbons (TPH) and chloride. Analytical results indicate that BTEX and TPH are below NMWQCC groundwater standards, however, chloride was present at a concentration above the standard of 250 mg/L with a concentration of 2,500 mg/L in the area of the excavation and a concentration of 950 mg/L in a trench associated with line tie-in procedures. Soil samples were collected from the same trench groundwater samples were collected from where discolored soil was present. The soil was analyzed by Envirotech for BTEX, TPH and Chloride. Analytical results for all soil samples were below NMOCD recommended soil action levels.
January 7, 2010	NMOCD Correspondence	C-141 Release Notification and Corrective Action form was submitted to the NMOCD by ConocoPhillips.
April 5, 2010 through April 7, 2010	Groundwater Monitoring Well Installation and Baseline Soil Sampling	Tetra Tech supervised the installation of 4 groundwater monitoring wells: MW-1, MW-2, MW-3 and MW-4, by Enviro-Drill Inc. of Albuquerque, NM. Each well was installed with 25 feet of screen. MW-1, MW-2 and MW-3 were all set at 30 feet below ground surface. MW-4 was set at 35 feet below ground surface. A confining layer of gray siltstone was found at depth in each of the four boring locations. Soil samples were collected from all four soil borings and analyzed for major ions, total metals, semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs) including BTEX, diesel range organics, and gasoline range organics. Analytical results for all soil samples were below NMOCD recommended soil action levels.
April 8, 2010	Baseline Groundwater Sampling	Tetra Tech conducted the initial groundwater sampling from Site Monitoring Wells, MW-1, MW-2, MW-3 and MW-4. A baseline suite was completed including major ions, NMWQCC dissolved metals, SVOCs, VOCs including BTEX, diesel range organics, and gasoline range organics. All four Site monitoring wells were below NMWQCC standards for BTEX constituents. All four wells were above the standard for dissolved manganese. MW-1, MW-2 and MW-4 were above the standard for total dissolved solids (TDS). MW-1 and MW-4 were also above the standard for sulfate.
June 9, 2010	Quarterly Groundwater Monitoring Event	Quarterly groundwater sampling was conducted by Tetra Tech. Samples were collected from all site monitoring wells and analyzed for BTEX, dissolved manganese, chloride, sulfate, and TDS. All four site monitoring wells were below NMWQCC standards for BTEX constituents. Samples collected from all four site wells were above the standard for dissolved manganese. Samples collected from MW-1, MW-2 and MW-4 were above the standard for TDS.
September 20, 2010	Quarterly Groundwater Monitoring Event	Quarterly groundwater sampling was conducted by Tetra Tech. Samples were collected from all Site monitoring wells and analyzed for BTEX, dissolved manganese, chloride, sulfate, and TDS. All four Site monitoring wells were below NMWQCC standards for BTEX constituents. Samples collected from all four Site wells were above the standard for dissolved manganese. Samples collected from MW-1, MW-2 and MW-4 were above the standard for TDS.
December 16, 2010	Quarterly Groundwater Monitoring Event	Fourth quarterly groundwater sampling was conducted by Tetra Tech. Samples were collected from all Site monitoring wells and analyzed for BTEX, dissolved manganese, sulfate, and TDS. All four Site monitoring wells were below NMWQCC standards for BTEX constituents. Samples collected from all four Site wells were above the standard for dissolved manganese. Samples collected from MW-1, MW-2 and MW-4 were above the standard for TDS.
March 16, 2011	Quarterly Groundwater Monitoring Event	Fifth quarterly groundwater sampling was conducted by Tetra Tech. Samples were collected from all Site monitoring wells and analyzed for BTEX, dissolved manganese, chloride, sulfate, and TDS. All four Site monitoring wells were below NMWQCC standards for BTEX constituents. Samples collected from all four Site wells were above the standard for dissolved manganese. The sample collected from MW-1 was above the standard for TDS.

NMOCD = New Mexico Oil Conservation Division

NMWQCC = New Mexico Water Quality Control Commission

mg/kg - dry = milligrams per kilogram, analyzed after residual water removed from the soil

µg/kg - dry = micrograms per kilogram

Table 2. ConocoPhillips Company, Wilmuth No. 1 - Groundwater Elevation Data Summary

Well ID	Total Depth (ft bgs)	Screen Interval (ft)	*Elevation (ft)	Date Measured	Depth to Groundwater (ft below TOC)	Relative Groundwater Elevation
MW-1	30.00	4.5 - 29.5	95.8	4/8/2010	5.21	90.59
				6/9/2010	1.94	93.86
				9/20/2010	1.51	94.29
				12/16/2010	3.31	92.49
				3/16/2011	4.98	90.82
MW-2	30.00	4.5 - 29.5	95.8	4/8/2010	6.48	89.32
				6/9/2010	3.68	92.12
				9/20/2010	3.28	92.52
				12/16/2010	4.83	90.97
				3/16/2011	6.31	89.49
MW-3	30.00	4.5 - 29.5	96.32	4/8/2010	6.37	89.95
				6/9/2010	3.39	92.93
				9/20/2010	3.02	93.30
				12/16/2010	4.65	91.67
				3/16/2011	6.20	90.12
MW-4	35.00	9.5 - 34.5	98.7	4/8/2010	9.68	89.02 ⁽¹⁾
				6/9/2010	4.41	94.29
				9/20/2010	3.78	94.92
				12/16/2010	5.70	93.00
				3/16/2011	7.44	91.26

ft = Feet

TOC = Top of casing

bgs = Below ground surface

* = Elevation relative to an arbitrary reference elevation of 100 feet

(1) = Anomalous data point

Table 3. ConocoPhillips Company, Wilmuth No. 1 - Groundwater Laboratory Analytical Results Summary

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Chloride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Dissolved Manganese (mg/L)
MW-1	4/8/2010	< 1.0	< 1.0	< 1.0	< 1.0	143	879	1780	3.03
	6/9/2010	< 1.0	< 1.0	< 1.0	< 1.0	26.9	375	1190	1.08
	9/20/2010	< 1.0	< 1.0	< 1.0	< 1.0	30.0	425	1020	0.933
	12/16/2010	< 1.0	< 1.0	< 1.0	< 1.0	NA	381	1010	0.896
	3/16/2011	< 1.0	< 1.0	< 1.0	< 1.0	26.0	499	1200	2.36
Duplicate	4/8/2010	< 1.0	1.1	< 1.0	1	NA	NA	NA	NA
	6/9/2010	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA	NA	NA
	9/20/2010	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA	NA	NA
	12/16/2010	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA	NA	NA
	3/16/2011	< 1.0	< 1.0	< 1.0	< 1.0	NA	NA	NA	NA
MW-2	4/8/2010	< 1.0	< 1.0	< 1.0	< 1.0	27.7	533	1120	2.48
	6/9/2010	< 1.0	< 1.0	< 1.0	< 1.0	19.8	337	1070	1.66
	9/20/2010	< 1.0	< 1.0	< 1.0	< 1.0	20.4	304	1130	0.822
	12/16/2010	< 1.0	< 1.0	< 1.0	< 1.0	NA	281	1410	1.37
	3/16/2011	< 1.0	< 1.0	< 1.0	< 1.0	20.1	280	858	1.57
MW-3	4/8/2010	< 1.0	< 1.0	< 1.0	< 1.0	19.2	259	930	1.38
	6/9/2010	< 1.0	< 1.0	< 1.0	< 1.0	18.5	241	769	1.43
	9/20/2010	< 1.0	< 1.0	< 1.0	< 1.0	20.3	271	830	0.736
	12/16/2010	< 1.0	< 1.0	< 1.0	< 1.0	NA	265	1200	1.33
	3/16/2011	< 1.0	< 1.0	< 1.0	< 1.0	18.1	263	896	1.57
MW-4	4/8/2010	< 1.0	< 1.0	< 1.0	< 1.0	40	918	1900	3.94
	6/9/2010	< 1.0	< 1.0	< 1.0	< 1.0	29.6	542	1380	3.44
	9/20/2010	< 1.0	< 1.0	< 1.0	< 1.0	22.4	445	1160	2.59
	12/16/2010	< 1.0	< 1.0	< 1.0	< 1.0	NA	464	1350	2.85
	3/16/2011	< 1.0	< 1.0	< 1.0	< 1.0	20.6	385	970	2.18
NMWQCC Groundwater Quality Standards		10 (µg/L)	750 (µg/L)	750 (µg/L)	620 (µg/L)	250 (mg/L)	600 (mg/L)	1000 (mg/L)	0.2 (mg/L)

Notes:

MW = monitoring well
NMWQCC = New Mexico Water Quality Control Commission
Constituents in **BOLD** are in excess of NMWQCC groundwater quality standards
µg/L = micrograms per liter (parts per billion)
mg/L = milligrams per liter (parts per million)
< 1.0 = Below laboratory detection limit of 1.0 µg/L
NA = not analyzed

APPENDIX A

March 2011 Quarterly Groundwater Sampling Field Forms



TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Wilmuth No. 1Page 1 of 4

Act No. _____

Site Location Aztec, NMSite/Well No. MW-1Coded/
Replicate No. 1630Date 3/16/11Weather cloudy, hotTime Sampling
Began _____Time Sampling
Completed 1625

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing

Height of MP Above/Below Land Surface _____

MP Elevation 95.8Total Sounded Depth of Well Below MP 25.44

Water-Level Elevation _____

Held _____ Depth to Water Below MP 4.98Diameter of Casing 2"Wet _____ Water Column in Well 20.46Gallons Pumped/Bailed
Prior to Sampling 10Gallons per Foot 0.16Gallons in Well 3.274Sampling Pump Intake Setting
(feet below land surface) _____

Purging Equipment

Purge pump Bailer3 = 9.82

SAMPLING DATA/FIELD PARAMETERS

Time	Temperature (°C)	pH	Conductivity (µS/cm³)	TDS (g/L)	DO (mg/L)	DO %	ORP (mV)	Volume (gal.)
<u>1616</u>	<u>14.40</u>	<u>7.58</u>	<u>1053</u>	<u>0.925</u>	<u>17.08</u>	<u>86.0</u>	<u>-75.2</u>	<u>9.0</u>
<u>1618</u>	<u>11.14</u>	<u>7.42</u>	<u>928</u>	<u>0.872</u>	<u>4.8</u>	<u>37.7</u>	<u>-61.6</u>	<u>9.5</u>
<u>1620</u>	<u>11.00</u>	<u>7.35</u>	<u>959</u>	<u>0.849</u>	<u>3.17</u>	<u>28.6</u>	<u>-45.1</u>	<u>10.0</u>

Sampling Equipment

Purge Pump/Bailer

Constituents Sampled

Container Description

Preservative

TDS, Sulfate
Dissolved Mn
BTEX32oz Plastic
16oz Plastic
(3) 40 mL VOASNone
None
HCL

Remarks

H₂O is brown & silty, no odor or sheen observed

Sampling Personnel

Christine Mathews, Cassie Brown

Well Casing Volumes

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



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WATER SAMPLING FIELD FORM

Project Name Wilmuth No. 1Page 2 of 4

Act No. _____

Site Location Aztec, NMSite/Well No. MW-2Coded/
Replicate No. _____Date 3/10/11Weather Sunny, hotTime Sampling
Began 1455Time Sampling
Completed 1535

EVACUATION DATA

Description of Measuring Point (MI Top of Casing) _____

Height of MP Above/Below Land Surface _____ MP Elevation 95.8Total Sounded Depth of Well Below MP 32.1 Water-Level Elevation _____Held _____ Depth to Water Below MP 10.81 Diameter of Casing 3"Wet _____ Water Column in Well 25.79 Gallons Pumped/Bailed
Prior to Sampling 12.5Gallons per Foot 0.16Gallons in Well 4.12 x 3 = 12.37 Sampling Pump Intake
(feet below land) _____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.)
1528	12.79	7.16	850	0.720	1.51	14.3	25.6	11.5
1530	12.05	7.14	863	0.750	1.52	14.2	29.0	12.0
1531	11.69	7.15	872	0.760	1.52	14.6	30.6	12.5

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
<u>TDS, sulfate</u>	<u>32 oz. plastic</u>	<u>None</u>
<u>Dissolved Mn</u>	<u>16 oz. plastic</u>	<u>None</u>
<u>BTEX</u>	<u>(3) 40 ml vials</u>	<u>HCl</u>

Remarks H2O is brown w/ silt. no odor or green observedSampling Personnel Christine Mathews, Cassie Brown

Well Casing Volumes

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



TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Wilmuth No. 1Page 3 of 4

Project No. _____

Site Location Aztec, NMSite/Well No. MW-3Coded/
Replicate No. _____Date 3/16/11Weather Sunny, hotTime Sampling
Began 1515Time Sampling
Completed 1545

EVACUATION DATA

Description of Measuring Point (MP) Top of CasingHeight of MP Above/Below Land Surface _____ MP Elevation 96.32Total Sounded Depth of Well Below MP 32.68

Water-Level Elevation _____

Held _____ Depth to Water Below MP 6.20Diameter of Casing 2"Wet _____ Water Column in Well 26.88Gallons Pumped/Bailed
Prior to Sampling _____Gallons per Foot 0.16Gallons in Well 4.22 x 3 =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.)
1540	11.88	7.23	762	0.661	2.43	22.5	40.3	11.50
1542	11.95	7.20	765	0.662	2.37	21.8	40.8	12.0
1544	11.83	7.20	765	0.661	2.95	18.0	41.2	12.5

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
Sulfate, TDS	32 oz Plastic	None
Dissolved Mn	16 oz Plastic	None
BTEX	(3) 40 mL VOA	HCL

Remarks H₂O is brown & silty, no odor or sheen observedSampling Personnel Christine Mathews, Cassie Brown

Well Casing Volumes

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



TETRA TECH, INC.

WATER SAMPLING FIELD FORM

Project Name Wilmuth No. 1Page 4 of 4

Act No. _____

Site Location Aztec, NMSite/Well No. MW - 4Coded/
Replicate No. _____Date 3/6/11Weather Sunny, hot,Time Sampling
Began 1600Time Sampling
Completed 1635700

EVACUATION DATA

Description of Measuring Point (MP) Top of CasingHeight of MP Above/Below Land Surface _____ MP Elevation 98.7Total Sounded Depth of Well Below MP 32.44 Water-Level Elevation _____Held _____ Depth to Water Below MP 7.44 Diameter of Casing 2"Wet _____ Water Column in Well 25 Gallons Pumped/Bailed 12.25Gallons per Foot 0.16Gallons in Well 4 x 3 = 12 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>1626</u>	<u>12.12</u>	<u>7.37</u>	<u>1003</u>	<u>0.864</u>	<u>3.60</u>	<u>38.6</u>	<u>4.0</u>	<u>11.0</u>
<u>1628</u>	<u>11.77</u>	<u>7.32</u>	<u>1035</u>	<u>0.900</u>	<u>4.10</u>	<u>38.1</u>	<u>11.3</u>	<u>11.5</u>
<u>1630</u>	<u>11.84</u>	<u>7.31</u>	<u>1027</u>	<u>0.891</u>	<u>3.92</u>	<u>36.5</u>	<u>15.5</u>	<u>12.0</u>

Sampling Equipment Purge Pump/Bailer

Constituents Sampled	Container Description	Preservative
<u>Sulfate, TDS</u>	<u>32 oz plastic</u>	<u>None</u>
<u>Dissolved Mn</u>	<u>16 oz plastic</u>	<u>None</u>
<u>BTEX</u>	<u>37 40-02 vials</u>	<u>HCl</u>

Remarks H₂O is brown & silty, no odor or sheen observedSampling Personnel Christine Mathews, Cassie Brown

Well Casing Volumes

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

APPENDIX B

March 2011 Quarterly Groundwater Laboratory Analytical Report



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

Conoco Phillips

Certificate of Analysis Number:
11030462

<u>Report To:</u> Tetra Tech, Inc. Kelly Blanchard 6121 Indian School Road, N.E. Suite 200 Albuquerque NM 87110- ph (505) 237-8440 fax: (505) 881-3283	<u>Project Name:</u> Wilmuth No. 1 <u>Site:</u> Aztec, NM <u>Site Address:</u> <u>PO Number:</u> <u>State:</u> New Mexico <u>State Cert. No.:</u> <u>Date Reported:</u> 3/28/2011
--	--

This Report Contains A Total Of 18 Pages

Excluding This Page, Chain Of Custody

And

Any Attachments

3/28/2011

Date

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

Version 2.1 - Modified February 11, 2011



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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:
11030462

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: Wilmuth No. 1 Site: Aztec, NM Site Address: PO Number: State: New Mexico State Cert. No.: Date Reported: 3/28/2011
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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.

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 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

11030462 Page 1

3/28/2011

Erica Cardenas
Project Manager

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

Date



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

Case Narrative for:
Conoco Phillips

Certificate of Analysis Number:
11030462

his designee, as verified by the following signature.

A handwritten signature in cursive script that reads 'Erica Cardenas'.

Erica Cardenas
Project Manager

11030462 Page 2
3/28/2011

Date

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



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

Conoco Phillips

Certificate of Analysis Number:

11030462

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: Wilmuth No. 1
Site: Aztec, NM
Site Address:

PO Number:
State: New Mexico

State Cert. No.:

Date Reported: 3/28/2011

Fax To:

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
MW-1	11030462-01	Water	03/16/2011 16:25	3/18/2011 9:06:00 AM	302849	☐
MW-2	11030462-02	Water	03/16/2011 15:35	3/18/2011 9:06:00 AM	302849	☐
MW-3	11030462-03	Water	03/16/2011 15:45	3/18/2011 9:06:00 AM	302849	☐
MW-4	11030462-04	Water	03/16/2011 16:35	3/18/2011 9:06:00 AM	302849	☐
MW-4	11030462-04	Water	03/16/2011 16:35	3/18/2011 9:06:00 AM	302851	☐
Duplicate	11030462-05	Water	03/16/2011 16:30	3/18/2011 9:06:00 AM	302851	☐
Trip Blank	11030462-06	Water	03/16/2011 21:30	3/18/2011 9:06:00 AM	302851	☐

Erica Cardenas

3/28/2011

Erica Cardenas
Project Manager

Date

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

Ted Yen
Quality Assurance Officer



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

Client Sample ID MW-1

Collected: 03/16/2011 16:25 SPL Sample ID: 11030462-01

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				MCL	E300.0	Units: mg/L	
Chloride	26		1	2	03/19/11 13:40	ESK	5747466
Sulfate	499		25	50	03/19/11 16:54	ESK	5747478

METALS BY METHOD 6010B, DISSOLVED				MCL	SW6010B	Units: mg/L	
Manganese	2.36		0.005	1	03/25/11 18:32	EG	5752212

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	03/18/2011 10:15	M_W	1.00

TOTAL DISSOLVED SOLIDS				MCL	SM2540 C	Units: mg/L	
Total Dissolved Solids (Residue, Filterable)	1200		10	1	03/22/11 11:30	MM1	5749754

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	03/21/11 16:41	JC	5748368
Ethylbenzene	ND		1	1	03/21/11 16:41	JC	5748368
Toluene	ND		1	1	03/21/11 16:41	JC	5748368
m,p-Xylene	ND		2	1	03/21/11 16:41	JC	5748368
o-Xylene	ND		1	1	03/21/11 16:41	JC	5748368
Xylenes, Total	ND		1	1	03/21/11 16:41	JC	5748368
Surr: 1,2-Dichloroethane-d4	86.8	%	70-130	1	03/21/11 16:41	JC	5748368
Surr: 4-Bromofluorobenzene	93.6	%	74-125	1	03/21/11 16:41	JC	5748368
Surr: Toluene-d8	97.2	%	82-118	1	03/21/11 16:41	JC	5748368

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

Client Sample ID MW-2

Collected: 03/16/2011 15:35

SPL Sample ID: 11030462-02

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				MCL	E300.0	Units: mg/L	
Chloride	20.1		1	.2	03/19/11 13:56	ESK	5747467
Sulfate	280		25	50	03/19/11 17:42	ESK	5747481
METALS BY METHOD 6010B, DISSOLVED				MCL	SW6010B	Units: mg/L	
Manganese	1.57		0.005	1	03/25/11 18:39	EG	5752213

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	03/18/2011 10:15	M_W	1.00

TOTAL DISSOLVED SOLIDS				MCL	SM2540 C	Units: mg/L	
Total Dissolved Solids (Residue, Filterable)	858		10	1	03/22/11 11:30	MM1	5749756

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	03/21/11 18:07	JC	5748371
Ethylbenzene	ND		1	1	03/21/11 18:07	JC	5748371
Toluene	ND		1	1	03/21/11 18:07	JC	5748371
m,p-Xylene	ND		2	1	03/21/11 18:07	JC	5748371
o-Xylene	ND		1	1	03/21/11 18:07	JC	5748371
Xylenes, Total	ND		1	1	03/21/11 18:07	JC	5748371
Surr: 1,2-Dichloroethane-d4	81.1	%	70-130	1	03/21/11 18:07	JC	5748371
Surr: 4-Bromofluorobenzene	91.8	%	74-125	1	03/21/11 18:07	JC	5748371
Surr: Toluene-d8	95.9	%	82-118	1	03/21/11 18:07	JC	5748371

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

Client Sample ID MW-3 Collected: 03/16/2011 15:45 SPL Sample ID: 11030462-03

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				MCL	E300.0	Units: mg/L	
Chloride	18.1		1	2	03/19/11 14:12	ESK	5747468
Sulfate	263		25	50	03/19/11 17:58	ESK	5747482

METALS BY METHOD 6010B, DISSOLVED				MCL	SW6010B	Units: mg/L	
Manganese	1.57		0.005	1	03/25/11 18:45	EG	5752214

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	03/18/2011 10:15	M_W	1.00

TOTAL DISSOLVED SOLIDS				MCL	SM2540 C	Units: mg/L	
Total Dissolved Solids (Residue, Filterable)	896		10	1	03/22/11 11:30	MM1	5749757

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	03/21/11 18:37	JC	5748372
Ethylbenzene	ND		1	1	03/21/11 18:37	JC	5748372
Toluene	ND		1	1	03/21/11 18:37	JC	5748372
m,p-Xylene	ND		2	1	03/21/11 18:37	JC	5748372
o-Xylene	ND		1	1	03/21/11 18:37	JC	5748372
Xylenes, Total	ND		1	1	03/21/11 18:37	JC	5748372
Surr: 1,2-Dichloroethane-d4	83.3	%	70-130	1	03/21/11 18:37	JC	5748372
Surr: 4-Bromofluorobenzene	94.5	%	74-125	1	03/21/11 18:37	JC	5748372
Surr: Toluene-d8	99.4	%	82-118	1	03/21/11 18:37	JC	5748372

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

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

Client Sample ID MW-4 Collected: 03/16/2011 16:35 SPL Sample ID: 11030462-04

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
ION CHROMATOGRAPHY				MCL	E300.0	Units: mg/L	
Chloride	20.6		1	2	03/19/11 15:01	ESK	5747471
Sulfate	385		25	50	03/19/11 18:14	ESK	5747483

METALS BY METHOD 6010B, DISSOLVED				MCL	SW6010B	Units: mg/L	
Manganese	2.18		0.005	1	03/25/11 18:51	EG	5752215

Prep Method	Prep Date	Prep Initials	Prep Factor
SW3005A	03/18/2011 10:15	M_W	1.00

TOTAL DISSOLVED SOLIDS				MCL	SM2540 C	Units: mg/L	
Total Dissolved Solids (Residue,Filterable)	970		10	1	03/22/11 11:30	MM1	5749758

VOLATILE ORGANICS BY METHOD 8260B				MCL	SW8260B	Units: ug/L	
Benzene	ND		1	1	03/21/11 19:06	JC	5748373
Ethylbenzene	ND		1	1	03/21/11 19:06	JC	5748373
Toluene	ND		1	1	03/21/11 19:06	JC	5748373
m,p-Xylene	ND		2	1	03/21/11 19:06	JC	5748373
o-Xylene	ND		1	1	03/21/11 19:06	JC	5748373
Xylenes, Total	ND		1	1	03/21/11 19:06	JC	5748373
Surr: 1,2-Dichloroethane-d4	107	%	70-130	1	03/21/11 19:06	JC	5748373
Surr: 4-Bromofluorobenzene	93.6	%	74-125	1	03/21/11 19:06	JC	5748373
Surr: Toluene-d8	102	%	82-118	1	03/21/11 19:06	JC	5748373

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

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

Client Sample ID Duplicate Collected: 03/16/2011 16:30 SPL Sample ID: 11030462-05

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
Benzene	ND		1	1	03/21/11 19:34	JC	5748374
Ethylbenzene	ND		1	1	03/21/11 19:34	JC	5748374
Toluene	ND		1	1	03/21/11 19:34	JC	5748374
m,p-Xylene	ND		2	1	03/21/11 19:34	JC	5748374
o-Xylene	ND		1	1	03/21/11 19:34	JC	5748374
Xylenes, Total	ND		1	1	03/21/11 19:34	JC	5748374
Surr: 1,2-Dichloroethane-d4	74.8		% 70-130	1	03/21/11 19:34	JC	5748374
Surr: 4-Bromofluorobenzene	94.3		% 74-125	1	03/21/11 19:34	JC	5748374
Surr: Toluene-d8	100		% 82-118	1	03/21/11 19:34	JC	5748374

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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

Client Sample ID Trip Blank Collected: 03/16/2011 21:30 SPL Sample ID: 11030462-06

Site: Aztec, NM

Analyses/Method	Result	QUAL	Rep.Limit	Dil. Factor	Date Analyzed	Analyst	Seq. #
VOLATILE ORGANICS BY METHOD 8260B			MCL	SW8260B	Units: ug/L		
Benzene	ND		1	1	03/21/11 20:04	JC	5748375
Ethylbenzene	ND		1	1	03/21/11 20:04	JC	5748375
Toluene	ND		1	1	03/21/11 20:04	JC	5748375
m,p-Xylene	ND		2	1	03/21/11 20:04	JC	5748375
o-Xylene	ND		1	1	03/21/11 20:04	JC	5748375
Xylenes, Total	ND		1	1	03/21/11 20:04	JC	5748375
Surr: 1,2-Dichloroethane-d4	87.1	%	70-130	1	03/21/11 20:04	JC	5748375
Surr: 4-Bromofluorobenzene	95.8	%	74-125	1	03/21/11 20:04	JC	5748375
Surr: Toluene-d8	99.2	%	82-118	1	03/21/11 20:04	JC	5748375

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated value between MDL and PQL
E - Estimated Value exceeds calibration curve
TNTC - Too numerous to count

>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution
MI - Matrix Interference

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Quality Control Documentation



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

Quality Control Report

Conoco Phillips

Wilmuth No. 1

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

WorkOrder: 11030462
Lab Batch ID: 105539

Method Blank

RunID: ICP2_110325A-5752201 Units: mg/L
Analysis Date: 03/25/2011 17:25 Analyst: EG
Preparation Date: 03/18/2011 10:15 Prep By: M_ Method SW3005A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030462-01B	MW-1
11030462-02B	MW-2
11030462-03B	MW-3
11030462-04B	MW-4

Analyte	Result	Rep Limit
Manganese	ND	0.005

Laboratory Control Sample (LCS)

RunID: ICP2_110325A-5752202 Units: mg/L
Analysis Date: 03/25/2011 17:31 Analyst: EG
Preparation Date: 03/18/2011 10:15 Prep By: M_ Method SW3005A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Manganese	0.1000	0.1050	105.0	80	120

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

Sample Spiked: 11030446-02
RunID: ICP2_110325A-5752204 Units: mg/L
Analysis Date: 03/25/2011 17:43 Analyst: EG
Preparation Date: 03/18/2011 10:15 Prep By: M_ Method SW3005A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Manganese	1.211	0.1	1.354	N/C	0.1	1.308	N/C	N/C	20	75	125

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected in The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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.

Version 2.1 - Modified February 11, 2011

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ACCUTEST[®]

LABORATORIES

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

Quality Control Report

Conoco Phillips

Wilmuth No. 1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030462
Lab Batch ID: R317340

Method Blank

RunID: Q_110321A-5748366 Units: ug/L
Analysis Date: 03/21/2011 16:12 Analyst: JC

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	103.3	70-130
Surr: 4-Bromofluorobenzene	91.3	74-125
Surr: Toluene-d8	99.8	82-118

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030462-01C	MW-1
11030462-02C	MW-2
11030462-03C	MW-3
11030462-04C	MW-4
11030462-05C	Duplicate
11030462-06C	Trip Blank

Laboratory Control Sample (LCS)

RunID: Q_110321A-5748365 Units: ug/L
Analysis Date: 03/21/2011 15:43 Analyst: JC

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	20.0	17.2	86.1	74	123
Ethylbenzene	20.0	20.9	105	72	127
Toluene	20.0	21.2	106	74	126
m,p-Xylene	40.0	42.2	105	71	129
o-Xylene	20.0	20.7	103	74	130
Xylenes, Total	60.0	62.9	105	71	130
Surr: 1,2-Dichloroethane-d4	50.0	38.6	77.2	70	130
Surr: 4-Bromofluorobenzene	50.0	47	94.1	74	125
Surr: Toluene-d8	50.0	48	96.1	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
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.

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Quality Control Report

Conoco Phillips

Wilmuth No. 1

Analysis: Volatile Organics by Method 8260B
Method: SW8260B

WorkOrder: 11030462
Lab Batch ID: R317340

Sample Spiked: 11030462-01
RunID: Q_110321A-5748369 Units: ug/L
Analysis Date: 03/21/2011 17:10 Analyst: JC

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	19.4	97.0	20	18.7	93.4	3.77	22	70	124
Ethylbenzene	ND	20	21.4	107	20	21.6	108	0.795	20	76	122
Toluene	ND	20	21.8	109	20	21.0	105	3.57	24	80	117
m,p-Xylene	ND	40	43.4	108	40	43.9	110	1.13	20	69	127
o-Xylene	ND	20	21.1	105	20	21.0	105	0.247	20	84	114
Xylenes, Total	ND	60	64.5	107	60	64.9	108	0.682	20	69	127
Surr: 1,2-Dichloroethane-d4	ND	50	43	86.0	50	36.7	73.5	15.7	30	70	130
Surr: 4-Bromofluorobenzene	ND	50	46.4	92.8	50	47.6	95.2	2.57	30	74	125
Surr: Toluene-d8	ND	50	48.5	96.9	50	49.3	98.5	1.64	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
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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HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Wilmuth No. 1

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 11030462
Lab Batch ID: R317283

Method Blank

RunID: IC1_110319A-5747460 Units: mg/L
Analysis Date: 03/19/2011 10:31 Analyst: ESK

Analyte	Result	Rep Limit
Chloride	ND	0.50
Sulfate	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030462-01A	MW-1
11030462-02A	MW-2
11030462-03A	MW-3
11030462-04A	MW-4

Laboratory Control Sample (LCS)

RunID: IC1_110319A-5747461 Units: mg/L
Analysis Date: 03/19/2011 10:47 Analyst: ESK

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	10.00	9.841	98.41	90	110
Sulfate	10.00	10.02	100.2	90	110

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

Sample Spiked: 11030462-01
RunID: IC1_110319A-5747479 Units: mg/L
Analysis Date: 03/19/2011 17:10 Analyst: ESK

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Sulfate	499.3	250	792.3	117.2	250	780.0	112.3	1.565	15	80	120

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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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LABORATORIES

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

Quality Control Report

Conoco Phillips

Wilmuth No. 1

Analysis: Ion Chromatography
Method: E300.0

WorkOrder: 11030462
Lab Batch ID: R317283A

Method Blank

RunID: IC1_110319A-5747460 Units: mg/L
Analysis Date: 03/19/2011 10:31 Analyst: ESK

Analyte	Result	Rep Limit
Chloride	ND	0.50
Sulfate	ND	0.50

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030462-01A	MW-1
11030462-02A	MW-2
11030462-03A	MW-3
11030462-04A	MW-4

Laboratory Control Sample (LCS)

RunID: IC1_110319A-5747461 Units: mg/L
Analysis Date: 03/19/2011 10:47 Analyst: ESK

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Chloride	10.00	9.841	98.41	90	110
Sulfate	10.00	10.02	100.2	90	110

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

Sample Spiked: 11030462-03
RunID: IC1_110319A-5747469 Units: mg/L
Analysis Date: 03/19/2011 14:28 Analyst: ESK

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Chloride	18.06	10	28.07	100.1	10	28.12	100.6	0.1815	15	80	120

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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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SPL ENVIRONMENTAL
8880 INTERCHANGE DRIVE
HOUSTON, TX 77054
(713) 660-0901

Quality Control Report

Conoco Phillips

Wilmuth No. 1

Analysis: Total Dissolved Solids
Method: SM2540 C

WorkOrder: 11030462
Lab Batch ID: R317419

Method Blank

RunID: WET_110322K-5749750 Units: mg/L
Analysis Date: 03/22/2011 11:30 Analyst: MM1

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

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
11030462-01A	MW-1
11030462-02A	MW-2
11030462-03A	MW-3
11030462-04A	MW-4

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

RunID: WET_110322K-5749752 Units: mg/L
Analysis Date: 03/22/2011 11:30 Analyst: MM1

Analyte	LCS Spike Added	LCS Result	LCS Percent Recovery	LCSD Spike Added	LCSD Result	LCSD Percent Recovery	RPD	RPD Limit	Lower Limit	Upper Limit
Total Dissolved Solids (Residue,Filterable)	200.0	205.0	102.5	200.0	205.0	102.5	0.0	10	95	107

Sample Duplicate

Original Sample: 11030462-01
RunID: WET_110322K-5749754 Units: mg/L
Analysis Date: 03/22/2011 11:30 Analyst: MM1

Analyte	Sample Result	DUP Result	RPD	RPD Limit
Total Dissolved Solids (Residue,Filterable)	1200	1202	0	10

Qualifiers: ND/U - Not Detected at the Reporting Limit
B - Analyte Detected In The Associated Method Blank
J - Estimated Value Between MDL And PQL
E - Estimated Value exceeds calibration curve
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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*Sample Receipt Checklist
And
Chain of Custody*



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

Sample Receipt Checklist

Workorder:	11030462	Received By:	NB
Date and Time Received:	3/18/2011 9:06:00 AM	Carrier name:	Fedex-Standard Overnight
Temperature:	2.5/2.5°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:
Client Name Contacted:

Contact Date & Time:

Non Conformance Issues:
Client Instructions:



SPL, Inc.

Analysis Request & Chain of Custody Record

11030402
302849
page 1 of 2

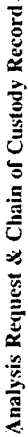
Client Name: Phra Tech
Address: 1921 Indian School Rd NE Ste 200
City: Abilene State: NM Zip: 79601
Phone/Fax: 505.237.8440
Client Contact: Kelly Blanchard Email: kelly.blanchard@phratel.com
Project Name/No.: Wilwith No. 1
Site Name: Agate, NM
Site Location: Agate, NM
Invoice To:

SAMPLE ID	DATE	TIME	comp	grab	Ph:					Requested Analysis				
					W	S	oil	A	air	matrix	bottle	size	pres.	Number of Containers
MW-1	3/10/11	1025		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	1
MW-1	3/10/11	11025		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	1
MW-1	3/10/11	11025		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	3
MW-2	3/10/11	1535		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	1
MW-2	3/10/11	1535		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	1
MW-2	3/10/11	1535		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	1
MW-3	3/10/11	1545		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	1
MW-3	3/10/11	1545		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	1
MW-3	3/10/11	1545		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	1
MW-4	3/10/11	1635		X	W					SL=water S=oil A=air	P=plastic	1=1 liter 4=4oz 40=vial	1=HCl 2=HNO3 3=H2SO4 X=other	1

Client/Consultant Remarks: Please refer to Agate mobile lab
Laboratory remarks: Intact? ☒ Y ☒ N
Ice? ☒ Y ☒ N
Temp: 25-28

Special Reporting Requirements Results: Fax ☐ Email ☒ PDF ☒
Standard QC ☒ Level 3 QC ☐ Level 4 QC ☐ TX TRRP ☐ LA RECAP ☐
1. Relinquished by Supplier: 3/17/11 date 0730 time
2. Relinquished by: 3/17/11 date 0730 time
3. Relinquished by: 3/18/11 date 0904 time
5. Relinquished by: 3/18/11 date 0904 time
6. Received by Laboratory: 3/18/11 date 0904 time
Rush TAT requires prior notice ☒ Other ☐

8880 Interchange Drive
Houston, TX 77054 (713) 660-0901
500 Ambassador Caffery Parkway
Scott, LA 70583 (337) 237-4775
459 Hughes Drive
Traverse City, MI 49686 (231) 947-5777



1000

302851

29/01/11

Analysis Request & Chain of Custody Record

duplicate
trip blank

Laboratory remarks:

Intact?
Ice?
Tommy?

Requested TAT

☐ 1 Business Day	☐ Contract
☐ 2 Business Days	☒ Standard
☐ 3 Business Days	

Special Reporting Requirements Results:

[illegible]

1. Relinquished by Supplier:

3. Relinquished by: 

5. Relinquished by:

Rush TAK requires prior notice

date:

0106

Received by Laboratory: 22

☒ 8880 Interchange Drive
Houston, TX 77054 (713) 660-0000

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

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