



**PDC Energy, Inc.**  
**Fourth Quarter 2015 Groundwater Monitoring Summary**

January 28, 2016

Wiedeman 21B, 24-21, 21-2 Tank Battery  
NESW S21 T5N R67W  
Weld County, API # 05-123-11427  
Spill Tracking # 1175631  
Remediation # 4071

This groundwater summary has been prepared by Tasman Geosciences, Inc for the Wiedeman 21B, 24-21, 21-2 tank battery. On November 4, 2015, groundwater sampling was conducted at five monitoring well locations. Groundwater samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B. Analytical results are summarized in Table 1 and the laboratory report is included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. Fourth quarter 2015 analytical results indicate that benzene concentrations are above applicable COGCC Table 910-1 groundwater standards at monitoring well MW01. BTEX concentrations are below COGCC regulatory standards at the remaining four sample locations

Monitored natural attenuation (MNA) will remain the selected remediation strategy for the site through the first quarter 2016.

First quarter 2016 groundwater sampling will be conducted during February 2016.

**TABLE 1**  
**WIEDEMAN 21B, 24-21, 21-2 TANK BATTERY**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup>		5	560	700	1,400	
GW01	6/29/2007	180	15	<1.0	740	N/A
MW01	8/17/2007	210	<1.0	91	360	6.19
MW01	2/21/2008	30	<1.0	14	<1.0	12.65
MW01	5/6/2008	22	<1.0	<1.0	<1.0	12.72
MW01	8/27/2008	500	<1.0	110	290	6.68
MW01	11/12/2008	350	<1.0	63	180	9.63
MW01	2/9/2009	12	<1.0	5.1	3.1	11.90
MW01	5/8/2009	130	<1.0	18	6.5	10.98
MW01	8/28/2009	270	<1.0	77	81	6.18
MW01	11/11/2009	800	<1.0	71	210	9.06
MW01	2/25/2010	13	<1.0	2.1	5.0	11.70
MW01	5/18/2010	200	<1.0	48	100	N/A
MW01	8/11/2010	310	<1.0	110	180	5.90
MW01	11/10/2010	180	<1.0	15	20	10.30
MW01	2/24/2011	33	<1.0	4.6	12	12.62
MW01	5/5/2011	17	<1.0	1.4	<1.0	N/A
MW01	8/2/2011	170	<1.0	100	200	5.64
MW01	11/30/2011	7.2	<1.0	2.2	2.3	8.80
MW01	2/21/2012	200	1.2	82	210	10.61
MW01	5/29/2012	180	<1.0	120	350	9.37
MW01	5/23/2013	DRY	DRY	DRY	DRY	DRY
MW01	8/27/2013	22	<1.0	2.6	3.4	4.24
MW01	11/26/2013	<1.0	<1.0	<1.0	<1.0	7.12
MW01	2/20/2014	7.3	<1.0	3.1	4.3	8.61
MW01	5/30/2014	18	<1.0	17	6.5	6.19
MW01	8/18/2014	18	<1.0	9.0	4.7	2.92
MW01	11/20/2014	16	<1.0	17	12	7.00
MW01	2/26/2015	21	<1.0	18	11	9.17
MW01	5/8/2015	28	<1.0	23	6.6	9.51
MW01	8/5/2015	39	<1.0	36	9.6	4.36
MW01	11/4/2015	15	<1.0	6.1	7.0	7.48

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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW02	8/17/2007	<1.0	<1.0	<1.0	<1.0	5.43
MW02	2/21/2008	7.4	<1.0	1.1	2.2	12.20
MW02	5/6/2008	1.4	<1.0	<1.0	<1.0	12.47
MW02	8/27/2008	12	<1.0	1.6	<1.0	6.12
MW02	11/12/2008	59	<1.0	38	43	9.38
MW02	2/9/2009	12	<1.0	9.6	<1.0	11.60
MW02	5/8/2009	8.2	<1.0	4.2	11	10.42
MW02	8/28/2009	5.5	<1.0	<1.0	7.7	5.53
MW02	11/11/2009	22	<1.0	37	52	8.72
MW02	2/25/2010	<1.0	<1.0	1.3	<1.0	11.35
MW02	5/18/2010	8.7	<1.0	14	12	N/A
MW02	8/11/2010	<1.0	<1.0	<1.0	<1.0	5.26
MW02	11/10/2010	<1.0	<1.0	<1.0	<1.0	10.00
MW02	2/24/2011	<1.0	<1.0	<1.0	<1.0	12.22
MW02	5/5/2011	<1.0	<1.0	<1.0	<1.0	N/A
MW02	8/2/2011	<1.0	<1.0	<1.0	<1.0	4.84
MW02	11/30/2011	<1.0	<1.0	5.9	<1.0	7.64
MW02	2/21/2012	1.1	<1.0	14	30	10.23
MW02	5/29/2012	<1.0	<1.0	18	30	8.84
MW02	5/23/2013	4.5	<1.0	20	74	11.83
MW02	8/27/2013	4.6	<1.0	13	11	5.77
MW02	11/26/2013	1.1	<1.0	1.4	<1.0	8.86
MW02	2/20/2014	<1.0	<1.0	<1.0	<1.0	10.44
MW02	5/30/2014	<1.0	<1.0	<1.0	<1.0	7.90
MW02	8/18/2014	<1.0	<1.0	<1.0	<1.0	4.58
MW02	11/20/2014	<1.0	<1.0	<1.0	<1.0	8.85
MW02	2/26/2015	<1.0	<1.0	<1.0	<1.0	10.98
MW02	5/8/2015	<1.0	<1.0	<1.0	<1.0	11.40
MW02	8/5/2015	<1.0	<1.0	<1.0	<1.0	6.04
MW02	11/4/2015	<1.0	<1.0	<1.0	<1.0	9.36
MW03	8/17/2007	<1.0	<1.0	<1.0	<1.0	6.23
MW03	2/21/2008	<1.0	<1.0	<1.0	<1.0	13.08
MW03	5/6/2008	<1.0	<1.0	<1.0	<1.0	13.68

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**WIEDEMAN 21B, 24-21, 21-2 TANK BATTERY**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW03	8/27/2008	<1.0	<1.0	<1.0	<1.0	7.10
MW03	11/12/2008	<1.0	<1.0	<1.0	<1.0	10.64
MW03	2/9/2009	<1.0	<1.0	<1.0	<1.0	12.84
MW03	5/8/2009	<1.0	<1.0	<1.0	<1.0	11.76
MW03	8/28/2009	<1.0	<1.0	<1.0	<1.0	6.51
MW03	11/11/2009	<1.0	<1.0	<1.0	<1.0	10.01
MW03	2/25/2010	<1.0	<1.0	<1.0	<1.0	12.55
MW03	5/18/2010	<1.0	<1.0	<1.0	<1.0	N/A
MW03	8/11/2010	<1.0	<1.0	<1.0	<1.0	6.20
MW03	11/10/2010	<1.0	<1.0	<1.0	<1.0	11.23
MW03	2/24/2011	<1.0	<1.0	<1.0	<1.0	13.44
MW03	5/5/2011	<1.0	<1.0	<1.0	<1.0	N/A
MW03	8/2/2011	<1.0	<1.0	<1.0	<1.0	13.82
MW03	11/30/2011	<1.0	<1.0	<1.0	<1.0	8.80
MW03	2/21/2012	<1.0	<1.0	<1.0	<1.0	11.49
MW03	5/29/2012	1.5	2.4	<1.0	<1.0	9.79
MW03	5/23/2013	<1.0	<1.0	<1.0	<1.0	13.00
MW03	8/27/2013	<1.0	<1.0	<1.0	<1.0	6.70
MW03	11/26/2013	<1.0	<1.0	<1.0	<1.0	9.97
MW03	2/20/2014	<1.0	<1.0	<1.0	<1.0	11.55
MW03	5/30/2014	<1.0	<1.0	<1.0	<1.0	8.72
MW03	8/18/2014	<1.0	<1.0	<1.0	<1.0	5.63
MW03	11/20/2014	<1.0	<1.0	<1.0	<1.0	10.03
MW03	2/26/2015	<1.0	<1.0	<1.0	<1.0	12.21
MW03	5/8/2015	<1.0	<1.0	<1.0	<1.0	12.57
MW03	8/5/2015	<1.0	<1.0	<1.0	<1.0	6.89
MW03	11/4/2015	<1.0	<1.0	<1.0	<1.0	10.49
MW04	2/21/2008	<1.0	<1.0	<1.0	<1.0	13.20
MW04	5/6/2008	<1.0	<1.0	<1.0	<1.0	13.38
MW04	8/27/2008	<1.0	<1.0	<1.0	<1.0	N/A
MW04	11/12/2008	<1.0	<1.0	<1.0	<1.0	N/A
MW04	2/9/2009	<1.0	<1.0	<1.0	<1.0	N/A
MW04	5/8/2009	<1.0	<1.0	<1.0	<1.0	N/A

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**WIEDEMAN 21B, 24-21, 21-2 TANK BATTERY**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW04	11/11/2009	<1.0	<1.0	<1.0	<1.0	N/A
MW04	2/25/2010	<1.0	<1.0	<1.0	<1.0	0.00
MW04	5/18/2010	<1.0	<1.0	<1.0	<1.0	N/A
MW04	8/11/2010	<1.0	<1.0	<1.0	<1.0	7.54
MW04	11/10/2010	<1.0	<1.0	<1.0	<1.0	10.61
MW04	2/24/2011	<1.0	<1.0	<1.0	<1.0	N/A
MW04	5/5/2011	<1.0	<1.0	<1.0	<1.0	N/A
MW04	8/2/2011	<1.0	<1.0	<1.0	<1.0	7.14
MW04	11/30/2011	<1.0	<1.0	<1.0	<1.0	8.50
MW04	2/21/2012	<1.0	<1.0	<1.0	<1.0	10.92
MW04	5/29/2012	<1.0	<1.0	<1.0	<1.0	10.76
MW04	5/23/2013	<1.0	<1.0	<1.0	<1.0	12.48
MW04	8/27/2013	<1.0	<1.0	<1.0	<1.0	7.67
MW04	11/26/2013	<1.0	<1.0	<1.0	<1.0	9.36
MW04	2/20/2014	<1.0	<1.0	<1.0	<1.0	11.07
MW04	5/30/2014	<1.0	<1.0	<1.0	<1.0	9.96
MW04	8/18/2014	<1.0	<1.0	<1.0	<1.0	5.69
MW04	11/20/2014	<1.0	<1.0	<1.0	<1.0	9.46
MW04	2/26/2015	<1.0	<1.0	<1.0	<1.0	11.77
MW04	5/8/2015	<1.0	<1.0	<1.0	<1.0	12.12
MW04	8/5/2015	<1.0	<1.0	<1.0	<1.0	8.76
MW04	11/4/2015	<1.0	<1.0	<1.0	<1.0	10.24
MW05	2/21/2008	<1.0	<1.0	<1.0	<1.0	13.10
MW05	5/6/2008	<1.0	<1.0	<1.0	<1.0	13.24
MW05	8/27/2008	<1.0	<1.0	<1.0	<1.0	7.17
MW05	11/12/2008	<1.0	<1.0	<1.0	<1.0	9.86
MW05	2/9/2009	<1.0	<1.0	<1.0	<1.0	12.20
MW05	5/8/2009	<1.0	<1.0	<1.0	<1.0	11.30
MW05	8/28/2009	<1.0	<1.0	<1.0	<1.0	6.83
MW05	11/11/2009	<1.0	<1.0	<1.0	<1.0	9.31
MW05	2/25/2010	<1.0	<1.0	<1.0	<1.0	12.00
MW05	5/18/2010	<1.0	<1.0	<1.0	<1.0	N/A
MW05	8/11/2010	<1.0	<1.0	<1.0	<1.0	6.58

**TABLE 1**  
**WIEDEMAN 21B, 24-21, 21-2 TANK BATTERY**  
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Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
MW05	11/10/2010	<1.0	<1.0	<1.0	<1.0	10.67
MW05	2/24/2011	<1.0	<1.0	<1.0	<1.0	12.88
MW05	5/5/2011	<1.0	<1.0	<1.0	<1.0	N/A
MW05	8/2/2011	<1.0	<1.0	<1.0	<1.0	6.12
MW05	11/30/2011	<1.0	<1.0	<1.0	<1.0	9.32
MW05	2/21/2012	<1.0	<1.0	<1.0	<1.0	10.95
MW05	5/29/2012	<1.0	<1.0	<1.0	<1.0	10.09
MW05	5/23/2013	<1.0	<1.0	<1.0	<1.0	12.52
MW05	8/27/2013	<1.0	<1.0	<1.0	<1.0	5.35
MW05	11/26/2013	<1.0	<1.0	<1.0	<1.0	7.60
MW05	2/20/2014	<1.0	<1.0	<1.0	<1.0	9.28
MW05	5/30/2014	<1.0	<1.0	<1.0	<1.0	7.58
MW05	8/18/2014	<1.0	<1.0	<1.0	<1.0	3.58
MW05	11/20/2014	<1.0	<1.0	<1.0	<1.0	7.66
MW05	2/26/2015	<1.0	<1.0	<1.0	<1.0	9.92
MW05	5/8/2015	<1.0	<1.0	<1.0	<1.0	10.26
MW05	8/5/2015	<1.0	<1.0	<1.0	<1.0	5.83
MW05	11/4/2015	<1.0	<1.0	<1.0	<1.0	8.33

**Notes:**

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

(<) = Analytical result is less than the indicated laboratory reporting limit.

DRY = Well contained insufficient volume to collect sample.

N/A = LT Environmental, Inc. field data not available

**BOLD** = Analytical result is in exceedance of COGCC groundwater standards.



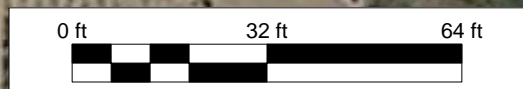
MW01		
Compound (µg/L)	8/5/2015	11/4/2015
Benzene	39	15
Toluene	<1.0	<1.0
Ethylbenzene	36	6.1
Total Xylenes	9.6	7.0

MW04		
Compound (µg/L)	8/5/2015	11/4/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

MW05		
Compound (µg/L)	8/5/2015	11/4/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

MW02		
Compound (µg/L)	8/5/2015	11/4/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

MW03		
Compound (µg/L)	8/5/2015	11/4/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0



DRAWN BY: ESS

DATE: 12/15/2015

**Facility Diagram**  
PDC Energy – DJ Basin  
Wiedeman 21B, 24-21, 21-2 Tank Battery  
NESW S21 T5N R67W  
Weld County, CO



6899 Pecos St., Unit C  
Denver CO 80221

**LEGEND**

- Excavation Extent
- Excavation Groundwater Sample Location
- Monitoring Well Location
- Point of Release

**Note:** Surface drainage direction is estimated based on site topography and is not related to regional topography.

All locations are approximate unless otherwise noted

**FIGURE 1**  
GROUNDWATER ANALYTICAL RESULTS MAP

## **ATTACHMENT A**



# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

November 11, 2015

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Wiedeman 21B, 24-21, 21-1

Enclosed are the results of analyses for samples received by Summit Scientific on 11/04/15 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury  
President



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wiedeman 21B, 24-21, 21-1

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/11/15 07:38

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW01	1511034-01	Water	11/04/15 10:06	11/04/15 17:00
MW02	1511034-02	Water	11/04/15 10:14	11/04/15 17:00
MW03	1511034-03	Water	11/04/15 10:19	11/04/15 17:00
MW04	1511034-04	Water	11/04/15 10:24	11/04/15 17:00
MW05	1511034-05	Water	11/04/15 10:31	11/04/15 17:00

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*





PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wiedeman 21B, 24-21, 21-1

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/11/15 07:38

**MW01**  
**1511034-01 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 11/04/15 10:06

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>15</b>	1.0	ug/l	1	1511078	11/09/15	11/09/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>6.1</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>7.0</b>	1.0	"	"	"	"	"	"	

Date Sampled: 11/04/15 10:06

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		103 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		104 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wiedeman 21B, 24-21, 21-1

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/11/15 07:38

**MW02**  
**1511034-02 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 11/04/15 10:14

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1511078	11/09/15	11/09/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 11/04/15 10:14

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.1 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wiedeman 21B, 24-21, 21-1

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/11/15 07:38

**MW03**  
**1511034-03 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 11/04/15 10:19

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1511078	11/09/15	11/09/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 11/04/15 10:19

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		100 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wiedeman 21B, 24-21, 21-1  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/11/15 07:38

**MW04**  
**1511034-04 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 11/04/15 10:24

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1511078	11/09/15	11/09/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 11/04/15 10:24

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		102 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.8 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wiedeman 21B, 24-21, 21-1

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/11/15 07:38

**MW05**  
**1511034-05 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 11/04/15 10:31

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1511078	11/09/15	11/09/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 11/04/15 10:31

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wiedeman 21B, 24-21, 21-1

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/11/15 07:38

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

### Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

#### Batch 1511078 - EPA 5030 Water MS

##### Blank (1511078-BLK1)

Prepared & Analyzed: 11/09/15

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.3		"	13.2	108	37-154				
Surrogate: Toluene-d8	12.8		"	13.3	96.3	45-149				
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3	103	45-146				

##### LCS (1511078-BS1)

Prepared & Analyzed: 11/09/15

Benzene	45.1	1.0	ug/l	50.0	90.2	51-132				
Toluene	46.8	1.0	"	50.0	93.6	51-138				
Ethylbenzene	47.6	1.0	"	50.0	95.1	58-146				
m,p-Xylene	94.0	2.0	"	100	94.0	57-144				
o-Xylene	46.7	1.0	"	50.0	93.3	53-146				
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.2	108	37-154				
Surrogate: Toluene-d8	13.2		"	13.3	98.7	45-149				
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3	98.4	45-146				

##### Matrix Spike (1511078-MS1)

Source: 1511014-01

Prepared & Analyzed: 11/09/15

Benzene	47.3	1.0	ug/l	50.0	ND	94.5	34-141			
Toluene	49.4	1.0	"	50.0	ND	98.8	27-151			
Ethylbenzene	51.7	1.0	"	50.0	ND	103	29-160			
m,p-Xylene	100	2.0	"	100	ND	100	20-166			
o-Xylene	49.4	1.0	"	50.0	ND	98.8	33-159			
Surrogate: 1,2-Dichloroethane-d4	12.7		"	13.2	96.2	37-154				
Surrogate: Toluene-d8	13.4		"	13.3	101	45-149				
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3	100	45-146				

Summit Scientific

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1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wiedeman 21B, 24-21, 21-1  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/11/15 07:38

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

**Batch 1511078 - EPA 5030 Water MS**

Matrix Spike Dup (1511078-MSD1)		Source: 1511014-01			Prepared & Analyzed: 11/09/15					
Benzene	46.4	1.0	ug/l	50.0	ND	92.9	34-141	1.75	32	
Toluene	48.0	1.0	"	50.0	ND	95.9	27-151	2.94	25	
Ethylbenzene	51.3	1.0	"	50.0	ND	103	29-160	0.699	50	
m,p-Xylene	99.2	2.0	"	100	ND	99.2	20-166	1.26	36	
o-Xylene	48.8	1.0	"	50.0	ND	97.6	33-159	1.28	26	
Surrogate: 1,2-Dichloroethane-d4	12.7		"	13.2		96.4	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		99.1	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	45-146			

Summit Scientific

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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Wiedeman 21B, 24-21, 21-1

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/11/15 07:38

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

A handwritten signature in black ink, appearing to be 'MSM'.