

Project: 7239
Document #: 2211168
Date: 01/22/2016



PDC Energy, Inc.
Fourth Quarter 2014 Groundwater Monitoring Summary

November 25, 2014

Ryan 23-25U & 25BU, 14-25U/ Scott 24-25U/ MVS #1 Tank Battery
SESW Section 25 T5N R68W
Weld County, API # 05-069-06179

This groundwater monitoring summary has been prepared by Tasman Geosciences, LLC for the Ryan 23-25U & 25BU, 14-25U/ Scott 24-25U/ MVS #1 tank battery. On October 22, 2014, groundwater sampling was conducted at the five temporary monitoring well locations. Groundwater samples were submitted for laboratory analysis of BTEX constituents using USEPA Method 8260B. Analytical results are summarized in Table 1 and are illustrated on Figure 1. The laboratory analytical report is included as Attachment A. Fourth quarter analytical results indicate that benzene concentrations are in exceedance of COGCC regulatory standards in two well locations (BH03R and BH04R). BTEX concentrations are below COGCC regulatory standards at the remaining three sample locations (BH01, BH02R and BH05R).

Tasman conducted enhanced fluid recovery (EFR) and air sparge (AS) events between second quarter 2012 and second quarter 2013. EFR/AS activities were discontinued in the third quarter 2013 due to decreased groundwater levels on site. A summary of the EFR/AS operational data through the second quarter 2013 is provided in Table 2. Monitored natural attenuation (MNA) was selected as the remedial strategy in third quarter 2013 and will continue through first quarter 2015.

First quarter 2015 groundwater sampling will be conducted during January 2015.

TABLE 1
RYAN 23-25U, 25BU, 14-25U/SCOTT 24-25U/MVS 1
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (feet)
GW01-BH-01	4/13/2012	320	810	44	490	NM
BH01	7/17/2012	<1.0	<1.0	<1.0	<1.0	14.39
BH01	10/1/2012	<1.0	<1.0	<1.0	<1.0	14.67
BH01	1/28/2013	<1.0	<1.0	<1.0	<1.0	14.90
BH01	5/3/2013	<1.0	<1.0	<1.0	<1.0	15.50
BH01	7/25/2013	<1.0	<1.0	<1.0	<1.0	16.29
BH01	10/31/2013	<1.0	<1.0	<1.0	<1.0	15.90
BH01	1/24/2014	<1.0	<1.0	<1.0	<1.0	15.53
BH01	4/28/2014	<1.0	<1.0	<1.0	<1.0	15.26
BH01	7/25/2014	<1.0	<1.0	<1.0	<1.0	15.59
BH01	10/22/2014	<1.0	<1.0	<1.0	<1.0	16.25
GW02-BH02	4/13/2012	7,100	14,000	420	4,400	NM
BH02	7/17/2012	DRY	DRY	DRY	DRY	DRY
BH02	10/1/2012	DRY	DRY	DRY	DRY	DRY
BH02	1/28/2013	DRY	DRY	DRY	DRY	DRY
BH02	5/3/2013	DRY	DRY	DRY	DRY	DRY
BH02	7/25/2013	DRY	DRY	DRY	DRY	DRY
BH02	10/31/2013	DRY	DRY	DRY	DRY	DRY
BH02 ⁽³⁾	1/24/2014	DRY	DRY	DRY	DRY	DRY
BH02R	4/28/2014	1.0	<1.0	<1.0	<1.0	17.06
BH02R	7/25/2014	<1.0	<1.0	<1.0	<1.0	17.38
BH02R	10/22/2014	<1.0	<1.0	<1.0	<1.0	17.01
GW03-BH03	4/13/2012	11,000	13,000	300	3,500	NM
BH03	7/17/2012	1,400	710	20	250	13.82
BH03	10/1/2012	41	47	3	32	14.20
BH03	1/28/2013	DRY	DRY	DRY	DRY	DRY
BH03	5/3/2013	<1.0	<1.0	<1.0	<1.0	14.81
BH03	7/25/2013	DRY	DRY	DRY	DRY	DRY
BH03	10/31/2013	DRY	DRY	DRY	DRY	DRY
BH03 ⁽³⁾	1/24/2014	<1.0	<1.0	<1.0	<1.0	14.82
BH03R	4/28/2014	<1.0	<1.0	<1.0	<1.0	16.08
BH03R	7/25/2014	3.4	<1.0	<1.0	<1.0	15.43
BH03R	10/22/2014	7.3	<1.0	1.2	<1.0	15.4

TABLE 1
RYAN 23-25U, 25BU, 14-25U/SCOTT 24-25U/MVS 1
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (feet)
GW04-BH04	4/13/2012	3,100	3,900	150	1,700	NM
BH04	7/17/2012	1,500	490	<1.0	1,900	13.21
BH04 ⁽²⁾	10/1/2012	2,400	66	53	1,800	13.58
BH04R	1/28/2013	26	<1.0	<1.0	77	14.53
BH04R	5/3/2013	<1.0	<1.0	<1.0	<1.0	15.22
BH04R	7/25/2013	2.0	<1.0	<1.0	<1.0	16.12
BH04R	10/31/2013	<1.0	<1.0	<1.0	4.1	15.77
BH04R	1/24/2014	<1.0	<1.0	3.3	<1.0	15.24
BH04R	4/28/2014	<1.0	<1.0	4.1	<1.0	15.03
BH04R	7/25/2014	<1.0	<1.0	1.1	<1.0	15.17
BH04R	10/22/2014	13	<1.0	<1.0	<1.0	15.01
GW05-BH05	4/13/2012	510	3,400	190	2,200	NM
BH05	7/17/2012	<1.0	<1.0	<1.0	<1.0	13.30
BH05	10/1/2012	<1.0	<1.0	<1.0	<1.0	15.60
BH05	1/28/2013	<1.0	<1.0	<1.0	<1.0	15.74
BH05	5/3/2013	<1.0	<1.0	<1.0	<1.0	16.45
BH05	7/25/2013	DRY	DRY	DRY	DRY	DRY
BH05	8/31/2013	DRY	DRY	DRY	DRY	DRY
BH05	10/31/2013	DRY	DRY	DRY	DRY	DRY
BH05 ⁽³⁾	1/24/2014	<1.0	<1.0	<1.0	<1.0	16.49
BH05R	4/28/2014	<1.0	<1.0	<1.0	<1.0	15.89
BH05R	7/25/2014	<1.0	<1.0	<1.0	<1.0	16.15
BH05R	10/22/2014	<1.0	<1.0	<1.0	<1.0	15.90
COGCC standards for Groundwater (ug/L) ⁽¹⁾		5	560	700	1,400	

Notes:

- 1). The environmental cleanup standards for groundwater that are applicable to this site are the Colorado Oil and Gas Conservation Commission (COGCC) standards for contaminants in groundwater according to Table 910-1 of the COGCC 900 Series Rule for E&P Waste Management.
- 2). Groundwater sample collection at BH04 discontinued following installation of BH04R during the fourth quarter 2012.
- 3). Groundwater sample collection at BH02, BH03, and BH05 discontinued following installation of BH02R, BH03R, and BH05R during the second quarter 2013.

Bold red values indicate an exceedance of the COGCC groundwater standards for the site.

ug/L- Micrograms per liter

NM - Not Measured

TABLE 2
RYAN 23-25U, 25BU, 14-25U/SCOTT 24-25U/MVS 1
AIR SPARGE / EFR OPERATIONAL SUMMARY TABLE

Second Quarter 2012					
Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Injection Pressure (psi)
5/29/2012	BH01, BH02, BH03,	6	210	BH01, BH02, BH03,	8
6/13/2012	BH04, BH05	6	210	BH04, BH05	8
Quarterly Totals		12	420		-
Third Quarter 2012					
7/2/2012	BH01, BH02, BH03, BH04, BH05	6	252	BH01, BH02, BH03, BH04, BH05	8
7/10/2012		6	210		8
7/25/2012		6	207		8
8/18/2012		7	124.5		7.5
8/21/2012		8	124.5		8
9/4/2012		7	0		8
Quarterly Totals		40	918		-
Fourth Quarter 2012					
10/3/2012	BH01, BH02, BH03, BH04, BH05	7	83	BH01, BH02, BH03, BH04, BH05	8
10/30/2012		6	11.5		8
11/13/2012		6	23		8
11/29/2012		6.5	14.6		8
12/6/2012		6.5	7.5		8
Quarterly Totals		32	139.6		-
First Quarter 2013					
1/7/2013	BH03, BH04, BH05	5	10	BH03, BH04, BH05	10
3/25/2013		6	26		10
Quarterly Totals		11	36		-
Second Quarter 2013					
4/14/2013	BH03, BH04, BH05	6	23.5	BH03, BH04, BH05	10
4/25/2013		6	16		10
5/10/2013		6	22		10
Quarterly Totals		18	61.5		-

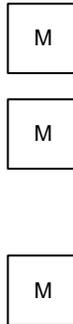
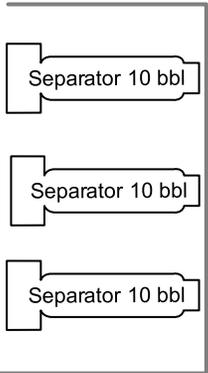


Surface
Drainage

BH03R		
Compound (ug/L)	7/25/2014	10/22/2014
Benzene	3.4	7.3
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	1.2
Total Xylenes	<1.0	<1.0

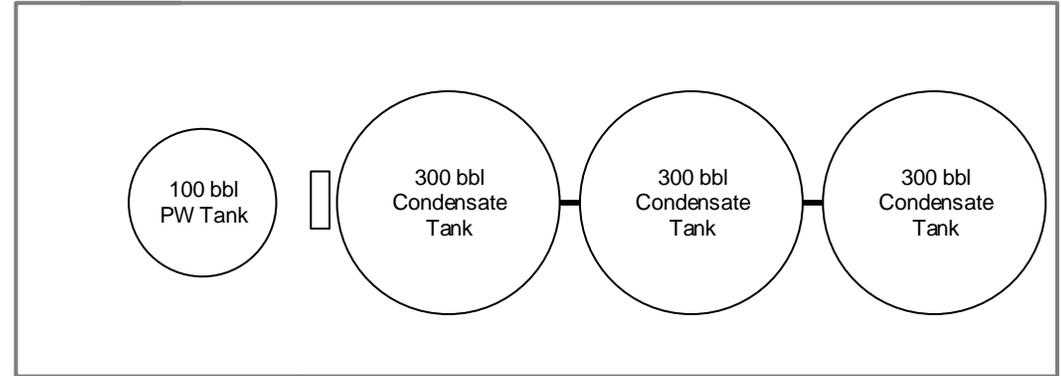
BH04R		
Compound (ug/L)	7/25/2014	10/22/2014
Benzene	<1.0	13.0
Toluene	<1.0	<1.0
Ethylbenzene	1.1	<1.0
Total Xylenes	<1.0	<1.0

BH05R		
Compound (ug/L)	7/25/2014	10/22/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0



BH01

BH01		
Compound (ug/L)	7/25/2014	10/22/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0



BH02

BH02R		
Compound (ug/L)	7/25/2014	10/22/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

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

DRAWN BY: BAM

Facility Diagram
PDC Energy – DJ Basin
Ryan 23-25U & 25BU, 14-25U/ Scott 24-25U/ MVS #1
SESW T5N R68W S25
Weld County, CO



6899 Pecos St., Unit C
Denver CO 80221

LEGEND

- Corrugated Steel Berm
- ⊗ Monitoring Well Location. Soil and Groundwater Samples Collected
- ⊗ Sampling Discontinued from Monitoring Well Location
- M Meter Shed

FIGURE 1

GROUNDWATER
ANALYTICAL RESULTS

Not to Scale

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite J ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.374.5933 - fax

October 28, 2014

Brandon Bruns

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Enclosed are the results of analyses for samples received by Summit Scientific on 10/23/14 17:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Joseph J Egry IV

Laboratory/Technical Director

This report shall not be reproduced, except in its entirety, without the written approval of Summit Scientific. Test results relate only to samples analyzed.

Summit Scientific is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 08:19

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1410215-01	Water	10/22/14 11:48	10/23/14 17:15
BH02R	1410215-02	Water	10/22/14 11:55	10/23/14 17:15
BH03R	1410215-03	Water	10/22/14 12:05	10/23/14 17:15
BH04R	1410215-04	Water	10/22/14 12:02	10/23/14 17:15
BH05R	1410215-05	Water	10/22/14 11:52	10/23/14 17:15

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.

Joseph J Egrý IV, Laboratory/Technical Director



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 08:19

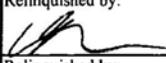
Summit Scientific 1410215

S₂

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-277-9531 Fax

Page 1 of 1

Client: PDC Energy
Address: _____ Project Manager: Brandon Bruns
City/State/Zip: _____ E-Mail: bbruns@petd.com
Phone: _____ Fax: _____ Project Name: Ryan 14, 23, 25U, 25BU/Scott 24-25U/MVS
Sampler Name: Elliot Dillon-Herzog Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix		Analyze For:				Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)					
BH01	10/22/14	11:48	3	X				X								
BH02R		11:55	3	X				X								
BH03L		12:05	3	X				X								
BH04L		12:02	3	X				X								
BH05R		11:52	3	X				X								
Relinquished by: 	Date/Time: 10/22/14	Received by: 	Date/Time: 10/23/14 1715	Turn Around Time (Check)				Notes:								
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day	72 Hours	24 Hours	Standard									
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	48 Hours		Sample Integrity:										
						Temperature Upon Receipt: 4°C										
						Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No										

www.s2scientific.com

Soil samples reported on a wet-weight basis unless otherwise indicated on results page.

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.

Joseph J Egly IV, Laboratory/Technical Director



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 10/28/14 08:19

BH01
1410215-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/22/14 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1410277	10/26/14	10/26/14 01:00	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/22/14 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	86.3 %	37-154				"	"	"	"
Surrogate: Toluene-d8	93.1 %	45-149				"	"	"	"
Surrogate: 4-Bromofluorobenzene	95.5 %	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.

Joseph J Egry IV, Laboratory/Technical Director



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 10/28/14 08:19

BH02R
1410215-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/22/14 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1410277	10/26/14	10/26/14 01:24	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/22/14 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	86.7 %	37-154				"	"	"	"
Surrogate: Toluene-d8	93.2 %	45-149				"	"	"	"
Surrogate: 4-Bromofluorobenzene	96.5 %	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.

Joseph J Egry IV, Laboratory/Technical Director



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 10/28/14 08:19

BH03R
1410215-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/22/14 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	7.3	1.0	ug/l	1	1410277	10/26/14	10/26/14 01:48	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	1.2	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/22/14 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	84.6 %	37-154			"	"	"	"	
Surrogate: Toluene-d8	92.9 %	45-149			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	98.4 %	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.

Joseph J Egly IV, Laboratory/Technical Director



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 10/28/14 08:19

BH04R
1410215-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/22/14 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	13	1.0	ug/l	1	1410277	10/26/14	10/26/14 02:13	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/22/14 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	84.2 %	37-154			"	"	"	"	
Surrogate: Toluene-d8	94.4 %	45-149			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	94.8 %	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.

Joseph J Egly IV, Laboratory/Technical Director



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 08:19

BH05R
1410215-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/22/14 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1410277	10/26/14	10/26/14 02:37	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **10/22/14 11:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	88.6 %	37-154				"	"	"	"
Surrogate: Toluene-d8	94.5 %	45-149				"	"	"	"
Surrogate: 4-Bromofluorobenzene	99.6 %	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.

Joseph J Egry IV, Laboratory/Technical Director



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 08:19

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

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

Batch 1410277 - EPA 5030 Water MS

Blank (1410277-BLK1)

Prepared & Analyzed: 10/25/14

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>11.1</i>		<i>"</i>	<i>13.2</i>		<i>84.3</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.6</i>		<i>"</i>	<i>13.3</i>		<i>94.1</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.7</i>		<i>"</i>	<i>13.3</i>		<i>95.5</i>	<i>45-146</i>			

LCS (1410277-BS1)

Prepared & Analyzed: 10/25/14

Benzene	39.8	1.0	ug/l	33.3		119	51-132			
Toluene	39.6	1.0	"	33.3		119	51-138			
Ethylbenzene	41.6	1.0	"	33.1		126	58-146			
m,p-Xylene	81.6	2.0	"	66.5		123	57-144			
o-Xylene	41.3	1.0	"	32.8		126	53-146			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>11.1</i>		<i>"</i>	<i>13.2</i>		<i>84.4</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.7</i>		<i>"</i>	<i>13.3</i>		<i>95.3</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.1</i>		<i>"</i>	<i>13.3</i>		<i>98.4</i>	<i>45-146</i>			

Matrix Spike (1410277-MS1)

Source: 1410214-01

Prepared & Analyzed: 10/25/14

Benzene	40.1	1.0	ug/l	33.3	ND	120	34-141			
Toluene	40.1	1.0	"	33.3	ND	120	27-151			
Ethylbenzene	41.5	1.0	"	33.1	ND	125	29-160			
m,p-Xylene	80.8	2.0	"	66.5	ND	122	20-166			
o-Xylene	40.9	1.0	"	32.8	ND	125	33-159			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>11.3</i>		<i>"</i>	<i>13.2</i>		<i>85.8</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.7</i>		<i>"</i>	<i>13.3</i>		<i>95.0</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.7</i>		<i>"</i>	<i>13.3</i>		<i>95.0</i>	<i>45-146</i>			

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.

Joseph J Egry IV, Laboratory/Technical Director



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 10/28/14 08:19

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

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

Batch 1410277 - EPA 5030 Water MS

Matrix Spike Dup (1410277-MSD1)	Source: 1410214-01			Prepared & Analyzed: 10/25/14						
Benzene	40.2	1.0	ug/l	33.3	ND	121	34-141	0.299	32	
Toluene	39.8	1.0	"	33.3	ND	119	27-151	0.802	25	
Ethylbenzene	41.8	1.0	"	33.1	ND	126	29-160	0.841	50	
m,p-Xylene	82.4	2.0	"	66.5	ND	124	20-166	1.84	36	
o-Xylene	41.9	1.0	"	32.8	ND	128	33-159	2.30	26	
Surrogate: 1,2-Dichloroethane-d4	11.2		"	13.2		84.5	37-154			
Surrogate: Toluene-d8	12.8		"	13.3		95.6	45-149			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.6	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.

Joseph J Egry IV, Laboratory/Technical Director



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

Project: Ryan 14, 23-25U, 25BU/Scott 24-25U/MVS 1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 08:19

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

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.

Joseph J Egry IV, Laboratory/Technical Director