

Project: 7239  
Document #: 2211170  
Date: 01/22/2016



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

June 10, 2015

Ryan 23-25U & 25BU, 14-25U/ Scott 24-25U/ MVS #1 Tank Battery  
SESW Section 25 T5N R68W  
Weld County, API # 05-069-06179  
Spill Tracking # 2224254  
Remediation # 7239

This groundwater monitoring summary has been prepared by Tasman Geosciences for the Ryan 23-25U & 25BU, 14-25U/ Scott 24-25U/ MVS #1 tank battery. On April 9, 2015, groundwater sampling was conducted at the five temporary monitoring well locations. Groundwater samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (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. Second quarter 2015 analytical results indicate that benzene concentrations are below COGCC regulatory standards in the five sample locations for the second consecutive quarter.

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 the third quarter 2015.

Third quarter 2015 groundwater sampling will be conducted during July 2015.

**TABLE 1**  
**RYAN 23-25U, 25BU, 14-25U/SCOTT 24-25U/MVS 1 TANK BATTERY**  
**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	<b>320</b>	<b>810</b>	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
BH01	1/13/2015	<1.0	<1.0	<1.0	<1.0	15.00
BH01	4/9/2015	<1.0	<1.0	<1.0	<1.0	15.38
GW02-BH02	4/13/2012	<b>7,100</b>	<b>14,000</b>	420	<b>4,400</b>	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 <sup>(3)</sup>	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
BH02R	1/13/2015	<1.0	<1.0	<1.0	<1.0	16.74
BH02R	4/9/2015	<1.0	<1.0	<1.0	<1.0	17.13
GW03-BH03	4/13/2012	<b>11,000</b>	<b>13,000</b>	300	<b>3,500</b>	NM
BH03	7/17/2012	<b>1,400</b>	<b>710</b>	20	250	13.82
BH03	10/1/2012	<b>41</b>	47	3.0	32	14.20
BH03	1/28/2013	DRY	DRY	DRY	DRY	DRY
BH03	5/3/20123	<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 <sup>(3)</sup>	1/24/2014	<1.0	<1.0	<1.0	<1.0	14.82

**TABLE 1**  
**RYAN 23-25U, 25BU, 14-25U/SCOTT 24-25U/MVS 1 TANK BATTERY**  
**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)
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	<b>7.3</b>	<1.0	1.2	<1.0	15.4
BH03R	1/13/2015	<1.0	<1.0	1.3	<1.0	15.15
BH03R	4/9/2015	<1.0	<1.0	<1.0	<1.0	15.47
GW04-BH04	4/13/2012	<b>3,100</b>	<b>3,900</b>	150	<b>1,700</b>	NM
BH04	7/17/2012	<b>1,500</b>	490	<1.0	<b>1,900</b>	13.21
BH04 <sup>(2)</sup>	10/1/2012	<b>2,400</b>	66	53	<b>1,800</b>	13.58
BH04R	1/28/2013	<b>26</b>	<1.0	<1.0	<b>77</b>	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	<b>13</b>	<1.0	<1.0	<1.0	15.01
BH04R	1/13/2015	2.4	<1.0	1.5	4.0	14.81
BH04R	4/9/2015	1.7	<1.0	1.5	7.4	15.11
GW05-BH05	4/13/2012	<b>510</b>	<b>3,400</b>	190	<b>2,200</b>	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 <sup>(3)</sup>	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
BH05R	1/13/2015	<1.0	<1.0	<1.0	<1.0	15.65
BH05R	4/9/2015	<1.0	<1.0	<1.0	<1.0	15.94
<b>COGCC standards for Groundwater (ug/L)<sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	

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.

**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 TANK BATTERY**  
**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
<b>Quarterly Totals</b>		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
<b>Quarterly Totals</b>		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
<b>Quarterly Totals</b>		32	139.6		-
First Quarter 2013					
1/7/2013	BH03, BH04, BH05	5	10	BH03, BH04, BH05	10
3/25/2013		6	26		10
<b>Quarterly Totals</b>		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
<b>Quarterly Totals</b>		18	61.5		-



Surface  
Drainage

BH03R		
Compound (ug/L)	1/13/2015	4/9/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	1.3	<1.0
Total Xylenes	<1.0	<1.0

BH04R		
Compound (ug/L)	1/13/2015	4/9/2015
Benzene	2.4	1.7
Toluene	<1.0	<1.0
Ethylbenzene	1.5	1.5
Total Xylenes	4.0	7.4

BH05R		
Compound (ug/L)	1/13/2015	4/9/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH03R

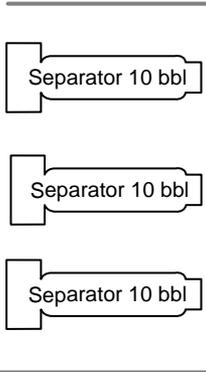
BH03

BH04R

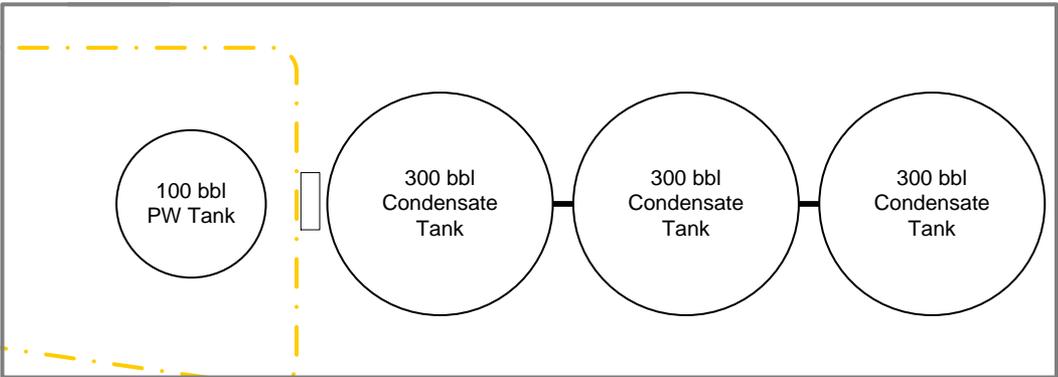
BH04

BH05

BH05R



BH01



BH02R

BH02

BH01		
Compound (ug/L)	1/13/2015	4/9/2015
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH02R		
Compound (ug/L)	1/13/2015	4/9/2015
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.

**Facility Diagram**

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



6899 Pecos St., Unit C  
Denver CO 80221

**LEGEND**

- Corrugated Steel Berm
- Approximate Area of Excavation
- Monitoring Well Location
- Monitoring Well Location – Sampling Discontinued
- Meter Shed

FIGURE 1

GROUNDWATER  
ANALYTICAL RESULTS

Not to Scale

DRAWN BY: ATF

DATE: 5/11/15

**ATTACHMENT A**

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 15, 2015

Brandon Bruns

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

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

Enclosed are the results of analyses for samples received by Summit Scientific on 04/09/15 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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

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

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/15/15 12:54

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1504098-01	Water	04/09/15 13:50	04/09/15 16:30
BH02R	1504098-02	Water	04/09/15 13:55	04/09/15 16:30
BH03R	1504098-03	Water	04/09/15 14:00	04/09/15 16:30
BH04R	1504098-04	Water	04/09/15 14:05	04/09/15 16:30
BH05R	1504098-05	Water	04/09/15 14:10	04/09/15 16:30

Summit Scientific

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

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

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
04/15/15 12:54

# Summit Scientific

1504098

741 Corporate Circle Suite I • Golden, Colorado 80401  
303-277-9310 • 303-374-5933 Fax

Page 1 of 1

Client: PDC Energy  
Address:  
City/State/Zip:  
Phone: Fax:  
Sampler Name: Elliot Dillen-Herzog

Project Manager: Brandon Bruns  
E-Mail: brandon.bruns@pdce.com  
Project Name: Ryan 23-25U & 25BU,14-25U/Scott 24-25U/MVS #1  
Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions	
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)					
BH01	04/09/15	13:50	2	Y				Y								
BH02R		13:55	3	Y				Y								
BH03R		14:00	3	Y				Y								
BH04R		14:05	3	Y				Y								
BH05R		14:10	3	Y				Y								

Relinquished by:	Date/Time: 04/09/15 16:00	Received by:	Date/Time: 4/9/15 10:30	<b>Turn Around Time (Check)</b> Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>	<b>Notes:</b> on ice
Relinquished by:	Date/Time: 4/9/15 18:00	Received by:	Date/Time: 4-9 19:00		
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:		

www.s2scient.com



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

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

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
04/15/15 12:54

Sample Receipt Checklist

S2 Work Order: 1504098

Client: PDC Client Project ID: Ryan / Scott / MVS

Shipped Via: HD Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	<u>5.9</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			<u>HCl</u>
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, etc.				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

Ben Shrawsbury  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

4/9/1940  
Date/Time

[Signature]



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

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

Project Number: [none]  
 Project Manager: Brandon Bruns

**Reported:**  
 04/15/15 12:54

**BH01**  
**1504098-01 (Water)**

**Summit Scientific**

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

Date Sampled: **04/09/15 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504122	04/11/15	04/11/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/09/15 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		99.8 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.8 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		100 %	45-146		"	"	"	"	

Summit Scientific

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

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

Project Number: [none]  
 Project Manager: Brandon Brunns

**Reported:**  
 04/15/15 12:54

**BH02R**  
**1504098-02 (Water)**

**Summit Scientific**

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

Date Sampled: **04/09/15 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504122	04/11/15	04/11/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/09/15 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>104 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>96.0 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>99.8 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

Summit Scientific

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

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

Project Number: [none]  
 Project Manager: Brandon Brunns

**Reported:**  
 04/15/15 12:54

**BH03R**  
**1504098-03 (Water)**

**Summit Scientific**

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

Date Sampled: **04/09/15 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504122	04/11/15	04/11/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/09/15 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>103 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>96.2 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>100 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

Summit Scientific

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

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

Project Number: [none]  
 Project Manager: Brandon Brunns

**Reported:**  
 04/15/15 12:54

**BH04R**  
**1504098-04 (Water)**

**Summit Scientific**

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

Date Sampled: **04/09/15 14:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>1.7</b>	1.0	ug/l	1	1504122	04/11/15	04/11/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>1.5</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>7.4</b>	1.0	"	"	"	"	"	"	

Date Sampled: **04/09/15 14:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		105 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.8 %	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: Ryan 23-25U & 25BU,14-25U/Scott 24-25U/MVS #1

Project Number: [none]  
 Project Manager: Brandon Bruns

**Reported:**  
 04/15/15 12:54

**BH05R**  
**1504098-05 (Water)**

**Summit Scientific**

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

Date Sampled: **04/09/15 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504122	04/11/15	04/11/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/09/15 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.3 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	45-146		"	"	"	"	

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Denver CO, 80203

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

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
04/15/15 12:54

### 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 1504122 - EPA 5030 Water MS

##### Blank (1504122-BLK1)

Prepared & Analyzed: 04/11/15

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.2		97.2	37-154			
Surrogate: Toluene-d8	12.6		"	13.3		94.4	45-149			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	45-146			

##### LCS (1504122-BS1)

Prepared & Analyzed: 04/11/15

Benzene	26.5	1.0	ug/l	33.3		79.5	51-132			
Toluene	29.1	1.0	"	33.3		87.2	51-138			
Ethylbenzene	30.1	1.0	"	33.1		91.1	58-146			
m,p-Xylene	61.1	2.0	"	66.5		91.8	57-144			
o-Xylene	31.8	1.0	"	32.8		96.8	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.2		102	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		97.1	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.1	45-146			

##### Matrix Spike (1504122-MS1)

Source: 1504088-02

Prepared & Analyzed: 04/11/15

Benzene	26.7	1.0	ug/l	33.3	ND	80.2	34-141			
Toluene	30.3	1.0	"	33.3	ND	90.8	27-151			
Ethylbenzene	30.8	1.0	"	33.1	ND	93.2	29-160			
m,p-Xylene	61.9	2.0	"	66.5	ND	93.1	20-166			
o-Xylene	32.3	1.0	"	32.8	ND	98.5	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.2		104	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.2	45-146			

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

Project Number: [none]  
 Project Manager: Brandon Brunns

**Reported:**  
 04/15/15 12:54

**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 1504122 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1504122-MSD1)</b>	<b>Source: 1504088-02</b>			<b>Prepared &amp; Analyzed: 04/11/15</b>						
Benzene	26.9	1.0	ug/l	33.3	ND	80.7	34-141	0.597	32	
Toluene	30.4	1.0	"	33.3	ND	91.1	27-151	0.396	25	
Ethylbenzene	30.9	1.0	"	33.1	ND	93.4	29-160	0.195	50	
m,p-Xylene	62.6	2.0	"	66.5	ND	94.1	20-166	1.08	36	
o-Xylene	32.5	1.0	"	32.8	ND	99.0	33-159	0.432	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.4</i>		<i>"</i>	<i>13.2</i>		<i>102</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.2</i>		<i>"</i>	<i>13.3</i>		<i>99.1</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.0</i>		<i>"</i>	<i>13.3</i>		<i>97.6</i>	<i>45-146</i>			

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Denver CO, 80203

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

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
04/15/15 12:54

### 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

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