



PDC Energy, Inc.
Fourth Quarter 2014 Groundwater Monitoring Summary

January 14, 2015

Becker 5-1, 2, 14, 15 Tank Battery
SE 1/4 Section 5 T3N R64W
Weld County, API # 05-123-12297

This groundwater summary has been prepared by Tasman Geosciences, LLC for the Becker 5-1, 2, 14, 15 tank battery. On December 16, 2014 groundwater sampling was conducted at eight 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 below and the complete lab report is included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. Fourth quarter 2014 analytical results indicate that benzene concentrations are in exceedance of COGCC regulatory standards at monitoring well BH01. BTEX concentrations are below regulatory standards at the remaining seven sample locations.

Tasman temporarily discontinued enhanced fluid recovery (EFR) and air sparge (AS) events at the site after the fourth quarter 2013 until additional remediation wells could be installed. EFR/AS activities were resumed during the second quarter 2014, and will remain the selected remediation strategy through the first quarter 2015. A summary of the EFR/AS operational data is provided in Table 2.

First quarter 2015 groundwater sampling will be conducted in March 2015.

TABLE 1
BECKER 5-1, 2, 14, 15
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	11/29/2012	3,100	610	320	3,700	NM
BH01	12/20/2012	97	<1.0	180	1,200	13.24
BH01	3/19/2013	1.7	<1.0	4.9	48	13.27
BH01	6/21/2013	<1.0	<1.0	8.0	49	13.01
BH01	9/23/2013	<1.0	<1.0	<1.0	<1.0	12.52
BH01	12/18/2013	1.5	<1.0	<1.0	<1.0	12.80
BH01	3/28/2014	<1.0	1.9	<1.0	2.2	12.81
BH01	6/25/2014	<1.0	<1.0	15	8.9	11.44
BH01	9/17/2014	<1.0	<1.0	11	2.1	10.93
BH01	12/16/2014	7.4	<1.0	11	<1.0	11.45
BH02	12/20/2012	170	1.6	490	1,700	10.20
BH02	3/19/2013	<1.0	<1.0	<1.0	2.8	10.44
BH02	6/21/2013	82	<1.0	66	410	9.85
BH02	9/23/2013	35	<1.0	39	39	9.31
BH02	12/18/2013	550	<1.0	1.4	110	9.74
BH02	3/28/2014	660	150	1.0	280	9.78
BH02	6/25/2014	<1.0	<1.0	<1.0	<1.0	8.12
BH02	9/17/2014	110	<1.0	120	24	7.78
BH02	12/16/2014	<1.0	<1.0	<1.0	<1.0	8.41
BH03	12/20/2012	<1.0	<1.0	<1.0	<1.0	12.78
BH03	3/19/2013	<1.0	<1.0	<1.0	<1.0	12.60
BH03	6/21/2013	<1.0	<1.0	<1.0	<1.0	12.39
BH03	9/23/2013	<1.0	<1.0	<1.0	<1.0	12.18
BH03	12/18/2013	1.2	<1.0	<1.0	<1.0	12.09
BH03	3/28/2014	<1.0	<1.0	<1.0	<1.0	12.06
BH03	6/25/2014	<1.0	<1.0	<1.0	<1.0	10.92
BH03	9/17/2014	<1.0	<1.0	<1.0	<1.0	10.44
BH03	12/16/2014	<1.0	<1.0	<1.0	<1.0	10.79

TABLE 1
BECKER 5-1, 2, 14, 15
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)
BH04	6/25/2014	18	<1.0	53	130	8.72
BH04	9/17/2014	1.1	<1.0	<1.0	<1.0	8.13
BH04	12/16/2014	3.3	<1.0	6.0	21	8.73
BH05	6/25/2014	<1.0	<1.0	<1.0	<1.0	10.55
BH05	9/17/2014	<1.0	<1.0	<1.0	<1.0	10.70
BH05	12/16/2014	<1.0	<1.0	<1.0	<1.0	10.78
BH06	6/25/2014	<1.0	<1.0	<1.0	<1.0	8.67
BH06	9/17/2014	<1.0	<1.0	<1.0	<1.0	8.12
BH06	12/16/2014	<1.0	<1.0	<1.0	<1.0	8.77
BH07	6/25/2014	<1.0	<1.0	<1.0	<1.0	8.94
BH07	9/17/2014	<1.0	<1.0	<1.0	<1.0	8.40
BH07	12/16/2014	<1.0	<1.0	<1.0	<1.0	8.17
BH08	6/25/2014	<1.0	<1.0	<1.0	<1.0	8.92
BH08	9/17/2014	<1.0	<1.0	<1.0	<1.0	8.40
BH08	12/16/2014	<1.0	<1.0	<1.0	<1.0	9.02
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.

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

ug/L= Micrograms per liter

NM – Not Measured

TABLE 2
BECKER 5-1, 2, 14, 15
AIR SPARGE / EFR OPERATIONAL SUMMARY TABLE

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Injection Pressure (psi)	Average Air Flow (cfm)
First Quarter 2013						
1/28/2013	BH01, BH02	6	4.5	BH01, BH02	10	
2/16/2013		5.5	16		10	
3/3/2013		6	0		10	
3/18/2013		6	7		10	
Quarterly Totals		23.5	27.5		-	
Second Quarter 2013						
4/15/2013	BH01, BH02	6	9	BH01, BH02	10	
5/3/2013		4	0		10	
5/20/2013		6	2		10	
Quarterly Totals		16	11		-	
Third Quarter 2013						
7/8/2013	BH01, BH02	6	7	BH01, BH02	10	
7/23/2013		6.25	0		10	
8/9/2013		6.25	2		15	
8/22/2013		6	0		not recorded	
9/9/2013		6	13		10	
9/17/2013		6	not recorded		12	
9/24/2013		6	15		15	
Quarterly Totals		42.5	37		-	
Fourth Quarter 2013						
10/7/2013	BH01, BH02	6	1	BH01, BH02	10	
10/15/2013		6.25	5		10	
10/29/2013		6	0		10	
11/13/2013		6	not recorded		10	
11/25/2013		6	0.5		10	
12/19/2013		6	0		10	
Quarterly Totals		36.25	6.5			

TABLE 2
BECKER 5-1, 2, 14, 15
AIR SPARGE / EFR OPERATIONAL SUMMARY TABLE

Second Quarter 2014						
Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Injection Pressure (psi)	Average Air Flow (cfm)
4/16/2014	BH02	6	0	BH02, BH04, BH05, BH06, BH07	10	10
5/1/2014		6	0		20	3
5/7/2014		6	0		10	16
5/21/2014		4.5	0		10	17.5
6/6/2014		6	0		10	14
6/19/2014		6	0		20	24
Quarterly Totals		34.5	0		-	
Third Quarter 2014						
7/9/2014	BH02	6	0	BH02, BH04, BH05, BH06, BH07	20	16
7/14/2014		6	0		20	15
8/5/2014		6	42		20	17
8/22/2014		6	0		20	12
9/11/2014		6	20		20	20
Quarterly Totals		30	62		-	
Fourth Quarter 2014						
10/1/2014	BH04, BH05, BH06, BH07	6	0	BH02,BH04, BH05, BH06, BH07	20	20
10/20/2014		6	50		20	19
11/3/2014		6	18		20	30
11/20/2014		6	0		20	30
12/8/2014		6	0		30	22.5
12/19/2014		6	10		30	29
Quarterly Totals		36	78		-	



Surface
Drainage



DCP Tank Battery

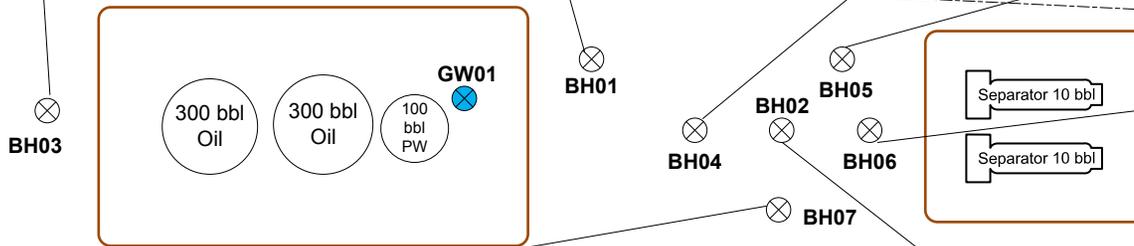
BH03		
Compound (ug/L)	9/17/2014	12/16/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH01		
Compound (ug/L)	9/17/2014	12/16/2014
Benzene	<1.0	7.4
Toluene	<1.0	<1.0
Ethylbenzene	11	11
Total Xylenes	2.1	<1.0

BH04		
Compound (ug/L)	9/17/2014	12/16/2014
Benzene	1.1	3.3
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	6.0
Total Xylenes	<1.0	21

BH05		
Compound (ug/L)	9/17/2014	12/16/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

Property Fence



BH06		
Compound (ug/L)	9/17/2014	12/16/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH07		
Compound (ug/L)	9/17/2014	12/16/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH08		
Compound (ug/L)	9/17/2014	12/16/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH02		
Compound (ug/L)	9/17/2014	12/16/2014
Benzene	110	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	120	<1.0
Total Xylenes	24	<1.0

Buried Irrigation Line

County Road 36

Approximate Scale:
1 inch equals 25 feet

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

DRAWN BY: PD

Facility Diagram
PDC Energy – DJ Basin
Becker 5-1, 2, 14, 15
SE 1/4 S5 T3N R64W
Weld County, CO



6899 Pecos Street
Unit C
Denver, CO 80221

LEGEND

- Earthen Berm
- Temporary Monitoring Well
- Groundwater Sample Location Collected During Excavation Activities

FIGURE 1
GROUNDWATER ANALYTICAL RESULTS

DATE: 1/5/2015

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite J ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.374.5933 - fax

December 19, 2014

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Becker 5-1,2,14,15

Enclosed are the results of analyses for samples received by Summit Scientific on 12/16/14 17:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Joseph J. Egry IV". The signature is fluid and cursive, with a small "IV" superscripted at the end.

Joseph J Egry IV For Paul Shrewsbury
President

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: Becker 5-1,2,14,15

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/19/14 12:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH08	1412134-01	Water	12/16/14 13:50	12/16/14 17:15
BH07	1412134-02	Water	12/16/14 13:55	12/16/14 17:15
BH06	1412134-03	Water	12/16/14 14:00	12/16/14 17:15
BH05	1412134-04	Water	12/16/14 14:03	12/16/14 17:15
BH04	1412134-05	Water	12/16/14 14:13	12/16/14 17:15
BH01	1412134-06	Water	12/16/14 14:15	12/16/14 17:15
BH03	1412134-07	Water	12/16/14 13:48	12/16/14 17:15
BH02	1412134-08	Water	12/16/14 14:25	12/16/14 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 Egly IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/19/14 12:57

Summit Scientific 1412134

741 Corporate Circle Suite I • Golden, Colorado 80401
N.ck. 720-987-6438
303-277-9310 • 303-374-5933 Fax

Client: PDC Energy Page 1 of 1
 Address: _____
 City/State/Zip: _____
 Phone: _____ Fax: _____
 Project Manager: Brandon Bruns
 E-Mail: Brandon.Bruns@PDC.E.COM
 Project Name: Becker 5-1,2,14,15
 Project Number: _____
 Sampler Name: Eve Bugarcin, Kyle Gustafson, Jason Speitz

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)					
BHC 8	12/16/14	13:50	3	X				X								BHC 7 Filtered without HCL preservative
BHC 7		13:55	3	X				X								
BHC 6		14:00	3	X				X								
BHC 5		14:03	3	X				X								
BHC 4		14:13	3	X				X								
BHC 3-PHC1		14:15	3	X				X								
BHC 3		14:18	3	X				X								
BHC 2		14:25	3	X				X								
Relinquished by: <u>Kyle Gustafson</u> Date/Time: <u>12/17/14 5:10 AM</u>				Received by: <u>MB</u> Date/Time: <u>12/16/14 1715</u>				Turn Around Time (Check)				Notes:				
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Same Day <input type="checkbox"/>				72 Hours <input type="checkbox"/>				
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				24 Hours <input type="checkbox"/>				Standard <input checked="" type="checkbox"/>				
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				48 Hours <input type="checkbox"/>				Sample Integrity:				
								Temperature Upon Receipt: <u>7.6°C</u>				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

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 Egrý IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 12/19/14 12:57

Sample Receipt Checklist

S2 Work Order: 1412134

Client: PDC Client Project ID: Becker 5-1,2,14,15

Shipped Via: Pick Up Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID	<u>1</u>				
Temp (°C)	<u>7.6</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 ⁽¹⁾ ?		<input checked="" type="checkbox"/>		<u>Same Day</u>
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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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) ⁽¹⁾ ?	<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 ⁽¹⁾ ?			<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):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Joseph J Egry IV
 Custodian Printed Name

Joseph J Egry IV
 Signature or Initials of Custodian

12/17/14
 Date/Time

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 Egry IV

Joseph J Egry IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 12/19/14 12:57

BH08
1412134-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/16/14 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1412197	12/18/14	12/18/14 10:19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/16/14 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	108 %	37-154			"	"	"	"	
Surrogate: Toluene-d8	92.3 %	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 Egrý IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 12/19/14 12:57

BH07
1412134-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/16/14 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1412197	12/18/14	12/18/14 10:44	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/16/14 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	102 %	37-154			"	"	"	"	
Surrogate: Toluene-d8	93.5 %	45-149			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	97.1 %	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 Egrý IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 12/19/14 12:57

BH06
1412134-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/16/14 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1412197	12/18/14	12/18/14 11:08	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/16/14 14:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	100 %	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 Egrý IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 12/19/14 12:57

BH05
1412134-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/16/14 14:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1412197	12/18/14	12/18/14 11:32	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/16/14 14:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	110 %	37-154				"	"	"	"
Surrogate: Toluene-d8	94.0 %	45-149				"	"	"	"
Surrogate: 4-Bromofluorobenzene	95.9 %	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 Egrý IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 12/19/14 12:57

BH04
1412134-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/16/14 14:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	3.3	1.0	ug/l	1	1412197	12/18/14	12/18/14 11:57	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	6.0	1.0	"	"	"	"	"	"	
Xylenes (total)	21	1.0	"	"	"	"	"	"	

Date Sampled: **12/16/14 14:13**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	103 %	37-154			"	"	"	"	
Surrogate: Toluene-d8	93.4 %	45-149			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	97.9 %	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 For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 12/19/14 12:57

BH01
1412134-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/16/14 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	7.4	1.0	ug/l	1	1412197	12/18/14	12/18/14 12:21	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	11	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/16/14 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	103 %	37-154			"	"	"	"	
Surrogate: Toluene-d8	93.6 %	45-149			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	90.9 %	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 Egrý IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 12/19/14 12:57

BH03
1412134-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/16/14 13:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1412197	12/18/14	12/18/14 12:45	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/16/14 13:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	103 %	37-154			"	"	"	"	
Surrogate: Toluene-d8	92.3 %	45-149			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	95.9 %	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 Egrý IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 12/19/14 12:57

BH02
1412134-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/16/14 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1412197	12/18/14	12/18/14 13:10	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **12/16/14 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	105 %	37-154				"	"	"	"
Surrogate: Toluene-d8	92.9 %	45-149				"	"	"	"
Surrogate: 4-Bromofluorobenzene	97.5 %	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 Egrý IV For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
12/19/14 12:57

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 1412197 - EPA 5030 Water MS

Blank (1412197-BLK1)

Prepared & Analyzed: 12/18/14

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>13.2</i>		<i>"</i>	<i>13.2</i>		<i>100</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.4</i>		<i>"</i>	<i>13.3</i>		<i>92.9</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.0</i>		<i>"</i>	<i>13.3</i>		<i>97.4</i>	<i>45-146</i>			

LCS (1412197-BS1)

Prepared & Analyzed: 12/18/14

Benzene	30.0	1.0	ug/l	33.3		89.9	51-132			
Toluene	28.7	1.0	"	33.3		86.2	51-138			
Ethylbenzene	31.8	1.0	"	33.1		96.2	58-146			
m,p-Xylene	62.7	2.0	"	66.5		94.3	57-144			
o-Xylene	32.2	1.0	"	32.8		98.2	53-146			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.6</i>		<i>"</i>	<i>13.2</i>		<i>103</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.6</i>		<i>"</i>	<i>13.3</i>		<i>94.4</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.6</i>		<i>"</i>	<i>13.3</i>		<i>94.4</i>	<i>45-146</i>			

LCS (1412197-BS2)

Prepared & Analyzed: 12/18/14

Benzene	30.3	1.0	ug/l	33.3		91.0	51-132			
Toluene	29.3	1.0	"	33.3		87.8	51-138			
Ethylbenzene	32.8	1.0	"	33.1		99.1	58-146			
m,p-Xylene	64.6	2.0	"	66.5		97.1	57-144			
o-Xylene	33.7	1.0	"	32.8		103	53-146			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.2</i>		<i>"</i>	<i>13.2</i>		<i>100</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.6</i>		<i>"</i>	<i>13.3</i>		<i>94.4</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.3</i>		<i>"</i>	<i>13.3</i>		<i>92.1</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 For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/19/14 12:57

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 1412197 - EPA 5030 Water MS

Matrix Spike (1412197-MS1)	Source: 1412132-01			Prepared & Analyzed: 12/18/14								
Benzene	31.0	1.0	ug/l	33.3	ND	92.9	34-141					
Toluene	29.8	1.0	"	33.3	ND	89.5	27-151					
Ethylbenzene	33.0	1.0	"	33.1	ND	99.6	29-160					
m,p-Xylene	64.5	2.0	"	66.5	ND	97.0	20-166					
o-Xylene	33.6	1.0	"	32.8	ND	102	33-159					
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.1</i>		<i>"</i>	<i>13.2</i>		<i>107</i>	<i>37-154</i>					
<i>Surrogate: Toluene-d8</i>	<i>12.6</i>		<i>"</i>	<i>13.3</i>		<i>94.7</i>	<i>45-149</i>					
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.3</i>		<i>"</i>	<i>13.3</i>		<i>92.5</i>	<i>45-146</i>					

Matrix Spike (1412197-MS2)	Source: 1412132-02			Prepared & Analyzed: 12/18/14								
Benzene	30.7	1.0	ug/l	33.3	ND	92.1	34-141					
Toluene	29.2	1.0	"	33.3	ND	87.5	27-151					
Ethylbenzene	32.6	1.0	"	33.1	ND	98.7	29-160					
m,p-Xylene	64.4	2.0	"	66.5	ND	96.7	20-166					
o-Xylene	33.6	1.0	"	32.8	ND	102	33-159					
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.6</i>		<i>"</i>	<i>13.2</i>		<i>103</i>	<i>37-154</i>					
<i>Surrogate: Toluene-d8</i>	<i>12.5</i>		<i>"</i>	<i>13.3</i>		<i>93.8</i>	<i>45-149</i>					
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.4</i>		<i>"</i>	<i>13.3</i>		<i>93.3</i>	<i>45-146</i>					

Matrix Spike Dup (1412197-MSD1)	Source: 1412132-01			Prepared & Analyzed: 12/18/14								
Benzene	30.4	1.0	ug/l	33.3	ND	91.1	34-141	1.96	32			
Toluene	29.0	1.0	"	33.3	ND	86.9	27-151	2.99	25			
Ethylbenzene	33.1	1.0	"	33.1	ND	100	29-160	0.333	50			
m,p-Xylene	64.8	2.0	"	66.5	ND	97.5	20-166	0.510	36			
o-Xylene	33.7	1.0	"	32.8	ND	103	33-159	0.327	26			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.8</i>		<i>"</i>	<i>13.2</i>		<i>105</i>	<i>37-154</i>					
<i>Surrogate: Toluene-d8</i>	<i>12.4</i>		<i>"</i>	<i>13.3</i>		<i>93.3</i>	<i>45-149</i>					
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>12.3</i>		<i>"</i>	<i>13.3</i>		<i>92.2</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 For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 12/19/14 12:57

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 1412197 - EPA 5030 Water MS

Matrix Spike Dup (1412197-MSD2)	Source: 1412132-02			Prepared & Analyzed: 12/18/14						
Benzene	30.0	1.0	ug/l	33.3	ND	89.9	34-141	2.34	32	
Toluene	28.6	1.0	"	33.3	ND	85.8	27-151	1.94	25	
Ethylbenzene	32.6	1.0	"	33.1	ND	98.5	29-160	0.184	50	
m,p-Xylene	64.2	2.0	"	66.5	ND	96.5	20-166	0.202	36	
o-Xylene	33.4	1.0	"	32.8	ND	102	33-159	0.507	26	
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.2		104	37-154			
Surrogate: Toluene-d8	12.5		"	13.3		94.1	45-149			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		92.6	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 For Paul Shrewsbury, President



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

Project: Becker 5-1,2,14,15

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/19/14 12:57

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 For Paul Shrewsbury, President