

TABLE 1
BARRELL 41-4 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500
SS01	2/6/2011	15-20	<0.0050	0.0056	<0.0050	0.032	0.021	63
SS02	2/6/2011	25	2.1	36	11	73	2.9	6,900
SS03	2/6/2011	15-20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS04	2/6/2011	23	<0.0050	<0.0050	<0.0050	<0.010	0.0062	<50
SS05	2/6/2011	23	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS06	2/6/2011	20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS07	3/3/2011	32	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS08	3/3/2011	37	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
BH01 @ 27.5	6/21/2011	27.5	1.5	16	5.2	47	2.3	2,750
IP01	7/10/2012	15-18	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
IP02	7/10/2012	20-25	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
IP03	7/10/2012	15-18	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
IP04	7/10/2012	15-18	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS02A	1/8/2013	25-27'	0.034	14	11	83	0.24	5,000
BH01-R @ 23	9/25/2015	23	<0.0020	<0.0050	<0.0050	<0.010	<0.010	2,243
SS02A-R @ 22	9/25/2015	22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	2,050
SS02A-R2 @ 22'	9/21/2017	22	<0.0020	<0.0050	0.012	0.20	<0.010	2,581
SS02A-R2 @ 25-27'	9/21/2017	25-27	0.018	0.14	7.3	41	0.47	2,760
SS02A-R2 @ 34.5'	9/21/2017	34.5	0.082	0.99	2.8	18	0.51	2,210
BH03 @ 22-23'	10/11/2017	22-23	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH03 @ 25-27'	10/11/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH03 @ 34-35'	10/11/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH04 @ 22-23'	10/11/2017	22-23	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH04 @ 25-27'	10/11/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH04 @ 34-35'	10/11/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH05 @ 22-23'	10/12/2017	22-23	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH05 @ 25-27'	10/12/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH05 @ 34-35'	10/12/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH06 @ 22-23'	10/12/2017	22-23	<0.0020	<0.0050	<0.0050	<0.010	0.012	157
BH06 @ 25-27'	10/12/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1,300
BH06 @ 34-35'	10/12/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH07 @ 25-27'	11/2/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH07 @ 34-35'	11/2/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH08 @ 25-27'	11/2/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH08 @ 34-35'	11/2/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH09 @ 25-27'	11/3/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH09 @ 34-35'	11/3/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

TABLE 1
BARRELL 41-4 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.
 2. TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.
- COGCC = Colorado Oil and Gas Conservation Commission
- (<) = Analytical result is less than the indicated laboratory reporting limit.
- GRO = Total volatile petroleum hydrocarbons - gasoline range organics
- DRO = Total extractable petroleum hydrocarbons - diesel range organics
- mg/kg = Milligrams per kilogram
- bgs = Below ground surface
- BOLD** = Analytical result is in exceedance of COGCC soil standards.

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 02, 2015

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 09/25/15 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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/02/15 16:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01-R@23'	1509250-01	Soil	09/25/15 10:30	09/25/15 17:00
SS02A-R@22'	1509250-02	Soil	09/25/15 10:40	09/25/15 17:00

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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: Barrell 41-4

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/02/15 16:45

Summit Scientific

S₂

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933

1509250

Page 1 of 1

Client: PDC Energy Project Manager: Mark Longhurst
Address: _____ E-Mail: _____
City/State/Zip: _____
Phone: _____ Fax: _____ Project Name: Barrell 41-4
Sampler Name: C. W. 1509250 Project Number: _____

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	8200 1509250	8200 1509250	8015 D40	
1	BH1-RC23'	9/25/15	1030	1			X			X						
2	BH2A-RC22'	9/25/15	1040	1			X			X						
3																
4																
5																
6																
7																
8																
9																
10																

Relinquished by: <u>[Signature]</u>	Date/Time: <u>9/25/15 1330</u>	Received by: <u>[Signature]</u>	Date/Time: <u>9/25/15 1700</u>	Turn Around Time (Check) 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"/>	Notes: <u>on ice</u>
Relinquished by: <u>[Signature]</u>	Date/Time: <u>9/25/15 1740</u>	Received by: <u>[Signature]</u>	Date/Time: <u>9/25 1740</u>	Sample Integrity: Temperature Upon Receipt: <u>25°C</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/02/15 16:45

BH01-R@23'
1509250-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/25/15 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	2200	50	mg/kg	1	1509288	10/01/15	10/02/15	8015M	

Date Sampled: **09/25/15 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		148 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/25/15 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1509275	09/29/15	09/30/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	43	0.50	"	"	"	"	"	"	

Date Sampled: **09/25/15 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		116 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		64.5 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		212 %	21-167		"	"	"	"	S-02

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/02/15 16:45

SS02A-R@22'
1509250-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/25/15 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1900	50	mg/kg	1	1509288	10/01/15	10/02/15	8015M	

Date Sampled: **09/25/15 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		153 %	30-150		"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/25/15 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1509275	09/29/15	09/30/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	150	5.0	"	10	"	"	"	"	

Date Sampled: **09/25/15 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		28.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		342 %	21-167		"	"	"	"	S-02

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/02/15 16:45

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1509288 - EPA 3550A

Blank (1509288-BLK1)

Prepared: 10/01/15 Analyzed: 10/02/15

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.4 " 12.2 101 30-150

LCS (1509288-BS1)

Prepared: 10/01/15 Analyzed: 10/02/15

C10-C28 (DRO) 433 50 mg/kg 499 86.7 73-134

Surrogate: o-Terphenyl 12.4 " 12.2 102 30-150

Matrix Spike (1509288-MS1)

Source: 1509124-04

Prepared: 10/01/15 Analyzed: 10/02/15

C10-C28 (DRO) 441 50 mg/kg 466 21.8 89.9 50-148

Surrogate: o-Terphenyl 11.5 " 11.4 101 30-150

Matrix Spike Dup (1509288-MSD1)

Source: 1509124-04

Prepared: 10/01/15 Analyzed: 10/02/15

C10-C28 (DRO) 467 50 mg/kg 494 21.8 90.2 50-148 5.71 13

Surrogate: o-Terphenyl 11.7 " 12.1 97.0 30-150

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/02/15 16:45

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 1509275 - EPA 5030 Soil MS

Blank (1509275-BLK1)

Prepared: 09/29/15 Analyzed: 09/30/15

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0468</i>		<i>"</i>	<i>0.0396</i>		<i>118</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0437</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>21-167</i>			

LCS (1509275-BS1)

Prepared: 09/29/15 Analyzed: 09/30/15

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.117	0.0020	"	0.100		117	58-130			
Toluene	0.107	0.0050	"	0.100		107	61-134			
Ethylbenzene	0.121	0.0050	"	0.0992		121	74-139			
m,p-Xylene	0.236	0.010	"	0.200		118	73-137			
o-Xylene	0.124	0.0050	"	0.0984		126	73-141			
Xylenes (total)	0.360	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.49	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0489</i>		<i>"</i>	<i>0.0396</i>		<i>124</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0417</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0427</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>21-167</i>			

Matrix Spike (1509275-MS1)

Source: 1509235-01

Prepared: 09/29/15 Analyzed: 09/30/15

Naphthalene	0.0867	0.010	mg/kg		0.117		10-158			
Benzene	0.145	0.0020	"	0.0943	0.0328	119	30-131			
Toluene	0.294	0.0050	"	0.0943	0.193	108	30-134			
Ethylbenzene	0.243	0.0050	"	0.0936	0.159	89.9	22-153			
m,p-Xylene	0.416	0.010	"	0.188	0.230	98.7	10-159			
o-Xylene	0.275	0.0050	"	0.0928	0.168	116	31-151			
Xylenes (total)	0.692	0.010	"		0.398		30-160			
Gasoline Range Hydrocarbons	ND	0.50	"		18.0		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0465</i>		<i>"</i>	<i>0.0374</i>		<i>124</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0408</i>		<i>"</i>	<i>0.0377</i>		<i>108</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0406</i>		<i>"</i>	<i>0.0377</i>		<i>107</i>	<i>21-167</i>			

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/02/15 16:45

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 1509275 - EPA 5030 Soil MS

Matrix Spike Dup (1509275-MSD1)			Source: 1509235-01		Prepared: 09/29/15 Analyzed: 09/30/15					
Naphthalene	0.0826	0.010	mg/kg		0.117		10-158	4.86	42	
Benzene	0.145	0.0020	"	0.0963	0.0328	116	30-131	0.101	34	
Toluene	0.268	0.0050	"	0.0963	0.193	77.4	30-134	9.59	30	
Ethylbenzene	0.227	0.0050	"	0.0956	0.159	71.0	22-153	6.92	24	
m,p-Xylene	0.394	0.010	"	0.192	0.230	85.2	10-159	5.41	68	
o-Xylene	0.255	0.0050	"	0.0948	0.168	92.0	31-151	7.75	38	
Xylenes (total)	0.649	0.010	"		0.398		30-160	6.33	30	
Gasoline Range Hydrocarbons	ND	0.50	"		18.0		30-160		30	
Surrogate: 1,2-Dichloroethane-d4	0.0467		"	0.0382		122	23-173			
Surrogate: Toluene-d8	0.0415		"	0.0385		108	20-170			
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0385		105	21-167			

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/02/15 16:45

Notes and Definitions

S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

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

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 22, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 09/21/17 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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02A-R2@22'	1709206-01	Soil	09/21/17 12:31	09/21/17 17:00
SS02A-R2@25-27'	1709206-02	Soil	09/21/17 14:19	09/21/17 17:00
SS02A-R2@34.5'	1709206-03	Soil	09/21/17 15:39	09/21/17 17:00

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

1709206

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303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: PDC Energy Project Manager: Mark Longhurst
Address: _____ E-Mail: _____
City/State/Zip: _____
Phone: _____ Fax: _____ Project Name: Barrell 41-4
Sampler Name: Brook Nelson Project Number: _____

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	CBTEX	TPH	DEP	805	
1	SS07A-RZ022'	9/21/17	1231	1			X			X							
2	SS02A-RZ025-27'		1419	1			X			X							
3	SS02A-RZ034.5'		1539	1			X			X							
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Relinquished by: <u>[Signature]</u> Date/Time: <u>9/21/17 1700</u>	Received by: <u>MP</u> Date/Time: <u>9-21-17 17:00</u>	Turn Around Time (Check) Same Day <u>X</u> 72 hours _____ 24 hours _____ Standard _____ 48 hours _____	Notes:
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____	Sample Integrity: Temperature Upon Receipt: <u>14.1</u> Intact: <u>Yes</u> No	
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____		

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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.

[Signature]



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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

1709206

Sample Receipt Checklist

S2 Work Order: _____

Client: PDC Client Project ID: Barrell 41-4

Shipped Via: H.D. ON ICE Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID					
Temp (°C)	14.1				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	X			
Were all samples received intact ⁽¹⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
If custody seals are present, are they intact ⁽¹⁾ ?			X	
Are short holding time analytes or samples with HTs due within 48 hours present?			X	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			X	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			X	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			X	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			X	
Record the pH in Comments.			X	
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Muril
Custodian Printed Name

9-21-17
Signature or Initials of Custodian

18:00
Date/Time



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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

SS02A-R2@22'
1709206-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/21/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	2500	50	mg/kg	1	1709225	09/21/17	09/21/17	8015M	

Date Sampled: **09/21/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		141 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/21/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1709224	09/21/17	09/21/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.012	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.20	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	81	0.50	"	"	"	"	"	"	

Date Sampled: **09/21/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		114 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		103 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		153 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

SS02A-R2@25-27'
1709206-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/21/17 14:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	860	50	mg/kg	1	1709225	09/21/17	09/21/17	8015M	

Date Sampled: **09/21/17 14:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		107 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/21/17 14:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.47	0.010	mg/kg	1	1709224	09/21/17	09/21/17	EPA 8260B	
Benzene	0.018	0.0020	"	"	"	"	"	"	
Toluene	0.14	0.0050	"	"	"	"	"	"	
Ethylbenzene	7.3	0.50	"	100	"	"	"	"	
Xylenes (total)	41	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1900	50	"	"	"	"	09/21/17	"	

Date Sampled: **09/21/17 14:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %	23-173		"	"	09/21/17	"	
<i>Surrogate: Toluene-d8</i>		101 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		112 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

SS02A-R2@34.5'
1709206-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/21/17 15:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1400	50	mg/kg	1	1709225	09/21/17	09/21/17	8015M	

Date Sampled: **09/21/17 15:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		122 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/21/17 15:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.51	0.010	mg/kg	1	1709224	09/21/17	09/21/17	EPA 8260B	
Benzene	0.082	0.0020	"	"	"	"	"	"	
Toluene	0.99	0.50	"	100	"	"	"	"	
Ethylbenzene	2.8	0.50	"	"	"	"	"	"	
Xylenes (total)	18	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	810	50	"	"	"	"	09/21/17	"	

Date Sampled: **09/21/17 15:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		111 %	23-173		"	"	09/21/17	"	
<i>Surrogate: Toluene-d8</i>		105 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		110 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1709225 - EPA 3550A

Blank (1709225-BLK1)

Prepared & Analyzed: 09/21/17

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	12.1		"	12.5		96.7	30-150			

LCS (1709225-BS1)

Prepared & Analyzed: 09/21/17

C10-C28 (DRO)	399	50	mg/kg	499		80.1	73-134			
Surrogate: o-Terphenyl	12.3		"	12.5		98.2	30-150			

Matrix Spike (1709225-MS1)

Source: 1709207-01

Prepared & Analyzed: 09/21/17

C10-C28 (DRO)	410	50	mg/kg	499	ND	82.1	50-148			
Surrogate: o-Terphenyl	12.1		"	12.5		96.6	30-150			

Matrix Spike Dup (1709225-MSD1)

Source: 1709207-01

Prepared & Analyzed: 09/21/17

C10-C28 (DRO)	410	50	mg/kg	499	ND	82.1	50-148	0.0586	20	
Surrogate: o-Terphenyl	12.1		"	12.5		97.0	30-150			

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

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 1709224 - EPA 5030 Soil MS

Blank (1709224-BLK1)

Prepared & Analyzed: 09/21/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0424</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>21-167</i>			

LCS (1709224-BS1)

Prepared & Analyzed: 09/21/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.121	0.0020	"	0.100		121	58-130			
Toluene	0.124	0.0050	"	0.100		124	61-134			
Ethylbenzene	0.132	0.0050	"	0.0992		133	74-139			
m,p-Xylene	0.256	0.010	"	0.200		128	73-137			
o-Xylene	0.121	0.0050	"	0.0980		124	73-141			
Xylenes (total)	0.377	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.87	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0405</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>21-167</i>			

Matrix Spike (1709224-MS1)

Source: 1709207-01

Prepared & Analyzed: 09/21/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.122	0.0020	"	0.100	ND	122	30-131			
Toluene	0.125	0.0050	"	0.100	ND	125	30-134			
Ethylbenzene	0.130	0.0050	"	0.0992	ND	131	22-153			
m,p-Xylene	0.251	0.010	"	0.200	0.00948	121	10-159			
o-Xylene	0.120	0.0050	"	0.0980	ND	122	31-151			
Xylenes (total)	0.370	0.010	"		0.00948		30-160			
Gasoline Range Hydrocarbons	2.85	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0454</i>		<i>"</i>	<i>0.0400</i>		<i>113</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0417</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.7</i>	<i>21-167</i>			

Summit Scientific

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

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 1709224 - EPA 5030 Soil MS

Matrix Spike Dup (1709224-MSD1)			Source: 1709207-01		Prepared & Analyzed: 09/21/17					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.125	0.0020	"	0.100	ND	125	30-131	2.21	34	
Toluene	0.127	0.0050	"	0.100	ND	127	30-134	1.31	30	
Ethylbenzene	0.133	0.0050	"	0.0992	ND	134	22-153	2.09	24	
m,p-Xylene	0.255	0.010	"	0.200	0.00948	123	10-159	1.71	68	
o-Xylene	0.122	0.0050	"	0.0980	ND	125	31-151	2.11	38	
Xylenes (total)	0.377	0.010	"		0.00948		30-160	1.84	30	
Gasoline Range Hydrocarbons	2.78	0.50	"		ND		30-160	2.37	30	
Surrogate: 1,2-Dichloroethane-d4	0.0494		"	0.0400		123	23-173			
Surrogate: Toluene-d8	0.0416		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0417		"	0.0400		104	21-167			

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/22/17 06:25

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

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 13, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 10/12/17 17:12. 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, flowing script.

Paul Shrewsbury
President



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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH03@22-23'	1710127-01	Soil	10/11/17 09:50	10/12/17 17:12
BH03@25-27'	1710127-02	Soil	10/11/17 10:04	10/12/17 17:12
BH03@34-35'	1710127-03	Soil	10/11/17 10:53	10/12/17 17:12
BH04@22-23'	1710127-04	Soil	10/11/17 13:26	10/12/17 17:12
BH04@25-27'	1710127-05	Soil	10/11/17 14:21	10/12/17 17:12
BH04@34-35'	1710127-06	Soil	10/11/17 14:52	10/12/17 17:12

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

Summit Scientific 10/27

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: Brack Nelson

Project Manager: Mark Longhurst
E-Mail: _____
Project Name: Barrell 41-4
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)	6BTEX 8266	TPH-DEO 8015												
BH03 @ 22-23'	10/12/17	950	1			X							X	X											
BH03 @ 25-27'		1004	1			X							X	X											
BH03 @ 34-35'		1053	1			X							X	X											
BH04 @ 22-25'		1326	1			X							X	X											
BH04 @ 25-27'		1421	1			*							X	X											
BH04 @ 34-35'		1452	1			*							X	X											
Relinquished by: <u>[Signature]</u> Date/Time: <u>10/12/17 17:12</u>				Received by: <u>[Signature]</u> Date/Time: <u>10-12-17 17:12</u>				Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>										Notes:							
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <u>65</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																	
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____																					

www.s2scientific.com

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: Barrell 41-4

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

Sample Receipt Checklist

S2 Work Order: 1710127

Client: PDC

Client Project ID: BARRELL 41-4

Shipped Via: H.D.

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>6.5</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"/>			
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⁾ ?				
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? 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.

Muri P.
Custodian Printed Name

10-12-17
Signature or Initials of Custodian

17:30
Date/Time



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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

BH03@22-23'
1710127-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/17 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/17 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/11/17 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

BH03@25-27'
1710127-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/17 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		110 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/17 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/11/17 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		110 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

BH03@34-35'
1710127-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/17 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/17 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/11/17 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

BH04@22-23'
1710127-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		110 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/11/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		108 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

BH04@25-27'
1710127-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/17 14:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 14:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/17 14:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/11/17 14:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

BH04@34-35'
1710127-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/11/17 14:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 14:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/11/17 14:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/11/17 14:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1710127 - EPA 3550A

Blank (1710127-BLK1)

Prepared & Analyzed: 10/12/17

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	14.2		"	12.5		114	30-150			

LCS (1710127-BS1)

Prepared & Analyzed: 10/12/17

C10-C28 (DRO)	461	50	mg/kg	499		92.3	73-134			
Surrogate: o-Terphenyl	14.1		"	12.5		113	30-150			

Matrix Spike (1710127-MS1)

Source: 1710118-01

Prepared & Analyzed: 10/12/17

C10-C28 (DRO)	511	50	mg/kg	499	14.4	99.6	50-148			
Surrogate: o-Terphenyl	14.9		"	12.5		119	30-150			

Matrix Spike Dup (1710127-MSD1)

Source: 1710118-01

Prepared & Analyzed: 10/12/17

C10-C28 (DRO)	494	50	mg/kg	499	14.4	96.2	50-148	3.41	20	
Surrogate: o-Terphenyl	14.7		"	12.5		118	30-150			

Summit Scientific

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

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

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

Batch 1710126 - EPA 5030 Soil MS

Blank (1710126-BLK1)

Prepared & Analyzed: 10/12/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.6</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0425</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0417</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

LCS (1710126-BS1)

Prepared & Analyzed: 10/12/17

Naphthalene	ND	0.010	mg/kg							
Benzene	0.0834	0.0020	"	0.100		83.4	58-130			
Toluene	0.0949	0.0050	"	0.100		94.9	61-134			
Ethylbenzene	0.127	0.0050	"	0.0992		128	74-139			
m,p-Xylene	0.216	0.010	"	0.200		108	73-137			
o-Xylene	0.109	0.0050	"	0.0980		111	73-141			
Xylenes (total)	0.326	0.010	"				0-200			
Gasoline Range Hydrocarbons	6.11	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0686</i>		<i>"</i>	<i>0.0400</i>		<i>171</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0423</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0436</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>21-167</i>			

Matrix Spike (1710126-MS1)

Source: 1710118-01

Prepared & Analyzed: 10/12/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0825	0.0020	"	0.100	ND	82.5	30-131			
Toluene	0.0927	0.0050	"	0.100	ND	92.7	30-134			
Ethylbenzene	0.128	0.0050	"	0.0992	ND	129	22-153			
m,p-Xylene	0.218	0.010	"	0.200	ND	109	10-159			
o-Xylene	0.109	0.0050	"	0.0980	ND	111	31-151			
Xylenes (total)	0.327	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	6.12	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0685</i>		<i>"</i>	<i>0.0400</i>		<i>171</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0428</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>21-167</i>			

Summit Scientific

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

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 1710126 - EPA 5030 Soil MS

Matrix Spike Dup (1710126-MSD1)		Source: 1710118-01			Prepared & Analyzed: 10/12/17					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0830	0.0020	"	0.100	ND	83.0	30-131	0.544	34	
Toluene	0.0962	0.0050	"	0.100	ND	96.2	30-134	3.68	30	
Ethylbenzene	0.128	0.0050	"	0.0992	ND	129	22-153	0.257	24	
m,p-Xylene	0.222	0.010	"	0.200	ND	111	10-159	1.88	68	
o-Xylene	0.113	0.0050	"	0.0980	ND	115	31-151	3.08	38	
Xylenes (total)	0.335	0.010	"		ND		30-160	2.28	30	
Gasoline Range Hydrocarbons	5.93	0.50	"		ND		30-160	3.17	30	
Surrogate: 1,2-Dichloroethane-d4	0.0422		"	0.0400		106	23-173			
Surrogate: Toluene-d8	0.0416		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0446		"	0.0400		112	21-167			

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/13/17 06:13

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

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 16, 2017

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 10/13/17 16:12. 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: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/16/17 05:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH05@22-23'	1710139-01	Soil	10/13/17 09:18	10/13/17 16:12
BH05@25-27'	1710139-02	Soil	10/13/17 09:34	10/13/17 16:12
BH05@34-35'	1710139-03	Soil	10/13/17 09:59	10/13/17 16:12
BH06@22-23'	1710139-04	Soil	10/13/17 12:32	10/13/17 16:12
BH06@25-27'	1710139-05	Soil	10/13/17 12:50	10/13/17 16:12
BH06@34-35'	1710139-06	Soil	10/13/17 13:11	10/13/17 16:12

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: Barrell 41-4

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/16/17 05:40

Summit Scientific 1710139

S₂

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933

Client: PDC Energy Project Manager: Mark Longhurst Page 1 of 1
Address: _____ E-Mail: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Project Name: Barrell 41-4
Sampler Name: Bak Nelson Project Number: _____

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	GC/MS	GC/MS	GC/MS	
1	BH05 @ 22-23'	10/13/17	918	1			X			X			X	X		
2	BH05 @ 25-27'		934	1			X			X			X	X		
3	BH05 @ 34-35'		959	1			X			X			X	X		
4	BH06 @ 22-23'		1232	1			X			X			X	X		
5	BH06 @ 25-27'		1250	1			X			X			X	X		
6	BH06 @ 34-35'		1311	1			X			X			X	X		
7																
8																
9																
10																

Relinquished by: <u>[Signature]</u>	Date/Time: <u>10/13/17 1612</u>	Received by: <u>[Signature]</u>	Date/Time: <u>10-13-17 16:12</u>	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input checked="" type="checkbox"/> 72 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours <input checked="" type="checkbox"/> Standard <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	48 hours <input type="checkbox"/>	
Sample Integrity:				Temperature Upon Receipt: <u>7.3</u>	
Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No					

www.s2scientific.com

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.

[Signature]



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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/16/17 05:40

Sample Receipt Checklist

S2 Work Order: 1710139

Client: PDC

Client Project ID: BARRELL 41-4

Shipped Via: H.D.

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #:

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

Cooler ID					
Temp (°C)	<u>7.3</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
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"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.			<input checked="" type="checkbox"/>	
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.				

Muri P.
Custodian Printed Name

DA 10-13-17
Signature or Initials of Custodian

18:00
Date/Time



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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/16/17 05:40

BH05@22-23'
1710139-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/13/17 09:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710143	10/13/17	10/13/17	8015M	

Date Sampled: **10/13/17 09:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		113 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/13/17 09:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/13/17 09:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/16/17 05:40

BH05@25-27'
1710139-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/13/17 09:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710143	10/13/17	10/13/17	8015M	

Date Sampled: **10/13/17 09:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		119 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/13/17 09:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/13/17 09:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/16/17 05:40

BH05@34-35'
1710139-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/13/17 09:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710143	10/13/17	10/13/17	8015M	

Date Sampled: **10/13/17 09:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/13/17 09:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/13/17 09:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/16/17 05:40

BH06@22-23'
1710139-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/13/17 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	110	50	mg/kg	1	1710143	10/13/17	10/14/17	8015M	

Date Sampled: **10/13/17 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		114 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/13/17 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.012	0.010	mg/kg	1	1710142	10/13/17	10/13/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	47	0.50	"	"	"	"	"	"	

Date Sampled: **10/13/17 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		154 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/16/17 05:40

BH06@25-27'
1710139-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/13/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	1200	50	mg/kg	1	1710143	10/13/17	10/14/17	8015M	

Date Sampled: **10/13/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		222 %	30-150		"	"	"	"	S-02

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/13/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	100	5.0	"	10	"	"	"	"	

Date Sampled: **10/13/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		200 %	20-170		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		307 %	21-167		"	"	"	"	S-02

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: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/16/17 05:40

BH06@34-35'
1710139-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/13/17 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710143	10/13/17	10/14/17	8015M	

Date Sampled: **10/13/17 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/13/17 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/13/17 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/16/17 05:40

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1710143 - EPA 3550A

Blank (1710143-BLK1)

Prepared & Analyzed: 10/13/17

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	14.1		"	12.5		113	30-150			

LCS (1710143-BS1)

Prepared & Analyzed: 10/13/17

C10-C28 (DRO)	488	50	mg/kg	499		97.8	73-134			
Surrogate: o-Terphenyl	15.9		"	12.5		127	30-150			

Matrix Spike (1710143-MS1)

Source: 1710139-01

Prepared & Analyzed: 10/13/17

C10-C28 (DRO)	498	50	mg/kg	499	7.38	98.4	50-148			
Surrogate: o-Terphenyl	16.2		"	12.5		129	30-150			

Matrix Spike Dup (1710143-MSD1)

Source: 1710139-01

Prepared & Analyzed: 10/13/17

C10-C28 (DRO)	521	50	mg/kg	499	7.38	103	50-148	4.42	20	
Surrogate: o-Terphenyl	15.1		"	12.5		121	30-150			

Summit Scientific

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/16/17 05:40

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

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

Batch 1710142 - EPA 5030 Soil MS

Blank (1710142-BLK1)

Prepared & Analyzed: 10/13/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>21-167</i>			

LCS (1710142-BS1)

Prepared & Analyzed: 10/13/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.116	0.0020	"	0.100		116	58-130			
Toluene	0.122	0.0050	"	0.100		122	61-134			
Ethylbenzene	0.134	0.0050	"	0.0992		135	74-139			
m,p-Xylene	0.248	0.010	"	0.200		124	73-137			
o-Xylene	0.122	0.0050	"	0.0980		124	73-141			
Xylenes (total)	0.369	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.77	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0420</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>21-167</i>			

Matrix Spike (1710142-MS1)

Source: 1710139-01

Prepared & Analyzed: 10/13/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.113	0.0020	"	0.100	ND	113	30-131			
Toluene	0.121	0.0050	"	0.100	ND	121	30-134			
Ethylbenzene	0.136	0.0050	"	0.0992	ND	137	22-153			
m,p-Xylene	0.252	0.010	"	0.200	ND	126	10-159			
o-Xylene	0.123	0.0050	"	0.0980	ND	126	31-151			
Xylenes (total)	0.375	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	2.70	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0440</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0422</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>21-167</i>			

Summit Scientific

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/16/17 05:40

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 1710142 - EPA 5030 Soil MS

Matrix Spike Dup (1710142-MSD1)		Source: 1710139-01			Prepared & Analyzed: 10/13/17					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.116	0.0020	"	0.100	ND	116	30-131	2.22	34	
Toluene	0.123	0.0050	"	0.100	ND	123	30-134	1.70	30	
Ethylbenzene	0.135	0.0050	"	0.0992	ND	136	22-153	1.26	24	
m,p-Xylene	0.250	0.010	"	0.200	ND	125	10-159	0.597	68	
o-Xylene	0.122	0.0050	"	0.0980	ND	125	31-151	0.783	38	
Xylenes (total)	0.373	0.010	"		ND		30-160	0.658	30	
Gasoline Range Hydrocarbons	2.82	0.50	"		ND		30-160	4.25	30	
Surrogate: 1,2-Dichloroethane-d4	0.0446		"	0.0400		112	23-173			
Surrogate: Toluene-d8	0.0410		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0407		"	0.0400		102	21-167			

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: Barrell 41-4
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/16/17 05:40

Notes and Definitions

S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
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

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

November 13, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 11/06/17 13:55. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to be 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury For Ben Shrewsbury
Laboratory Manager



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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH07@25-27'	1711050-01	Soil	11/02/17 09:29	11/06/17 13:55
BH07@34-35'	1711050-02	Soil	11/02/17 09:47	11/06/17 13:55
BH08@25-27'	1711050-03	Soil	11/02/17 12:06	11/06/17 13:55
BH08@34-35'	1711050-04	Soil	11/02/17 12:39	11/06/17 13:55
BH09@25-27'	1711050-05	Soil	11/03/17 10:06	11/06/17 13:55
BH09@34-35'	1711050-06	Soil	11/03/17 10:41	11/06/17 13:55

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.

Summit Scientific

1711050

S₂

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401

303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: PDC Enrgy

Project Manager: Mark Longhurst

Address:

E-Mail:

City/State/Zip:

Phone: Brack Nelson Fax:

Project Name: Barrell 41-4

Sampler Name: Brack Nelson

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	GBTEXN	TPH-DND							
1	BH07② 25-27'	11/2/17	929	1			X			X			X	X							
2	BH07② 34-35'	11/2/17	947	1			X			X			X	X							
3	BH08② 25-27'	11/2/17	1206	1			X			X			X	X							
4	BH08② 34-35'	11/2/17	1239	1			X			X			X	X							
5	BH09② 25-27'	11/3/17	1006	1			X			X			X	X							
6	BH09② 34-35'	11/3/17	1041	1			X			X			X	X							
7																					
8																					
9																					
10																					

Relinquished by: <u>[Signature]</u>	Date/Time: <u>11/3/17 1355</u>	Received by: <u>[Signature]</u>	Date/Time: <u>11-3-17 13:55</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/>	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity: Temperature Upon Receipt: <u>.4</u> Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	
Relinquished by:	Date/Time:	Received by:	Date/Time:		

1711050

Sample Receipt Checklist

S2 Work Order: _____

Client: PDC ENERGYClient Project ID: BARRELL 41-4Shipped Via: H.D. ON ICE
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>.4</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⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
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⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
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.

Musi P.
Custodian Printed Name

DA 11-3-17
Signature or Initials of Custodian

15:00
Date/Time



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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

BH07@25-27'
1711050-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/02/17 09:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/02/17 09:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		101 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/02/17 09:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/07/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/02/17 09:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		156 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		166 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

BH07@34-35'
1711050-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/02/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/02/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/02/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/02/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		86.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.4 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

BH08@25-27'
1711050-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/02/17 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/02/17 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/02/17 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/02/17 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		119 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

BH08@34-35'
1711050-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/02/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/02/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/02/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/02/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		120 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.4 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

BH09@25-27'
1711050-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/03/17 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/03/17 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/03/17 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/03/17 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		117 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.4 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

BH09@34-35'
1711050-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/03/17 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/03/17 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/03/17 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/03/17 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.4 %	21-167		"	"	"	"	

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1711094 - EPA 3550A

Blank (1711094-BLK1)

Prepared: 11/07/17 Analyzed: 11/08/17

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 13.1 " 12.5 105 30-150

LCS (1711094-BS1)

Prepared: 11/07/17 Analyzed: 11/08/17

C10-C28 (DRO) 547 50 mg/kg 499 110 73-134

Surrogate: o-Terphenyl 14.2 " 12.5 114 30-150

Matrix Spike (1711094-MS1)

Source: 1711045-01

Prepared: 11/07/17 Analyzed: 11/08/17

C10-C28 (DRO) 567 50 mg/kg 499 39.6 106 50-148

Surrogate: o-Terphenyl 16.1 " 12.5 129 30-150

Matrix Spike Dup (1711094-MSD1)

Source: 1711045-01

Prepared: 11/07/17 Analyzed: 11/08/17

C10-C28 (DRO) 528 50 mg/kg 499 39.6 97.9 50-148 7.02 20

Surrogate: o-Terphenyl 13.9 " 12.5 112 30-150

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

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

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

Batch 1711092 - EPA 5030 Soil MS

Blank (1711092-BLK1)

Prepared & Analyzed: 11/07/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0424</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0373</i>		<i>"</i>	<i>0.0400</i>		<i>93.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0390</i>		<i>"</i>	<i>0.0400</i>		<i>97.4</i>	<i>21-167</i>			

LCS (1711092-BS1)

Prepared & Analyzed: 11/07/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0695	0.0020	"	0.100		69.5	58-130			
Toluene	0.0848	0.0050	"	0.100		84.8	61-134			
Ethylbenzene	0.0909	0.0050	"	0.0992		91.7	74-139			
m,p-Xylene	0.158	0.010	"	0.200		79.4	73-137			
o-Xylene	0.0722	0.0050	"	0.0980		73.7	73-141			
Xylenes (total)	0.231	0.010	"				0-200			
Gasoline Range Hydrocarbons	1.50	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0453</i>		<i>"</i>	<i>0.0400</i>		<i>113</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0326</i>		<i>"</i>	<i>0.0400</i>		<i>81.4</i>	<i>21-167</i>			

Matrix Spike (1711092-MS1)

Source: 1711045-01

Prepared & Analyzed: 11/07/17

Naphthalene	0.00330	0.010	mg/kg		ND		10-158			
Benzene	0.0656	0.0020	"	0.100	ND	65.6	30-131			
Toluene	0.0782	0.0050	"	0.100	ND	78.2	30-134			
Ethylbenzene	0.0810	0.0050	"	0.0992	ND	81.6	22-153			
m,p-Xylene	0.213	0.010	"	0.200	0.0535	80.0	10-159			
o-Xylene	0.121	0.0050	"	0.0980	0.0314	91.1	31-151			
Xylenes (total)	0.334	0.010	"		0.0850		30-160			
Gasoline Range Hydrocarbons	3.07	0.50	"		1.90		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0493</i>		<i>"</i>	<i>0.0400</i>		<i>123</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

Summit Scientific

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

Project: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

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 1711092 - EPA 5030 Soil MS

Matrix Spike Dup (1711092-MSD1)		Source: 1711045-01			Prepared & Analyzed: 11/07/17					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0563	0.0020	"	0.100	ND	56.3	30-131	15.2	34	
Toluene	0.0690	0.0050	"	0.100	ND	69.0	30-134	12.5	30	
Ethylbenzene	0.0746	0.0050	"	0.0992	ND	75.2	22-153	8.22	24	
m,p-Xylene	0.177	0.010	"	0.200	0.0535	62.0	10-159	18.4	68	
o-Xylene	0.112	0.0050	"	0.0980	0.0314	82.1	31-151	7.59	38	
Xylenes (total)	0.289	0.010	"		0.0850		30-160	14.4	30	
Gasoline Range Hydrocarbons	2.96	0.50	"		1.90		30-160	3.69	30	
Surrogate: 1,2-Dichloroethane-d4	0.0469		"	0.0400		117	23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0419		"	0.0400		105	21-167			

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: Barrell 41-4
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/13/17 12:56

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