

TABLE 1
FORMER MARK 11, 12, 14-35 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@10'	11/7/2018	10	0.0048	0.029	0.14	0.76	0.021	51
GS01@6'	11/7/2018	6	18	<0.0050	45	510	0.42	1,072
GS02@8'	11/7/2018	8	17	<0.0050	15	230	0.070	3,500
GS03@8'	11/8/2018	8	1.2	<0.0050	0.20	0.51	0.085	865
SS02@6'	11/9/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS03@8'	11/9/2018	8	<0.0020	<0.0050	<0.0050	0.013	<0.010	<50
SS04@6'	11/9/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS05@8'	11/9/2018	8	<0.0020	<0.0050	<0.0050	<0.010	0.010	<50
SS06@6'	11/13/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS07@8'	11/13/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS08@6'	11/14/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS09@8'	11/14/2018	8	0.058	<0.0050	0.016	<0.010	<0.010	<50
SS10@10'	11/14/2018	10	0.10	<0.0050	0.031	<0.010	<0.010	4.4
SS11@6'	11/14/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS12@8'	11/14/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS13@6'	11/14/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS14@8'	11/14/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS15@10'	11/15/2018	10	<0.0020	<0.0050	<0.0050	0.057	<0.010	4.0
SS16@6'	11/15/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS17@8'	11/15/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS18@6'	11/15/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	9.6
SS19@8'	11/15/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS20@6'	11/15/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS21@8'	11/15/2018	8	<0.0020	<0.0050	<0.0050	0.024	<0.010	2.8
SS22@6'	11/15/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS23@8'	11/15/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS01@10'	11/15/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS02@10'	11/16/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS03@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS04@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS05@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS06@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS07@10'	11/16/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS08@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS09@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS10@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS11@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS12@10'	11/16/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS13@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS14@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS15@10'	11/19/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS16@6'	11/19/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS17@8'	11/19/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS18@6'	11/19/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS19@8'	11/19/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS20@6'	11/19/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

TABLE 1
FORMER MARK 11, 12, 14-35 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
WSS21@8'	11/19/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS22@10'	11/19/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS23@10'	11/20/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS24@6'	11/20/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS25@8'	11/20/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS26@6'	11/20/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS27@8'	11/20/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS28@6'	11/20/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS29@8'	11/20/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS30@10'	11/20/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS31@6'	11/20/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS32@8'	11/20/2018	8	0.095	<0.0050	0.020	0.048	<0.010	<50
BH03@8-9'	1/23/2019	8-9	0.0055	<0.0020	0.12	0.93	<0.010	1.3
BH05@9-10'	1/23/2019	9-10	<0.0020	<0.0050	<0.0050	0.12	<0.010	<50

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective May 1, 2018.

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 01, 2019

Mark Longhurst

PDC Energy

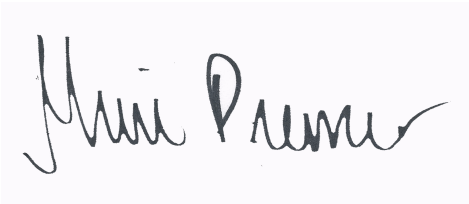
1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Mark 11,12,14-35

Enclosed are the results of analyses for samples received by Summit Scientific on 01/25/19 12:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is written in a cursive style and reads "Muri Premier".

Muri Premier For Paul Shrewsbury

President



PDC Energy

1775 Sherman St. STE. 3000

Denver CO, 80203

Project: Mark 11,12,14-35

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

02/01/19 09:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH03@8-9'	1901322-01	Soil	01/23/19 09:35	01/25/19 12:30
BH05@9-10'	1901322-02	Soil	01/23/19 10:40	01/25/19 12:30

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.

Page 1 of 1

Project Manager: Mark Langhurst
E-Mail: Mark.Langhurst@pdce.com
Project Name: Mark 11, 12, 14-35
Project Number:

[illegible]

Sample Receipt Checklist

S2 Work Order 1901322

Client: PDC Energy Client Project ID: Mark 11, 12, 14-35

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other P.U. Airbill #: _____

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

Temp (°C)	<u>4.2</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⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Not relinquished</u>
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

CP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

1.25.19 1830
Date/Time



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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

BH03@8-9'
1901322-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 09:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	0.0055	0.0020	mg/kg	1	1901329	01/28/19	01/28/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.12	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.93	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.3	0.50	"	"	"	"	01/28/19	"	

Date Sampled: **01/23/19 09:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 09:35**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1901330	01/28/19	01/28/19	EPA 8015M	

Date Sampled: **01/23/19 09:35**

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

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

BH05@9-10'
1901322-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901329	01/28/19	01/28/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.12	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	01/29/19	"	

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		98.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.0 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901330	01/28/19	01/29/19	EPA 8015M	

Date Sampled: **01/23/19 10:40**

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

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

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 1901329 - Volatiles

Blank (1901329-BLK1)

Prepared & Analyzed: 01/28/19

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0389		"	0.0400		97.4	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.5	21-167			

LCS (1901329-BS1)

Prepared & Analyzed: 01/28/19

Benzene	0.0899	0.0020	mg/kg	0.100		89.9	70-130			
Toluene	0.0908	0.0050	"	0.100		90.8	70-130			
Ethylbenzene	0.0858	0.0050	"	0.100		85.8	70-130			
m,p-Xylene	0.175	0.010	"	0.200		87.5	70-130			
o-Xylene	0.0910	0.0050	"	0.100		91.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0390		"	0.0400		97.5	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0380		"	0.0400		95.0	21-167			

Matrix Spike (1901329-MS1)

Source: 1901316-01

Prepared & Analyzed: 01/28/19

Benzene	0.0973	0.0020	mg/kg	0.100	ND	97.3	70-130			
Toluene	0.0932	0.0050	"	0.100	ND	93.2	70-130			
Ethylbenzene	0.0844	0.0050	"	0.100	ND	84.4	70-130			
m,p-Xylene	0.199	0.010	"	0.200	ND	99.6	70-130			
o-Xylene	0.0880	0.0050	"	0.100	ND	88.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0374		"	0.0400		93.6	21-167			

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

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 1901329 - Volatiles

Matrix Spike Dup (1901329-MSD1)		Source: 1901316-01			Prepared & Analyzed: 01/28/19					
Benzene	0.100	0.0020	mg/kg	0.100	ND	100	70-130	3.19	30	
Toluene	0.0973	0.0050	"	0.100	ND	97.3	70-130	4.35	30	
Ethylbenzene	0.0920	0.0050	"	0.100	ND	92.0	70-130	8.64	30	
m,p-Xylene	0.214	0.010	"	0.200	ND	107	70-130	7.33	30	
o-Xylene	0.0940	0.0050	"	0.100	ND	94.0	70-130	6.63	30	
Surrogate: 1,2-Dichloroethane-d4	0.0391		"	0.0400		97.8	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0364		"	0.0400		91.0	21-167			

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1901330 - EPA 5030 Soil GC

Blank (1901330-BLK1)

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1901330-BS1)

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) 580 50 mg/kg 500 116 70-130

Matrix Spike (1901330-MS1)

Source: 1901316-01

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) 704 50 mg/kg 500 131 115 70-130

Matrix Spike Dup (1901330-MSD1)

Source: 1901316-01

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) 749 50 mg/kg 500 131 124 70-130 6.16 20

Summit Scientific

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PDC Energy

1775 Sherman St. STE. 3000

Denver CO, 80203

Project: Mark 11,12,14-35

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

02/01/19 09:32

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