

TABLE 1
FORMER BROWN 22-20 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)	pH (units)	EC (mmhos/cm)
COGCC Table 910-1 Soil Standard (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500	6-9	<4
SS01 @ 5'	9/24/2019	5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.49	1.57

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

ft. = Feet

bgs = Below ground surface

EC = Electrical conductivity

mmhos/cm = millimhos per centimeter

TABLE 2
FORMER BROWN 22-20 TANK BATTERY
VOC CONCENTRATIONS SUMMARY TABLE

Sample ID	Date Sampled	Depth (ft. bgs)	Sample Location ⁽¹⁾	Field Measured VOC Concentration ⁽²⁾ (ppm)
SS01 @ 5'	9/24/2019	5	Base	3.5
SS02 @ 3'	9/24/2019	3	North Sidewall	3.6
SS03 @ 3'	9/24/2019	3	West Sidewall	4.4
SS04 @ 3'	9/24/2019	3	South Sidewall	3.3
SS05 @ 3'	9/24/2019	3	East Sidewall	2.5

Notes:

1. Refers to the sample location within the excavation area below the former produced water vessel.

2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

ft. = Feet

bgs = Below ground surface

ppm = Parts per million

= Sample submitted for laboratory analysis.

ATTACHMENT A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 01, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

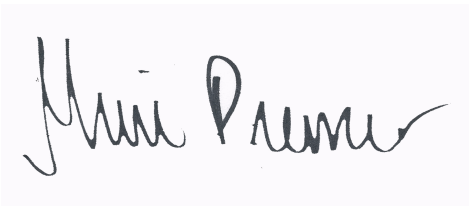
Denver, CO 80203

RE: Brown 22-20

Work Order # 1909318

Enclosed are the results of analyses for samples received by Summit Scientific on 09/24/19 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Ben Shrewsbury

Laboratory Manager



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

Project: Brown 22-20

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
10/01/19 09:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@5'	1909318-01	Soil	09/24/19 08:51	09/24/19 17:30

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.

1909318

Summit Scientific

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

Page 1 of 1

Client: PDC
 Address: _____
 City/State/Zip: _____
 Phone: _____ Fax: _____
 Sampler Name: Jake McCarver

Project Manager: Mark Longhurst
 E-Mail: Mark.Longhurst@pdce.com
 Project Name: Brown 22-20
 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)	GBTEXN (8260)	TPH - DRO	EC/pH	HOLD						
SS01 @ 5'	9/24/2019	8:51	1			X		X					X	X	X						
SS02 @ 3'	9/24/2019	8:54	1			X		X									X				
SS03 @ 3'	9/24/2019	8:57	1			X		X									X				
SS04 @ 3'	9/24/2019	9:00	1			X		X									X				
SS05 @ 3'	9/24/2019	9:03	1			X		X									X				
Relinquished by: <u>[Signature]</u> <u>9/24/19</u> <u>2:44</u> <u>1730</u>				Received by: <u>[Signature]</u> <u>9/24/19</u> <u>1730</u>				Turn Around Time (Check)						Hold SS02-SS05							
								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"/>													
Relinquished by:				Received in Lab by:				Sample Integrity:													
								Temperature Upon Receipt: <u>4.8</u>													
								Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>													

Sample Receipt Checklist

S2 Work Order 1909318

Client: POC Client Project ID: Brown 12-20

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

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

Temp (°C)	<u>4.8</u>
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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.	<u>X</u>			
Were all samples received intact ⁽¹⁾ ?	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>X</u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u>X</u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?		<u>X</u>		
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>X</u>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<u>X</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<u>X</u>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<u>X</u>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			<u>X</u>	
If dissolved metals are requested, were samples field filtered?			<u>X</u>	
Additional Comments (if any):				

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

PE
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

09/24/19 1802
Date/Time



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

Project: Brown 22-20

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/01/19 09:45

SS01@5'
1909318-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/24/19 08:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1909362	09/26/19	09/27/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/24/19 08:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/24/19 08:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1909363	09/26/19	09/27/19	EPA 8015M	

Date Sampled: **09/24/19 08:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		128 %	30-150		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **09/24/19 08:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.49		pH Units	1	1909417	09/30/19	09/30/19	EPA 9045D	

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PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Brown 22-20 Project Number: [none] Project Manager: Mark Longhurst	Reported: 10/01/19 09:45
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SS01@5'
1909318-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Specific Conductance by EPA Method 120.1

Date Sampled: **09/24/19 08:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.57	0.0100	mmhos/cm	1	1909416	09/30/19	09/30/19	EPA 120.1	

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

Project: Brown 22-20

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/01/19 09:45

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1909362 - EPA 5030 Soil MS

Blank (1909362-BLK1)

Prepared: 09/26/19 Analyzed: 09/27/19

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	0.0553		"	0.0400		138	23-173				
Surrogate: Toluene-d8	0.0419		"	0.0400		105	20-170				
Surrogate: 4-Bromofluorobenzene	0.0447		"	0.0400		112	21-167				

LCS (1909362-BS1)

Prepared: 09/26/19 Analyzed: 09/27/19

Benzene	0.0789	0.0020	mg/kg	0.100		78.9	70-130				
Toluene	0.0961	0.0050	"	0.100		96.1	70-130				
Ethylbenzene	0.0868	0.0050	"	0.100		86.8	70-130				
m,p-Xylene	0.160	0.010	"	0.200		79.8	70-130				
o-Xylene	0.0818	0.0050	"	0.100		81.8	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0374		"	0.0400		93.4	23-173				
Surrogate: Toluene-d8	0.0434		"	0.0400		109	20-170				
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.5	21-167				

Matrix Spike (1909362-MS1)

Source: 1909286-01

Prepared: 09/26/19 Analyzed: 09/27/19

Benzene	0.0782	0.0020	mg/kg	0.100	ND	78.2	70-130				
Toluene	0.107	0.0050	"	0.100	ND	107	70-130				
Ethylbenzene	0.0918	0.0050	"	0.100	ND	91.8	70-130				
m,p-Xylene	0.172	0.010	"	0.200	ND	86.2	70-130				
o-Xylene	0.0895	0.0050	"	0.100	ND	89.5	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0375		"	0.0400		93.8	23-173				
Surrogate: Toluene-d8	0.0482		"	0.0400		120	20-170				
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	21-167				

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

Project: Brown 22-20

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/01/19 09:45

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

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

Batch 1909362 - EPA 5030 Soil MS

Matrix Spike Dup (1909362-MSD1)

Source: 1909286-01

Prepared: 09/26/19 Analyzed: 09/27/19

Benzene	0.0724	0.0020	mg/kg	0.100	ND	72.4	70-130	7.69	30	
Toluene	0.0915	0.0050	"	0.100	ND	91.5	70-130	15.2	30	
Ethylbenzene	0.0898	0.0050	"	0.100	ND	89.8	70-130	2.11	30	
m,p-Xylene	0.170	0.010	"	0.200	ND	84.9	70-130	1.44	30	
o-Xylene	0.0865	0.0050	"	0.100	ND	86.5	70-130	3.44	30	
Surrogate: 1,2-Dichloroethane-d4	0.0355		"	0.0400		88.8	23-173			
Surrogate: Toluene-d8	0.0436		"	0.0400		109	20-170			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.5	21-167			

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PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Brown 22-20 Project Number: [none] Project Manager: Mark Longhurst	Reported: 10/01/19 09:45
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Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1909363 - EPA 3550A

Blank (1909363-BLK1)		Prepared: 09/26/19 Analyzed: 09/27/19									
C10-C28 (DRO)	ND	50	mg/kg								
LCS (1909363-BS1)		Prepared: 09/26/19 Analyzed: 09/27/19									
C10-C28 (DRO)	573	50	mg/kg	500	115	70-130					
Matrix Spike (1909363-MS1)		Source: 1909263-01		Prepared: 09/26/19 Analyzed: 09/27/19							
C10-C28 (DRO)	567	50	mg/kg	500	39.1	106	70-130				
Matrix Spike Dup (1909363-MSD1)		Source: 1909263-01		Prepared: 09/26/19 Analyzed: 09/27/19							
C10-C28 (DRO)	545	50	mg/kg	500	39.1	101	70-130	3.95	20		

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PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Brown 22-20 Project Number: [none] Project Manager: Mark Longhurst	Reported: 10/01/19 09:45
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Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
Summit Scientific

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

Batch 1909417 - General Preparation

LCS (1909417-BS1)		Prepared & Analyzed: 09/30/19								
pH	9.19		pH Units	9.18		100	95-105			
Duplicate (1909417-DUP1)		Source: 1909311-01		Prepared & Analyzed: 09/30/19						
pH	8.32		pH Units	8.43				1.31	20	

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

Project: Brown 22-20

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 10/01/19 09:45

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 1909416 - General Preparation

Blank (1909416-BLK1)

Prepared & Analyzed: 09/30/19

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1909416-BS1)

Prepared & Analyzed: 09/30/19

Specific Conductance (EC) 0.782 0.0100 mmhos/cm 0.750 104 90-110

Duplicate (1909416-DUP1)

Source: 1909311-01

Prepared & Analyzed: 09/30/19

Specific Conductance (EC) 1.21 0.0100 mmhos/cm 1.33 9.02 20

Summit Scientific

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

Project: Brown 22-20

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/01/19 09:45

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