

TABLE 1
FORMER COCKROFT 19V, 19C; CHRISTENSON 8-19 TANK BATTERY AND COCKROFT 19V WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
ORGANIC COMPOUNDS

Sample ID	Date Sampled	Depth	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1, 2, 4-TMB (mg/kg)	1, 3, 5-TMB (mg/kg)	Naphthalene (mg/kg)	TPH ⁽⁴⁾ (mg/kg)
Residential SSL ^(1,2)			1.2	490	5.8	58	30	27	2	500
Protection of Groundwater SSL ^(1,2,3)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500
AST01 @ 0-6"	7/14/2022	0-6 in. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SEP01-FL @ 4'	7/15/2022	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SEP01-DL @ 4'	7/15/2022	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SEP02-FL @ 4'	7/15/2022	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SEP02-DL @ 6'	7/15/2022	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
PWV01-B @ 4'	7/15/2022	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
PWV01-E @ 2.5'	7/15/2022	2.5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
WH01 @ 6'	7/14/2022	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FLR01 @ 3'	7/14/2022	3 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50

Notes:

- Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
- Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
- SSLs are applicable if a pathway for communication with groundwater is present.
- Value calculated by adding TVPH-GRO, TEPH-DRO, and TEPH-ORO concentrations.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

TVPH-GRO = Total volatile petroleum hydrocarbons - gasoline range organics

TEPH-DRO = Total extractable petroleum hydrocarbons - diesel range organics

TEPH-ORO = Total extractable petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

TMB = Trimethylbenzene

ft. = Feet

bgs = Below ground surface

TABLE 2
FORMER COCKROFT 19V, 19C; CHRISTENSON 8-19 TANK BATTERY AND COCKROFT 19V WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
INORGANIC COMPOUNDS

Sample ID	Date Sampled	Depth	pH (units)	EC (mmhos/cm)	SAR (units)	Boron (mg/L)
Soil Suitability for Reclamation Standard ⁽¹⁾			6-8.3	<4	<6	2
PWV01-B @ 4'	7/15/2022	4 ft. bgs	7.45	2.62	3.55	0.186
PWV01-E @ 2.5'	7/15/2022	2.5 ft. bgs	7.52	2.00	1.12	0.0962
WH01 @ 6'	7/14/2022	6 ft. bgs	7.79	0.620	2.56	0.0378
FLR01 @ 3'	7/14/2022	3 ft. bgs	7.98	0.442	2.16	0.0498

Notes:

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.

COGCC = Colorado Oil and Gas Conservation Commission

EC = Electrical conductivity

SAR = Sodium adsorption ratio

mmhos/cm = Millimhos per centimeter

mg/L = Milligrams per liter

ft. = Feet

bgs = Below ground surface

TABLE 3
FORMER COCKROFT 19V, 19C; CHRISTENSON 8-19 TANK BATTERY AND COCKROFT 19V WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
ORGANIC COMPOUNDS - PAHs

Sample ID	Date Sampled	Depth	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL ^(1,2)			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL ^(1,2,3)			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
WH01 @ 6'	7/14/2022	6 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FLR01 @ 3'	7/14/2022	3 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

Notes:

- Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
 - Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
 - SSLs are applicable if a pathway for communication with groundwater is present.
- COGCC = Colorado Oil and Gas Conservation Commission
(<) = Analytical result is less than the indicated laboratory reporting limit.
PAHs = Polycyclic aromatic hydrocarbons
Benz(a) = Benzantrhacene
Benzo(a) = Benzopyrene
Benzo(b) = Benzo(a)fluoranthene
Benzo(k) = Benzo(a)fluoranthene
A,H = Dibenzoanthracene
1,2,3-CD = Indenopyrene
M = Methylnaphthalene
mg/kg = Milligrams per kilogram
ft. = Feet
bgs = Below ground surface

TABLE 4
FORMER COCKROFT 19V, 19C; CHRISTENSON 8-19 TANK BATTERY AND COCKROFT 19V WELLHEAD
FIELD DATA SUMMARY TABLE

Sample ID	Date Sampled	Depth	GPS Data ⁽¹⁾ Latitude / Longitude		PDOP Value	VOC Concentration ⁽²⁾ (ppm)
ECD01 @ 0-6"	7/14/2022	0-6 in. bgs	40.388419	-104.470864	0.9	0.2
ECD02 @ 0-6"	7/14/2022	0-6 in. bgs	40.388372	-104.470908	0.9	0.3
MH01 @ 0-6"	7/14/2022	0-6 in. bgs	40.388353	-104.470744	0.8	0.1
MH02 @ 0-6"	7/14/2022	0-6 in. bgs	40.388347	-104.470751	0.9	0.2
AST01 @ 0-6"	7/14/2022	0-6 in. bgs	40.388201	-104.470490	0.8	0.6
SEP01-FL @ 4'	7/15/2022	4 ft. bgs	40.388389	-104.470830	1.0	0.0
SEP01-DL @ 4'	7/15/2022	4 ft. bgs	40.388387	-104.470779	1.0	1.3
SEP02-FL @ 4'	7/15/2022	4 ft. bgs	40.388364	-104.470860	1.0	1.6
SEP02-DL @ 6'	7/15/2022	6 ft. bgs	40.388351	-104.470806	1.0	0.8
PWV01-B @ 4'	7/15/2022	4 ft. bgs	40.388244	-104.470530	1.0	0.0
PWV01-N @ 2.5'	7/15/2022	2.5 ft. bgs	40.388264	-104.470539	1.0	0.3
PWV01-W @ 2.5'	7/15/2022	2.5 ft. bgs	40.388243	-104.470546	1.0	0.1
PWV01-S @ 2.5'	7/15/2022	2.5 ft. bgs	40.388222	-104.470529	1.0	0.4
PWV01-E @ 2.5'	7/15/2022	2.5 ft. bgs	40.388246	-104.470509	1.0	0.5
WDL01 @ 3'	7/15/2022	3 ft. bgs	40.388226	-104.470530	NC	0.9
BKG01 @ 2.5'	7/14/2022	2.5 ft. bgs	40.388541	-104.470583	0.8	0.5
BKG01 @ 3'	7/14/2022	3 ft. bgs	40.388541	-104.470583	0.8	0.4
BKG01 @ 5'	7/14/2022	5 ft. bgs	40.388541	-104.470583	0.8	0.3
WH01 @ 6'	7/14/2022	6 ft. bgs	NC	NC	NC	0.6
FLR01 @ 3'	7/14/2022	3 ft. bgs	40.388880	-104.470681	0.8	0.6
WHS01-N @ 0-6"	7/14/2022	0-6 in. bgs	40.388912	-104.470673	0.7	0.4
WHS01-W @ 0-6"	7/14/2022	0-6 in. bgs	40.388884	-104.470741	0.7	0.0
WHS01-S @ 0-6"	7/14/2022	0-6 in. bgs	40.388836	-104.470730	0.7	0.2
WHS01-E @ 0-6"	7/14/2022	0-6 in. bgs	40.388862	-104.470671	0.7	0.1
BKG01 @ 3'	7/14/2022	3 ft. bgs	40.388870	-104.470586	0.8	0.5
BKG01 @ 6'	7/14/2022	6 ft. bgs	40.388870	-104.470586	0.8	0.4

Notes:

1. Global Positioning System (GPS) data is provided in decimal degrees using World Geodetic System (WGS) 84 UTM Zone 13 North.
2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

PDOP = Position Dilution of Precision

ppm = Parts per million

ft. = Feet

in. = Inches

bgs = Below ground surface

NC = Data not collected

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

July 20, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Work Order #2207207

Enclosed are the results of analyses for samples received by Summit Scientific on 07/14/22 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
07/20/22 11:34

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
AST01@0-6"	2207207-01	Soil	07/14/22 10:41	07/14/22 16:00

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

S₂


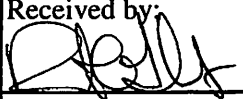
2207207

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Page 1 of 1

Client:	PDC / Tasman	Project Manager:	Mark Longhurst
Address:	6855 W 119th Ave	E-Mail:	mark.longhurst@PDCE.com
City/State/Zip:	Broomfield/ CO/ 80020		
Phone:	303-487-1228	Project Name:	Cockcroft 19N, 19L; Christensen 8-19 Tank Battery
Sampler Name:	Sam Anderson	Project Number:	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested										Special Instructions	
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	PAHs	Metals	ON Hold				
1	ASTOI E 0-6"	7/14/22	1041	3			X			X				X	X	X								pH, EC, SAR by saturated paste
2	BK601 E 2.5'	↓	942	1			↓			↓													X	
3	BK601 E 5'	↓	954	1			↓			↓													X	
4	BK601 E 3'	↓	948	1			↓			↓													X	
5																								
6																								
7																								
8																								
9																								
10																								

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time	(Check)	Notes:
	1540 7/14/22	Tasman's Lock Box	1540 7/14/22	Same Day <input checked="" type="checkbox"/>	72 hours	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours	Standard <input checked="" type="checkbox"/>	
Tasman's Lock Box	71422 1600		71422 1600	48 hours		
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:		
				Temperature Upon Receipt:	9.6	
				Samples Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

S₂

Sample Receipt Checklist

S2 Work Order# 2207207Client: Doc Tasman Client Project ID: Cockcroft 190, 19C; Christensen 8-19
Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: Tank Bottom

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Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 9.6 Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6 °C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			an IUE
Were all samples received intact ⁽¹⁾ ?	-			
Was adequate sample volume provided ⁽¹⁾ ?	-			
If custody seals are present, are they intact ⁽¹⁾ ?	-			
Are samples due within 48 hours present?		-		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			-	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	-			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	-			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	-			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			-	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.			-	
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?			-	
Additional Comments (if any):				

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

 Custodian Printed Name

71422
 Date/Time



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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/20/22 11:34

AST01@0-6"
2207207-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/14/22 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFG0293	07/18/22	07/18/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/14/22 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		90.4 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		104 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/14/22 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFG0295	07/18/22	07/19/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/14/22 10:41**

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

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/20/22 11:34

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 BFG0293 - EPA 5030 Soil MS

Blank (BFG0293-BLK1)

Prepared & Analyzed: 07/18/22

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0393		"	0.0400		98.3	50-150			
Surrogate: Toluene-d8	0.0412		"	0.0400		103	50-150			
Surrogate: 4-Bromofluorobenzene	0.0428		"	0.0400		107	50-150			

LCS (BFG0293-BS1)

Prepared & Analyzed: 07/18/22

Benzene	0.143	0.0020	mg/kg	0.125		115	70-130			
Toluene	0.134	0.0050	"	0.125		107	70-130			
Ethylbenzene	0.147	0.0050	"	0.125		117	70-130			
m,p-Xylene	0.287	0.010	"	0.250		115	70-130			
o-Xylene	0.136	0.0050	"	0.125		109	70-130			
1,2,4-Trimethylbenzene	0.150	0.0050	"	0.125		120	70-130			
1,3,5-Trimethylbenzene	0.156	0.0050	"	0.125		125	70-130			
Naphthalene	0.103	0.0038	"	0.125		82.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0360		"	0.0400		90.0	50-150			
Surrogate: Toluene-d8	0.0422		"	0.0400		106	50-150			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	50-150			

Matrix Spike (BFG0293-MS1)

Source: 2207200-06

Prepared & Analyzed: 07/18/22

Benzene	0.136	0.0020	mg/kg	0.125	ND	109	70-130			
Toluene	0.156	0.0050	"	0.125	ND	125	70-130			
Ethylbenzene	0.142	0.0050	"	0.125	ND	114	70-130			
m,p-Xylene	0.281	0.010	"	0.250	ND	112	70-130			
o-Xylene	0.133	0.0050	"	0.125	ND	107	70-130			
1,2,4-Trimethylbenzene	0.145	0.0050	"	0.125	ND	116	70-130			
1,3,5-Trimethylbenzene	0.153	0.0050	"	0.125	ND	122	70-130			
Naphthalene	0.106	0.0038	"	0.125	ND	84.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0355		"	0.0400		88.8	50-150			
Surrogate: Toluene-d8	0.0416		"	0.0400		104	50-150			
Surrogate: 4-Bromofluorobenzene	0.0407		"	0.0400		102	50-150			

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/20/22 11:34

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 BFG0293 - EPA 5030 Soil MS

Matrix Spike Dup (BFG0293-MSD1)	Source: 2207200-06			Prepared & Analyzed: 07/18/22						
Benzene	0.135	0.0020	mg/kg	0.125	ND	108	70-130	0.864	30	
Toluene	0.155	0.0050	"	0.125	ND	124	70-130	0.289	30	
Ethylbenzene	0.141	0.0050	"	0.125	ND	113	70-130	0.656	30	
m,p-Xylene	0.278	0.010	"	0.250	ND	111	70-130	0.762	30	
o-Xylene	0.132	0.0050	"	0.125	ND	105	70-130	1.15	30	
1,2,4-Trimethylbenzene	0.143	0.0050	"	0.125	ND	115	70-130	1.06	30	
1,3,5-Trimethylbenzene	0.152	0.0050	"	0.125	ND	121	70-130	0.886	30	
Naphthalene	0.104	0.0038	"	0.125	ND	82.9	70-130	2.18	30	
Surrogate: 1,2-Dichloroethane-d4	0.0354		"	0.0400		88.5	50-150			
Surrogate: Toluene-d8	0.0419		"	0.0400		105	50-150			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	50-150			

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/20/22 11:34

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 BFG0295 - EPA 3550A

Blank (BFG0295-BLK1)

Prepared & Analyzed: 07/18/22

C10-C28 (DRO)	ND	50	mg/kg
C28-C36 (ORO)	ND	50	"

LCS (BFG0295-BS1)

Prepared & Analyzed: 07/18/22

C10-C28 (DRO)	421	50	mg/kg	500	84.2	70-130
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Matrix Spike (BFG0295-MS1)

Source: 2207200-06

Prepared & Analyzed: 07/18/22

C10-C28 (DRO)	397	50	mg/kg	500	11.7	77.1	70-130
---------------	-----	----	-------	-----	------	------	--------

Matrix Spike Dup (BFG0295-MSD1)

Source: 2207200-06

Prepared & Analyzed: 07/18/22

C10-C28 (DRO)	416	50	mg/kg	500	11.7	81.0	70-130	4.73	20
---------------	-----	----	-------	-----	------	------	--------	------	----

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: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
07/20/22 11:34

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 12, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Work Order #2207211

Enclosed are the results of analyses for samples received by Summit Scientific on 07/15/22 17:23. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SEP01-FL@4'	2207211-01	Soil	07/15/22 09:44	07/15/22 17:23
SEP01-DL@4'	2207211-02	Soil	07/15/22 09:48	07/15/22 17:23
SEP02-FL@4'	2207211-03	Soil	07/15/22 09:51	07/15/22 17:23
PWV01-B@4'	2207211-04	Soil	07/15/22 10:25	07/15/22 17:23
PWV01-E@2.5'	2207211-08	Soil	07/15/22 10:33	07/15/22 17:23
SEP02-DL@6'	2207211-09	Soil	07/15/22 10:52	07/15/22 17:23

Summit Scientific

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Summit Scientific

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 2 of 2

Client: PDC / Tasman

Project Manager: Mark Longhurst

Address: 6855 W 119th Ave

E-Mail: mark.longhurst@PDCE.com

City/State/Zip: Broomfield/ CO/ 80020

Phone: 303-487-1228

Project Name: Cockcroft 19C, 19V, Christiansen 8-K Tank Battery

Sampler Name: David Vigil

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	pH, EC, SAR	Boron - HWS	TMBs (1,2,4)&(1,3,5)	PAH - 915	Metals - 915			
1	SEP02-DL@6'	7/15/22	1052	3			X			X				X	X							pH, EC, SAR by saturated paste
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						

Relinquished by: <i>David Vigil</i>	Date/Time: 7/15/22 1330	Received by: Tasman's Lock Box	Date/Time: 7/15/22 1330	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ Sample Integrity: Temperature Upon Receipt: 9.3 Samples Intact: <input checked="" type="checkbox"/> Yes No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 7/15/22 1723	Received by: <i>[Signature]</i>	Date/Time: 7/15/22 1723		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂2/2
Sample Receipt Checklist2207211
S2 Work Order#Client: Pectrasman Client Project ID: Cockroft 19c, 19v, Christensen 8-19 Tank BatteryShipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #:

--	--	--	--	--

Matrix (Check all that apply) Air ☐ Soil/Solid ☐ Water ☐ Other ☐Temp (°C) 9.3Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6 °C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			on ICE
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	-			
If custody seals are present, are they intact ⁽¹⁾ ?	-			
Are samples due within 48 hours present?	-			Sameday
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			-	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	-			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	-			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	-			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			-	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.			-	
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?			-	
Additional Comments (if any):				

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

 Custodian Printed Name

71522
 Date/Time



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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

SEP01-FL@4'
2207211-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/15/22 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFG0293	07/18/22	07/19/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/15/22 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		90.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		104 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/15/22 09:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFG0295	07/18/22	07/19/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/15/22 09:44**

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

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

SEP01-DL@4'
2207211-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/15/22 09:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFG0293	07/18/22	07/19/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/15/22 09:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		88.7 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		103 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/15/22 09:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFG0295	07/18/22	07/19/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/15/22 09:48**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		124 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

SEP02-FL@4'
2207211-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/15/22 09:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFG0293	07/18/22	07/19/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/15/22 09:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		89.0 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		103 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/15/22 09:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFG0295	07/18/22	07/19/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/15/22 09:51**

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

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

PWV01-B@4'
2207211-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/15/22 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFG0293	07/18/22	07/19/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/15/22 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		89.5 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		102 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/15/22 10:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFG0295	07/18/22	07/19/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/15/22 10:25**

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

Total Metals by EPA 6020B Hot Water Soluble Extraction

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

PWV01-B@4'
2207211-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **07/15/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.186	0.0100	mg/L	1	BFG0317	07/18/22	07/20/22	EPA 6020B	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **07/15/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	53.7	0.0517	mg/L dry	1	BFG0320	07/18/22	07/21/22	EPA 6020B	
Magnesium	21.9	0.0517	"	"	"	"	"	"	
Sodium	122	0.0517	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **07/15/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.55	0.00100	units	1	BFG0422	07/22/22	07/22/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **07/15/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	96.8		%	1	BFG0298	07/18/22	07/18/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **07/15/22 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.62	0.0100	mmhos/cm	1	BFG0370	07/20/22	07/21/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

PWV01-B@4'
2207211-04 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **07/15/22 10:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.45			pH Units	1	BFG0371	07/20/22	07/20/22	EPA 9045D	

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

PWV01-E@2.5'
2207211-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFG0466	07/26/22	07/27/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		112 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.7 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFG0468	07/26/22	07/26/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		66.7 %	30-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

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: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

PWV01-E@2.5'
2207211-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0962	0.0100	mg/L	1	BFG0470	07/26/22	07/26/22	EPA 6020B	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	190	0.0568	mg/L dry	1	BFG0464	07/26/22	07/28/22	EPA 6020B	
Magnesium	53.2	0.0568	"	"	"	"	"	"	
Sodium	67.7	0.0568	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.12	0.00100	units	1	BFG0541	07/29/22	07/29/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.0		%	1	BFG0493	07/27/22	07/27/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.00	0.0100	mmhos/cm	1	BFG0499	07/27/22	07/27/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

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: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

PWV01-E@2.5'
2207211-08 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **07/15/22 10:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.52			pH Units	1	BFG0500	07/27/22	07/27/22	EPA 9045D	

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: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

SEP02-DL@6'
2207211-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/15/22 10:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFG0286	07/15/22	07/16/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/15/22 10:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		96.8 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/15/22 10:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFG0287	07/15/22	07/16/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/15/22 10:52**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		100 %	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: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

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 BFG0286 - EPA 5030 Soil MS

Blank (BFG0286-BLK1)

Prepared: 07/15/22 Analyzed: 07/16/22

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0400		109	50-150			
Surrogate: Toluene-d8	0.0408		"	0.0400		102	50-150			
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400		102	50-150			

LCS (BFG0286-BS1)

Prepared: 07/15/22 Analyzed: 07/16/22

Benzene	0.131	0.0020	mg/kg	0.125		105	70-130			
Toluene	0.150	0.0050	"	0.125		120	70-130			
Ethylbenzene	0.142	0.0050	"	0.125		113	70-130			
m,p-Xylene	0.280	0.010	"	0.250		112	70-130			
o-Xylene	0.133	0.0050	"	0.125		106	70-130			
1,2,4-Trimethylbenzene	0.147	0.0050	"	0.125		118	70-130			
1,3,5-Trimethylbenzene	0.153	0.0050	"	0.125		123	70-130			
Naphthalene	0.107	0.0038	"	0.125		85.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0387		"	0.0400		96.8	50-150			
Surrogate: Toluene-d8	0.0416		"	0.0400		104	50-150			
Surrogate: 4-Bromofluorobenzene	0.0407		"	0.0400		102	50-150			

Matrix Spike (BFG0286-MS1)

Source: 2207210-02

Prepared: 07/15/22 Analyzed: 07/16/22

Benzene	0.133	0.0020	mg/kg	0.125	ND	106	70-130			
Toluene	0.152	0.0050	"	0.125	ND	122	70-130			
Ethylbenzene	0.143	0.0050	"	0.125	ND	114	70-130			
m,p-Xylene	0.285	0.010	"	0.250	ND	114	70-130			
o-Xylene	0.133	0.0050	"	0.125	ND	106	70-130			
1,2,4-Trimethylbenzene	0.150	0.0050	"	0.125	ND	120	70-130			
1,3,5-Trimethylbenzene	0.155	0.0050	"	0.125	ND	124	70-130			
Naphthalene	0.111	0.0038	"	0.125	ND	88.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0396		"	0.0400		99.0	50-150			
Surrogate: Toluene-d8	0.0416		"	0.0400		104	50-150			
Surrogate: 4-Bromofluorobenzene	0.0410		"	0.0400		102	50-150			

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

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	Notes

Batch BFG0286 - EPA 5030 Soil MS

Matrix Spike Dup (BFG0286-MSD1)

Source: 2207210-02

Prepared: 07/15/22 Analyzed: 07/16/22

Benzene	0.137	0.0020	mg/kg	0.125	ND	109	70-130	2.99	30	
Toluene	0.157	0.0050	"	0.125	ND	126	70-130	3.17	30	
Ethylbenzene	0.148	0.0050	"	0.125	ND	119	70-130	3.70	30	
m,p-Xylene	0.294	0.010	"	0.250	ND	118	70-130	3.06	30	
o-Xylene	0.137	0.0050	"	0.125	ND	110	70-130	3.20	30	
1,2,4-Trimethylbenzene	0.154	0.0050	"	0.125	ND	123	70-130	2.76	30	
1,3,5-Trimethylbenzene	0.161	0.0050	"	0.125	ND	129	70-130	3.61	30	
Naphthalene	0.119	0.0038	"	0.125	ND	95.3	70-130	7.39	30	
Surrogate: 1,2-Dichloroethane-d4	0.0408		"	0.0400		102	50-150			
Surrogate: Toluene-d8	0.0415		"	0.0400		104	50-150			
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400		102	50-150			

Batch BFG0293 - EPA 5030 Soil MS

Blank (BFG0293-BLK1)

Prepared & Analyzed: 07/18/22

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0393		"	0.0400		98.3	50-150			
Surrogate: Toluene-d8	0.0412		"	0.0400		103	50-150			
Surrogate: 4-Bromofluorobenzene	0.0428		"	0.0400		107	50-150			

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

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 BFG0293 - EPA 5030 Soil MS

LCS (BFG0293-BS1)

Prepared & Analyzed: 07/18/22

Benzene	0.143	0.0020	mg/kg	0.125		115	70-130
Toluene	0.134	0.0050	"	0.125		107	70-130
Ethylbenzene	0.147	0.0050	"	0.125		117	70-130
m,p-Xylene	0.287	0.010	"	0.250		115	70-130
o-Xylene	0.136	0.0050	"	0.125		109	70-130
1,2,4-Trimethylbenzene	0.150	0.0050	"	0.125		120	70-130
1,3,5-Trimethylbenzene	0.156	0.0050	"	0.125		125	70-130
Naphthalene	0.103	0.0038	"	0.125		82.2	70-130
Surrogate: 1,2-Dichloroethane-d4	0.0360		"	0.0400		90.0	50-150
Surrogate: Toluene-d8	0.0422		"	0.0400		106	50-150
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	50-150

Matrix Spike (BFG0293-MS1)

Source: 2207200-06

Prepared & Analyzed: 07/18/22

Benzene	0.136	0.0020	mg/kg	0.125	ND	109	70-130
Toluene	0.156	0.0050	"	0.125	ND	125	70-130
Ethylbenzene	0.142	0.0050	"	0.125	ND	114	70-130
m,p-Xylene	0.281	0.010	"	0.250	ND	112	70-130
o-Xylene	0.133	0.0050	"	0.125	ND	107	70-130
1,2,4-Trimethylbenzene	0.145	0.0050	"	0.125	ND	116	70-130
1,3,5-Trimethylbenzene	0.153	0.0050	"	0.125	ND	122	70-130
Naphthalene	0.106	0.0038	"	0.125	ND	84.7	70-130
Surrogate: 1,2-Dichloroethane-d4	0.0355		"	0.0400		88.8	50-150
Surrogate: Toluene-d8	0.0416		"	0.0400		104	50-150
Surrogate: 4-Bromofluorobenzene	0.0407		"	0.0400		102	50-150

Matrix Spike Dup (BFG0293-MSD1)

Source: 2207200-06

Prepared & Analyzed: 07/18/22

Benzene	0.135	0.0020	mg/kg	0.125	ND	108	70-130	0.864	30
Toluene	0.155	0.0050	"	0.125	ND	124	70-130	0.289	30
Ethylbenzene	0.141	0.0050	"	0.125	ND	113	70-130	0.656	30
m,p-Xylene	0.278	0.010	"	0.250	ND	111	70-130	0.762	30
o-Xylene	0.132	0.0050	"	0.125	ND	105	70-130	1.15	30
1,2,4-Trimethylbenzene	0.143	0.0050	"	0.125	ND	115	70-130	1.06	30
1,3,5-Trimethylbenzene	0.152	0.0050	"	0.125	ND	121	70-130	0.886	30
Naphthalene	0.104	0.0038	"	0.125	ND	82.9	70-130	2.18	30
Surrogate: 1,2-Dichloroethane-d4	0.0354		"	0.0400		88.5	50-150		
Surrogate: Toluene-d8	0.0419		"	0.0400		105	50-150		
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	50-150		

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

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 BFG0466 - EPA 5030 Soil MS

Blank (BFG0466-BLK1)

Prepared: 07/26/22 Analyzed: 07/27/22

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0403		"	0.0400		101	50-150			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0384		"	0.0400		96.0	50-150			

LCS (BFG0466-BS1)

Prepared: 07/26/22 Analyzed: 07/27/22

Benzene	0.150	0.0020	mg/kg	0.150		100	70-130			
Toluene	0.147	0.0050	"	0.150		97.8	70-130			
Ethylbenzene	0.145	0.0050	"	0.150		97.0	70-130			
m,p-Xylene	0.290	0.010	"	0.300		96.7	70-130			
o-Xylene	0.145	0.0050	"	0.150		96.5	70-130			
1,2,4-Trimethylbenzene	0.144	0.0050	"	0.150		96.2	70-130			
1,3,5-Trimethylbenzene	0.144	0.0050	"	0.150		95.8	70-130			
Naphthalene	0.141	0.0038	"	0.150		94.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0442		"	0.0400		111	50-150			
Surrogate: Toluene-d8	0.0408		"	0.0400		102	50-150			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	50-150			

Matrix Spike (BFG0466-MS1)

Source: 2207280-01

Prepared: 07/26/22 Analyzed: 07/27/22

Benzene	0.139	0.0020	mg/kg	0.150	ND	92.4	70-130			
Toluene	0.110	0.0050	"	0.150	ND	73.3	70-130			
Ethylbenzene	0.125	0.0050	"	0.150	ND	83.1	70-130			
m,p-Xylene	0.245	0.010	"	0.300	ND	81.6	70-130			
o-Xylene	0.123	0.0050	"	0.150	ND	82.1	70-130			
1,2,4-Trimethylbenzene	0.120	0.0050	"	0.150	ND	80.1	70-130			
1,3,5-Trimethylbenzene	0.122	0.0050	"	0.150	ND	81.5	70-130			
Naphthalene	0.113	0.0038	"	0.150	ND	75.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0568		"	0.0400		142	50-150			
Surrogate: Toluene-d8	0.0255		"	0.0400		63.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0402		"	0.0400		101	50-150			

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

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 BFG0466 - EPA 5030 Soil MS

Matrix Spike Dup (BFG0466-MSD1)	Source: 2207280-01			Prepared: 07/26/22 Analyzed: 07/27/22						
Benzene	0.128	0.0020	mg/kg	0.150	ND	85.2	70-130	8.11	30	
Toluene	0.106	0.0050	"	0.150	ND	71.0	70-130	3.19	30	
Ethylbenzene	0.120	0.0050	"	0.150	ND	80.0	70-130	3.75	30	
m,p-Xylene	0.236	0.010	"	0.300	ND	78.7	70-130	3.57	30	
o-Xylene	0.117	0.0050	"	0.150	ND	78.2	70-130	4.79	30	
1,2,4-Trimethylbenzene	0.112	0.0050	"	0.150	ND	74.9	70-130	6.68	30	
1,3,5-Trimethylbenzene	0.113	0.0050	"	0.150	ND	75.3	70-130	7.88	30	
Naphthalene	0.108	0.0038	"	0.150	ND	71.8	70-130	5.05	30	
Surrogate: 1,2-Dichloroethane-d4	0.0454		"	0.0400		113	50-150			
Surrogate: Toluene-d8	0.0406		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0405		"	0.0400		101	50-150			

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

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 BFG0287 - EPA 3550A

Blank (BFG0287-BLK1)

Prepared: 07/15/22 Analyzed: 07/16/22

C10-C28 (DRO)	ND	50	mg/kg
C28-C36 (ORO)	ND	50	"

LCS (BFG0287-BS1)

Prepared: 07/15/22 Analyzed: 07/16/22

C10-C28 (DRO)	645	50	mg/kg	500	129	70-130
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Matrix Spike (BFG0287-MS1)

Source: 2207210-01

Prepared: 07/15/22 Analyzed: 07/16/22

C10-C28 (DRO)	526	50	mg/kg	500	23.5	100	70-130
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Matrix Spike Dup (BFG0287-MSD1)

Source: 2207210-01

Prepared: 07/15/22 Analyzed: 07/16/22

C10-C28 (DRO)	530	50	mg/kg	500	23.5	101	70-130	0.847	20
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Batch BFG0295 - EPA 3550A

Blank (BFG0295-BLK1)

Prepared & Analyzed: 07/18/22

C10-C28 (DRO)	ND	50	mg/kg
C28-C36 (ORO)	ND	50	"

LCS (BFG0295-BS1)

Prepared & Analyzed: 07/18/22

C10-C28 (DRO)	421	50	mg/kg	500	84.2	70-130
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Matrix Spike (BFG0295-MS1)

Source: 2207200-06

Prepared & Analyzed: 07/18/22

C10-C28 (DRO)	397	50	mg/kg	500	11.7	77.1	70-130
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Matrix Spike Dup (BFG0295-MSD1)

Source: 2207200-06

Prepared & Analyzed: 07/18/22

C10-C28 (DRO)	416	50	mg/kg	500	11.7	81.0	70-130	4.73	20
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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.



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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

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 BFG0468 - EPA 3550A

Blank (BFG0468-BLK1)

Prepared & Analyzed: 07/26/22

C10-C28 (DRO)	ND	50	mg/kg
C28-C36 (ORO)	ND	50	"

LCS (BFG0468-BS1)

Prepared & Analyzed: 07/26/22

C10-C28 (DRO)	387	50	mg/kg	500	77.4	70-130
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Matrix Spike (BFG0468-MS1)

Source: 2207280-01

Prepared & Analyzed: 07/26/22

C10-C28 (DRO)	339	50	mg/kg	500	39.9	59.7	70-130			QM-07
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Matrix Spike Dup (BFG0468-MSD1)

Source: 2207280-01

Prepared & Analyzed: 07/26/22

C10-C28 (DRO)	355	50	mg/kg	500	39.9	62.9	70-130	4.61	20	QM-07
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Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control
Summit Scientific

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

Batch BFG0317 - EPA 3050B

Blank (BFG0317-BLK1)

Prepared: 07/18/22 Analyzed: 07/20/22

Boron ND 0.0100 mg/L

LCS (BFG0317-BS1)

Prepared: 07/18/22 Analyzed: 07/20/22

Boron 4.94 0.0100 mg/L 5.00 98.7 80-120

Duplicate (BFG0317-DUP1)

Source: 2207200-01

Prepared: 07/18/22 Analyzed: 07/20/22

Boron 0.0979 0.0100 mg/L 0.105 7.45 20

Matrix Spike (BFG0317-MS1)

Source: 2207200-01

Prepared: 07/18/22 Analyzed: 07/20/22

Boron 4.97 0.0100 mg/L 5.00 0.105 97.2 75-125

Matrix Spike Dup (BFG0317-MSD1)

Source: 2207200-01

Prepared: 07/18/22 Analyzed: 07/20/22

Boron 4.94 0.0100 mg/L 5.00 0.105 96.7 75-125 0.495 25

Batch BFG0470 - EPA 3050B

Blank (BFG0470-BLK1)

Prepared & Analyzed: 07/26/22

Boron ND 0.0100 mg/L

LCS (BFG0470-BS1)

Prepared & Analyzed: 07/26/22

Boron 4.64 0.0100 mg/L 5.00 92.8 80-120

Duplicate (BFG0470-DUP1)

Source: 2207211-08

Prepared & Analyzed: 07/26/22

Boron 0.0900 0.0100 mg/L 0.0962 6.61 20

Matrix Spike (BFG0470-MS1)

Source: 2207211-08

Prepared & Analyzed: 07/26/22

Boron 4.89 0.0100 mg/L 5.00 0.0962 95.8 75-125

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control
Summit Scientific

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

Batch BFG0470 - EPA 3050B

Matrix Spike Dup (BFG0470-MSD1)				Source: 2207211-08		Prepared & Analyzed: 07/26/22				
Boron	4.93	0.0100	mg/L	5.00	0.0962	96.7	75-125	0.866	25	

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control
Summit Scientific

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

Batch BFG0320 - General Preparation

Blank (BFG0320-BLK1)

Prepared: 07/18/22 Analyzed: 07/21/22

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

LCS (BFG0320-BS1)

Prepared: 07/18/22 Analyzed: 07/21/22

Calcium	5.24	0.0500	mg/L wet	70-130
Magnesium	5.14	0.0500	"	70-130
Sodium	4.97	0.0500	"	70-130

Batch BFG0464 - General Preparation

Blank (BFG0464-BLK1)

Prepared: 07/26/22 Analyzed: 07/28/22

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

LCS (BFG0464-BS1)

Prepared: 07/26/22 Analyzed: 07/28/22

Calcium	5.00	0.0500	mg/L wet	5.00	99.9	70-130
Magnesium	4.87	0.0500	"	5.00	97.5	70-130
Sodium	4.54	0.0500	"	5.00	90.8	70-130

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

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

Batch BFG0298 - General Preparation

Duplicate (BFG0298-DUP1)		Source: 2206109-01			Prepared & Analyzed: 07/18/22					
% Solids	95.9		%		96.0			0.201	20	

Batch BFG0493 - General Preparation

Duplicate (BFG0493-DUP1)		Source: 2207211-08			Prepared & Analyzed: 07/27/22					
% Solids	88.3		%		88.0			0.352	20	

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control
Summit Scientific

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

Batch BFG0370 - General Preparation

Blank (BFG0370-BLK1)

Prepared: 07/20/22 Analyzed: 07/21/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFG0370-BS1)

Prepared: 07/20/22 Analyzed: 07/21/22

Specific Conductance (EC) 0.155 0.0100 mmhos/cm 0.150 103 95-105

Duplicate (BFG0370-DUP1)

Source: 2207209-01

Prepared: 07/20/22 Analyzed: 07/21/22

Specific Conductance (EC) 0.918 0.0100 mmhos/cm 0.927 1.01 20

Batch BFG0499 - General Preparation

Blank (BFG0499-BLK1)

Prepared & Analyzed: 07/27/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFG0499-BS1)

Prepared & Analyzed: 07/27/22

Specific Conductance (EC) 0.158 0.0100 mmhos/cm 0.150 105 95-105

Duplicate (BFG0499-DUP1)

Source: 2207321-01

Prepared & Analyzed: 07/27/22

Specific Conductance (EC) 3.37 0.0100 mmhos/cm 3.40 0.887 20

Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control
Summit Scientific

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

Batch BFG0371 - General Preparation

LCS (BFG0371-BS1)

Prepared & Analyzed: 07/20/22

pH	9.11		pH Units	9.18		99.2	95-105		
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Duplicate (BFG0371-DUP1)

Source: 2207209-01

Prepared & Analyzed: 07/20/22

pH	7.78		pH Units		7.64			1.82	20
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Batch BFG0500 - General Preparation

LCS (BFG0500-BS1)

Prepared & Analyzed: 07/27/22

pH	9.18		pH Units	9.18		100	95-105		
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Duplicate (BFG0500-DUP1)

Source: 2207321-01

Prepared & Analyzed: 07/27/22

pH	7.92		pH Units		7.91			0.126	20
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Summit Scientific

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

Project: Cockroft 19V, 19C; Christenson 8-19 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
08/12/22 11:14

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

July 21, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Cockroft 19V Wellhead

Work Order #2207206

Enclosed are the results of analyses for samples received by Summit Scientific on 07/14/22 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury
President



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

Project: Cockroft 19V Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH01@6'	2207206-01	Soil	07/14/22 09:09	07/14/22 16:00
FLR01@3'	2207206-02	Soil	07/14/22 09:15	07/14/22 16:00

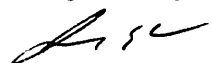
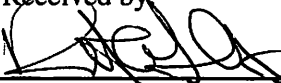
Summit Scientific

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2207206

Page 1 of 1

Project Manager:	Mark Longhurst
E-Mail:	mark.longhurst@PDCE.com
Project Name:	Cockroft 19V wellhead
Project Number:	

					Preservative				Matrix				Analysis Requested										Special Instructions		
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	PAHs	Metals	DW HOLD					
1	WHOLE 6'	7/14/22	909	3			X			X			X	X	X	X	X	X	X			pH, EC, SAR by saturated paste			
2	FLOOIL 3'		915	3									X	X	X	X	X	X							
3	BK601 E 3'		930	1																	X				
4	BK601 E 6'		937	1																	X				
5																									
6																									
7																									
8																									
9																									
10	.																								
Relinquished by:					Date/Time:					Received by:					Date/Time:					Turn Around Time (Check)					Notes:
					1540 7/14/22					Tasman's Lock Box					1540 7/14/22					Same Day _____ 72 hours					
Relinquished by:					Date/Time:					Received by:					Date/Time:					24 hours _____ Standard <input checked="" type="checkbox"/>					
Tasman's Lock Box					7/14/22 1600										7/14/22 1600					48 hours _____					
Relinquished by:					Date/Time:					Received by:					Date/Time:					Sample Integrity:					
																				Temperature Upon Receipt: 9.0					
																				Samples Intact: <input checked="" type="checkbox"/> Yes No					

S₂

Sample Receipt Checklist

S2 Work Order# 2207206Client: POC/Tasman Client Project ID: Cockcroft 19w wellheadShipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: _____

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Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 9.6 Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6 °C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			on ICE
Were all samples received intact ⁽¹⁾ ?	-			
Was adequate sample volume provided ⁽¹⁾ ?	-			
If custody seals are present, are they intact ⁽¹⁾ ?	-			
Are samples due within 48 hours present?		-		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			-	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	-			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	-			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	-			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			-	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.			-	
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?			-	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

[Signature]
Custodian Printed Name

7/14/22
Date/Time



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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

WH01@6'
2207206-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFG0272	07/15/22	07/15/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		102 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFG0273	07/15/22	07/15/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.8 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

WH01@6'
2207206-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFG0257	07/15/22	07/16/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		71.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		80.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0378	0.0100	mg/L	1	BFG0299	07/18/22	07/19/22	EPA 6020B	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

WH01@6'
2207206-01 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Calcium	28.5	0.0549	mg/L dry	1	BFG0263	07/18/22	07/21/22	EPA 6020B
Magnesium	6.07	0.0549	"	"	"	"	"	"
Sodium	57.8	0.0549	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.56	0.00100	units	1	BFG0391	07/21/22	07/21/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.1		%	1	BFG0264	07/15/22	07/15/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.620	0.0100	mmhos/cm	1	BFG0318	07/18/22	07/19/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **07/14/22 09:09**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.79		pH Units	1	BFG0319	07/18/22	07/19/22	EPA 9045D	

Summit Scientific

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

Project: Cockroft 19V Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

FLR01@3'
2207206-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFG0272	07/15/22	07/15/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFG0273	07/15/22	07/15/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		89.2 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

FLR01@3'
2207206-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFG0257	07/15/22	07/16/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		73.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		76.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0498	0.0100	mg/L	1	BFG0299	07/18/22	07/19/22	EPA 6020B	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

FLR01@3'
2207206-02 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Calcium	24.0	0.0510	mg/L dry	1	BFG0263	07/18/22	07/21/22	EPA 6020B
Magnesium	4.30	0.0510	"	"	"	"	"	"
Sodium	43.7	0.0510	"	"	"	"	"	"

Calculated Analysis

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.16	0.00100	units	1	BFG0391	07/21/22	07/21/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	98.0		%	1	BFG0264	07/15/22	07/15/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.442	0.0100	mmhos/cm	1	BFG0318	07/18/22	07/19/22	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **07/14/22 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.98		pH Units	1	BFG0319	07/18/22	07/19/22	EPA 9045D	

Summit Scientific

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

Project: Cockroft 19V Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

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 BFG0272 - EPA 5030 Soil MS

Blank (BFG0272-BLK1)

Prepared & Analyzed: 07/15/22

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0443		"	0.0400		111	50-150			
Surrogate: Toluene-d8	0.0402		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	50-150			

LCS (BFG0272-BS1)

Prepared & Analyzed: 07/15/22

Benzene	0.138	0.0020	mg/kg	0.125		110	70-130			
Toluene	0.156	0.0050	"	0.125		125	70-130			
Ethylbenzene	0.152	0.0050	"	0.125		122	70-130			
m,p-Xylene	0.302	0.010	"	0.250		121	70-130			
o-Xylene	0.140	0.0050	"	0.125		112	70-130			
1,2,4-Trimethylbenzene	0.156	0.0050	"	0.125		125	70-130			
1,3,5-Trimethylbenzene	0.161	0.0050	"	0.125		129	70-130			
Naphthalene	0.108	0.0038	"	0.125		86.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0400		"	0.0400		100	50-150			
Surrogate: Toluene-d8	0.0409		"	0.0400		102	50-150			
Surrogate: 4-Bromofluorobenzene	0.0398		"	0.0400		99.5	50-150			

Matrix Spike (BFG0272-MS1)

Source: 2207206-01

Prepared & Analyzed: 07/15/22

Benzene	0.136	0.0020	mg/kg	0.125	ND	109	70-130			
Toluene	0.155	0.0050	"	0.125	ND	124	70-130			
Ethylbenzene	0.151	0.0050	"	0.125	ND	120	70-130			
m,p-Xylene	0.299	0.010	"	0.250	ND	120	70-130			
o-Xylene	0.139	0.0050	"	0.125	ND	111	70-130			
1,2,4-Trimethylbenzene	0.160	0.0050	"	0.125	ND	128	70-130			
1,3,5-Trimethylbenzene	0.135	0.0050	"	0.125	ND	108	70-130			
Naphthalene	0.116	0.0038	"	0.125	ND	92.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0406		"	0.0400		101	50-150			
Surrogate: Toluene-d8	0.0409		"	0.0400		102	50-150			
Surrogate: 4-Bromofluorobenzene	0.0411		"	0.0400		103	50-150			

Summit Scientific

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

Project: Cockroft 19V Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

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

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

Batch BFG0272 - EPA 5030 Soil MS

Matrix Spike Dup (BFG0272-MSD1)		Source: 2207206-01			Prepared & Analyzed: 07/15/22						
Benzene	0.134	0.0020	mg/kg	0.125	ND	107	70-130	1.73	30		
Toluene	0.151	0.0050	"	0.125	ND	121	70-130	2.31	30		
Ethylbenzene	0.146	0.0050	"	0.125	ND	117	70-130	3.20	30		
m,p-Xylene	0.292	0.010	"	0.250	ND	117	70-130	2.32	30		
o-Xylene	0.136	0.0050	"	0.125	ND	109	70-130	1.94	30		
1,2,4-Trimethylbenzene	0.152	0.0050	"	0.125	ND	122	70-130	4.90	30		
1,3,5-Trimethylbenzene	0.157	0.0050	"	0.125	ND	126	70-130	15.2	30		
Naphthalene	0.113	0.0038	"	0.125	ND	90.5	70-130	2.51	30		
Surrogate: 1,2-Dichloroethane-d4	0.0407		"	0.0400		102	50-150				
Surrogate: Toluene-d8	0.0413		"	0.0400		103	50-150				
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	50-150				

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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

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 BFG0273 - EPA 3550A

Blank (BFG0273-BLK1)

Prepared & Analyzed: 07/15/22

C10-C28 (DRO)	ND	50	mg/kg
C28-C36 (ORO)	ND	50	"

LCS (BFG0273-BS1)

Prepared & Analyzed: 07/15/22

C10-C28 (DRO)	435	50	mg/kg	500	87.0	70-130
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Matrix Spike (BFG0273-MS1)

Source: 2207206-01

Prepared & Analyzed: 07/15/22

C10-C28 (DRO)	429	50	mg/kg	500	24.7	80.8	70-130
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Matrix Spike Dup (BFG0273-MSD1)

Source: 2207206-01

Prepared & Analyzed: 07/15/22

C10-C28 (DRO)	447	50	mg/kg	500	24.7	84.4	70-130	4.09	20
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Summit Scientific

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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFG0257 - EPA 5030 Soil MS

Blank (BFG0257-BLK1)

Prepared & Analyzed: 07/15/22

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0391		"	0.0333		117	40-150			
Surrogate: Fluoranthene-d10	0.0353		"	0.0333		106	40-150			

LCS (BFG0257-BS1)

Prepared & Analyzed: 07/15/22

Acenaphthene	0.0301	0.00500	mg/kg	0.0333	90.3	31-137
Anthracene	0.0338	0.00500	"	0.0333	101	30-120
Benzo (a) anthracene	0.0332	0.00500	"	0.0333	99.7	30-120
Benzo (a) pyrene	0.0356	0.00500	"	0.0333	107	30-120
Benzo (b) fluoranthene	0.0360	0.00500	"	0.0333	108	30-120
Benzo (k) fluoranthene	0.0381	0.00500	"	0.0333	114	30-120
Chrysene	0.0371	0.00500	"	0.0333	111	30-120
Dibenz (a,h) anthracene	0.0349	0.00500	"	0.0333	105	30-120
Fluoranthene	0.0323	0.00500	"	0.0333	96.9	30-120
Fluorene	0.0274	0.00500	"	0.0333	82.3	30-120
Indeno (1,2,3-cd) pyrene	0.0328	0.00500	"	0.0333	98.3	30-120
Pyrene	0.0343	0.00500	"	0.0333	103	35-142
1-Methylnaphthalene	0.0345	0.00500	"	0.0333	103	35-142
2-Methylnaphthalene	0.0265	0.00500	"	0.0333	79.6	35-142
Surrogate: 2-Methylnaphthalene-d10	0.0333		"	0.0333	100	40-150
Surrogate: Fluoranthene-d10	0.0305		"	0.0333	91.4	40-150

Summit Scientific

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

Project: Cockroft 19V Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFG0257 - EPA 5030 Soil MS

Matrix Spike (BFG0257-MS1)

Source: 2207037-02

Prepared & Analyzed: 07/15/22

Acenaphthene	0.0185	0.00500	mg/kg	0.0333	ND	55.5	31-137			
Anthracene	0.0251	0.00500	"	0.0333	ND	75.4	30-120			
Benzo (a) anthracene	0.0254	0.00500	"	0.0333	ND	76.2	30-120			
Benzo (a) pyrene	0.0262	0.00500	"	0.0333	ND	78.7	30-120			
Benzo (b) fluoranthene	0.0268	0.00500	"	0.0333	ND	80.3	30-120			
Benzo (k) fluoranthene	0.0311	0.00500	"	0.0333	ND	93.2	30-120			
Chrysene	0.0275	0.00500	"	0.0333	ND	82.6	30-120			
Dibenz (a,h) anthracene	0.0246	0.00500	"	0.0333	ND	73.7	30-120			
Fluoranthene	0.0255	0.00500	"	0.0333	ND	76.5	30-120			
Fluorene	0.0174	0.00500	"	0.0333	ND	52.2	30-120			
Indeno (1,2,3-cd) pyrene	0.0236	0.00500	"	0.0333	ND	70.9	30-120			
Pyrene	0.0286	0.00500	"	0.0333	ND	85.8	35-142			
1-Methylnaphthalene	0.0242	0.00500	"	0.0333	ND	72.6	15-130			
2-Methylnaphthalene	0.0210	0.00500	"	0.0333	ND	63.0	15-130			
Surrogate: 2-Methylnaphthalene-d10	0.0206		"	0.0333		61.8	40-150			
Surrogate: Fluoranthene-d10	0.0244		"	0.0333		73.3	40-150			

Matrix Spike Dup (BFG0257-MSD1)

Source: 2207037-02

Prepared & Analyzed: 07/15/22

Acenaphthene	0.0145	0.00500	mg/kg	0.0333	ND	43.6	31-137	24.0	30	
Anthracene	0.0191	0.00500	"	0.0333	ND	57.2	30-120	27.4	30	
Benzo (a) anthracene	0.0198	0.00500	"	0.0333	ND	59.3	30-120	25.0	30	
Benzo (a) pyrene	0.0199	0.00500	"	0.0333	ND	59.6	30-120	27.7	30	
Benzo (b) fluoranthene	0.0204	0.00500	"	0.0333	ND	61.2	30-120	27.0	30	
Benzo (k) fluoranthene	0.0240	0.00500	"	0.0333	ND	71.9	30-120	25.7	30	
Chrysene	0.0213	0.00500	"	0.0333	ND	63.9	30-120	25.5	30	
Dibenz (a,h) anthracene	0.0189	0.00500	"	0.0333	ND	56.7	30-120	26.1	30	
Fluoranthene	0.0195	0.00500	"	0.0333	ND	58.6	30-120	26.5	30	
Fluorene	0.0145	0.00500	"	0.0333	ND	43.6	30-120	17.8	30	
Indeno (1,2,3-cd) pyrene	0.0182	0.00500	"	0.0333	ND	54.7	30-120	25.7	30	
Pyrene	0.0209	0.00500	"	0.0333	ND	62.8	35-142	30.9	30	QR-02
1-Methylnaphthalene	0.0137	0.00500	"	0.0333	ND	41.2	15-130	55.3	50	QR-02
2-Methylnaphthalene	0.0159	0.00500	"	0.0333	ND	47.6	15-130	27.9	50	
Surrogate: 2-Methylnaphthalene-d10	0.0137		"	0.0333		41.1	40-150			
Surrogate: Fluoranthene-d10	0.0185		"	0.0333		55.4	40-150			

Summit Scientific

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

Project: Cockroft 19V Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control
Summit Scientific

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

Batch BFG0299 - EPA 3050B

Blank (BFG0299-BLK1)

Prepared: 07/18/22 Analyzed: 07/19/22

Boron ND 0.0100 mg/L

LCS (BFG0299-BS1)

Prepared: 07/18/22 Analyzed: 07/19/22

Boron 5.26 0.0100 mg/L 5.00 105 80-120

Duplicate (BFG0299-DUP1)

Source: 2207204-01

Prepared: 07/18/22 Analyzed: 07/19/22

Boron 0.0202 0.0100 mg/L 0.0222 9.34 20

Matrix Spike (BFG0299-MS1)

Source: 2207204-01

Prepared: 07/18/22 Analyzed: 07/19/22

Boron 5.26 0.0100 mg/L 5.00 0.0222 105 75-125

Matrix Spike Dup (BFG0299-MSD1)

Source: 2207204-01

Prepared: 07/18/22 Analyzed: 07/19/22

Boron 5.73 0.0100 mg/L 5.00 0.0222 114 75-125 8.47 25

Summit Scientific

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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BFG0263 - General Preparation

Blank (BFG0263-BLK1)

Prepared: 07/15/22 Analyzed: 07/20/22

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

LCS (BFG0263-BS1)

Prepared: 07/15/22 Analyzed: 07/20/22

Calcium	5.62	0.0500	mg/L wet	5.00	112	70-130
Magnesium	5.40	0.0500	"	5.00	108	70-130
Sodium	5.13	0.0500	"	5.00	103	70-130

Summit Scientific

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

Project: Cockroft 19V Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
Summit Scientific

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

Batch BFG0264 - General Preparation

Duplicate (BFG0264-DUP1)		Source: 2207198-01		Prepared & Analyzed: 07/15/22						
% Solids	94.2		%		94.4			0.175	20	

Summit Scientific

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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control
Summit Scientific

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

Batch BFG0318 - General Preparation

Blank (BFG0318-BLK1)

Prepared: 07/18/22 Analyzed: 07/19/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFG0318-BS1)

Prepared: 07/18/22 Analyzed: 07/19/22

Specific Conductance (EC) 0.147 0.0100 mmhos/cm 0.150 98.0 95-105

Duplicate (BFG0318-DUP1)

Source: 2207198-01

Prepared: 07/18/22 Analyzed: 07/19/22

Specific Conductance (EC) 0.971 0.0100 mmhos/cm 0.989 1.91 20

Summit Scientific

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

Project: Cockroft 19V Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BFG0319 - General Preparation

LCS (BFG0319-BS1)

Prepared: 07/18/22 Analyzed: 07/19/22

pH	9.20	pH Units	9.18	100	95-105
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Duplicate (BFG0319-DUP1)

Source: 2207198-01

Prepared: 07/18/22 Analyzed: 07/19/22

pH	7.63	pH Units	7.58	0.657	20
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Summit Scientific

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

Project: Cockroft 19V Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/21/22 12:52

Notes and Definitions

QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

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