

**TABLE 1
FORMER KERBS 1-20 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE**

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
SS01 @ 4'	5/13/2021	4 ft. bgs	0.56	0.17	0.53	6.6	2.3	1.3	0.26	34
SS02 @ 13'	5/13/2021	13 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	310
SS03 @ 4'	6/23/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SS04 @ 12'	6/23/2021	12 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SS05 @ 4'	6/23/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SS06 @ 12'	6/23/2021	12 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SS07 @ 4'	6/23/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SS08 @ 12'	6/23/2021	12 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
SS09 @ 4'	6/23/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	58
SS10 @ 12'	6/23/2021	12 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

 = Source material characterization sample

TMB = Trimethylbenzene

ft. = Feet

bgs = Below ground surface

BOLD = Analytical result is in exceedance of applicable standard.

TABLE 2
FORMER KERBS 1-20 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
SS01 @ 4'	5/13/2021	4 ft. bgs	9.08	0.902	0.722	0.976

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 = milligram per liter

SS01 @ 4' = Source material characterization sample

ft. = Feet

bgs = Below ground surface

BOLD = Analytical result is in exceedance of applicable standard.

TABLE 3
FORMER KERBS 1-20 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
SS01 @ 4'	5/13/2021	4 ft. bgs	0.0336	0.0807	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0406	<0.00500	0.00710	0.314	0.576

Notes:

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
3. SSLs are applicable if a pathway for communication with

COGCC = Colorado Oil and Gas Conservation Commission

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

TMB = Trimethylbenzene

PAHs = Polycyclic aromatic hydrocarbons

Benz(a) = Benzanthracene

Benzo(a) = Benzopyrene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

M = Methylnaphthalene

mg/kg = Milligrams per kilogram

Source material characterization sample

ft. = Feet

bgs = Below ground surface

BOLD = Analytical result is in exceedance of applicable standard.

**TABLE 4
FORMER KERBS 1-20 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
METALS**

Sample ID	Date Sampled	Depth	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Residential SSL ^(1,2)			0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL ^(1,2,3)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
SS01 @ 4'	5/13/2021	4 ft. bgs	6.88	101	<0.267	<0.30 ⁽⁴⁾	15.1	34.6	18.0	1.11	0.0581	76.5

Notes:

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
 2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
 3. SSLs are applicable if a pathway for communication with groundwater is present.
 4. Compound falls within COGCC Table 915-1 Footnote 9.
- COGCC = Colorado Oil and Gas Conservation Commission
 (<) = Analytical result is less than the indicated laboratory reporting limit.
 mg/kg = Milligrams per kilogram
 = Source material characterization sample
 ft. = Feet
 bgs = Below ground surface
BOLD = Analytical result is in exceedance of applicable standard.

**TABLE 5
FORMER KERBS 1-20 WELLHEAD
FIELD DATA SUMMARY TABLE**

Sample ID	Date Sampled	Depth	GPS Data ⁽¹⁾		PDOP Value	VOC Concentration ⁽²⁾ (ppm)
			Latitude	Longitude		
SS01 @ 4'	5/13/2021	4 ft. bgs	40.301587	-104.805238	1.3	580.0
SS02 @ 13'	6/22/2021	13 ft. bgs	NC	NC	NC	130.1
FL01-01 @ 4'	6/22/2021	4 ft. bgs	40.301446	-104.804936	1.0	0.2
SS03 @ 4'	6/23/2021	4 ft. bgs	40.301552	-104.805234	1.0	1.3
SS04 @ 12'	6/23/2021	12 ft. bgs	40.301552	-104.805234	1.0	1.8
SS05 @ 4'	6/23/2021	4 ft. bgs	40.301573	-104.805201	1.0	4.7
SS06 @ 12'	6/23/2021	12 ft. bgs	40.301573	-104.805201	1.0	1.2
SS07 @ 4'	6/23/2021	4 ft. bgs	40.301605	-104.805223	1.0	3.6
SS08 @ 12'	6/23/2021	12 ft. bgs	40.301605	-104.805223	1.0	2.3
SS09 @ 4'	6/23/2021	4 ft. bgs	40.301582	-104.805263	1.1	1.2
SS10 @ 12'	6/23/2021	12 ft. bgs	40.301582	-104.805263	1.1	3.5
SS11 @ 2.5'	6/23/2021	2.5 ft. bgs	40.301552	-104.805234	1.0	0.7
SS12 @ 15'	6/23/2021	15 ft. bgs	NC	NC	NC	17.3
SS13 @ 14'	6/23/2021	14 ft. bgs	40.301552	-104.805234	1.0	0.7
SS14 @ 14'	6/23/2021	14 ft. bgs	40.301573	-104.805201	1.0	1.3
SS15 @ 14'	6/23/2021	14 ft. bgs	40.301605	-104.805223	1.0	0.6
SS16 @ 14'	6/23/2021	14 ft. bgs	40.301582	-104.805263	1.1	0.6
BKG01 @ 4'	6/23/2021	4 ft. bgs	40.301659	-104.805365	1.0	0.7

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

 = Source material characterization sample

ft. = Feet

bgs = Below ground surface

NC = Data not collected

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

May 20, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Kerbs 1-20 Wellhead

Work Order #2105180

Enclosed are the results of analyses for samples received by Summit Scientific on 05/13/21 18:24. 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, stylized initial "M".

Muri Premer For Paul Shrewsbury
President



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
05/20/21 17:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@4'	2105180-01	Soil	05/13/21 16:54	05/13/21 18:24

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.

2105180

Summit Scientific

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: Kerbs 1-20 Wellhead
 Sampler Name: Kevin Fletcher 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	GBTEXN - 8260B ⁹¹⁵	TPH - (C6 - C36) ⁹¹⁵	pH, EC, SAR 915	Boron - HWS 915	VOC - 915	PAH - 915		Metals - 915	TMBs (124435) 915
1	SSOL@4	5/13/21	1654	3			X			X			X	X	X	X	X	X	X	X	pH, EC, SAR by saturated paste
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
Relinquished by: Kevin Fletcher		Date/Time: 5/13/21 1815		Received by: Tasman's Lock Box		Date/Time: 5/13/21 1815		Turn Around Time (Check)			Notes:										
								Same Day <input checked="" type="checkbox"/> 72 hours													
								24 hours <input type="checkbox"/> Standard													
								48 hours <input type="checkbox"/>													
								Sample Integrity:													
								Temperature Upon Receipt: 4													
								Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No													

Sample Receipt Checklist

S2 Work Order 2105180

Client: POL / Tasman Client Project ID: Kerbs 1-20 Wellhead

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

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

Temp (°C)	<u>4</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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>On ice</u>
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Same day.</u>
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

JB
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

5/13/21
Date/Time



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/20/21 17:28

SS01@4'
2105180-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	0.56	0.0020		mg/kg	1	BEE0240	05/13/21	05/14/21	EPA 8260B	
Toluene	0.17	0.0050		"	"	"	"	"	"	
Ethylbenzene	0.53	0.0050		"	"	"	"	"	"	
Xylenes (total)	6.6	0.10		"	10	"	"	"	"	
1,2,4-Trimethylbenzene	2.3	0.050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	1.3	0.050		"	"	"	"	"	"	
Naphthalene	0.26	0.0038		"	1	"	"	"	"	
Gasoline Range Hydrocarbons	34	0.50		"	"	"	"	"	"	

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		87.6 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.5 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BEE0241	"	05/13/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		116 %		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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/20/21 17:28

SS01@4'
2105180-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.0336	0.00500	mg/kg	1	BEE0273	05/17/21	05/18/21	EPA 8270D SIM	
Anthracene	0.0807	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	0.0406	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	0.00710	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	0.314	0.0500	"	10	"	"	"	"	
2-Methylnaphthalene	0.576	0.0500	"	"	"	"	"	"	

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		71.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		70.5 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.976	0.0100	mg/L	1	BEE0254	05/14/21	05/15/21	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/20/21 17:28

SS01@4'
2105180-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	6.88	0.267	mg/kg dry	1	BEE0288	05/17/21	05/18/21	EPA 6020B	
Barium	101	0.533	"	"	"	"	"	"	
Cadmium	ND	0.267	"	"	"	"	"	"	
Copper	15.1	0.533	"	"	"	"	"	"	
Lead	34.6	0.267	"	"	"	"	"	"	
Nickel	18.0	0.533	"	"	"	"	"	"	
Selenium	1.11	0.347	"	"	"	"	"	"	
Silver	0.0581	0.0267	"	"	"	"	"	"	
Zinc	76.5	0.533	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BEE0261	05/14/21	05/17/21	EPA 7196A	

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

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	41.5	0.0667	mg/L dry	1	BEE0262	05/14/21	05/17/21	EPA 6020B	
Magnesium	4.02	0.0667	"	"	"	"	"	"	
Sodium	18.2	0.0667	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.722	0.00100	units	1	BEE0312	05/18/21	05/18/21	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/13/21 16:54**

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: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

SS01@4'
2105180-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	75.0	%	1	BEE0250	05/14/21	05/14/21	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.902	0.0100	mmhos/cm	1	BEE0286	05/17/21	05/17/21	EPA 120.1	

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

Date Sampled: **05/13/21 16:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.08		pH Units	1	BEE0287	05/17/21	05/17/21	EPA 9045D	

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/20/21 17:28

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 BEE0240 - EPA 5030 Soil MS

Blank (BEE0240-BLK1)

Prepared: 05/13/21 Analyzed: 05/14/21

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	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0320		"	0.0400		80.0		23-173			
<i>Surrogate: Toluene-d8</i>	0.0375		"	0.0400		93.8		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0327		"	0.0400		81.8		21-167			

LCS (BEE0240-BS1)

Prepared: 05/13/21 Analyzed: 05/14/21

Benzene	0.0955	0.0020	mg/kg	0.100		95.5		70-130			
Toluene	0.107	0.0050	"	0.100		107		70-130			
Ethylbenzene	0.120	0.0050	"	0.100		120		70-130			
m,p-Xylene	0.258	0.010	"	0.200		129		70-130			
o-Xylene	0.125	0.0050	"	0.100		125		70-130			
1,2,4-Trimethylbenzene	0.124	0.0050	"	0.100		124		70-130			
1,3,5-Trimethylbenzene	0.121	0.0050	"	0.100		121		70-130			
Naphthalene	0.121	0.0038	"	0.100		121		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0323		"	0.0400		80.7		23-173			
<i>Surrogate: Toluene-d8</i>	0.0410		"	0.0400		102		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0343		"	0.0400		85.6		21-167			

Matrix Spike (BEE0240-MS1)

Source: 2105176-01

Prepared: 05/13/21 Analyzed: 05/14/21

Benzene	0.0954	0.0020	mg/kg	0.100	ND	95.4		70-130			
Toluene	0.103	0.0050	"	0.100	ND	103		70-130			
Ethylbenzene	0.115	0.0050	"	0.100	ND	115		70-130			
m,p-Xylene	0.236	0.010	"	0.200	ND	118		70-130			
o-Xylene	0.117	0.0050	"	0.100	ND	117		70-130			
1,2,4-Trimethylbenzene	0.113	0.0050	"	0.100	ND	113		70-130			
1,3,5-Trimethylbenzene	0.112	0.0050	"	0.100	ND	112		70-130			
Naphthalene	0.124	0.0038	"	0.100	ND	124		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0345		"	0.0400		86.3		23-173			
<i>Surrogate: Toluene-d8</i>	0.0389		"	0.0400		97.2		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0328		"	0.0400		82.0		21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

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

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

Batch BEE0240 - EPA 5030 Soil MS

Matrix Spike Dup (BEE0240-MSD1)	Source: 2105176-01			Prepared: 05/13/21 Analyzed: 05/14/21						
Benzene	0.0929	0.0020	mg/kg	0.100	ND	92.9	70-130	2.58	30	
Toluene	0.0923	0.0050	"	0.100	ND	92.3	70-130	11.3	30	
Ethylbenzene	0.107	0.0050	"	0.100	ND	107	70-130	7.28	30	
m,p-Xylene	0.239	0.010	"	0.200	ND	120	70-130	1.39	30	
o-Xylene	0.111	0.0050	"	0.100	ND	111	70-130	5.37	30	
1,2,4-Trimethylbenzene	0.111	0.0050	"	0.100	ND	111	70-130	1.69	30	
1,3,5-Trimethylbenzene	0.113	0.0050	"	0.100	ND	113	70-130	0.695	30	
Naphthalene	0.121	0.0038	"	0.100	ND	121	70-130	2.20	30	
Surrogate: 1,2-Dichloroethane-d4	0.0359		"	0.0400		89.8	23-173			
Surrogate: Toluene-d8	0.0383		"	0.0400		95.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0343		"	0.0400		85.7	21-167			

Summit Scientific

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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

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 BEE0241 - EPA 3550A

Blank (BEE0241-BLK1)

Prepared: 05/13/21 Analyzed: 05/14/21

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

LCS (BEE0241-BS1)

Prepared: 05/13/21 Analyzed: 05/14/21

C10-C28 (DRO)	434	50	mg/kg	500	86.8	70-130				
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Matrix Spike (BEE0241-MS1)

Source: 2105176-01

Prepared: 05/13/21 Analyzed: 05/14/21

C10-C28 (DRO)	465	50	mg/kg	500	11.2	90.8	70-130			
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Matrix Spike Dup (BEE0241-MSD1)

Source: 2105176-01

Prepared: 05/13/21 Analyzed: 05/14/21

C10-C28 (DRO)	454	50	mg/kg	500	11.2	88.6	70-130	2.44	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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/20/21 17:28

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEE0273 - EPA 5030 Soil MS

Blank (BEE0273-BLK1)

Prepared & Analyzed: 05/17/21

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	0.0276		"	0.0333	82.7	40-150					
Surrogate: Fluoranthene-d10	0.0272		"	0.0333	81.7	40-150					

LCS (BEE0273-BS1)

Prepared & Analyzed: 05/17/21

Acenaphthene	0.0300	0.00500	mg/kg	0.0333	89.9	31-137					
Anthracene	0.0295	0.00500	"	0.0333	88.4	30-120					
Benzo (a) anthracene	0.0285	0.00500	"	0.0333	85.4	30-120					
Benzo (a) pyrene	0.0321	0.00500	"	0.0333	96.4	30-120					
Benzo (b) fluoranthene	0.0350	0.00500	"	0.0333	105	30-120					
Benzo (k) fluoranthene	0.0335	0.00500	"	0.0333	101	30-120					
Chrysene	0.0288	0.00500	"	0.0333	86.3	30-120					
Dibenz (a,h) anthracene	0.0356	0.00500	"	0.0333	107	30-120					
Fluoranthene	0.0274	0.00500	"	0.0333	82.1	30-120					
Fluorene	0.0330	0.00500	"	0.0333	99.0	30-120					
Indeno (1,2,3-cd) pyrene	0.0333	0.00500	"	0.0333	100	30-120					
Pyrene	0.0254	0.00500	"	0.0333	76.1	35-142					
1-Methylnaphthalene	0.0275	0.00500	"	0.0333	82.6	35-142					
2-Methylnaphthalene	0.0296	0.00500	"	0.0333	88.7	35-142					
Surrogate: 2-Methylnaphthalene-d10	0.0273		"	0.0333	82.0	40-150					
Surrogate: Fluoranthene-d10	0.0302		"	0.0333	90.5	40-150					

Summit Scientific

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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/20/21 17:28

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BEE0273 - EPA 5030 Soil MS

Matrix Spike (BEE0273-MS1)	Source: 2105092-01			Prepared & Analyzed: 05/17/21						
Acenaphthene	0.0309	0.00500	mg/kg	0.0333	ND	92.7	31-137			
Anthracene	0.0299	0.00500	"	0.0333	ND	89.6	30-120			
Benzo (a) anthracene	0.0284	0.00500	"	0.0333	ND	85.3	30-120			
Benzo (a) pyrene	0.0320	0.00500	"	0.0333	ND	96.1	30-120			
Benzo (b) fluoranthene	0.0353	0.00500	"	0.0333	ND	106	30-120			
Benzo (k) fluoranthene	0.0344	0.00500	"	0.0333	ND	103	30-120			
Chrysene	0.0291	0.00500	"	0.0333	ND	87.2	30-120			
Dibenz (a,h) anthracene	0.0356	0.00500	"	0.0333	ND	107	30-120			
Fluoranthene	0.0273	0.00500	"	0.0333	ND	82.0	30-120			
Fluorene	0.0341	0.00500	"	0.0333	ND	102	30-120			
Indeno (1,2,3-cd) pyrene	0.0336	0.00500	"	0.0333	ND	101	30-120			
Pyrene	0.0258	0.00500	"	0.0333	ND	77.5	35-142			
1-Methylnaphthalene	0.0282	0.00500	"	0.0333	ND	84.7	15-130			
2-Methylnaphthalene	0.0300	0.00500	"	0.0333	ND	90.0	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0256</i>		<i>"</i>	<i>0.0333</i>		<i>76.8</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0271</i>		<i>"</i>	<i>0.0333</i>		<i>81.3</i>	<i>40-150</i>			

Matrix Spike Dup (BEE0273-MSD1)	Source: 2105092-01			Prepared & Analyzed: 05/17/21						
Acenaphthene	0.0315	0.00500	mg/kg	0.0333	ND	94.5	31-137	1.89	30	
Anthracene	0.0303	0.00500	"	0.0333	ND	90.9	30-120	1.37	30	
Benzo (a) anthracene	0.0293	0.00500	"	0.0333	ND	88.0	30-120	3.08	30	
Benzo (a) pyrene	0.0327	0.00500	"	0.0333	ND	98.2	30-120	2.15	30	
Benzo (b) fluoranthene	0.0359	0.00500	"	0.0333	ND	108	30-120	1.70	30	
Benzo (k) fluoranthene	0.0347	0.00500	"	0.0333	ND	104	30-120	0.647	30	
Chrysene	0.0296	0.00500	"	0.0333	ND	88.9	30-120	1.91	30	
Dibenz (a,h) anthracene	0.0365	0.00500	"	0.0333	ND	110	30-120	2.45	30	
Fluoranthene	0.0279	0.00500	"	0.0333	ND	83.7	30-120	1.99	30	
Fluorene	0.0345	0.00500	"	0.0333	ND	103	30-120	1.16	30	
Indeno (1,2,3-cd) pyrene	0.0342	0.00500	"	0.0333	ND	102	30-120	1.60	30	
Pyrene	0.0264	0.00500	"	0.0333	ND	79.2	35-142	2.17	30	
1-Methylnaphthalene	0.0290	0.00500	"	0.0333	ND	86.9	15-130	2.59	50	
2-Methylnaphthalene	0.0318	0.00500	"	0.0333	ND	95.4	15-130	5.82	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0269</i>		<i>"</i>	<i>0.0333</i>		<i>80.7</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0295</i>		<i>"</i>	<i>0.0333</i>		<i>88.5</i>	<i>40-150</i>			

Summit Scientific

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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

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

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

Batch BEE0254 - EPA 3050B

Blank (BEE0254-BLK1)

Prepared: 05/14/21 Analyzed: 05/15/21

Boron ND 0.0100 mg/L

LCS (BEE0254-BS1)

Prepared: 05/14/21 Analyzed: 05/15/21

Boron 5.21 0.0100 mg/L 5.00 104 80-120

Duplicate (BEE0254-DUP1)

Source: 2105149-01

Prepared: 05/14/21 Analyzed: 05/15/21

Boron 0.492 0.0100 mg/L 0.464 5.81 20

Matrix Spike (BEE0254-MS1)

Source: 2105149-01

Prepared: 05/14/21 Analyzed: 05/15/21

Boron 6.42 0.0100 mg/L 5.00 0.464 119 75-125

Matrix Spike Dup (BEE0254-MSD1)

Source: 2105149-01

Prepared: 05/14/21 Analyzed: 05/15/21

Boron 6.74 0.0100 mg/L 5.00 0.464 125 75-125 4.77 25

Summit Scientific

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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/20/21 17:28

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BEE0288 - EPA 3050B

Blank (BEE0288-BLK1)

Prepared: 05/17/21 Analyzed: 05/18/21

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Selenium	ND	0.260	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							

LCS (BEE0288-BS1)

Prepared: 05/17/21 Analyzed: 05/18/21

Arsenic	34.7	0.200	mg/kg wet	40.0	86.8	80-120
Barium	33.1	0.400	"	40.0	82.6	80-120
Cadmium	1.65	0.200	"	2.00	82.7	80-120
Copper	32.9	0.400	"	40.0	82.2	80-120
Lead	16.6	0.200	"	20.0	83.1	80-120
Nickel	35.8	0.400	"	40.0	89.5	80-120
Selenium	3.27	0.260	"	4.00	81.8	80-120
Silver	1.63	0.0200	"	2.00	81.3	80-120
Zinc	34.7	0.400	"	40.0	86.8	80-120

Duplicate (BEE0288-DUP1)

Source: 2105149-01

Prepared: 05/17/21 Analyzed: 05/18/21

Arsenic	1.52	0.245	mg/kg dry	1.56	2.73	20
Barium	70.6	0.489	"	71.9	1.79	20
Cadmium	0.261	0.245	"	0.246	5.98	20
Copper	13.4	0.489	"	14.4	7.80	20
Lead	16.7	0.245	"	13.8	19.4	20
Nickel	5.23	0.489	"	4.69	10.9	20
Selenium	0.576	0.318	"	0.584	1.48	20
Silver	0.152	0.0245	"	0.130	15.3	20
Zinc	49.7	0.489	"	47.9	3.62	20

Summit Scientific

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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BEE0288 - EPA 3050B

Matrix Spike (BEE0288-MS1)

Source: 2105149-01

Prepared: 05/17/21 Analyzed: 05/18/21

Arsenic	46.9	0.245	mg/kg dry	48.9	1.56	92.8	75-125			
Barium	127	0.489	"	48.9	71.9	112	75-125			
Cadmium	2.56	0.245	"	2.45	0.246	94.5	75-125			
Copper	60.1	0.489	"	48.9	14.4	93.4	75-125			
Lead	37.2	0.245	"	24.5	13.8	95.9	75-125			
Nickel	48.5	0.489	"	48.9	4.69	89.5	75-125			
Selenium	5.00	0.318	"	4.89	0.584	90.2	75-125			
Silver	2.39	0.0245	"	2.45	0.130	92.5	75-125			
Zinc	96.5	0.489	"	48.9	47.9	99.5	75-125			

Matrix Spike Dup (BEE0288-MSD1)

Source: 2105149-01

Prepared: 05/17/21 Analyzed: 05/18/21

Arsenic	48.7	0.245	mg/kg dry	48.9	1.56	96.4	75-125	3.69	25
Barium	129	0.489	"	48.9	71.9	117	75-125	2.06	25
Cadmium	2.67	0.245	"	2.45	0.246	99.3	75-125	4.50	25
Copper	63.5	0.489	"	48.9	14.4	100	75-125	5.50	25
Lead	38.5	0.245	"	24.5	13.8	101	75-125	3.29	25
Nickel	51.0	0.489	"	48.9	4.69	94.6	75-125	5.00	25
Selenium	5.30	0.318	"	4.89	0.584	96.3	75-125	5.78	25
Silver	2.49	0.0245	"	2.45	0.130	96.5	75-125	3.96	25
Zinc	106	0.489	"	48.9	47.9	119	75-125	9.32	25

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: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BEE0261 - 3060A Mod

Blank (BEE0261-BLK1)

Prepared: 05/14/21 Analyzed: 05/17/21

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BEE0261-BS1)

Prepared: 05/14/21 Analyzed: 05/17/21

Chromium, Hexavalent 23.6 0.30 mg/kg wet 25.0 94.6 80-120

Duplicate (BEE0261-DUP1)

Source: 2105143-02

Prepared: 05/14/21 Analyzed: 05/17/21

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BEE0261-MS1)

Source: 2105143-02

Prepared: 05/14/21 Analyzed: 05/17/21

Chromium, Hexavalent 25.8 0.30 mg/kg dry 27.4 ND 94.0 75-125

Matrix Spike Dup (BEE0261-MSD1)

Source: 2105143-02

Prepared: 05/14/21 Analyzed: 05/17/21

Chromium, Hexavalent 25.7 0.30 mg/kg dry 27.4 ND 93.8 75-125 0.213 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: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

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

Summit Scientific

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

Batch BEE0262 - General Preparation

Blank (BEE0262-BLK1)

Prepared: 05/14/21 Analyzed: 05/17/21

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

LCS (BEE0262-BS1)

Prepared: 05/14/21 Analyzed: 05/17/21

Calcium	4.89	0.0500	mg/L wet	5.00	97.7	70-130				
Magnesium	6.40	0.0500	"	5.00	128	70-130				
Sodium	5.61	0.0500	"	5.00	112	70-130				

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: Kerbs 1-20 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

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 BEE0250 - General Preparation

Duplicate (BEE0250-DUP1)

Source: 2105142-26

Prepared & Analyzed: 05/14/21

% Solids	83.8		%		84.0			0.229	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: Kerbs 1-20 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

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

Summit Scientific

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

Batch BEE0286 - General Preparation

Blank (BEE0286-BLK1)

Prepared & Analyzed: 05/17/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BEE0286-BS1)

Prepared & Analyzed: 05/17/21

Specific Conductance (EC) 0.163 0.0100 mmhos/cm 0.150 109 90-110

Duplicate (BEE0286-DUP1)

Source: 2105149-01

Prepared & Analyzed: 05/17/21

Specific Conductance (EC) 3.22 0.0100 mmhos/cm 3.24 0.775 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: Kerbs 1-20 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 05/20/21 17:28

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

Summit Scientific

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

Batch BEE0287 - General Preparation

LCS (BEE0287-BS1)

Prepared & Analyzed: 05/17/21

pH	9.33	pH Units	9.21	101	95-105
----	------	----------	------	-----	--------

Duplicate (BEE0287-DUP1)

Source: 2105149-01

Prepared & Analyzed: 05/17/21

pH	8.34	pH Units	8.33	0.120	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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/20/21 17:28

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

June 23, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Kerbs 1-20 Wellhead

Work Order #2106411

Enclosed are the results of analyses for samples received by Summit Scientific on 06/22/21 17:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury

President



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
06/23/21 06:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02@13'	2106411-01	Soil	06/22/21 11:42	06/22/21 17:15

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

2106411

Summit Scientific

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

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: Kerbs 1-20 Wellhead
 Sampler Name: Cody Miller 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	GBTEXN - 8260B ⁹¹⁵	TPH - (C6 - C36) ⁴¹⁵	pH, EC, SAR ⁹¹⁵	Boron - HWS ⁹¹⁵	VOC - 915	PAH - 915		Metals - 915	MIBs, O, 2, 4, 6, 8, 10, 13, 15 ⁹¹⁵
1	SS02 @ 13'	6/22/21	1142	3			X			X			X	X						X	pH, EC, SAR by saturated paste
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
Relinquished by: <u>Cody Miller</u>		Date/Time: <u>6/22/21 1440</u>		Received by: <u>Tasman's Lock Box</u>		Date/Time: <u>6/22/21 1440</u>		Turn Around Time (Check)			Same Day <input checked="" type="checkbox"/> 72 hours <input type="checkbox"/>							Notes:			
Relinquished by: <u>Tasman's Lock Box</u>		Date/Time: <u>6/22/21 1715</u>		Received by: <u>[Signature]</u>		Date/Time: <u>6/22/21 1715</u>		24 hours <input type="checkbox"/> Standard <input type="checkbox"/>			48 hours <input type="checkbox"/>										
Relinquished by:		Date/Time:		Received by:		Date/Time:		Sample Integrity: <u>4</u>			Temperature Upon Receipt: <u>4</u>										
								Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No													

Sample Receipt Checklist

S2 Work Order 2106411

Client: PDC / Tasman Client Project ID: Kerbs 1-20 Wellhead

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

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

Temp (°C)	4
-----------	---

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.	✓			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 with holding times due within 48 hours sample due within 48 hours present?	✓			Same day.
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, H2SO4, NaOH, HNO3, ect			✓	
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.

JB
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

6/22/21
Date/Time



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/23/21 06:17

SS02@13'
2106411-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/22/21 11:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEF0471	06/22/21	06/22/21	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: **06/22/21 11:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		49.0 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		75.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		148 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/22/21 11:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	310	50		mg/kg	1	BEF0472	06/22/21	06/22/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **06/22/21 11:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		93.5 %		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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/23/21 06:17

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEF0471 - EPA 5030 Soil MS

Blank (BEF0471-BLK1)

Prepared: 06/22/21 Analyzed: 06/23/21

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0381		"	0.0400		95.2	23-173			
<i>Surrogate: Toluene-d8</i>	0.0396		"	0.0400		98.9	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0403		"	0.0400		101	21-167			

LCS (BEF0471-BS1)

Prepared: 06/22/21 Analyzed: 06/23/21

Benzene	0.0798	0.0020	mg/kg	0.100		79.8	70-130			
Toluene	0.0851	0.0050	"	0.100		85.1	70-130			
Ethylbenzene	0.105	0.0050	"	0.100		105	70-130			
m,p-Xylene	0.210	0.010	"	0.200		105	70-130			
o-Xylene	0.106	0.0050	"	0.100		106	70-130			
1,2,4-Trimethylbenzene	0.126	0.0050	"	0.100		126	70-130			
1,3,5-Trimethylbenzene	0.123	0.0050	"	0.100		123	70-130			
Naphthalene	0.102	0.0038	"	0.100		102	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0387		"	0.0400		96.8	23-173			
<i>Surrogate: Toluene-d8</i>	0.0403		"	0.0400		101	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0392		"	0.0400		98.0	21-167			

Matrix Spike (BEF0471-MS1)

Source: 2106395-01

Prepared: 06/22/21 Analyzed: 06/23/21

Benzene	0.0803	0.0020	mg/kg	0.100	ND	80.3	70-130			
Toluene	0.0867	0.0050	"	0.100	ND	86.7	70-130			
Ethylbenzene	0.110	0.0050	"	0.100	ND	110	70-130			
m,p-Xylene	0.219	0.010	"	0.200	ND	109	70-130			
o-Xylene	0.110	0.0050	"	0.100	ND	110	70-130			
1,2,4-Trimethylbenzene	0.128	0.0050	"	0.100	ND	128	70-130			
1,3,5-Trimethylbenzene	0.127	0.0050	"	0.100	ND	127	70-130			
Naphthalene	0.111	0.0038	"	0.100	ND	111	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0388		"	0.0400		96.9	23-173			
<i>Surrogate: Toluene-d8</i>	0.0398		"	0.0400		99.6	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0392		"	0.0400		98.0	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 06/23/21 06:17

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 BEF0471 - EPA 5030 Soil MS

Matrix Spike Dup (BEF0471-MSD1)	Source: 2106395-01			Prepared: 06/22/21 Analyzed: 06/23/21					
Benzene	0.0772	0.0020	mg/kg	0.100	ND	77.2	70-130	3.92	30
Toluene	0.0818	0.0050	"	0.100	ND	81.8	70-130	5.88	30
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	70-130	7.00	30
m,p-Xylene	0.205	0.010	"	0.200	ND	103	70-130	6.39	30
o-Xylene	0.104	0.0050	"	0.100	ND	104	70-130	5.65	30
1,2,4-Trimethylbenzene	0.121	0.0050	"	0.100	ND	121	70-130	6.02	30
1,3,5-Trimethylbenzene	0.118	0.0050	"	0.100	ND	118	70-130	7.09	30
Naphthalene	0.110	0.0038	"	0.100	ND	110	70-130	1.49	30
Surrogate: 1,2-Dichloroethane-d4	0.0402		"	0.0400		100	23-173		
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170		
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0400		99.2	21-167		

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 06/23/21 06:17

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 BEF0472 - EPA 3550A

Blank (BEF0472-BLK1)

Prepared: 06/22/21 Analyzed: 06/23/21

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

LCS (BEF0472-BS1)

Prepared: 06/22/21 Analyzed: 06/23/21

C10-C28 (DRO)	454	50	mg/kg	500	90.8	70-130				
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Matrix Spike (BEF0472-MS1)

Source: 2106395-01

Prepared: 06/22/21 Analyzed: 06/23/21

C10-C28 (DRO)	519	50	mg/kg	500	14.7	101	70-130			
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Matrix Spike Dup (BEF0472-MSD1)

Source: 2106395-01

Prepared: 06/22/21 Analyzed: 06/23/21

C10-C28 (DRO)	484	50	mg/kg	500	14.7	94.0	70-130	6.84	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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/23/21 06:17

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

June 24, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Kerbs 1-20 Wellhead

Work Order #2106417

Enclosed are the results of analyses for samples received by Summit Scientific on 06/23/21 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury

President



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS03@4'	2106417-01	Soil	06/23/21 09:26	06/23/21 18:00
SS04@12'	2106417-02	Soil	06/23/21 09:30	06/23/21 18:00
SS05@4'	2106417-03	Soil	06/23/21 09:36	06/23/21 18:00
SS06@12'	2106417-04	Soil	06/23/21 09:40	06/23/21 18:00
SS07@4'	2106417-05	Soil	06/23/21 09:46	06/23/21 18:00
SS08@12'	2106417-06	Soil	06/23/21 09:50	06/23/21 18:00
SS09@4'	2106417-07	Soil	06/23/21 10:02	06/23/21 18:00
SS10@12'	2106417-08	Soil	06/23/21 10:06	06/23/21 18:00

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.

2106417.1

Summit Scientific

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 1 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: Kerbs 1-20 Wellhead
 Sampler Name: Cody Miller 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	GBTEXN - 8260B ⁹¹⁵	TPH - (C6 - C36) ⁹¹⁵	pH, EC, SAR ⁹¹⁵	Boron - HWS ⁹¹⁵	VOC - 915	PAH - 915 ^{CM}	
1	SS03 @ 4'	6/23/21	0926	3			X			X			X	X			X	X	pH, EC, SAR by saturated paste PAH = Akenaphthene, Anthracene, Fluorene, Pyrene, 1 & 2 Methylnaphthalene Hold
2	SS04 @ 12'		0930	3			X			X			X	X			X	X	
3	SS05 @ 4'		0936	3			X			X			X	X			X	X	
4	SS06 @ 12'		0940	3			X			X			X	X			X	X	
5	SS07 @ 4'		0946	3			X			X			X	X			X	X	
6	SS08 @ 12'		0950	3			X			X			X	X			X	X	
7	SS09 @ 4'		1002	3			X			X			X	X			X	X	
8	SS10 @ 12'		1006	3			X			X			X	X			X	X	
9	SS11 @ 2.5'		1045	1			X			X			X	X					
10	BKG01 @ 2.5'	↓	1052	1			X			X								X	
Relinquished by: Cody Miller		Date/Time: 6/23/21 1415		Received by: Tasman's Lock Box		Date/Time: 6/23/21 1415		Turn Around Time (Check)			Notes:								
								Same Day <input checked="" type="checkbox"/>			72 hours <input type="checkbox"/>								
								24 hours <input type="checkbox"/>			Standard <input type="checkbox"/>								
								48 hours <input type="checkbox"/>											
								Sample Integrity:			Temperature Upon Receipt: 5								
								Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No											

Sample Receipt Checklist

S2 Work Order 2106417

Client: POC / Tasman Client Project ID: Kerbs 1-20 Wellhead

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

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

Temp (°C)	5
-----------	---

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.	✓			<i>On ice.</i>
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?	✓			<i>Same day.</i>
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, H2SO4, NaOH, HNO3, ect			✓	
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.

JB
 Custodian Printed Name or Initials

[Signature]
 Signature of Custodian

6/23/21
 Date/Time



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

SS03@4'
2106417-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/23/21 09:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BEF0498	06/23/21	06/23/21	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: **06/23/21 09:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		105 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/23/21 09:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BEF0499	06/23/21	06/23/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **06/23/21 09:26**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		111 %		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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

SS04@12'
2106417-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/23/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEF0498	06/23/21	06/23/21	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: **06/23/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/23/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEF0499	06/23/21	06/23/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **06/23/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		115 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

SS05@4'
2106417-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/23/21 09:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEF0498	06/23/21	06/23/21	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: **06/23/21 09:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/23/21 09:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEF0499	06/23/21	06/23/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **06/23/21 09:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		109 %	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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

SS06@12'
2106417-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/23/21 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEF0498	06/23/21	06/23/21	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: **06/23/21 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.1 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/23/21 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEF0499	06/23/21	06/23/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **06/23/21 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.3 %	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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

SS07@4'
2106417-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/23/21 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEF0498	06/23/21	06/23/21	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: **06/23/21 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/23/21 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEF0499	06/23/21	06/23/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **06/23/21 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		115 %	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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

SS08@12'
2106417-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/23/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEF0498	06/23/21	06/23/21	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: **06/23/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.4 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/23/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEF0499	06/23/21	06/23/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **06/23/21 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		112 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

SS09@4'
2106417-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/23/21 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEF0498	06/23/21	06/23/21	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: **06/23/21 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/23/21 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	58	50	mg/kg	1	BEF0499	06/23/21	06/23/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **06/23/21 10:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

SS10@12'
2106417-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/23/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEF0498	06/23/21	06/23/21	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: **06/23/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/23/21 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEF0499	06/23/21	06/23/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **06/23/21 10:06**

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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

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 BEF0498 - EPA 5030 Soil MS

Blank (BEF0498-BLK1)

Prepared & Analyzed: 06/23/21

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	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0458		"	0.0400		114		23-173			
<i>Surrogate: Toluene-d8</i>	0.0562		"	0.0400		140		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0459		"	0.0400		115		21-167			

LCS (BEF0498-BS1)

Prepared: 06/23/21 Analyzed: 06/24/21

Benzene	0.0882	0.0020	mg/kg	0.100		88.2		70-130			
Toluene	0.0979	0.0050	"	0.100		97.9		70-130			
Ethylbenzene	0.100	0.0050	"	0.100		100		70-130			
m,p-Xylene	0.188	0.010	"	0.200		93.8		70-130			
o-Xylene	0.0943	0.0050	"	0.100		94.3		70-130			
1,2,4-Trimethylbenzene	0.0926	0.0050	"	0.100		92.6		70-130			
1,3,5-Trimethylbenzene	0.0909	0.0050	"	0.100		90.9		70-130			
Naphthalene	0.0833	0.0038	"	0.100		83.3		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0303		"	0.0400		75.7		23-173			
<i>Surrogate: Toluene-d8</i>	0.0475		"	0.0400		119		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0455		"	0.0400		114		21-167			

Matrix Spike (BEF0498-MS1)

Source: 2106414-02

Prepared: 06/23/21 Analyzed: 06/24/21

Benzene	0.0909	0.0020	mg/kg	0.100	ND	90.9		70-130			
Toluene	0.0940	0.0050	"	0.100	ND	94.0		70-130			
Ethylbenzene	0.101	0.0050	"	0.100	ND	101		70-130			
m,p-Xylene	0.185	0.010	"	0.200	ND	92.6		70-130			
o-Xylene	0.0951	0.0050	"	0.100	ND	95.1		70-130			
1,2,4-Trimethylbenzene	0.0908	0.0050	"	0.100	ND	90.8		70-130			
1,3,5-Trimethylbenzene	0.0897	0.0050	"	0.100	ND	89.7		70-130			
Naphthalene	0.0985	0.0038	"	0.100	ND	98.5		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0345		"	0.0400		86.3		23-173			
<i>Surrogate: Toluene-d8</i>	0.0441		"	0.0400		110		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0429		"	0.0400		107		21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 06/24/21 06:38

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 BEF0498 - EPA 5030 Soil MS

Matrix Spike Dup (BEF0498-MSD1)	Source: 2106414-02			Prepared: 06/23/21 Analyzed: 06/24/21							
Benzene	0.0922	0.0020	mg/kg	0.100	ND	92.2	70-130	1.41	30		
Toluene	0.0926	0.0050	"	0.100	ND	92.6	70-130	1.48	30		
Ethylbenzene	0.0950	0.0050	"	0.100	ND	95.0	70-130	6.27	30		
m,p-Xylene	0.174	0.010	"	0.200	ND	87.1	70-130	6.13	30		
o-Xylene	0.0890	0.0050	"	0.100	ND	89.0	70-130	6.65	30		
1,2,4-Trimethylbenzene	0.0872	0.0050	"	0.100	ND	87.2	70-130	3.98	30		
1,3,5-Trimethylbenzene	0.0852	0.0050	"	0.100	ND	85.2	70-130	5.14	30		
Naphthalene	0.103	0.0038	"	0.100	ND	103	70-130	4.73	30		
Surrogate: 1,2-Dichloroethane-d4	0.0396		"	0.0400		98.9	23-173				
Surrogate: Toluene-d8	0.0447		"	0.0400		112	20-170				
Surrogate: 4-Bromofluorobenzene	0.0418		"	0.0400		105	21-167				

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Kerbs 1-20 Wellhead

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 06/24/21 06:38

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BEF0499 - EPA 3550A

Blank (BEF0499-BLK1)

Prepared & Analyzed: 06/23/21

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

LCS (BEF0499-BS1)

Prepared & Analyzed: 06/23/21

C10-C28 (DRO)	477	50	mg/kg	500	95.4	70-130				
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Matrix Spike (BEF0499-MS1)

Source: 2106414-02

Prepared: 06/23/21 Analyzed: 06/24/21

C10-C28 (DRO)	499	50	mg/kg	500	20.5	95.7	70-130			
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Matrix Spike Dup (BEF0499-MSD1)

Source: 2106414-02

Prepared: 06/23/21 Analyzed: 06/24/21

C10-C28 (DRO)	470	50	mg/kg	500	20.5	89.8	70-130	6.12	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: Kerbs 1-20 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/24/21 06:38

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