

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 09, 2019

Brent Hedstrom

Crestone Peak Resources

2020 E. Grand Avenue, Suite 515

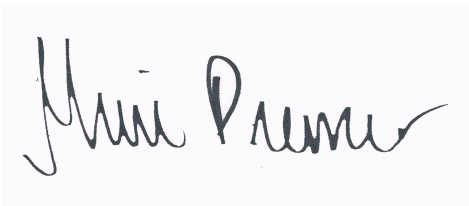
Laramie, WY 82070

RE: Barb 30-10

Work Order # 1909407

Enclosed are the results of analyses for samples received by Summit Scientific on 09/30/19 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Muri Premer For Ben Shrewsbury

Laboratory Manager



Crestone Peak Resources
2020 E. Grand Avenue, Suite 515
Laramie WY, 82070

Project: Barb 30-10

Project Number: [none]
Project Manager: Brent Hedstrom

Reported:
10/09/19 17:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Surface Casing	1909407-01	Water	09/27/19 09:50	09/30/19 16:00

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S₂

1909407

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

Page 1 of 1

Client: Crestone Peak Resources

Project Manager: Brent Hedstrom

Address: 10188 East I-25 Frontage Road

E-Mail: Brent.Hedstrom@crestonepr.com

City/State/Zip: Firestone, CO 80504

Phone: 303-434-3007

Project Name: Barb 30-10

Sampler Name:

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	Anion	Cations	TDS	Btex 8020	DRO	GRO	RSK-175			
1	Surface Casing	9/27/2019	9:50 AM	6	X	X			X					X	X	X	X	X	X	X		
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time (Check)	Notes:
Brent Hedstrom	9/30/19 10:30 AM		9/30/19 1600	Same Day <input type="checkbox"/>	
				24 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	48 hours <input type="checkbox"/>	72 hours <input type="checkbox"/>
					Standard <input checked="" type="checkbox"/>
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	
				Temperature Upon Receipt: 3.2	
				Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

1909407

Sample Receipt Checklist

S2 Work Order _____

Client: CRESTONE PEAK Client Project ID: BARB 30-10

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

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

Temp (°C)	3.2
-----------	-----

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"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCL HNO3
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pH 1
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.

RZ

Custodian Printed Name or Initials



Signature of Custodian

9/30/19

Date/Time



Crestone Peak Resources
2020 E. Grand Avenue, Suite 515
Laramie WY, 82070

Project: Barb 30-10

Project Number: [none]
Project Manager: Brent Hedstrom

Reported:
10/09/19 17:43

Surface Casing
1909407-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	110000	1000	ug/l	1000	1910067	10/03/19	10/08/19	EPA 8260B	
Toluene	380000	10000	"	10000	"	"	"	"	
Ethylbenzene	40000	1000	"	1000	"	"	"	"	
Xylenes (total)	270000	2000	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	16000000	500000	"	"	"	"	"	"	

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	146 %	23-173	"	"	"	"	"	"	
Surrogate: Toluene-d8	84.3 %	20-170	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	142 %	21-167	"	"	"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	6700	50	mg/L	10	1910026	10/02/19	10/03/19	EPA 8015M	

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	123 %	58.9-148	"	"	"	"	"	"	

Dissolved Gases by RSK-175

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Methane	0.050	0.010	mg/L	1	1910099	10/04/19	10/07/19	RSK-175 mod	
Ethane	0.042	0.010	"	"	"	"	"	"	
Propane	5.8	1.0	"	100	"	"	"	"	

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Surface Casing
1909407-01 (Water)

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Dissolved Gases by RSK-175

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Ethene		9.62 %	70-130		1910099	10/04/19	10/07/19	RSK-175 mod	S-04

Total Metals by EPA Method 200.8

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	4210	0.0500	mg/L	1	1910033	10/02/19	10/02/19	EPA 200.8	
Magnesium	18.8	0.0500	"	"	"	"	"	"	
Potassium	522	0.0500	"	"	"	"	"	"	
Sodium	1610	0.0500	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	758	30.0	mg/L	500	1910002	10/01/19	10/03/19	EPA 300.0	
Sulfate	1760	150	"	"	"	"	"	"	

Alkalinity by SM2320

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Alkalinity	350	10.0	mg/L as CaCO3	1	1910028	10/02/19	10/03/19	SM2320-B	
Carbonate	20.0	10.0	"	"	"	"	"	"	
Bicarbonate	330	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

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Project: Barb 30-10

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Surface Casing
1909407-01 (Water)

Summit Scientific

Total Dissolved Solids by SM2540C

Date Sampled: **09/27/19 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	19400	10.0		mg/L	1	1910019	10/02/19	10/02/19	SM2540C	

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Project: Barb 30-10

Project Number: [none]
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Reported:
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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 1910067 - EPA 5030 Water MS

Blank (1910067-BLK1)

Prepared: 10/03/19 Analyzed: 10/08/19

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Gasoline Range Hydrocarbons	ND	500	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	12.6		"	13.3		94.4		23-173			
<i>Surrogate: Toluene-d8</i>	12.3		"	13.3		92.0		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	10.9		"	13.3		81.5		21-167			

LCS (1910067-BS1)

Prepared: 10/03/19 Analyzed: 10/08/19

Benzene	22.9	1.0	ug/l	25.0		91.6		70-130			
Toluene	22.8	1.0	"	25.0		91.3		70-130			
Ethylbenzene	25.0	1.0	"	25.0		99.9		70-130			
m,p-Xylene	46.8	2.0	"	50.0		93.7		70-130			
o-Xylene	22.8	1.0	"	25.0		91.2		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	12.6		"	13.3		94.7		23-173			
<i>Surrogate: Toluene-d8</i>	12.5		"	13.3		93.5		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	11.4		"	13.3		85.4		21-167			

Matrix Spike (1910067-MS1)

Source: 1909389-01

Prepared: 10/03/19 Analyzed: 10/08/19

Benzene	22.7	1.0	ug/l	25.0	ND	90.9		70-130			
Toluene	22.1	1.0	"	25.0	ND	88.5		70-130			
Ethylbenzene	24.3	1.0	"	25.0	ND	97.1		70-130			
m,p-Xylene	46.2	2.0	"	50.0	ND	92.3		70-130			
o-Xylene	23.2	1.0	"	25.0	ND	92.9		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	11.9		"	13.3		89.0		23-173			
<i>Surrogate: Toluene-d8</i>	12.0		"	13.3		90.1		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	11.6		"	13.3		86.7		21-167			

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Project: Barb 30-10

Project Number: [none]
 Project Manager: Brent Hedstrom

Reported:
 10/09/19 17:43

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 1910067 - EPA 5030 Water MS

Matrix Spike Dup (1910067-MSD1)

Source: 1909389-01

Prepared: 10/03/19 Analyzed: 10/08/19

Benzene	23.0	1.0	ug/l	25.0	ND	92.0	70-130	1.22	30	
Toluene	23.0	1.0	"	25.0	ND	92.0	70-130	3.81	30	
Ethylbenzene	24.5	1.0	"	25.0	ND	97.9	70-130	0.821	30	
m,p-Xylene	47.2	2.0	"	50.0	ND	94.4	70-130	2.21	30	
o-Xylene	23.6	1.0	"	25.0	ND	94.3	70-130	1.54	30	
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.3		99.4	23-173			
Surrogate: Toluene-d8	12.0		"	13.3		89.9	20-170			
Surrogate: 4-Bromofluorobenzene	11.8		"	13.3		88.7	21-167			

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 Laramie WY, 82070

Project: Barb 30-10

Project Number: [none]
 Project Manager: Brent Hedstrom

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Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1910026 - EPA 3520B

Blank (1910026-BLK1)

Prepared & Analyzed: 10/02/19

C10-C28 (DRO) ND 5.0 mg/L

LCS (1910026-BS1)

Prepared & Analyzed: 10/02/19

C10-C28 (DRO) 56.0 5.0 mg/L 50.0 112 70-130

Matrix Spike (1910026-MS1)

Source: 1909345-01

Prepared & Analyzed: 10/02/19

C10-C28 (DRO) 67.2 5.0 mg/L 50.0 7.90 119 70-130

Matrix Spike Dup (1910026-MSD1)

Source: 1909345-01

Prepared & Analyzed: 10/02/19

C10-C28 (DRO) 67.8 5.0 mg/L 50.0 7.90 120 70-130 0.879 20

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Crestone Peak Resources
2020 E. Grand Avenue, Suite 515
Laramie WY, 82070

Project: Barb 30-10

Project Number: [none]
Project Manager: Brent Hedstrom

Reported:
10/09/19 17:43

Dissolved Gases by RSK-175 - Quality Control
Summit Scientific

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

Batch 1910099 - GC

Blank (1910099-BLK1)

Prepared: 10/04/19 Analyzed: 10/07/19

Methane	ND	0.010	mg/L								
Ethane	ND	0.010	"								
Propane	ND	0.010	"								
<i>Surrogate: Ethene</i>	<i>0.0433</i>		<i>"</i>	<i>0.0364</i>		<i>119</i>	<i>70-130</i>				

LCS (1910099-BS1)

Prepared: 10/04/19 Analyzed: 10/07/19

Methane	0.045	0.010	mg/L	0.0428		106	70-130				
Ethane	0.085	0.010	"	0.0798		106	70-130				
Propane	0.12	0.010	"	0.139		88.4	70-130				
<i>Surrogate: Ethene</i>	<i>0.0805</i>		<i>"</i>	<i>0.0728</i>		<i>111</i>	<i>70-130</i>				

Duplicate (1910099-DUP1)

Source: 1910032-01

Prepared: 10/04/19 Analyzed: 10/07/19

Methane	ND	0.010	mg/L		ND					30	
Ethane	ND	0.010	"		ND					30	
Propane	ND	0.010	"		ND					30	
<i>Surrogate: Ethene</i>	<i>0.0497</i>		<i>"</i>	<i>0.0364</i>		<i>137</i>	<i>70-130</i>				<i>QR-03</i>

Matrix Spike (1910099-MS1)

Source: 1910032-01

Prepared: 10/04/19 Analyzed: 10/07/19

Methane	0.039	0.010	mg/L	0.0428	ND	91.9	70-130				
Ethane	0.076	0.010	"	0.0798	ND	95.0	70-130				
Propane	0.11	0.010	"	0.139	ND	77.7	70-130				
<i>Surrogate: Ethene</i>	<i>0.0771</i>		<i>"</i>	<i>0.0728</i>		<i>106</i>	<i>70-130</i>				

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Project: Barb 30-10

Project Number: [none]
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Total Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1910033 - EPA 200.8

Blank (1910033-BLK1)

Prepared & Analyzed: 10/02/19

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

LCS (1910033-BS1)

Prepared & Analyzed: 10/02/19

Calcium	4.94	0.0500	mg/L	5.00		98.7	85-115			
Magnesium	5.10	0.0500	"	5.00		102	85-115			
Potassium	4.83	0.0500	"	5.00		96.6	85-115			
Sodium	5.03	0.0500	"	5.00		101	85-115			

Duplicate (1910033-DUP1)

Source: 1909392-01

Prepared & Analyzed: 10/02/19

Calcium	207	0.0500	mg/L		211			1.64	20	
Magnesium	26.4	0.0500	"		24.2			8.72	20	
Potassium	9.29	0.0500	"		9.09			2.15	20	
Sodium	170	0.0500	"		156			8.93	20	

Matrix Spike (1910033-MS1)

Source: 1909392-01

Prepared & Analyzed: 10/02/19

Calcium	215	0.0500	mg/L	5.00	211	85.5	70-130			
Magnesium	30.1	0.0500	"	5.00	24.2	117	70-130			
Potassium	13.7	0.0500	"	5.00	9.09	93.1	70-130			
Sodium	161	0.0500	"	5.00	156	107	70-130			

Matrix Spike Dup (1910033-MSD1)

Source: 1909392-01

Prepared & Analyzed: 10/02/19

Calcium	215	0.0500	mg/L	5.00	211	77.4	70-130	0.188	25	
Magnesium	30.1	0.0500	"	5.00	24.2	119	70-130	0.214	25	
Potassium	14.6	0.0500	"	5.00	9.09	111	70-130	6.19	25	
Sodium	162	0.0500	"	5.00	156	118	70-130	0.339	25	

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Project: Barb 30-10

Project Number: [none]
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Reported:
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Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch 1910002 - General Preparation

Blank (1910002-BLK1)

Prepared & Analyzed: 10/01/19

Sulfate	ND	0.300	mg/L							
Chloride	ND	0.0600	"							

LCS (1910002-BS1)

Prepared & Analyzed: 10/01/19

Chloride	3.27	0.0600	mg/L	3.00	109	90-110				
Sulfate	15.8	0.300	"	15.0	105	90-110				

Duplicate (1910002-DUP1)

Source: 1909374-01

Prepared & Analyzed: 10/01/19

Chloride	147	12.0	mg/L		150		2.15	20		
Sulfate	1400	60.0	"		1330		4.99	20		

Matrix Spike (1910002-MS1)

Source: 1909374-01

Prepared & Analyzed: 10/01/19

Chloride	821	12.0	mg/L	600	150	112	80-120			
Sulfate	4130	60.0	"	3000	1330	93.4	80-120			

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Project: Barb 30-10

Project Number: [none]
 Project Manager: Brent Hedstrom

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Alkalinity by SM2320 - Quality Control
Summit Scientific

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

Batch 1910028 - General Preparation

Blank (1910028-BLK1)

Prepared & Analyzed: 10/02/19

Total Alkalinity	ND	10.0	mg/L as CaCO3							
Carbonate	ND	10.0	"							
Bicarbonate	ND	10.0	"							
Hydroxide Alkalinity	ND	10.0	"							

LCS (1910028-BS1)

Prepared & Analyzed: 10/02/19

Total Alkalinity	110	10.0	mg/L as CaCO3	100		110	80-120			
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Duplicate (1910028-DUP1)

Source: 1909339-01

Prepared & Analyzed: 10/02/19

Total Alkalinity	500	10.0	mg/L as CaCO3		500			0.00	20	
Carbonate	ND	10.0	"		ND				20	
Bicarbonate	500	10.0	"		500			0.00	20	
Hydroxide Alkalinity	ND	10.0	"		ND				20	

Matrix Spike (1910028-MS1)

Source: 1909339-01

Prepared & Analyzed: 10/02/19

Total Alkalinity	610	10.0	mg/L as CaCO3	100	500	110	80-120			
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Matrix Spike Dup (1910028-MSD1)

Source: 1909339-01

Prepared & Analyzed: 10/02/19

Total Alkalinity	610	10.0	mg/L as CaCO3	100	500	110	80-120	0.00	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.



Crestone Peak Resources
 2020 E. Grand Avenue, Suite 515
 Laramie WY, 82070

Project: Barb 30-10

Project Number: [none]
 Project Manager: Brent Hedstrom

Reported:
 10/09/19 17:43

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

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

Batch 1910019 - General Preparation

Blank (1910019-BLK1)

Prepared & Analyzed: 10/02/19

Total Dissolved Solids ND 10.0 mg/L

Duplicate (1910019-DUP1)

Source: 1909374-01

Prepared & Analyzed: 10/02/19

Total Dissolved Solids 2550 10.0 mg/L 2560 0.313 20

Summit Scientific

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Crestone Peak Resources
2020 E. Grand Avenue, Suite 515
Laramie WY, 82070

Project: Barb 30-10

Project Number: [none]
Project Manager: Brent Hedstrom

Reported:
10/09/19 17:43

Notes and Definitions

- S-04 A sample matrix effect prevented complete surrogate recovery.
- QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- 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