

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

April 12, 2021

Ken Rogowski  
Absaroka Solutions  
112 High Street  
Buffalo, WY 82834

RE: Chalk Bluffs

Work Order #2104023

Enclosed are the results of analyses for samples received by Summit Scientific on 04/01/21 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-1@5.5'	2104023-01	Soil	03/31/21 10:10	04/01/21 17:30
SS-2@0'	2104023-02	Soil	03/31/21 10:15	04/01/21 17:30
SS-3@4'	2104023-03	Soil	03/31/21 10:30	04/01/21 17:30
SS-4@5'	2104023-04	Soil	03/31/21 10:35	04/01/21 17:30
SS-5@5'	2104023-05	Soil	03/31/21 11:20	04/01/21 17:30
SS-6@0'	2104023-06	Soil	03/31/21 11:25	04/01/21 17:30
SS-7@8'	2104023-07	Soil	03/31/21 11:45	04/01/21 17:30
BG-1@0'	2104023-08	Soil	03/31/21 11:50	04/01/21 17:30

Summit Scientific

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

2104023

# Summit Scientific

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310 ♦ 303-374-5933 (f)

Client: **Absaroka** Project Manager: Ken Rogowski  
 Address: E-Mail: **ken.rogowski@absarokasolutions.com**  
 City/State/Zip: Project Name: Chalk Bluffs  
 Phone: Project Number: 418.08  
 Sampler Name: TS, **JF**

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Full 915 Suite	BTEX	DRO	ORO	GRO	1,2,4-trimethylbenze		1,3,5-trimethylbenze	
1	SS-1 @ 5.5'	3/31/21	10:10	3			X			X					X	X	X	X	X	X	
2	SS-2 @ 0'	3/31/21	10:15	3			X			X					X	X	X	X	X	X	EC, pH, SAR, HWS-B
3	SS-3 @ 4'	3/31/21	10:30	3			X			X					X	X	X	X	X	X	
4	SS-4 @ 5'	3/31/21	10:35	3			X			X					X	X	X	X	X	X	
5	SS-5 @ 5'	3/31/21	11:20	3			X			X					X	X	X	X	X	X	
6	SS-6 @ 0'	3/31/21	11:25	3			X			X					X	X	X	X	X	X	
7	SS-7 @ 8'	3/31/21	11:45	3			X			X					X	X	X	X	X	X	
8	BG-1 @ 0'	3/31/21	11:50	3			X			X											EC, pH, SAR, HWS-B
9																					
10																					

Relinquished by: <i>Tube</i>	Date/Time: 4/1/21 1100	Received by: <i>Jack Bue</i>	Date/Time: 4/1/21 17:30	<b>Turn Around Time</b> (Check) Same Day _____ 72 hours _____ 24 hours _____ <b>Standard</b> X 48 hours _____ <b>Sample Integrity:</b> Temperature Upon Receipt: <u>13.2</u> Samples Intact: <b>Yes</b> No	<b>Notes: BILL TO WHITING</b> *HWS = Hot Water Soluble
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

**Sample Receipt Checklist**

S2 Work Order 2104023  
 Client: Absaroka Client Project ID: Chalk Bluffs

Shipped Via:  H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_  
      
 Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
 (Describe)

Temp (°C)	13.2
-----------	------

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? 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"/>	On ice.
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation <b>(excluding cooling)</b> <sup>(1)</sup> ? 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 <sup>(1)</sup> ? 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):

<sup>(1)</sup> 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

4/1/21 19:34  
 Date/Time



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**SS-1@5.5'**  
**2104023-01 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **03/31/21 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BED0103	04/07/21	04/08/21	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: **03/31/21 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		83.8 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		94.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.1 %		21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/31/21 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BED0074	04/06/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/31/21 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		98.5 %		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.



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**SS-2@0'**  
**2104023-02 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **03/31/21 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0103	04/07/21	04/08/21	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: **03/31/21 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/31/21 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0074	04/06/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/31/21 10:15**

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

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Summit Scientific

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



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**SS-2@0'**  
**2104023-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/31/21 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>1.49</b>	0.0100	mg/L	1	BED0162	04/09/21	04/10/21	EPA 6020B	

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

Date Sampled: **03/31/21 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>231</b>	0.0652	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
<b>Magnesium</b>	<b>94.9</b>	0.0652	"	"	"	"	"	"	
<b>Sodium</b>	<b>169</b>	0.0652	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/31/21 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>2.36</b>	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/31/21 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>76.7</b>		%	1	BED0127	04/08/21	04/08/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/31/21 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.433</b>	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Summit Scientific

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



Absaroka Solutions  
 112 High Street  
 Buffalo WY, 82834

Project: Chalk Bluffs  
 Project Number: 418.08  
 Project Manager: Ken Rogowski

**Reported:**  
 04/12/21 14:22

**SS-2@0'**  
**2104023-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/31/21 10:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>9.12</b>		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

Summit Scientific

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



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**SS-3@4'**  
**2104023-03 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **03/31/21 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	BED0103	04/07/21	04/08/21	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: **03/31/21 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		97.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.0 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/31/21 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	BED0074	04/06/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/31/21 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
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.



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**SS-4@5'**  
**2104023-04 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **03/31/21 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0103	04/07/21	04/08/21	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: **03/31/21 10:35**

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

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/31/21 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0074	04/06/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/31/21 10:35**

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



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**SS-5@5'**  
**2104023-05 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **03/31/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0103	04/07/21	04/08/21	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: **03/31/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.4 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/31/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0074	04/06/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/31/21 11:20**

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



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**SS-6@0'**  
**2104023-06 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **03/31/21 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0103	04/07/21	04/08/21	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: **03/31/21 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/31/21 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0074	04/06/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/31/21 11:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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.



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**SS-7@8'**  
**2104023-07 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **03/31/21 11:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BED0103	04/07/21	04/08/21	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: **03/31/21 11:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		88.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.7 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/31/21 11:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BED0074	04/06/21	04/07/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/31/21 11:45**

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



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**BG-1@0'**  
**2104023-08 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/31/21 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.157</b>	0.0100	mg/L	1	BED0162	04/09/21	04/10/21	EPA 6020B	

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

Date Sampled: **03/31/21 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>37.0</b>	0.0611	mg/L dry	1	BED0121	04/07/21	04/09/21	EPA 6020B	
<b>Magnesium</b>	<b>8.25</b>	0.0611	"	"	"	"	"	"	
<b>Sodium</b>	<b>30.2</b>	0.0611	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/31/21 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>1.17</b>	0.100	units	1	BED0169	04/09/21	04/09/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/31/21 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>81.8</b>		%	1	BED0127	04/08/21	04/08/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/31/21 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.369</b>	0.0100	mmhos/cm	1	BED0151	04/08/21	04/08/21	EPA 120.1	

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

Summit Scientific

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



Absaroka Solutions  
 112 High Street  
 Buffalo WY, 82834

Project: Chalk Bluffs  
 Project Number: 418.08  
 Project Manager: Ken Rogowski

**Reported:**  
 04/12/21 14:22

**BG-1@0'**  
**2104023-08 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/31/21 11:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>8.52</b>		pH Units	1	BED0152	04/08/21	04/08/21	EPA 9045D	

Summit Scientific

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



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

### 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 BED0103 - EPA 5030 Soil MS

##### Blank (BED0103-BLK1)

Prepared: 04/07/21 Analyzed: 04/08/21

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>	0.0357		"	0.0400		89.2	23-173			
<i>Surrogate: Toluene-d8</i>	0.0402		"	0.0400		101	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0381		"	0.0400		95.2	21-167			

##### LCS (BED0103-BS1)

Prepared: 04/07/21 Analyzed: 04/08/21

Benzene	0.178	0.0020	mg/kg	0.150		119	70-130			
Toluene	0.127	0.0050	"	0.150		84.7	70-130			
Ethylbenzene	0.141	0.0050	"	0.150		94.3	70-130			
m,p-Xylene	0.271	0.010	"	0.300		90.4	70-130			
o-Xylene	0.137	0.0050	"	0.150		91.5	70-130			
1,2,4-Trimethylbenzene	0.154	0.0050	"	0.150		103	70-130			
1,3,5-Trimethylbenzene	0.151	0.0050	"	0.150		101	70-130			
Naphthalene	0.177	0.0038	"	0.150		118	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0318		"	0.0400		79.4	23-173			
<i>Surrogate: Toluene-d8</i>	0.0366		"	0.0400		91.6	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0398		"	0.0400		99.4	21-167			

##### Matrix Spike (BED0103-MS1)

Source: 2104076-01

Prepared: 04/07/21 Analyzed: 04/08/21

Benzene	0.159	0.0020	mg/kg	0.150	ND	106	70-130			
Toluene	0.114	0.0050	"	0.150	ND	76.2	70-130			
Ethylbenzene	0.127	0.0050	"	0.150	ND	84.9	70-130			
m,p-Xylene	0.243	0.010	"	0.300	ND	80.9	70-130			
o-Xylene	0.123	0.0050	"	0.150	ND	82.2	70-130			
1,2,4-Trimethylbenzene	0.144	0.0050	"	0.150	ND	96.0	70-130			
1,3,5-Trimethylbenzene	0.142	0.0050	"	0.150	ND	94.4	70-130			
Naphthalene	0.177	0.0038	"	0.150	ND	118	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0305		"	0.0400		76.4	23-173			
<i>Surrogate: Toluene-d8</i>	0.0366		"	0.0400		91.6	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0382		"	0.0400		95.5	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.



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**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 BED0103 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BED0103-MSD1)</b>	<b>Source: 2104076-01</b>			Prepared: 04/07/21 Analyzed: 04/08/21					
Benzene	0.167	0.0020	mg/kg	0.150	ND	111	70-130	5.05	30
Toluene	0.117	0.0050	"	0.150	ND	78.0	70-130	2.28	30
Ethylbenzene	0.126	0.0050	"	0.150	ND	83.9	70-130	1.18	30
m,p-Xylene	0.239	0.010	"	0.300	ND	79.7	70-130	1.52	30
o-Xylene	0.122	0.0050	"	0.150	ND	81.1	70-130	1.45	30
1,2,4-Trimethylbenzene	0.148	0.0050	"	0.150	ND	98.3	70-130	2.37	30
1,3,5-Trimethylbenzene	0.147	0.0050	"	0.150	ND	98.1	70-130	3.85	30
Naphthalene	0.185	0.0038	"	0.150	ND	123	70-130	4.53	30
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0314</i>		<i>"</i>	<i>0.0400</i>		<i>78.5</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0361</i>		<i>"</i>	<i>0.0400</i>		<i>90.3</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0381</i>		<i>"</i>	<i>0.0400</i>		<i>95.2</i>	<i>21-167</i>		

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.*



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

**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 BED0074 - EPA 3550A**

**Blank (BED0074-BLK1)**

Prepared: 04/06/21 Analyzed: 04/07/21

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

**LCS (BED0074-BS1)**

Prepared: 04/06/21 Analyzed: 04/07/21

C10-C28 (DRO)	413	50	mg/kg	500	82.6	70-130				
---------------	-----	----	-------	-----	------	--------	--	--	--	--

**Matrix Spike (BED0074-MS1)**

Source: 2104022-04

Prepared: 04/06/21 Analyzed: 04/07/21

C10-C28 (DRO)	502	50	mg/kg	500	57.4	88.9	70-130			
---------------	-----	----	-------	-----	------	------	--------	--	--	--

**Matrix Spike Dup (BED0074-MSD1)**

Source: 2104022-04

Prepared: 04/06/21 Analyzed: 04/07/21

C10-C28 (DRO)	517	50	mg/kg	500	57.4	91.9	70-130	2.96	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.*



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

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

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

**Batch BED0162 - EPA 3050B**

**Blank (BED0162-BLK1)**

Prepared: 04/09/21 Analyzed: 04/10/21

Boron ND 0.0100 mg/L

**LCS (BED0162-BS1)**

Prepared: 04/09/21 Analyzed: 04/10/21

Boron 4.58 0.0100 mg/L 5.00 91.5 80-120

**Duplicate (BED0162-DUP1)**

**Source: 2103483-01**

Prepared: 04/09/21 Analyzed: 04/10/21

Boron 1.10 0.0100 mg/L 1.21 9.64 20

**Matrix Spike (BED0162-MS1)**

**Source: 2103483-01**

Prepared: 04/09/21 Analyzed: 04/10/21

Boron 5.61 0.0100 mg/L 5.00 1.21 88.0 75-125

**Matrix Spike Dup (BED0162-MSD1)**

**Source: 2103483-01**

Prepared: 04/09/21 Analyzed: 04/10/21

Boron 5.90 0.0100 mg/L 5.00 1.21 93.9 75-125 5.08 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.*



Absaroka Solutions  
 112 High Street  
 Buffalo WY, 82834

Project: Chalk Bluffs  
 Project Number: 418.08  
 Project Manager: Ken Rogowski

**Reported:**  
 04/12/21 14:22

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

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

**Batch BED0121 - General Preparation**

**Blank (BED0121-BLK1)**

Prepared: 04/07/21 Analyzed: 04/09/21

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

**LCS (BED0121-BS1)**

Prepared: 04/07/21 Analyzed: 04/09/21

Calcium	6.09	0.0500	mg/L wet	5.00		122	70-130			
Magnesium	6.50	0.0500	"	5.00		130	70-130			
Sodium	6.08	0.0500	"	5.00		122	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.*



Absaroka Solutions  
 112 High Street  
 Buffalo WY, 82834

Project: Chalk Bluffs  
 Project Number: 418.08  
 Project Manager: Ken Rogowski

**Reported:**  
 04/12/21 14:22

**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 BED0127 - General Preparation**

<b>Duplicate (BED0127-DUP1)</b>		<b>Source: 2104005-03</b>			<b>Prepared &amp; Analyzed: 04/08/21</b>						
% Solids	75.4		%		75.2			0.267		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.*



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

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

**Summit Scientific**

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

**Batch BED0151 - General Preparation**

**Blank (BED0151-BLK1)**

Prepared & Analyzed: 04/08/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BED0151-BS1)**

Prepared & Analyzed: 04/08/21

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 101 90-110

**Duplicate (BED0151-DUP1)**

Source: 2103341-03

Prepared & Analyzed: 04/08/21

Specific Conductance (EC) 4.61 0.0100 mmhos/cm 4.50 2.42 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.*



Absaroka Solutions  
 112 High Street  
 Buffalo WY, 82834

Project: Chalk Bluffs

Project Number: 418.08  
 Project Manager: Ken Rogowski

**Reported:**  
 04/12/21 14:22

**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 BED0152 - General Preparation**

**LCS (BED0152-BS1)**

Prepared & Analyzed: 04/08/21

pH 9.29 pH Units 9.21 101 95-105

**Duplicate (BED0152-DUP1)**

Source: 2103341-03

Prepared & Analyzed: 04/08/21

pH 8.18 pH Units 8.11 0.859 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.*



Absaroka Solutions  
112 High Street  
Buffalo WY, 82834

Project: Chalk Bluffs  
Project Number: 418.08  
Project Manager: Ken Rogowski

**Reported:**  
04/12/21 14:22

### 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