EXHIBIT 5D (2)

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 12, 2021

Joel Mason
Absaroka Solutions
112 High Street
Buffalo, WY 82834

RE: For Sampling-Mutual S17 Pad
Work Order #2106506

Enclosed are the results of analyses for samples received by Summit Scientific on 06/29/21 08:07. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Paul Shrewsbury
President

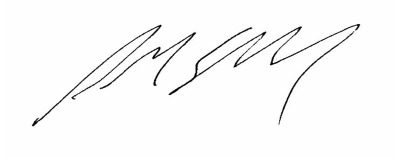
S2

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BW.Mutual..2.8H	2106506-01	Water	06/28/21 09:10	06/29/21 08:07
BW.Mutual..3.8H	2106506-02	Water	06/28/21 09:20	06/29/21 08:07
BW.Mutual..4.8H	2106506-03	Water	06/28/21 09:30	06/29/21 08:07

Summit Scientific



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

Summit Scientific 2106506

S_2

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

Client: Absaroka Energy and Environmental Solutions
Address: 112 High Street
City/State/Zip: Buffalo, WY 82834
Phone: 720-352-5326
Sampler Name: Max Moran

Project Manager: Joel Mason
E-Mail: Joel.Mason@AbsarokaSolutions.com
Max.Moran@AbsarokaSolutions.com
Project Name: EOR Sampling - Mutual S17 Pad
Project Number: D90CO.0540

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	pH, TDS, TSS, SP. Conductance	Alkalinity	Anions/Cations	Ba, B, Se, Sr	Napthalene	TPH C6-C10, C10-C36	BTEX	226Ra/228Ra	
1	~~Mutual 070 mm~~																				
2	~~Mutual mm~~																				
3	BV_Mutual_2_8H	6/28/21	0910	10	6	2	2		X				X	X	X	X	X	X	X	X	
4	BV_Mutual_3_8H	6/28/21	0920	1	1	1	1		1				1	1	1	1	1	1	1	1	
5	BV_Mutual_4_8H	6/28/21	0930	1	1	1	1		1				1	1	1	1	1	1	1	1	
6																					
7																					
8																					
9																					
10																					

Relinquished by:	Date/Time:	Received by:	Date/Time:
[signature]	6/29/21 0807	[signature]	6/29/21 8:07
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:

Turn Around Time (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard X
48 hours ___

Sample Integrity:
Temperature Upon Receipt: 2.4
Samples Intact: (Yes) No

Notes: Email results to max moran and joel mason. Please see the attached Rule 909.j.(1)-(5) for explanation of analysis

2106506

Appendix A
Rule 909.j.(1)-(5)

j. **Produced Water Quality Analyses**. Beginning January 15, 2021, Operators will submit an initial water quality analysis for produced water for each Well from which produced water is placed into a permitted or registered Pit, including Pits that were constructed prior to January 15, 2021.

(1) The water sample will be analyzed for the following:

A. pH;
B. Specific conductance;
C. Total dissolved and suspended solids (TDS and TSS);
D. Alkalinity (total, bicarbonate, and carbonate as CaCO3);
E. Major anions (bromide, chloride, fluoride, sulfate, nitrate and nitrite as N, and phosphorus);
F. Major cations (calcium, iron, magnesium, manganese, potassium, and sodium);
G. Other elements (barium, boron, selenium, and strontium);
H. Naphthalene;
I. Total petroleum hydrocarbons ("TPH") as total volatile hydrocarbons (C6 to C10) and total extractable hydrocarbons (C10 to C36);
J. BTEX compounds (benzene, toluene, ethylbenzene, and xylenes); and
K. Radium (226Ra and 228Ra).

(2) Operators will collect samples according to standard environmental procedures.

(3) Operators will analyze samples in an accredited laboratory using established methodologies. For those analytes with Groundwater threshold concentrations listed in WQCC Regulation 41, as incorporated by reference in Rule 901.b, the analytical technique will be capable of achieving, and will achieve, reporting limits at concentrations less than the WQCC Regulation 41 thresholds in the matrix submitted. The Director may review the analytical standard used for each analyte and may request the analysis be run by a different method.

2106506

Sample Receipt Checklist

S2 Work Order_____

Client: Absaroka Energy Client Project ID: EOR Sampling – Mutual

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

[X] [ ] [ ] [ ] [ ]

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

Temp (°C)	2.5

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.	X			
Were all samples received intact (1)?	X			
Was adequate sample volume provided (1)?	X			
If custody seals are present, are they intact (1)?			X	
Are samples with holding times due within 48 hours sample due within 48 hours present?	X			pH / Anions
Is a chain-of-custody (COC) form present and filled out completely (1)?	X			
Does the COC agree with the number and type of sample bottles received (1)?	X			
Do the sample IDs on the bottle labels match the COC (1)?	X			
Is the COC properly relinquished by the client w/ date and time recorded (1)?	X			
For volatiles in water – is there headspace present? **If yes, contact client and note in narrative.**		X		
Are samples preserved that require preservation **(excluding cooling)** (1)? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	X	X		one poly Lab preserved HNO_3
If samples are acid preserved for metals, is the pH ≤ 2(1)? Record the pH in Comments.	X			< 2
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any): VOAs not preserved				
(1) **If NO, then contact the client before proceeding with analysis and note in case narrative.**				

Custodian Printed Name or Initials	Signature of Custodian	Date/Time
		6/29/21 0807

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

BW.Mutual..2.8H

2106506-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	**4800**	100	ug/l	100	BEF0617	06/30/21	07/01/21	EPA 8260B	
Toluene	**3700**	100	"	"	"	"	"	"	
Ethylbenzene	**350**	100	"	"	"	"	"	"	
m,p-Xylene	**850**	200	"	"	"	"	"	"	
o-Xylene	**490**	100	"	"	"	"	"	"	
Xylenes (total)	**1300**	200	"	"	"	"	"	"	
Naphthalene	**150**	1.0	"	1	"	"	"	"	
1,2,4-Trimethylbenzene	**100**	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	**27**	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**12000**	500	"	"	"	"	"	"	

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*99.5 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*104 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*101 %*	*21-167*		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	**28**	5.0	mg/L	1	BEF0616	06/30/21	07/01/21	EPA 8015M	
C28-C36 (ORO)	**5.5**	5.0	"	"	"	"	"	"	

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*93.3 %*	*58.9-148*		"	"	"	"	

Total Metals by EPA Method 200.8

Summit Scientific

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Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

BW.Mutual..2.8H

2106506-01 (Water)

Summit Scientific

Total Metals by EPA Method 200.8

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Phosphorus	**8780**	10.0	ug/l	1	BEF0609	06/30/21	06/30/21	EPA 200.8	
Strontium	**127000**	1.00	"	"	"	"	"	"	
Barium	**63100**	1.00	"	"	"	"	"	"	
Boron	**2760**	10.0	"	"	"	"	"	"	
Calcium	**545000**	50.0	"	"	"	"	"	"	
Iron	**25560**	10.00	"	"	"	"	"	"	
Magnesium	**73600**	50.0	"	"	"	"	"	"	
Manganese	**378**	1.00	"	"	"	"	"	"	
Potassium	**58600**	50.0	"	"	"	"	"	"	
Selenium	**1.60**	1.00	"	"	"	"	"	"	
Sodium	**13900000**	50.0	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	**532**	200	mg/L	1000	BEF0622	06/30/21	07/02/21	EPA 300.0	
Chloride	**29100**	60.0	"	"	"	"	"	"	
Fluoride	ND	40.0	"	"	"	"	"	"	R-01
Nitrate as N	ND	50.0	"	"	"	"	"	"	R-01
Nitrite as N	**1090**	60.0	"	"	"	"	"	"	
Sulfate	**697**	300	"	"	"	"	"	"	

Alkalinity by SM2320

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Alkalinity	**280**	10.0	mg/L as CaCO3	1	BEG0158	07/09/21	07/16/21	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
Bicarbonate	**280**	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

Summit Scientific

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Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

BW.Mutual..2.8H

2106506-01 (Water)

Summit Scientific

Alkalinity by SM2320

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Suspended Solids	**147**	5.00	mg/L	1	BEG0119	07/08/21	07/08/21	SM2540D	

Specific Conductance by SM2510B

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	**65400**	1.00	umhos/cm	1	BEG0120	07/08/21	07/08/21	SM2510B	

Total Dissolved Solids by SM2540C

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**31900**	10.0	mg/L	1	BEG0122	07/08/21	07/08/21	SM2540C	

pH by SM4500

Date Sampled: **06/28/21 09:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**6.41**	1.00	pH Units	1	BEG0121	06/29/21	06/29/21	SM4500-H+ B	I-03

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

BW.Mutual..3.8H

2106506-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	**7100**	100	ug/l	100	BEF0617	06/30/21	07/01/21	EPA 8260B	
Toluene	**4400**	100	"	"	"	"	"	"	
Ethylbenzene	**380**	100	"	"	"	"	"	"	
m,p-Xylene	**880**	200	"	"	"	"	"	"	
o-Xylene	**520**	100	"	"	"	"	"	"	
Xylenes (total)	**1400**	200	"	"	"	"	"	"	
Naphthalene	**130**	1.0	"	1	"	"	"	"	
1,2,4-Trimethylbenzene	**85**	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	**22**	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**27000**	5000	"	10	"	"	"	"	

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*100 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*104 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*	*21-167*		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	**16**	5.0	mg/L	1	BEF0616	06/30/21	07/01/21	EPA 8015M	
C28-C36 (ORO)	ND	5.0	"	"	"	"	"	"	

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*91.2 %*	*58.9-148*		"	"	"	"	

Total Metals by EPA Method 200.8

Summit Scientific

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Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

BW.Mutual..3.8H

2106506-02 (Water)

Summit Scientific

Total Metals by EPA Method 200.8

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Phosphorus	**10400**	10.0	ug/l	1	BEF0609	06/30/21	06/30/21	EPA 200.8	
Strontium	**131000**	1.00	"	"	"	"	"	"	
Barium	**65200**	1.00	"	"	"	"	"	"	
Boron	**2410**	10.0	"	"	"	"	"	"	
Calcium	**562000**	50.0	"	"	"	"	"	"	
Iron	**36710**	10.00	"	"	"	"	"	"	
Magnesium	**77100**	50.0	"	"	"	"	"	"	
Manganese	**522**	1.00	"	"	"	"	"	"	
Potassium	**54400**	50.0	"	"	"	"	"	"	
Selenium	ND	1.00	"	"	"	"	"	"	
Sodium	**14700000**	50.0	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	**509**	200	mg/L	1000	BEF0622	06/30/21	07/02/21	EPA 300.0	
Chloride	**27900**	60.0	"	"	"	"	"	"	
Fluoride	ND	40.0	"	"	"	"	"	"	R-01
Nitrate as N	ND	50.0	"	"	"	"	"	"	R-01
Nitrite as N	**1070**	60.0	"	"	"	"	"	"	
Sulfate	**636**	300	"	"	"	"	"	"	

Alkalinity by SM2320

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Alkalinity	**280**	10.0	mg/L as CaCO3	1	BEG0158	07/09/21	07/16/21	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
Bicarbonate	**280**	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

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Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

BW.Mutual..3.8H

2106506-02 (Water)

Summit Scientific

Alkalinity by SM2320

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Suspended Solids	**147**	5.00	mg/L	1	BEG0119	07/08/21	07/08/21	SM2540D	

Specific Conductance by SM2510B

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	**64000**	1.00	umhos/cm	1	BEG0120	07/08/21	07/08/21	SM2510B	

Total Dissolved Solids by SM2540C

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**31300**	10.0	mg/L	1	BEG0122	07/08/21	07/08/21	SM2540C	

pH by SM4500

Date Sampled: **06/28/21 09:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**6.00**	1.00	pH Units	1	BEG0121	06/29/21	06/29/21	SM4500-H+ B	I-03

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

BW.Mutual..4.8H

2106506-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	**6800**	100	ug/l	100	BEF0617	06/30/21	07/01/21	EPA 8260B	
Toluene	**4000**	100	"	"	"	"	"	"	
Ethylbenzene	**110**	1.0	"	1	"	"	"	"	
m,p-Xylene	**810**	200	"	100	"	"	"	"	
o-Xylene	**440**	100	"	"	"	"	"	"	
Xylenes (total)	**1300**	200	"	"	"	"	"	"	
Naphthalene	**86**	1.0	"	1	"	"	"	"	
1,2,4-Trimethylbenzene	**38**	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	**10**	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**20000**	5000	"	10	"	"	"	"	

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*99.0 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*105 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*	*21-167*		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	5.0	mg/L	1	BEF0616	06/30/21	07/01/21	EPA 8015M	
C28-C36 (ORO)	ND	5.0	"	"	"	"	"	"	

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		*89.6 %*	*58.9-148*		"	"	"	"	

Total Metals by EPA Method 200.8

Summit Scientific

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Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

BW.Mutual..4.8H

2106506-03 (Water)

Summit Scientific

Total Metals by EPA Method 200.8

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Phosphorus	**72.7**	10.0	ug/l	1	BEF0609	06/30/21	06/30/21	EPA 200.8	
Strontium	**127000**	1.00	"	"	"	"	"	"	
Barium	**92700**	1.00	"	"	"	"	"	"	
Boron	**2520**	10.0	"	"	"	"	"	"	
Calcium	**533000**	50.0	"	"	"	"	"	"	
Iron	**225300**	10.00	"	"	"	"	"	"	
Magnesium	**67500**	50.0	"	"	"	"	"	"	
Manganese	**2920**	1.00	"	"	"	"	"	"	
Potassium	**49600**	50.0	"	"	"	"	"	"	
Selenium	ND	1.00	"	"	"	"	"	"	
Sodium	**13700000**	50.0	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromide	**474**	200	mg/L	1000	BEF0622	06/30/21	07/02/21	EPA 300.0	
Chloride	**27100**	60.0	"	"	"	"	"	"	
Fluoride	ND	40.0	"	"	"	"	"	"	R-01
Nitrate as N	ND	50.0	"	"	"	"	"	"	
Nitrite as N	**1020**	60.0	"	"	"	"	"	"	
Sulfate	**464**	300	"	"	"	"	"	"	

Alkalinity by SM2320

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Alkalinity	**240**	10.0	mg/L as CaCO3	1	BEG0158	07/09/21	07/16/21	SM2320-B	
Carbonate	ND	10.0	"	"	"	"	"	"	
Bicarbonate	**240**	10.0	"	"	"	"	"	"	
Hydroxide Alkalinity	ND	10.0	"	"	"	"	"	"	

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.

S2

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

BW.Mutual..4.8H

2106506-03 (Water)

Summit Scientific

Alkalinity by SM2320

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Suspended Solids	**218**	5.00	mg/L	1	BEG0119	07/08/21	07/08/21	SM2540D	

Specific Conductance by SM2510B

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	**64600**	1.00	umhos/cm	1	BEG0120	07/08/21	07/08/21	SM2510B	

Total Dissolved Solids by SM2540C

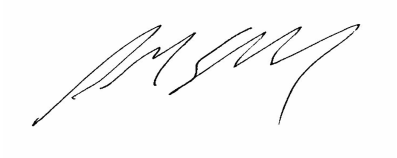
Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**31700**	10.0	mg/L	1	BEG0122	07/08/21	07/08/21	SM2540C	

pH by SM4500

Date Sampled: **06/28/21 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**5.85**	1.00	pH Units	1	BEG0121	06/29/21	06/29/21	SM4500-H+ B	I-03



Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEF0617 - EPA 5030 Water MS										
Blank (BEF0617-BLK1)				Prepared: 06/30/21 Analyzed: 07/01/21						
Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
m,p-Xylene	ND	2.0	"							
o-Xylene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Naphthalene	ND	1.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Gasoline Range Hydrocarbons	ND	500	"							
Surrogate: 1,2-Dichloroethane-d4	*13.5*		*"*	*13.3*		*101*	*23-173*			
Surrogate: Toluene-d8	*13.7*		*"*	*13.3*		*103*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.7*		*"*	*13.3*		*103*	*21-167*			
LCS (BEF0617-BS1)				Prepared: 06/30/21 Analyzed: 07/01/21						
Benzene	23.4	1.0	ug/l	33.3		70.3	51-132			
Toluene	31.7	1.0	"	33.3		95.2	51-138			
Ethylbenzene	35.5	1.0	"	33.3		106	58-146			
m,p-Xylene	68.5	2.0	"	66.7		103	57-144			
o-Xylene	28.4	1.0	"	33.3		85.4	53-146			
Naphthalene	33.7	1.0	"	33.3		101	70-130			
1,2,4-Trimethylbenzene	32.9	1.0	"	33.3		98.6	70-130			
1,3,5-Trimethylbenzene	31.0	1.0	"	33.3		93.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	*14.0*		*"*	*13.3*		*105*	*23-173*			
Surrogate: Toluene-d8	*14.1*		*"*	*13.3*		*106*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.5*		*"*	*13.3*		*102*	*21-167*			
Matrix Spike (BEF0617-MS1)	**Source: 2106470-01**			Prepared: 06/30/21 Analyzed: 07/01/21						
Benzene	27.5	1.0	ug/l	33.3	6.29	63.6	34-141			
Toluene	102	1.0	"	33.3	41.2	182	27-151			QM-07
Ethylbenzene	77.9	1.0	"	33.3	4.69	220	29-160			QM-07
m,p-Xylene	209	2.0	"	66.7	72.8	205	20-166			QM-07
o-Xylene	163	1.0	"	33.3	112	155	33-159			QM-07
Naphthalene	95.6	1.0	"	33.3	18.2	232	70-130			QM-07
1,2,4-Trimethylbenzene	111	1.0	"	33.3	25.3	258	70-130			QM-07
1,3,5-Trimethylbenzene	115	1.0	"	33.3	40.4	225	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	*15.1*		*"*	*13.3*		*113*	*23-173*			
Surrogate: Toluene-d8	*14.1*		*"*	*13.3*		*106*	*20-170*			

Summit Scientific

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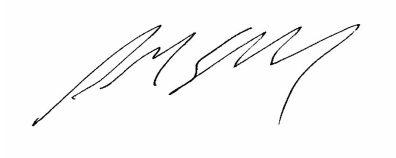
Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEF0617 - EPA 5030 Water MS										
Matrix Spike (BEF0617-MS1)	**Source: 2106470-01**			Prepared: 06/30/21 Analyzed: 07/01/21						
Surrogate: 4-Bromofluorobenzene	*13.7*		*ug/l*	*13.3*		*103*	*21-167*			
Matrix Spike Dup (BEF0617-MSD1)	**Source: 2106470-01**			Prepared: 06/30/21 Analyzed: 07/01/21						
Benzene	24.4	1.0	ug/l	33.3	6.29	54.2	34-141	12.0	30	
Toluene	88.8	1.0	"	33.3	41.2	143	27-151	13.6	30	
Ethylbenzene	70.7	1.0	"	33.3	4.69	198	29-160	9.70	30	QM-07
m,p-Xylene	186	2.0	"	66.7	72.8	170	20-166	11.9	30	QM-07
o-Xylene	143	1.0	"	33.3	112	95.2	33-159	13.0	30	
Naphthalene	88.3	1.0	"	33.3	18.2	210	70-130	8.01	30	QM-07
1,2,4-Trimethylbenzene	101	1.0	"	33.3	25.3	227	70-130	9.92	30	QM-07
1,3,5-Trimethylbenzene	104	1.0	"	33.3	40.4	190	70-130	10.6	30	QM-07
Surrogate: 1,2-Dichloroethane-d4	*15.5*		*"*	*13.3*		*116*	*23-173*			
Surrogate: Toluene-d8	*14.1*		*"*	*13.3*		*106*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.7*		*"*	*13.3*		*103*	*21-167*			



Extractable Petroleum Hydrocarbons by 8015 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEF0616 - EPA 3520B										
Blank (BEF0616-BLK1)				Prepared & Analyzed: 06/30/21						
C10-C28 (DRO)	ND	5.0	mg/L							
C28-C36 (ORO)	ND	5.0	"							
LCS (BEF0616-BS1)				Prepared & Analyzed: 06/30/21						
C10-C28 (DRO)	45.6	5.0	mg/L	50.0		91.2	54.3-147			
LCS Dup (BEF0616-BSD1)				Prepared & Analyzed: 06/30/21						
C10-C28 (DRO)	48.2	5.0	mg/L	50.0		96.5	54.3-147	5.61	15	
Matrix Spike (BEF0616-MS1)	**Source: 2106469-01**			Prepared & Analyzed: 06/30/21						
C10-C28 (DRO)	69.7	5.0	mg/L	50.0	12.5	114	81.6-126			

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

Total Metals by EPA Method 200.8 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEF0609 - EPA 200.8										
Blank (BEF0609-BLK1)				Prepared & Analyzed: 06/30/21						
Phosphorus	ND	10.0	ug/l							
Strontium	ND	1.00	"							
Barium	ND	1.00	"							
Boron	ND	10.0	"							
Calcium	ND	50.0	"							
Iron	ND	10.00	"							
Magnesium	ND	50.0	"							
Manganese	ND	1.00	"							
Potassium	ND	50.0	"							
Selenium	ND	1.00	"							
Sodium	ND	50.0	"							
LCS (BEF0609-BS1)				Prepared & Analyzed: 06/30/21						
Phosphorus	5360	10.0	ug/l	5000		107	85-115			
Strontium	558	1.00	"	500		112	85-115			
Barium	559	1.00	"	500		112	85-115			
Boron	2500	10.0	"	2500		99.8	85-115			
Calcium	5710	50.0	"	5000		114	85-115			
Iron	5036	10.00	"	5000		101	85-115			
Magnesium	5140	50.0	"	5000		103	85-115			
Manganese	523	1.00	"	500		105	85-115			
Potassium	5590	50.0	"	5000		112	85-115			
Selenium	45.9	1.00	"	50.0		91.8	85-115			
Sodium	5570	50.0	"	5000		111	85-115			
Duplicate (BEF0609-DUP1)		**Source: 2106495-01**		Prepared & Analyzed: 06/30/21						
Phosphorus	28.6	10.0	ug/l		31.6			10.1	20	
Strontium	2530	1.00	"		2430			3.85	20	
Barium	17.2	1.00	"		16.1			6.15	20	
Boron	579	10.0	"		565			2.57	20	
Calcium	188000	50.0	"		178000			5.37	20	
Iron	55.59	10.00	"		66.19			17.4	20	
Magnesium	72300	50.0	"		71100			1.59	20	
Manganese	17.9	1.00	"		18.0			0.542	20	
Potassium	3620	50.0	"		3610			0.375	20	
Selenium	5.75	1.00	"		5.31			7.93	20	
Sodium	185000	50.0	"		181000			1.96	20	

Summit Scientific

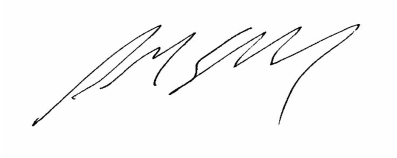
The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

Total Metals by EPA Method 200.8 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEF0609 - EPA 200.8										
Matrix Spike (BEF0609-MS1)	**Source: 2106495-01**			Prepared & Analyzed: 06/30/21						
Phosphorus	5750	10.0	ug/l	5000	31.6	114	70-130			
Strontium	2980	1.00	"	500	2430	109	70-130			
Barium	588	1.00	"	500	16.1	114	70-130			
Boron	2980	10.0	"	2500	565	96.5	70-130			
Calcium	184000	50.0	"	5000	178000	107	70-130			
Iron	5060	10.00	"	5000	66.19	99.9	70-130			
Magnesium	77200	50.0	"	5000	71100	121	70-130			
Manganese	526	1.00	"	500	18.0	102	70-130			
Potassium	8870	50.0	"	5000	3610	105	70-130			
Selenium	55.5	1.00	"	50.0	5.31	100	70-130			
Sodium	185000	50.0	"	5000	181000	88.6	70-130			
Matrix Spike Dup (BEF0609-MSD1)	**Source: 2106495-01**			Prepared & Analyzed: 06/30/21						
Phosphorus	5170	10.0	ug/l	5000	31.6	103	70-130	10.6	25	
Strontium	3080	1.00	"	500	2430	129	70-130	3.15	25	
Barium	529	1.00	"	500	16.1	103	70-130	10.5	25	
Boron	2770	10.0	"	2500	565	88.3	70-130	7.06	25	
Calcium	184000	50.0	"	5000	178000	118	70-130	0.291	25	
Iron	5100	10.00	"	5000	66.19	101	70-130	0.789	25	
Magnesium	75800	50.0	"	5000	71100	93.7	70-130	1.81	25	
Manganese	524	1.00	"	500	18.0	101	70-130	0.400	25	
Potassium	9100	50.0	"	5000	3610	110	70-130	2.56	25	
Selenium	57.0	1.00	"	50.0	5.31	103	70-130	2.58	25	
Sodium	186000	50.0	"	5000	181000	109	70-130	0.553	25	

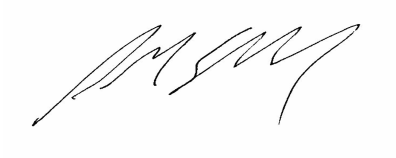


Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

Anions by EPA Method 300.0 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEF0622 - General Preparation										
Blank (BEF0622-BLK1)				Prepared: 06/30/21 Analyzed: 07/01/21						
Bromide	ND	0.200	mg/L							
Chloride	ND	0.0600	"							
Fluoride	ND	0.0400	"							
Nitrate as N	ND	0.0500	"							
Nitrite as N	ND	0.0600	"							
Sulfate	ND	0.300	"							
LCS (BEF0622-BS1)				Prepared: 06/30/21 Analyzed: 07/01/21						
Bromide	9.98	0.200	mg/L	10.0		99.8	90-110			
Chloride	2.82	0.0600	"	3.00		93.9	90-110			
Fluoride	1.84	0.0400	"	2.00		91.8	90-110			
Nitrate as N	2.76	0.0500	"	3.00		91.9	90-110			
Nitrite as N	2.84	0.0600	"	3.00		94.6	90-110			
Sulfate	16.2	0.300	"	15.0		108	90-110			
Duplicate (BEF0622-DUP1)	**Source: 2106390-01**			Prepared: 06/30/21 Analyzed: 07/01/21						
Bromide	ND	40.0	mg/L		ND				20	
Chloride	257	12.0	"		239			6.94	20	
Fluoride	ND	8.00	"		ND				20	
Nitrate as N	3.20	10.0	"		3.60			11.8	20	
Nitrite as N	ND	12.0	"		ND				20	
Sulfate	70.0	60.0	"		60.0			15.4	20	
Matrix Spike (BEF0622-MS1)	**Source: 2106390-01**			Prepared: 06/30/21 Analyzed: 07/01/21						
Bromide	1740	40.0	mg/L	2000	ND	87.1	80-120			
Chloride	744	12.0	"	600	239	84.1	80-120			
Fluoride	372	8.00	"	400	ND	93.0	80-120			
Nitrate as N	575	10.0	"	600	3.60	95.2	80-120			
Nitrite as N	513	12.0	"	600	ND	85.5	80-120			
Sulfate	3390	60.0	"	3000	60.0	111	80-120			



Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

Alkalinity by SM2320 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEG0158 - General Preparation										
Blank (BEG0158-BLK1)				Prepared: 07/09/21 Analyzed: 07/16/21						
Total Alkalinity	ND	10.0	mg/L as CaCO3							
Carbonate	ND	10.0	"							
Bicarbonate	ND	10.0	"							
Hydroxide Alkalinity	ND	10.0	"							
LCS (BEG0158-BS1)				Prepared: 07/09/21 Analyzed: 07/16/21						
Total Alkalinity	90.0	10.0	mg/L as CaCO3	100		90.0	80-120			
Duplicate (BEG0158-DUP1)		**Source: 2107103-01**		Prepared: 07/09/21 Analyzed: 07/16/21						
Total Alkalinity	400	10.0	mg/L as CaCO3		400			0.00	20	
Carbonate	ND	10.0	"		ND				20	
Bicarbonate	400	10.0	"		400			0.00	20	
Hydroxide Alkalinity	ND	10.0	"		ND				20	
Matrix Spike (BEG0158-MS1)		**Source: 2107103-01**		Prepared: 07/09/21 Analyzed: 07/16/21						
Total Alkalinity	480	10.0	mg/L as CaCO3	100	400	80.0	80-120			
Matrix Spike Dup (BEG0158-MSD1)		**Source: 2107103-01**		Prepared: 07/09/21 Analyzed: 07/16/21						
Total Alkalinity	480	10.0	mg/L as CaCO3	100	400	80.0	80-120	0.00	20	

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

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

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEG0119 - General Preparation										
Blank (BEG0119-BLK1)				Prepared & Analyzed: 07/08/21						
Total Suspended Solids	ND	5.00	mg/L							
Duplicate (BEG0119-DUP1)		**Source: 2107055-01**		Prepared & Analyzed: 07/08/21						
Total Suspended Solids	ND	5.00	mg/L		ND				20	

Summit Scientific

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Specific Conductance by SM2510B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEG0120 - General Preparation										
Blank (BEG0120-BLK1)				Prepared & Analyzed: 07/08/21						
Specific Conductance (EC)	ND	1.00	umhos/cm							
Duplicate (BEG0120-DUP1)		**Source: 2107064-01**		Prepared & Analyzed: 07/08/21						
Specific Conductance (EC)	12900	1.00	umhos/cm		12800			0.311	20	

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

Total Dissolved Solids by SM2540C - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEG0122 - General Preparation										
Blank (BEG0122-BLK1)				Prepared & Analyzed: 07/08/21						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (BEG0122-DUP1)		**Source: 2107061-01**		Prepared & Analyzed: 07/08/21						
Total Dissolved Solids	1470	10.0	mg/L		1470			0.204	20	

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

pH by SM4500 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BEG0121 - General Preparation										
LCS (BEG0121-BS1)				Prepared & Analyzed: 06/29/21						
pH	9.28	1.00	pH Units	9.21		101	90-110			
Duplicate (BEG0121-DUP1)		**Source: 2106506-01**		Prepared & Analyzed: 06/29/21						
pH	6.45	1.00	pH Units		6.41			0.622	20	

Radium-228

Case Narrative

Summit Scientific

2106506

Work Order Number: 2107078

1. This report consists of the analytical results for three wliquid samples received by ALS on 7/6/2021.

2. These samples were prepared according to the current revision of SOP 749 and SOP 736.

3. The samples were analyzed for the presence of ^{228}Ra by low background gas flow proportional counting of ^{228}Ac, which is the ingrown progeny of ^{228}Ra, according to the current revision of SOP 724. The analyses were completed on 7/23/2021.

4. The analysis results for these samples are reported on an 'As Received' basis in units of pCi/gram.

5. Due to uncertainty associated with the ICP-AES determination of barium concentration in the samples, the calculated yield for samples 2107078-1 fell between 100% and 110%. To minimize the potential for low bias, results have been calculated conservatively assuming quantitative chemical yield (100%). The magnitude of the low bias is estimated to be less than 10% of the reported value and is acceptable according the ALS LQAP. This sample is identified with an "Y1" flag on the final reports.

6. No further anomalous situations were noted during the preparation and analysis of these samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Dakota Wylde — 7/31/21
Radiochemistry Primary Data Reviewer — Date

Radiochemistry Final Data Reviewer — 8/17/21
Date

1

Section 1

CHAIN OF CUSTODY

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 2107078
Client Name: Summit Scientific
Client Project Name: 2106506
Client Project Number:
Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
BW_Mutual_2_8H	2107078-1		WLIQUID	28-Jun-21	9:10
BW_Mutual_3_8H	2107078-2		WLIQUID	28-Jun-21	9:20
BW_Mutual_4_8H	2107078-3		WLIQUID	28-Jun-21	9:30

ALS Environmental

225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

Form 202r6

WORKORDER # 2107078

PAGE 1 of 1

DISPOSAL: By Lab or Return to Client

PROJECT NAME	2106506	SAMPLER	
PROJECT No.		SITE ID	
		EDD FORMAT	
		PURCHASE ORDER	
COMPANY NAME	Summit Scientific	BILL TO COMPANY	Same
SEND REPORT TO	Paul Shrewsbury	INVOICE ATTN TO	Ben Shrewsbury
ADDRESS	4653 Table Mountain Drive	ADDRESS	Same
CITY / STATE / ZIP	Golden, CO 80403	CITY / STATE / ZIP	
PHONE	303-277-9310	PHONE	
FAX		FAX	
E-MAIL	pshrewsbury@s2scientific.com	E-MAIL	bshrewsbury@s2scientific.com

DATE: 6/28/21

TURNAROUND: Rush 2 Day

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	
1	BW_Mutual_2_8H	W	6/28	0910	1			X
2	BW_Mutual_3_8H	W	6/28	0920	1			X
3	BW_Mutual_4_8H	W	6/28	0930	1			X

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments: CC: mpremer@s2scientific.com

QC PACKAGE (check below)	
	LEVEL II (Standard QC)
✓	LEVEL III (Std QC + forms)
	LEVEL IV (Std QC + forms + raw data)

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Jack Breer	7/6/21	1400
RECEIVED BY		Josh Echey	7/6/21	1400
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

5 of 11

ALS Environmental - Fort Colllins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: SUMMIT SCIENTIFIC Workorder No: 2107078

Project Manager: JME Initials: JPE Date: 07/06/21

		N/A	YES	NO
1.	Are airbills / shipping documents present and/or removable?	X		
	Tracking number:			
2.	Are custody seals on **shipping** containers intact?	X		
3.	Are custody seals on **sample** containers intact?	X		
4.	Is there a COC (chain-of-custody) present?		X	
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)			X
6.	Are short-hold samples present?			X
7.	Are all samples within holding times for the requested analyses?		X	
8.	Were all sample containers received intact? (not broken or leaking)		X	
9.	Is there sufficient sample for the requested analyses?		X	
10.	Are samples in proper containers for requested analyses? (form 250, *Sample Handling Guidelines*)		X	
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)		X	
12.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	X		
13.	Were the samples shipped on ice?		X	
14.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #5	RAD ONLY	X	

Cooler #:	1						
Temperature (°C):	5.8						
# of custody seals on cooler:	0						
External µR/hr reading:	NA						
Background µR/hr reading:	11						

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? Na

*** Please provide details here for NO responses to boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.**

SAMPLE 3 IS ACIDIC PRESERVED DESPITE THE BOTTLE NOT SAYING SO. ASSUMED HNO3.

Were unpreserved bottles pH checked? N/A All client bottle ID's vs ALS lab ID's double-checked by JE

If applicable, was the client contacted? **NA** Contact: _____ Date/Time: _____

Project Manager Signature / Date: Kelly Burgus 7/7/21

Form 201r30.xls
03/18/2021

*IR Gun #5, VWR SN 192272629

Section 2

SAMPLE RESULTS SUMMARY

Radium-228 Analysis by GFPC Sample Results Summary

Client Name: Summit Scientific
Client Project Name: 2106506
Client Project Number:
Laboratory Name: **ALS -- Fort Collins**
PAI Work Order: 2107078

Reported on: Friday, July 30, 2021
5:24:43 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	DL	Units	Matrix	Prep Batch	Date Analyzed	Flags
2107078-1	BW_Mutual_2_8H	Sample	Ra-228	0.37 +/- 0.38	0.78	NA	pCi/g	WLIQUID	RA210720-2	7/23/2021	Y1,U
2107078-2	BW_Mutual_3_8H	Sample	Ra-228	0.44 +/- 0.48	1.01	NA	pCi/g	WLIQUID	RA210720-2	7/23/2021	U
2107078-3	BW_Mutual_4_8H	Sample	Ra-228	0.76 +/- 0.46	0.87	NA	pCi/g	WLIQUID	RA210720-2	7/23/2021	U

Comments:

Data Package ID: *RA2107078-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

Section 3

QC RESULTS SUMMARY ❸

Radium-228 Analysis by GFPC

PAI 724 Rev 14

Method Blank Results

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Lab ID: RA210720-2MB

Sample Matrix: WLIQUID
Prep SOP: SOP749 Rev 7
Date Collected: 20-Jul-21
Date Prepared: 20-Jul-21
Date Analyzed: 23-Jul-21

Prep Batch: RA210720-2
QCBatchID: RA210720-2-3
Run ID: RA210720-2A
Count Time: 150 minutes

Final Aliquot: 0.997 g
Result Units: pCi/g
File Name: raa0723

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
15262-20-1	Ra-228	0.24 +/- 0.39	0.83	5	NA	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
BARIUM	34890	34820	ug	99.8	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

DL - Decision Level

Data Package ID: *RA2107078-1*

Radium-228 Analysis by GFPC

PAI 724 Rev 14

Laboratory Control Sample(s)

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Lab ID: RA210720-2LCS

Sample Matrix: WLIQUID
Prep SOP: SOP749 Rev 7
Date Collected: 20-Jul-21
Date Prepared: 20-Jul-21
Date Analyzed: 23-Jul-21

Prep Batch: RA210720-2
QCBatchID: RA210720-2-3
Run ID: RA210720-2A
Count Time: 150 minutes

Final Aliquot: 0.997 g
Result Units: pCi/g
File Name: raa0723

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
15262-20-1	Ra-228	22.5 +/- 5.3	0.8	21.48	105	70 - 130	P

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
BARIUM	35340	34210	ug	96.8	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

Data Package ID: *RA2107078-1*

Section 4

INDIVIDUAL SAMPLE RESULTS

Radium-228 Analysis by GFPC

PAI 724 Rev 14

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Field ID: BW_Mutual_2_8H
Lab ID: 2107078-1

Sample Matrix: WLIQUID
Prep SOP: SOP749 Rev 7
Date Collected: 28-Jun-21
Date Prepared: 20-Jul-21
Date Analyzed: 23-Jul-21

Prep Batch: RA210720-2
QCBatchID: RA210720-2-3
Run ID: RA210720-2A
Count Time: 150 minutes
Report Basis: As Received

Final Aliquot: 1.03 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: rac0723

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
15262-20-1	Ra-228	0.37 +/- 0.38	0.78	5	NA	Y1,U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
BARIUM	33280	34710	ug	104	40 - 110 %	Y1

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: *RA2107078-1*

Radium-228 Analysis by GFPC

PAI 724 Rev 14

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Field ID: BW_Mutual_3_8H
Lab ID: 2107078-2

Sample Matrix: WLIQUID
Prep SOP: SOP749 Rev 7
Date Collected: 28-Jun-21
Date Prepared: 20-Jul-21
Date Analyzed: 23-Jul-21

Prep Batch: RA210720-2
QCBatchID: RA210720-2-3
Run ID: RA210720-2A
Count Time: 150 minutes
Report Basis: As Received

Final Aliquot: 1.00 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: raa0723

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
15262-20-1	Ra-228	0.44 +/- 0.48	1.01	5	NA	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
BARIUM	36990	31600	ug	85.4	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: *RA2107078-1*

Radium-228 Analysis by GFPC

PAI 724 Rev 14

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Field ID: BW_Mutual_4_8H
Lab ID: 2107078-3

Sample Matrix: WLIQUID
Prep SOP: SOP749 Rev 7
Date Collected: 28-Jun-21
Date Prepared: 20-Jul-21
Date Analyzed: 23-Jul-21

Prep Batch: RA210720-2
QCBatchID: RA210720-2-3
Run ID: RA210720-2A
Count Time: 150 minutes
Report Basis: As Received

Final Aliquot: 1.00 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: raa0723

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
15262-20-1	Ra-228	0.76 +/- 0.46	0.87	5	NA	U

Chemical Yield Summary

Carrier/Tracer	Amount Added	Result	Units	Yield	Control Limits	Flag
BARIUM	38340	33900	ug	88.4	40 - 110 %	

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: *RA2107078-1*

Section 5

RAW DATA

Radium-228 Analysis by GFPC Raw Data Report

Laboratory Name: ALS -- Fort Collins
PAI Work Order: 2107078

Prep SOP: SOP749
Analytical SOP: PAI 724

Reported on: Monday, July 26, 2021 10:47:41 AM

Sample ID / QC Type	Nuclide / Type	Sample Date/Time	Prep Batch / QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix / %Moist.	Samp Alq / Analy Alq	Inst ID / Det ID	AnRunID / File Name	Count Date/Time	GrossCPM / BkgCPM	BaseEff / ProgEff	CntDur(min) / Yield	Activity +/- 2 s TPU	MDC / DecLev	ReportUnits / ReportBasis	DER / RPD	%Spk. Recov / Flags
2107078-1	Ra-228	6/28/2021	RA210720-2	7/22/2021	7/23/2021	WLIQUID	1.04 g	LB4100-c	RA210720-2A	7/23/2021	1.967	42.60%	150	0.37	0.78	pCi/g	NA	
SMP	Trg. Analyte	9:10:00 AM	RA210720-2-3	8:10:00 AM	8:15:00 AM	NA	1.03 g	B3	rac0723	9:46 AM	1.718	NA	104.0%	0.38		As Received	NA	Y1,U
2107078-2	Ra-228	6/28/2021	RA210720-2	7/22/2021	7/23/2021	WLIQUID	1.01 g	LB4100-a	RA210720-2A	7/23/2021	2.207	42.21%	150	0.44	1.01	pCi/g	NA	
SMP	Trg. Analyte	9:20:00 AM	RA210720-2-3	8:10:00 AM	8:15:00 AM	NA	1 g	B1	raa0723	9:46 AM	1.967	NA	85.4%	0.48		As Received	NA	U
2107078-3	Ra-228	6/28/2021	RA210720-2	7/22/2021	7/23/2021	WLIQUID	1.01 g	LB4100-a	RA210720-2A	7/23/2021	2.273	45.60%	150	0.76	0.87	pCi/g	NA	
SMP	Trg. Analyte	9:30:00 AM	RA210720-2-3	8:10:00 AM	8:15:00 AM	NA	1 g	B2	raa0723	9:46 AM	1.812	NA	88.4%	0.46		As Received	NA	U
RA210720-2	Ra-228	7/20/2021	RA210720-2	7/22/2021	7/23/2021	WLIQUID	1 g	LB4100-a	RA210720-2A	7/23/2021	2.147	43.95%	150	0.24	0.83	pCi/g	NA	
MB	Trg. Analyte	8:28:27 AM	RA210720-2-3	8:10:00 AM	8:15:00 AM	NA	0.997 g	B3	raa0723	9:46 AM	1.989	NA	99.8%	0.39		As Received	NA	U
RA210720-2	Ra-228	7/20/2021	RA210720-2	7/22/2021	7/23/2021	WLIQUID	1 g	LB4100-a	RA210720-2A	7/23/2021	16.193	43.34%	150	22.5	0.8	pCi/g	NA	105
LCS	Trg. Analyte	8:28:27 AM	RA210720-2-3	8:10:00 AM	8:15:00 AM	NA	0.997 g	B4	raa0723	9:46 AM	1.894	NA	96.8%	5.3		As Received	NA	P

Comments:

Data Package ID: *RA2107078-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

DER - Duplicate Error Ratio

BDL - Below Detection Limit

17-0117

Radium-226

Case Narrative

Summit Scientific

2106506

Work Order Number: 2107078

1. This report consists of the analytical results for three wliquid samples received by ALS on 7/6/2021.

2. These samples were prepared and analyzed according to the current revisions of SOP 783 and SOP 736. The analyses were completed on 7/30/2021.

3. The analysis results for these samples are reported on an 'As Received' basis in units of pCi/gram.

4. Sample volume was insufficient to allow preparation of a duplicate. A laboratory control sample duplicate (LCSD) was prepared in lieu of a client sample duplicate.

5. No anomalous situations were encountered during the preparation or analysis of these samples. All quality control criteria were met.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

_____ 7/31/21

Dakota Wylde — Date

Radiochemistry Primary Data Reviewer

_____ 8/17/21

Radiochemistry Final Data Reviewer — Date

1

Section 1

CHAIN OF CUSTODY

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 2107078
Client Name: Summit Scientific
Client Project Name: 2106506
Client Project Number:
Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
BW_Mutual_2_8H	2107078-1		WLIQUID	28-Jun-21	9:10
BW_Mutual_3_8H	2107078-2		WLIQUID	28-Jun-21	9:20
BW_Mutual_4_8H	2107078-3		WLIQUID	28-Jun-21	9:30

ALS Environmental

225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

Form 202r6

WORKORDER # 2107078

PAGE 1 of 1

DISPOSAL: By Lab or Return to Client

PROJECT NAME	2106506	SAMPLER	
PROJECT No.		SITE ID	
		EDD FORMAT	
COMPANY NAME	Summit Scientific	PURCHASE ORDER	
SEND REPORT TO	Paul Shrewsbury	BILL TO COMPANY	Same
ADDRESS	4653 Table Mountain Drive	INVOICE ATTN TO	Ben Shrewsbury
CITY / STATE / ZIP	Golden, CO 80403	ADDRESS	Same
PHONE	303-277-9310	CITY / STATE / ZIP	
FAX		PHONE	
E-MAIL	pshrewsbury@s2scientific.com	FAX	
		E-MAIL	bshrewsbury@s2scientific.com

DATE: 6/28/21

TURNAROUND: Rush 2 Day

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	
1	BW_Mutual_2_8H	W	6/28	0910	1			X
2	BW_Mutual_3_8H	W	6/28	0920	1			X
3	BW_Mutual_4_8H	W	6/28	0930	1			X

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments: CC: mpremer@s2scientific.com

QC PACKAGE (check below)	
	LEVEL II (Standard QC)
✓	LEVEL III (Std QC + forms)
	LEVEL IV (Std QC + forms + raw data)

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Jack Breer	7/6/21	1400
RECEIVED BY		Josh Echey	7/6/21	1400
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

4 of 13

ALS Environmental - Fort Colllins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: SUMMIT SCIENTIFIC Workorder No: 2107078

Project Manager: JME Initials: JPE Date: 07/06/21

		N/A	YES	NO
1.	Are airbills / shipping documents present and/or removable?	X		
	Tracking number:			
2.	Are custody seals on **shipping** containers intact?	X		
3.	Are custody seals on **sample** containers intact?	X		
4.	Is there a COC (chain-of-custody) present?		X	
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)			X
6.	Are short-hold samples present?			X
7.	Are all samples within holding times for the requested analyses?		X	
8.	Were all sample containers received intact? (not broken or leaking)		X	
9.	Is there sufficient sample for the requested analyses?		X	
10.	Are samples in proper containers for requested analyses? (form 250, *Sample Handling Guidelines*)		X	
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)		X	
12.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	X		
13.	Were the samples shipped on ice?		X	
14.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #5	RAD ONLY	X	

Cooler #:	1						
Temperature (°C):	5.8						
# of custody seals on cooler:	0						
External µR/hr reading:	NA						
Background µR/hr reading:	11						

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? Na

*** Please provide details here for NO responses to boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.**

SAMPLE 3 IS ACIDIC PRESERVED DESPITE THE BOTTLE NOT SAYING SO. ASSUMED HNO3.

Were unpreserved bottles pH checked? N/A All client bottle ID's vs ALS lab ID's double-checked by JE

If applicable, was the client contacted? **NA** Contact: _____ Date/Time: _____

Project Manager Signature / Date: Kelly Burgus 7/7/21

Form 201r30.xls
03/18/2021

*IR Gun #5, VWR SN 192272629

Section 2

SAMPLE RESULTS SUMMARY

Radium-226 by Radon Emanation - Method 903.1 Sample Results Summary

Client Name: Summit Scientific
Client Project Name: 2106506
Client Project Number:
Laboratory Name: **ALS -- Fort Collins**
PAI Work Order: 2107078

Reported on: Friday, July 30, 2021
5:33:15 PM

Lab Sample ID	Client Sample ID	Sample Type	Nuclide	Result +/- 2 s TPU	MDC	DL	Units	Matrix	Prep Batch	Date Analyzed	Flags
2107078-1	BW_Mutual_2_8H	Sample	Ra-226	0.061 +/- 0.075	0.112	NA	pCi/g	WLIQUID	RE210708-2	7/30/2021	U
2107078-2	BW_Mutual_3_8H	Sample	Ra-226	0.092 +/- 0.096	0.142	NA	pCi/g	WLIQUID	RE210708-2	7/30/2021	U
2107078-3	BW_Mutual_4_8H	Sample	Ra-226	0.06 +/- 0.10	0.17	NA	pCi/g	WLIQUID	RE210708-2	7/30/2021	U

Comments:

Data Package ID: *RE2107078-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

LT - Result is less than Requested MDC, greater than sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

Section 3

QC RESULTS SUMMARY

Radium-226 by Radon Emanation - Method 903.1

PAI 783 Rev 15

Method Blank Results

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Lab ID: RE210708-2MB

Sample Matrix: WLIQUID
Prep SOP: PAI 783 Rev 15
Date Collected: 08-Jul-21
Date Prepared: 08-Jul-21
Date Analyzed: 30-Jul-21

Prep Batch: RE210708-2
QCBatchID: RE210708-2-2
Run ID: RE210708-2A
Count Time: 15 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
13982-63-3	Ra-226	0.053 +/- 0.065	0.097	1	NA	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

M - Requested MDC not met.

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

DL - Decision Level

Data Package ID: *RE2107078-1*

Radium-226 by Radon Emanation - Method 903.1

PAI 783 Rev 15

Laboratory Control Sample(s)

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Lab ID: RE210708-2LCS

Sample Matrix: WLIQUID
Prep SOP: PAI 783 Rev 15
Date Collected: 08-Jul-21
Date Prepared: 08-Jul-21
Date Analyzed: 30-Jul-21

Prep Batch: RE210708-2
QCBatchID: RE210708-2-2
Run ID: RE210708-2A
Count Time: 15 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	20.6 +/- 3.8	0.1	23.39	88.1	57 - 126	P

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

Data Package ID: *RE2107078-1*

Radium-226 by Radon Emanation - Method 903.1

PAI 783 Rev 15

Laboratory Control Sample(s)

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Lab ID: RE210708-2LCSD

Sample Matrix: WLIQUID
Prep SOP: PAI 783 Rev 15
Date Collected: 08-Jul-21
Date Prepared: 08-Jul-21
Date Analyzed: 30-Jul-21

Prep Batch: RE210708-2
QCBatchID: RE210708-2-2
Run ID: RE210708-2A
Count Time: 15 minutes

Final Aliquot: 2.00 g
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Results +/- 2s TPU	MDC	Spike Added	% Rec	Control Limits	Lab Qualifier
13982-63-3	Ra-226	21.7 +/- 4.0	0.2	23.39	92.8	57 - 126	P

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS Recovery within control limits.

M - The requested MDC was not met.

M3 - The requested MDC was not met, but thereported activity is greater than the reported MDC.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

Data Package ID: *RE2107078-1*

Radium-226 by Radon Emanation - Method 903.1

PAI 783 Rev 15

Duplicate Sample Results (DER)

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Field ID:
Lab ID: RE210708-2LCSD

Sample Matrix: WLIQUID
Prep SOP: PAI 783 Rev 15
Date Collected: 08-Jul-21
Date Prepared: 08-Jul-21
Date Analyzed: 30-Jul-21

Prep Batch: RE210708-2
QCBatchID: RE210708-2-2
Run ID: RE210708-2A
Count Time: 15 minutes

Final Aliquot: 2.00 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Analyte	Sample			Duplicate			DER	DER Lim
		Result +/- 2 s TPU	MDC	Flags	Result +/- 2 s TPU	MDC	Flags		
13982-63-3	Ra-226	20.6 +/- 3.8	0.1	P	21.7 +/- 4.0	0.2	P	0.199	2.13

Comments:

Duplicate Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

LT - Result is less than Request MDC, greater than sample specific MDC

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

Abbreviations:

TPU - Total Propagated Uncertainty

DER - Duplicate Error Ratio

BDL - Below Detection Limit

NR - Not Reported

Data Package ID: *RE2107078-1*

Section 4

INDIVIDUAL SAMPLE RESULTS

Radium-226 by Radon Emanation - Method 903.1

PAI 783 Rev 15

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Field ID: BW_Mutual_2_8H
Lab ID: 2107078-1

Sample Matrix: WLIQUID
Prep SOP: PAI 783 Rev 15
Date Collected: 28-Jun-21
Date Prepared: 08-Jul-21
Date Analyzed: 30-Jul-21

Prep Batch: RE210708-2
QCBatchID: RE210708-2-2
Run ID: RE210708-2A
Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 2.02 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
13982-63-3	Ra-226	0.061 +/- 0.075	0.112	1	NA	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: *RE2107078-1*

Radium-226 by Radon Emanation - Method 903.1

PAI 783 Rev 15

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Field ID: BW_Mutual_3_8H
Lab ID: 2107078-2

Sample Matrix: WLIQUID
Prep SOP: PAI 783 Rev 15
Date Collected: 28-Jun-21
Date Prepared: 08-Jul-21
Date Analyzed: 30-Jul-21

Prep Batch: RE210708-2
QCBatchID: RE210708-2-2
Run ID: RE210708-2A
Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 2.02 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
13982-63-3	Ra-226	0.092 +/- 0.096	0.142	1	NA	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: *RE2107078-1*

Radium-226 by Radon Emanation - Method 903.1

PAI 783 Rev 15

Sample Results

Lab Name: ALS -- Fort Collins
Work Order Number: 2107078
Client Name: Summit Scientific
ClientProject ID: 2106506

Field ID: BW_Mutual_4_8H
Lab ID: 2107078-3

Sample Matrix: WLIQUID
Prep SOP: PAI 783 Rev 15
Date Collected: 28-Jun-21
Date Prepared: 08-Jul-21
Date Analyzed: 30-Jul-21

Prep Batch: RE210708-2
QCBatchID: RE210708-2-2
Run ID: RE210708-2A
Count Time: 15 minutes
Report Basis: As Received

Final Aliquot: 2.03 g
Prep Basis: As Received
Moisture(%): NA
Result Units: pCi/g
File Name: Manual Entry

CASNO	Target Nuclide	Result +/- 2 s TPU	MDC	Requested MDC	DL	Lab Qualifier
13982-63-3	Ra-226	0.06 +/- 0.10	0.17	1	NA	U

Comments:

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative Yield is assumed.

Y2 - Chemical Yield outside default limits.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

M - The requested MDC was not met.

Abbreviations:

TPU - Total Propagated Uncertainty

MDC - Sample specific Minimum Detectable Concentration

BDL - Below Detection Limit

DL - Decision Level

Data Package ID: *RE2107078-1*

Section 5

RAW DATA

Radium-226 by Radon Emanation - Method 903.1 Raw Data Report

Laboratory Name: ALS -- Fort Collins
PAI Work Order: 2107078

Prep SOP: PAI 783
Analytical SOP: PAI 783

Reported on: Friday, July 30, 2021 2:02:46 PM

Sample ID / QC Type	Nuclide / Type	Sample Date/Time	Prep Batch / QCBatchID	Ingrowth Date /Time	Decay Date/Time	Matrix / %Moist.	Samp Alq / Analy Alq	Inst ID / Det ID	AnRunID / File Name	Count Date/Time	Gr Cnts Bkg Cnts	BaseEff / ProgEff	CntDur(min) / Yield	Activity +/- 2 s TPU	MDC / DecLev	ReportUnits / ReportBasis	DER / RPD	%Spk. Recov / Flags
2107078-1	Ra-226	6/28/2021	RE210708-2	7/24/2021	7/30/2021	WLIQUID	2.02 g	Alpha Scin	RE210708-2A	7/30/2021	5.000	156.46%	15	0.061	0.112	pCi/g	NA	
SMP	Trg. Analyte	9:10:00 AM	RE210708-2-2	2:08:00 PM	7:13:00 AM	NA	2.02 g	H023	Manual Entry	11:13 AM	1.000	NA	NA	0.075		As Received	NA	U
2107078-2	Ra-226	6/28/2021	RE210708-2	7/24/2021	7/30/2021	WLIQUID	2.02 g	Alpha Scin	RE210708-2A	7/30/2021	10.000	180.59%	15	0.092	0.142	pCi/g	NA	
SMP	Trg. Analyte	9:20:00 AM	RE210708-2-2	2:08:00 PM	7:32:00 AM	NA	2.02 g	A009	Manual Entry	11:33 AM	3.000	NA	NA	0.096		As Received	NA	U
2107078-3	Ra-226	6/28/2021	RE210708-2	7/24/2021	7/30/2021	WLIQUID	2.03 g	Alpha Scin	RE210708-2A	7/30/2021	11.000	191.78%	15	0.06	0.17	pCi/g	NA	
SMP	Trg. Analyte	9:30:00 AM	RE210708-2-2	2:08:00 PM	7:32:00 AM	NA	2.03 g	B010	Manual Entry	11:33 AM	6.000	NA	NA	0.10		As Received	NA	U
RE210708-2	Ra-226	7/8/2021	RE210708-2	7/24/2021	7/30/2021	WLIQUID	2 g	Alpha Scin	RE210708-2A	7/30/2021	5.000	181.34%	15	0.053	0.097	pCi/g	NA	
MB	Trg. Analyte	4:46:42 PM	RE210708-2-2	2:08:00 PM	7:51:00 AM	NA	2 g	B002	Manual Entry	11:54 AM	1.000	NA	NA	0.065		As Received	NA	U
RE210708-2	Ra-226	7/8/2021	RE210708-2	7/24/2021	7/30/2021	WLIQUID	2 g	Alpha Scin	RE210708-2A	7/30/2021	1418.000	164.67%	15	20.6	0.1	pCi/g	NA	88.1
LCS	Trg. Analyte	4:46:42 PM	RE210708-2-2	2:08:00 PM	7:51:00 AM	NA	2 g	A001	Manual Entry	11:54 AM	2.000	NA	NA	3.8		As Received	NA	P
RE210708-2	Ra-226	7/8/2021	RE210708-2	7/24/2021	7/30/2021	WLIQUID	2 g	Alpha Scin	RE210708-2A	7/30/2021	1652.000	181.69%	15	21.7	0.2	pCi/g	0.20	92.8
LCSD	Trg. Analyte	4:46:42 PM	RE210708-2-2	2:08:00 PM	7:51:00 AM	NA	2 g	C003	Manual Entry	11:54 AM	6.000	NA	NA	4.0		As Received	NA	P

Comments:

Data Package ID: *RE2107078-1*

Qualifiers/Flags:

U - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

D - DER is greater than Control Limit of 2.13

+ - Duplicate RPD not within limits.

LT - Result is less than Request MDC, greater than sample specific MDC

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested MDC.

Notes:

1) The Tracer results are not yield corrected (i.e. activity measured not activity added).

2) Where sample time is not available, 12:00 PM (Mountain) is used for decay correction.

Abbreviations:

TR- Tracer TA - Target Analyte

TPU - Total Propagated Uncertainty

MDC - Minimum Detectable Concentration

DER - Duplicate Error Ratio

BDL - Below Detection Limit

Absaroka Solutions 112 High Street Buffalo WY, 82834	Project: For Sampling-Mutual S17 Pad Project Number: D90.CO.0540 Project Manager: Joel Mason	**Reported:** 08/12/21 16:31

Notes and Definitions

R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
I-03	This sample was recieved and analyzed outside of the recommended holding time.
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