

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 24, 2023

Jacob Whritenour  
Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield, CO 80020  
RE: Noble - Ries 3-19  
Work Order #2301290

Enclosed are the results of analyses for samples received by Summit Scientific on 01/16/23 17:26. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott Sheely For Paul Shrewsbury  
President



Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Ries 3-19

Project Number: UWRWE-A2747-ABN

Project Manager: Jacob Whritenour

**Reported:**

01/24/23 12:32

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01-B@4'	2301290-01	Soil	01/16/23 09:00	01/16/23 17:26
FL01-C@3'	2301290-02	Soil	01/16/23 11:40	01/16/23 17:26
FL01-J@3'	2301290-03	Soil	01/16/23 11:10	01/16/23 17:26

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

S<sub>2</sub>

2301290

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

Client: Noble / Tasman Project Manager: Jacob Whritenour Invoice: Cole Moore  
Address: 6855 W. 119th Ave E-Mail: [jwhritenour@tasman-geo.com](mailto:jwhritenour@tasman-geo.com)  
City/State/Zip: Broomfield/ CO/ 80020  
Phone: 503-915-3046 Project Name: RIES 3-19  
Sampler Name: Martin Medeiros Project Number: UWRWE-A2747-ABN

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested					Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC-915	TPH-915	PAH-915	PH, EC, SAR	Boron-HWS		
1	FL01-B@4'	1/16/23	9:00	2			X			X				X	X	X	X	X	PH, EC, SAR by saturated paste
2	FL01-C@3'	↓	11:40	↓										↓	↓	↓	↓		
3	FL01-J@3'	↓	11:10	↓										↓	↓	↓	↓		
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: <i>Martin Medeiros</i> Martin Medeiros	Date/Time: 1/16/23 14:30	Received by: Tasman's Lock Box	Date/Time: 1/16/23 14:30	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/> 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/>	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 1/16/23 1720	Received by: <i>[Signature]</i>	Date/Time: 1/16/23 1720	Sample Integrity: Temperature Upon Receipt: 7.9	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

# S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2301290Client: Noble/Tasman Client Project ID: RIES 3-19Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other  Airbill #: 

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Matrix (Check all that apply) Air  Soil/Solid  Water  Other Temp (°C)  Thermometer # 

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? <sup>(1)</sup> <b>NOTE:</b> If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On Ice
If custody seals are present, are they intact? <sup>(1)</sup>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<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"/>	
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"/>	
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"/>	
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"/>	
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 (excluding cooling)? <sup>(1)</sup> Note the type of preservative in the comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	<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.

SF  
Custodian Printed Name

1/16/23 1726  
Date/Time



Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**FL01-B@4'**  
**2301290-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGA0378	01/17/23	01/18/23	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: **01/16/23 09:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0550	137 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0380	95.0 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0408	102 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGA0383	01/17/23	01/17/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	9.21	73.7 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**FL01-B@4'**  
**2301290-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGA0375	01/17/23	01/18/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0275	82.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0235	70.5 %	40-150		"	"	"	"	

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

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.125</b>	0.0100	mg/L	1	BGA0460	01/19/23	01/21/23	EPA 6020B	

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

Date Sampled: **01/16/23 09:00**

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

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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**FL01-B@4'**  
**2301290-01 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	34.0	0.0588	mg/L dry	1	BGA0487	01/19/23	01/20/23	EPA 6020B	
Magnesium	12.7	0.0588	"	"	"	"	"	"	
Sodium	44.3	0.0588	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.64	0.00100	units	1	BGA0545	01/23/23	01/23/23	Calculation	

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

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.0		%	1	BGA0485	01/19/23	01/19/23	Calculation	

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

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.452	0.0100	mmhos/cm	1	BGA0505	01/20/23	01/20/23	EPA 120.1	

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

Date Sampled: **01/16/23 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.09		pH Units	1	BGA0504	01/20/23	01/20/23	EPA 9045D	

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Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**FL01-C@3'**  
**2301290-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGA0378	01/17/23	01/18/23	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: **01/16/23 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0534	133 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0374	93.5 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0412	103 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGA0383	01/17/23	01/17/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	8.59	68.7 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**FL01-C@3'**  
**2301290-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGA0375	01/17/23	01/18/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0236	70.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0187	56.2 %	40-150		"	"	"	"	

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

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.0448</b>	0.0100	mg/L	1	BGA0460	01/19/23	01/21/23	EPA 6020B	

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

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**FL01-C@3'**  
**2301290-02 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	31.6	0.0533	mg/L dry	1	BGA0487	01/19/23	01/20/23	EPA 6020B	
Magnesium	7.51	0.0533	"	"	"	"	"	"	
Sodium	8.96	0.0533	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.372	0.00100	units	1	BGA0545	01/23/23	01/23/23	Calculation	

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

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.7		%	1	BGA0485	01/19/23	01/19/23	Calculation	

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

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.301	0.0100	mmhos/cm	1	BGA0505	01/20/23	01/20/23	EPA 120.1	

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

Date Sampled: **01/16/23 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.80		pH Units	1	BGA0504	01/20/23	01/20/23	EPA 9045D	

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Project: Noble - Ries 3-19  
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Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**FL01-J@3'**  
**2301290-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BGA0378	01/17/23	01/18/23	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: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0536	134 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0381	95.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0404	101 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BGA0383	01/17/23	01/17/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	11.8	94.8 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**FL01-J@3'**  
**2301290-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGA0375	01/17/23	01/18/23	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0207	62.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0166	49.7 %	40-150		"	"	"	"	

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

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.0784</b>	0.0100	mg/L	1	BGA0460	01/19/23	01/21/23	EPA 6020B	

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

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**FL01-J@3'**  
**2301290-03 (Soil)**

**Summit Scientific**

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	45.2	0.0524	mg/L dry	1	BGA0487	01/19/23	01/20/23	EPA 6020B	
Magnesium	18.0	0.0524	"	"	"	"	"	"	
Sodium	56.0	0.0524	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.78	0.00100	units	1	BGA0545	01/23/23	01/23/23	Calculation	

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

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.4		%	1	BGA0485	01/19/23	01/19/23	Calculation	

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

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.839	0.0100	mmhos/cm	1	BGA0505	01/20/23	01/20/23	EPA 120.1	

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

Date Sampled: **01/16/23 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.87		pH Units	1	BGA0504	01/20/23	01/20/23	EPA 9045D	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

### 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 BGA0378 - EPA 5030 Soil MS

##### Blank (BGA0378-BLK1)

Prepared & Analyzed: 01/17/23

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0545		"	0.0400		136	50-150				
Surrogate: Toluene-d8	0.0378		"	0.0400		94.4	50-150				
Surrogate: 4-Bromofluorobenzene	0.0407		"	0.0400		102	50-150				

##### LCS (BGA0378-BS1)

Prepared & Analyzed: 01/17/23

Benzene	0.115	0.0020	mg/kg	0.125		91.7	70-130				
Toluene	0.115	0.0050	"	0.125		91.9	70-130				
Ethylbenzene	0.146	0.0050	"	0.125		116	70-130				
m,p-Xylene	0.277	0.010	"	0.250		111	70-130				
o-Xylene	0.138	0.0050	"	0.125		110	70-130				
1,2,4-Trimethylbenzene	0.152	0.0050	"	0.125		122	70-130				
1,3,5-Trimethylbenzene	0.151	0.0050	"	0.125		121	70-130				
Naphthalene	0.144	0.0038	"	0.125		115	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0545		"	0.0400		136	50-150				
Surrogate: Toluene-d8	0.0383		"	0.0400		95.7	50-150				
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.5	50-150				

##### Matrix Spike (BGA0378-MS1)

Source: 2301287-01

Prepared & Analyzed: 01/17/23

Benzene	0.112	0.0020	mg/kg	0.125	ND	90.0	70-130				
Toluene	0.112	0.0050	"	0.125	ND	89.9	70-130				
Ethylbenzene	0.142	0.0050	"	0.125	ND	114	70-130				
m,p-Xylene	0.274	0.010	"	0.250	ND	109	70-130				
o-Xylene	0.136	0.0050	"	0.125	ND	109	70-130				
1,2,4-Trimethylbenzene	0.151	0.0050	"	0.125	ND	121	70-130				
1,3,5-Trimethylbenzene	0.160	0.0050	"	0.125	ND	128	70-130				
Naphthalene	0.151	0.0038	"	0.125	ND	121	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0574		"	0.0400		144	50-150				
Surrogate: Toluene-d8	0.0384		"	0.0400		96.0	50-150				
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.4	50-150				

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Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**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 BGA0378 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BGA0378-MSD1)</b>	<b>Source: 2301287-01</b>			<b>Prepared &amp; Analyzed: 01/17/23</b>						
Benzene	0.112	0.0020	mg/kg	0.125	ND	90.0	70-130	0.0267	30	
Toluene	0.114	0.0050	"	0.125	ND	91.4	70-130	1.64	30	
Ethylbenzene	0.142	0.0050	"	0.125	ND	113	70-130	0.232	30	
m,p-Xylene	0.273	0.010	"	0.250	ND	109	70-130	0.220	30	
o-Xylene	0.136	0.0050	"	0.125	ND	108	70-130	0.133	30	
1,2,4-Trimethylbenzene	0.152	0.0050	"	0.125	ND	122	70-130	0.869	30	
1,3,5-Trimethylbenzene	0.161	0.0050	"	0.125	ND	128	70-130	0.599	30	
Naphthalene	0.152	0.0038	"	0.125	ND	122	70-130	0.474	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0579</i>		<i>"</i>	<i>0.0400</i>		<i>145</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.4</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>50-150</i>			

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Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**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 BGA0383 - EPA 3550A**

**Blank (BGA0383-BLK1)**

Prepared & Analyzed: 01/17/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	13.9		"	12.5		111		30-150			

**LCS (BGA0383-BS1)**

Prepared & Analyzed: 01/17/23

C10-C28 (DRO)	527	50	mg/kg	500		105		70-130			
Surrogate: <i>o</i> -Terphenyl	13.7		"	12.5		109		30-150			

**Matrix Spike (BGA0383-MS1)**

Source: 2301288-01

Prepared & Analyzed: 01/17/23

C10-C28 (DRO)	417	50	mg/kg	500	38.4	75.8		70-130			
Surrogate: <i>o</i> -Terphenyl	10.6		"	12.5		84.9		30-150			

**Matrix Spike Dup (BGA0383-MSD1)**

Source: 2301288-01

Prepared & Analyzed: 01/17/23

C10-C28 (DRO)	406	50	mg/kg	500	38.4	73.5		70-130	2.82	20	
Surrogate: <i>o</i> -Terphenyl	6.51		"	12.5		52.0		30-150			

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Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**PAH by EPA Method 8270D SIM - Quality Control**  
**Summit Scientific**

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

**Batch BGA0375 - EPA 5030 Soil MS**

**Blank (BGA0375-BLK1)**

Prepared & Analyzed: 01/17/23

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0361</i>		"	<i>0.0333</i>	<i>108</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0296</i>		"	<i>0.0333</i>	<i>88.7</i>	<i>40-150</i>				

**LCS (BGA0375-BS1)**

Prepared & Analyzed: 01/17/23

Acenaphthene	0.0469	0.00500	mg/kg	0.0333	141	31-137			QLCS-02
Anthracene	0.0416	0.00500	"	0.0333	125	30-120			QLCS-02
Benzo (a) anthracene	0.0310	0.00500	"	0.0333	93.1	30-120			
Benzo (a) pyrene	0.0341	0.00500	"	0.0333	102	30-120			
Benzo (b) fluoranthene	0.0381	0.00500	"	0.0333	114	30-120			
Benzo (k) fluoranthene	0.0433	0.00500	"	0.0333	130	30-120			QLCS-02
Chrysene	0.0349	0.00500	"	0.0333	105	30-120			
Dibenz (a,h) anthracene	0.0353	0.00500	"	0.0333	106	30-120			
Fluoranthene	0.0428	0.00500	"	0.0333	128	30-120			QLCS-02
Fluorene	0.0472	0.00500	"	0.0333	142	30-120			QLCS-02
Indeno (1,2,3-cd) pyrene	0.0312	0.00500	"	0.0333	93.5	30-120			
Pyrene	0.0349	0.00500	"	0.0333	105	35-142			
1-Methylnaphthalene	0.0386	0.00500	"	0.0333	116	35-142			
2-Methylnaphthalene	0.0373	0.00500	"	0.0333	112	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0364</i>		"	<i>0.0333</i>	<i>109</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0424</i>		"	<i>0.0333</i>	<i>127</i>	<i>40-150</i>			

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Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

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

**Batch BGA0375 - EPA 5030 Soil MS**

<b>Matrix Spike (BGA0375-MS1)</b>	<b>Source: 2301243-01</b>			<b>Prepared &amp; Analyzed: 01/17/23</b>							
Acenaphthene	0.0261	0.00500	mg/kg	0.0333	ND	78.4	31-137				
Anthracene	0.0244	0.00500	"	0.0333	ND	73.1	30-120				
Benzo (a) anthracene	0.0203	0.00500	"	0.0333	ND	61.0	30-120				
Benzo (a) pyrene	0.0215	0.00500	"	0.0333	ND	64.6	30-120				
Benzo (b) fluoranthene	0.0221	0.00500	"	0.0333	ND	66.2	30-120				
Benzo (k) fluoranthene	0.0238	0.00500	"	0.0333	ND	71.3	30-120				
Chrysene	0.0208	0.00500	"	0.0333	ND	62.5	30-120				
Dibenz (a,h) anthracene	0.0230	0.00500	"	0.0333	ND	68.9	30-120				
Fluoranthene	0.0242	0.00500	"	0.0333	ND	72.7	30-120				
Fluorene	0.0276	0.00500	"	0.0333	ND	82.8	30-120				
Indeno (1,2,3-cd) pyrene	0.0197	0.00500	"	0.0333	ND	59.0	30-120				
Pyrene	0.0236	0.00500	"	0.0333	ND	70.8	35-142				
1-Methylnaphthalene	0.0233	0.00500	"	0.0333	ND	70.0	15-130				
2-Methylnaphthalene	0.0245	0.00500	"	0.0333	ND	73.4	15-130				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0238</i>		<i>"</i>	<i>0.0333</i>		<i>71.3</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0248</i>		<i>"</i>	<i>0.0333</i>		<i>74.3</i>	<i>40-150</i>				

<b>Matrix Spike Dup (BGA0375-MSD1)</b>	<b>Source: 2301243-01</b>			<b>Prepared &amp; Analyzed: 01/17/23</b>							
Acenaphthene	0.0293	0.00500	mg/kg	0.0333	ND	87.9	31-137	11.5	30		
Anthracene	0.0263	0.00500	"	0.0333	ND	78.9	30-120	7.69	30		
Benzo (a) anthracene	0.0225	0.00500	"	0.0333	ND	67.5	30-120	10.0	30		
Benzo (a) pyrene	0.0220	0.00500	"	0.0333	ND	66.0	30-120	2.13	30		
Benzo (b) fluoranthene	0.0246	0.00500	"	0.0333	ND	73.8	30-120	10.7	30		
Benzo (k) fluoranthene	0.0251	0.00500	"	0.0333	ND	75.3	30-120	5.53	30		
Chrysene	0.0220	0.00500	"	0.0333	ND	66.1	30-120	5.55	30		
Dibenz (a,h) anthracene	0.0228	0.00500	"	0.0333	ND	68.3	30-120	0.829	30		
Fluoranthene	0.0261	0.00500	"	0.0333	ND	78.4	30-120	7.47	30		
Fluorene	0.0283	0.00500	"	0.0333	ND	84.8	30-120	2.42	30		
Indeno (1,2,3-cd) pyrene	0.0210	0.00500	"	0.0333	ND	62.9	30-120	6.40	30		
Pyrene	0.0249	0.00500	"	0.0333	ND	74.8	35-142	5.45	30		
1-Methylnaphthalene	0.0251	0.00500	"	0.0333	ND	75.4	15-130	7.46	50		
2-Methylnaphthalene	0.0244	0.00500	"	0.0333	ND	73.1	15-130	0.438	50		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0246</i>		<i>"</i>	<i>0.0333</i>		<i>73.8</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0273</i>		<i>"</i>	<i>0.0333</i>		<i>81.9</i>	<i>40-150</i>				

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

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

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

**Batch BGA0460 - EPA 3050B**

**Blank (BGA0460-BLK1)**

Prepared: 01/19/23 Analyzed: 01/21/23

Boron ND 0.0100 mg/L

**LCS (BGA0460-BS1)**

Prepared: 01/19/23 Analyzed: 01/21/23

Boron 5.78 0.0100 mg/L 5.00 116 80-120

**Duplicate (BGA0460-DUP1)**

**Source: 2301265-01**

Prepared: 01/19/23 Analyzed: 01/21/23

Boron 0.137 0.0100 mg/L 0.140 2.11 20

**Matrix Spike (BGA0460-MS1)**

**Source: 2301265-01**

Prepared: 01/19/23 Analyzed: 01/21/23

Boron 5.83 0.0100 mg/L 5.00 0.140 114 75-125

**Matrix Spike Dup (BGA0460-MSD1)**

**Source: 2301265-01**

Prepared: 01/19/23 Analyzed: 01/21/23

Boron 5.83 0.0100 mg/L 5.00 0.140 114 75-125 0.0582 25

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Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

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

**Summit Scientific**

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

**Batch BGA0487 - General Preparation**

**Blank (BGA0487-BLK1)**

Prepared: 01/19/23 Analyzed: 01/20/23

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

**LCS (BGA0487-BS1)**

Prepared: 01/19/23 Analyzed: 01/20/23

Calcium	4.61	0.0500	mg/L wet	5.00	92.3	70-130				
Magnesium	5.13	0.0500	"	5.00	103	70-130				
Sodium	5.02	0.0500	"	5.00	100	70-130				

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 Broomfield CO, 80020

Project: Noble - Ries 3-19

Project Number: UWRWE-A2747-ABN

Project Manager: Jacob Whritenour

**Reported:**  
 01/24/23 12:32

**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 BGA0485 - General Preparation**

**Duplicate (BGA0485-DUP1)**

**Source: 2301290-01**

Prepared & Analyzed: 01/19/23

% Solids	85.4		%		85.0			0.378		20	
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Summit Scientific

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





Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

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

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

**Batch BGA0505 - General Preparation**

**Blank (BGA0505-BLK1)**

Prepared & Analyzed: 01/20/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BGA0505-BS1)**

Prepared & Analyzed: 01/20/23

Specific Conductance (EC) 0.148 0.0100 mmhos/cm 0.150 98.9 95-105

**Duplicate (BGA0505-DUP1)**

Source: 2301287-01

Prepared & Analyzed: 01/20/23

Specific Conductance (EC) 1.66 0.0100 mmhos/cm 1.67 0.780 20

Summit Scientific

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Tasman Geosciences  
 6855 W. 119th Ave.  
 Broomfield CO, 80020

Project: Noble - Ries 3-19

Project Number: UWRWE-A2747-ABN  
 Project Manager: Jacob Whritenour

**Reported:**  
 01/24/23 12:32

**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 BGA0504 - General Preparation**

**LCS (BGA0504-BS1)**

Prepared & Analyzed: 01/20/23

pH	9.04	pH Units	9.18	98.5	95-105
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**Duplicate (BGA0504-DUP1)**

Source: 2301287-01

Prepared & Analyzed: 01/20/23

pH	7.76	pH Units	7.71	0.646	20
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Summit Scientific

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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Ries 3-19  
Project Number: UWRWE-A2747-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
01/24/23 12:32

### Notes and Definitions

QLCS-02 The spike recovery was outside acceptance limits for this analyte indicating a potential high bias.

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