

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

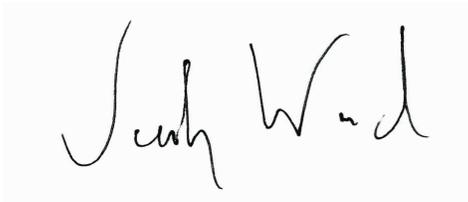
303.277.9310

August 26, 2024

Jacob Whritenour
Tasman Geosciences
6855 W. 119th Ave.
Broomfield, CO 80020
RE: Noble - Five Rivers K09-21D
Work Order #2408210

Enclosed are the results of analyses for samples received by Summit Scientific on 08/20/24 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Jacob Wood". The signature is written in a cursive style with a large initial "J" and a distinct "W".

Jacob Wood For Paul Shrewsbury
President



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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01-FL01-M@3'	2408210-01	Soil	08/20/24 14:28	08/20/24 17:40

Summit Scientific

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Send Data To:		Send Invoice To:	
Client: Noble/Tasman	Project Manager: Jake Whritenour	Company: Chevron	
Address: 6855 W. 119th Ave.	E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location:	
City/State/Zip: Broomfield/CO/ 80020		AFE#:	
Phone: 602-881-5716	Project Name: <u>Five Rivers 809-21D</u>	PO/Billing Codes:	
Sampler Name: Dennis Gray <u>MP Molly Parks</u>	Project Number:	Contact: <u>Erin Crawford</u>	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	HOLD		
1	SSOI-FL01-M@3'	08-20-24	1428	2			X							X	X	X	X	X	X		SAR, EC, pH by saturated paste
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
13																					
14																					
15																					

Relinquished by: <u>MP</u>	Date/Time: <u>08-20-24/1672</u>	Received by: <u>Tasman Lock Box</u>	Date/Time: <u>08-20-24/1672</u>	TAT Business Days	Field DO	Notes:
				Same Day	X Field EC	
Relinquished by: <u>Tasman Lock Box</u>	Date/Time: <u>8/20/24 1740</u>	Received by: <u>[Signature]</u>	Date/Time: <u>8/20/24 1740</u>	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
Temperature Upon Receipt: <u>21</u>	Corrected Temperature: <u>2</u>	IR gun #: <u>1</u>	HNO3 lot #:	Standard	Field Turb.	

S₂

Sample Receipt Checklist

S2 Work Order# 2408810

Client: Nadef Cooman Client Project ID: Five Rivers K09-210

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

-

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? ⁽¹⁾ NOTE: 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"/>	outside
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sameday
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

AS
Custodian Printed Name

8/20/24
Date/Time

5.3.2



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6855 W. 119th Ave.
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Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

SS01-FL01-M@3'
2408210-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHH0559	08/20/24	08/21/24	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: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0411	103 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0393	98.3 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0408	102 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHH0558	08/20/24	08/21/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	9.02	72.2 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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2408210-01 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.100	0.00500	mg/kg	1	BHH0561	08/21/24	08/23/24	EPA 8270D SIM	
Anthracene	0.355	0.00500	"	"	"	"	"	"	E
Benzo (a) anthracene	0.331	0.00500	"	"	"	"	"	"	E
Benzo (a) pyrene	0.242	0.00500	"	"	"	"	"	"	E
Benzo (b) fluoranthene	0.297	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	0.134	0.00500	"	"	"	"	"	"	
Chrysene	0.366	0.00500	"	"	"	"	"	"	E
Dibenz (a,h) anthracene	0.0390	0.00500	"	"	"	"	"	"	
Fluoranthene	1.49	0.0500	"	10	"	"	08/23/24	"	
Fluorene	0.171	0.00500	"	1	"	"	08/23/24	"	
Indeno (1,2,3-cd) pyrene	0.146	0.00500	"	"	"	"	"	"	
Pyrene	1.05	0.0500	"	10	"	"	08/23/24	"	
1-Methylnaphthalene	ND	0.00500	"	1	"	"	08/23/24	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0145	43.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0141	42.4 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHH0577	08/21/24	08/22/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.28	0.200	mg/kg dry	1	BHH0578	08/21/24	08/21/24	EPA 6020B	

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SS01-FL01-M@3'
2408210-01 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	52.4	0.400	mg/kg dry	1	BHH0578	08/21/24	08/21/24	EPA 6020B	
Cadmium	0.218	0.200	"	"	"	"	"	"	
Copper	4.53	0.400	"	"	"	"	"	"	
Lead	7.77	0.200	"	"	"	"	"	"	
Nickel	1.73	0.400	"	"	"	"	"	"	
Silver	0.0794	0.0200	"	"	"	"	"	"	
Zinc	20.5	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0570	08/21/24	08/21/24	EPA 7196A	

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

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	24.7	0.0500	mg/L dry	1	BHH0547	08/21/24	08/22/24	EPA 6020B	
Magnesium	3.43	0.0500	"	"	"	"	"	"	
Sodium	64.6	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.23	0.00100	units	1	BHH0705	08/23/24	08/23/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.9		%	1	BHH0556	08/21/24	08/21/24	Calculation	

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SS01-FL01-M@3'
2408210-01 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.739	0.0100	mmhos/cm	1	BHH0548	08/20/24	08/21/24	EPA 120.1	I-03

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

Date Sampled: **08/20/24 14:28**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.70		pH Units	1	BHH0549	08/20/24	08/21/24	EPA 9045D	I-03

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Volatile Organic Compounds by EPA Method 8260B - Quality Control

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

Batch BHH0559 - EPA 5030 Soil MS

Blank (BHH0559-BLK1)

Prepared: 08/20/24 Analyzed: 08/21/24

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0413		"	0.0400		103	50-150			
<i>Surrogate: Toluene-d8</i>	0.0392		"	0.0400		97.9	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0389		"	0.0400		97.2	50-150			

LCS (BHH0559-BS1)

Prepared: 08/20/24 Analyzed: 08/21/24

Benzene	0.0943	0.0020	mg/kg	0.100		94.3	70-130			
Toluene	0.0935	0.0050	"	0.100		93.5	70-130			
Ethylbenzene	0.0938	0.0050	"	0.100		93.8	70-130			
m,p-Xylene	0.182	0.010	"	0.200		90.8	70-130			
o-Xylene	0.0907	0.0050	"	0.100		90.7	70-130			
1,2,4-Trimethylbenzene	0.0865	0.0050	"	0.100		86.5	70-130			
1,3,5-Trimethylbenzene	0.0866	0.0050	"	0.100		86.6	70-130			
Naphthalene	0.0822	0.0038	"	0.100		82.2	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0444		"	0.0400		111	50-150			
<i>Surrogate: Toluene-d8</i>	0.0405		"	0.0400		101	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0394		"	0.0400		98.6	50-150			

Matrix Spike (BHH0559-MS1)

Source: 2408204-01

Prepared: 08/20/24 Analyzed: 08/21/24

Benzene	0.0873	0.0020	mg/kg	0.100	ND	87.3	70-130			
Toluene	0.0862	0.0050	"	0.100	ND	86.2	70-130			
Ethylbenzene	0.0910	0.0050	"	0.100	ND	91.0	70-130			
m,p-Xylene	0.174	0.010	"	0.200	ND	86.9	70-130			
o-Xylene	0.0853	0.0050	"	0.100	ND	85.3	70-130			
1,2,4-Trimethylbenzene	0.0817	0.0050	"	0.100	ND	81.7	70-130			
1,3,5-Trimethylbenzene	0.0835	0.0050	"	0.100	ND	83.5	70-130			
Naphthalene	0.0782	0.0038	"	0.100	ND	78.2	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0439		"	0.0400		110	50-150			
<i>Surrogate: Toluene-d8</i>	0.0396		"	0.0400		98.9	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0396		"	0.0400		99.0	50-150			

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Project Number: [none]
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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		

Batch BHH0559 - EPA 5030 Soil MS

Matrix Spike Dup (BHH0559-MSD1)	Source: 2408204-01			Prepared: 08/20/24 Analyzed: 08/21/24						
Benzene	0.0816	0.0020	mg/kg	0.100	ND	81.6	70-130	6.75	30	
Toluene	0.0807	0.0050	"	0.100	ND	80.7	70-130	6.58	30	
Ethylbenzene	0.0857	0.0050	"	0.100	ND	85.7	70-130	6.01	30	
m,p-Xylene	0.169	0.010	"	0.200	ND	84.3	70-130	3.10	30	
o-Xylene	0.0802	0.0050	"	0.100	ND	80.2	70-130	6.09	30	
1,2,4-Trimethylbenzene	0.0776	0.0050	"	0.100	ND	77.6	70-130	5.16	30	
1,3,5-Trimethylbenzene	0.0798	0.0050	"	0.100	ND	79.8	70-130	4.52	30	
Naphthalene	0.0758	0.0038	"	0.100	ND	75.8	70-130	3.12	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0420</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.7</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0384</i>		<i>"</i>	<i>0.0400</i>		<i>95.9</i>	<i>50-150</i>			

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Project Number: [none]
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Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BHH0558 - EPA 3550A

Blank (BHH0558-BLK1)

Prepared: 08/20/24 Analyzed: 08/21/24

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	15.3		"	12.5		123		30-150			

LCS (BHH0558-BS1)

Prepared: 08/20/24 Analyzed: 08/21/24

C10-C28 (DRO)	422	50	mg/kg	500		84.3		70-130			
Surrogate: <i>o</i> -Terphenyl	14.7		"	12.5		117		30-150			

Matrix Spike (BHH0558-MS1)

Source: 2408204-01

Prepared: 08/20/24 Analyzed: 08/21/24

C10-C28 (DRO)	405	50	mg/kg	500	26.3	75.8		70-130			
Surrogate: <i>o</i> -Terphenyl	11.8		"	12.5		94.1		30-150			

Matrix Spike Dup (BHH0558-MSD1)

Source: 2408204-01

Prepared: 08/20/24 Analyzed: 08/21/24

C10-C28 (DRO)	401	50	mg/kg	500	26.3	75.0		70-130	1.03	20	
Surrogate: <i>o</i> -Terphenyl	12.5		"	12.5		100		30-150			

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Project Number: [none]
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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 BHH0561 - EPA 5030 Soil MS

Blank (BHH0561-BLK1)

Prepared: 08/21/24 Analyzed: 08/22/24

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>0.0182</i>		"	<i>0.0333</i>		<i>54.5</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0169</i>		"	<i>0.0333</i>		<i>50.6</i>	<i>40-150</i>			

LCS (BHH0561-BS1)

Prepared: 08/21/24 Analyzed: 08/22/24

Acenaphthene	0.0261	0.00500	mg/kg	0.0333		78.3	31-137			
Anthracene	0.0200	0.00500	"	0.0333		60.0	30-120			
Benzo (a) anthracene	0.0231	0.00500	"	0.0333		69.2	30-120			
Benzo (a) pyrene	0.0223	0.00500	"	0.0333		67.0	30-120			
Benzo (b) fluoranthene	0.0217	0.00500	"	0.0333		65.2	30-120			
Benzo (k) fluoranthene	0.0229	0.00500	"	0.0333		68.6	30-120			
Chrysene	0.0240	0.00500	"	0.0333		71.9	30-120			
Dibenz (a,h) anthracene	0.0239	0.00500	"	0.0333		71.6	30-120			
Fluoranthene	0.0201	0.00500	"	0.0333		60.4	30-120			
Fluorene	0.0249	0.00500	"	0.0333		74.7	30-120			
Indeno (1,2,3-cd) pyrene	0.0188	0.00500	"	0.0333		56.5	30-120			
Pyrene	0.0266	0.00500	"	0.0333		79.7	35-142			
1-Methylnaphthalene	0.0219	0.00500	"	0.0333		65.7	35-142			
2-Methylnaphthalene	0.0208	0.00500	"	0.0333		62.5	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0216</i>		"	<i>0.0333</i>		<i>64.9</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0201</i>		"	<i>0.0333</i>		<i>60.3</i>	<i>40-150</i>			

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

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 BHH0561 - EPA 5030 Soil MS

Matrix Spike (BHH0561-MS1)	Source: 2408202-26			Prepared: 08/21/24 Analyzed: 08/22/24						
Acenaphthene	0.0213	0.00500	mg/kg	0.0333	ND	64.0	31-137			
Anthracene	0.0162	0.00500	"	0.0333	ND	48.5	30-120			
Benzo (a) anthracene	0.0174	0.00500	"	0.0333	ND	52.3	30-120			
Benzo (a) pyrene	0.0171	0.00500	"	0.0333	ND	51.4	30-120			
Benzo (b) fluoranthene	0.0162	0.00500	"	0.0333	ND	48.5	30-120			
Benzo (k) fluoranthene	0.0166	0.00500	"	0.0333	ND	49.9	30-120			
Chrysene	0.0178	0.00500	"	0.0333	ND	53.3	30-120			
Dibenz (a,h) anthracene	0.0193	0.00500	"	0.0333	ND	58.0	30-120			
Fluoranthene	0.0154	0.00500	"	0.0333	ND	46.3	30-120			
Fluorene	0.0203	0.00500	"	0.0333	ND	60.8	30-120			
Indeno (1,2,3-cd) pyrene	0.0180	0.00500	"	0.0333	ND	54.0	30-120			
Pyrene	0.0216	0.00500	"	0.0333	ND	64.8	35-142			
1-Methylnaphthalene	0.0214	0.00500	"	0.0333	ND	64.2	15-130			
2-Methylnaphthalene	0.0203	0.00500	"	0.0333	ND	60.8	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0200</i>		<i>"</i>	<i>0.0333</i>		<i>60.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0158</i>		<i>"</i>	<i>0.0333</i>		<i>47.5</i>	<i>40-150</i>			

Matrix Spike Dup (BHH0561-MSD1)	Source: 2408202-26			Prepared: 08/21/24 Analyzed: 08/22/24						
Acenaphthene	0.0185	0.00500	mg/kg	0.0333	ND	55.5	31-137	14.2	30	
Anthracene	0.0145	0.00500	"	0.0333	ND	43.4	30-120	11.0	30	
Benzo (a) anthracene	0.0167	0.00500	"	0.0333	ND	50.0	30-120	4.47	30	
Benzo (a) pyrene	0.0167	0.00500	"	0.0333	ND	50.2	30-120	2.35	30	
Benzo (b) fluoranthene	0.0156	0.00500	"	0.0333	ND	46.7	30-120	3.81	30	
Benzo (k) fluoranthene	0.0163	0.00500	"	0.0333	ND	48.9	30-120	2.10	30	
Chrysene	0.0170	0.00500	"	0.0333	ND	51.0	30-120	4.27	30	
Dibenz (a,h) anthracene	0.0172	0.00500	"	0.0333	ND	51.5	30-120	11.9	30	
Fluoranthene	0.0141	0.00500	"	0.0333	ND	42.2	30-120	9.20	30	
Fluorene	0.0178	0.00500	"	0.0333	ND	53.4	30-120	12.9	30	
Indeno (1,2,3-cd) pyrene	0.0186	0.00500	"	0.0333	ND	55.7	30-120	3.02	30	
Pyrene	0.0187	0.00500	"	0.0333	ND	56.0	35-142	14.6	30	
1-Methylnaphthalene	0.0189	0.00500	"	0.0333	ND	56.6	15-130	12.7	50	
2-Methylnaphthalene	0.0187	0.00500	"	0.0333	ND	56.1	15-130	8.11	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0187</i>		<i>"</i>	<i>0.0333</i>		<i>56.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0146</i>		<i>"</i>	<i>0.0333</i>		<i>43.7</i>	<i>40-150</i>			

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

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

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

Batch BHH0577 - EPA 3050B

Blank (BHH0577-BLK1)

Prepared: 08/21/24 Analyzed: 08/22/24

Boron ND 2.00 mg/L

LCS (BHH0577-BS1)

Prepared: 08/21/24 Analyzed: 08/22/24

Boron 4.69 2.00 mg/L 5.00 93.7 80-120

Duplicate (BHH0577-DUP1)

Source: 2408123-08

Prepared: 08/21/24 Analyzed: 08/22/24

Boron 0.154 2.00 mg/L 0.155 0.462 20

Matrix Spike (BHH0577-MS1)

Source: 2408123-08

Prepared: 08/21/24 Analyzed: 08/22/24

Boron 4.83 2.00 mg/L 5.00 0.155 93.4 75-125

Matrix Spike Dup (BHH0577-MSD1)

Source: 2408123-08

Prepared: 08/21/24 Analyzed: 08/22/24

Boron 4.83 2.00 mg/L 5.00 0.155 93.5 75-125 0.0358 25

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BHH0578 - EPA 3050B

Blank (BHH0578-BLK1)

Prepared & Analyzed: 08/21/24

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

LCS (BHH0578-BS1)

Prepared & Analyzed: 08/21/24

Arsenic	34.7	0.200	mg/kg wet	36.8	94.4	80-120
Barium	33.6	0.400	"	36.8	91.3	80-120
Cadmium	1.67	0.200	"	1.84	90.8	80-120
Copper	35.8	0.400	"	36.8	97.3	80-120
Lead	16.6	0.200	"	18.4	90.3	80-120
Nickel	35.1	0.400	"	36.8	95.6	80-120
Silver	1.68	0.0200	"	1.84	91.2	80-120
Zinc	35.2	0.400	"	36.8	95.9	80-120
Selenium	4.00	0.260	"	3.68	109	80-120

Duplicate (BHH0578-DUP1)

Source: 2408123-08

Prepared & Analyzed: 08/21/24

Arsenic	0.870	0.181	mg/kg dry	0.981	12.0	20	
Barium	71.5	0.362	"	81.4	13.0	20	
Cadmium	0.178	0.181	"	0.220	21.4	20	QR-01
Copper	3.71	0.362	"	4.01	7.72	20	
Lead	12.6	0.181	"	7.74	47.4	20	QR-04
Nickel	2.18	0.362	"	2.35	7.76	20	
Silver	0.0446	0.0181	"	0.0635	34.9	20	QR-01
Zinc	27.7	0.362	"	27.9	0.774	20	
Selenium	ND	0.236	"	ND		20	

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BHH0578 - EPA 3050B

Matrix Spike (BHH0578-MS1)

Source: 2408123-08

Prepared & Analyzed: 08/21/24

Arsenic	25.2	0.200	mg/kg dry	39.0	0.981	62.1	75-125				QM-05
Barium	103	0.400	"	39.0	81.4	54.7	75-125				QM-07
Cadmium	1.89	0.200	"	1.95	0.220	85.5	75-125				
Copper	28.2	0.400	"	39.0	4.01	62.2	75-125				QM-05
Lead	25.0	0.200	"	19.5	7.74	88.6	75-125				
Nickel	26.6	0.400	"	39.0	2.35	62.3	75-125				QM-05
Silver	1.73	0.0200	"	1.95	0.0635	85.7	75-125				
Zinc	48.4	0.400	"	39.0	27.9	52.7	75-125				QM-07
Selenium	3.72	0.260	"	3.90	ND	95.5	75-125				

Matrix Spike Dup (BHH0578-MSD1)

Source: 2408123-08

Prepared & Analyzed: 08/21/24

Arsenic	24.7	0.200	mg/kg dry	39.5	0.981	60.0	75-125	1.85	25		QM-05
Barium	115	0.400	"	39.5	81.4	86.0	75-125	11.6	25		
Cadmium	2.00	0.200	"	1.98	0.220	90.2	75-125	6.06	25		
Copper	29.2	0.400	"	39.5	4.01	63.7	75-125	3.43	25		QM-05
Lead	24.8	0.200	"	19.8	7.74	86.1	75-125	0.939	25		
Nickel	28.3	0.400	"	39.5	2.35	65.6	75-125	6.05	25		QM-05
Silver	1.76	0.0200	"	1.98	0.0635	85.7	75-125	1.50	25		
Zinc	62.8	0.400	"	39.5	27.9	88.4	75-125	25.9	25		QM-07
Selenium	3.49	0.260	"	3.95	ND	88.2	75-125	6.44	25		

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BHH0570 - 3060A Mod

Blank (BHH0570-BLK1)

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BHH0570-BS1)

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent 25.8 0.30 mg/kg wet 25.0 103 80-120

Duplicate (BHH0570-DUP1)

Source: 2408198-01

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BHH0570-MS1)

Source: 2408198-01

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent 26.6 0.30 mg/kg dry 26.8 ND 99.6 75-125

Matrix Spike Dup (BHH0570-MSD1)

Source: 2408198-01

Prepared & Analyzed: 08/21/24

Chromium, Hexavalent 26.4 0.30 mg/kg dry 26.8 ND 98.6 75-125 1.01 20

Summit Scientific

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

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 BHH0547 - General Preparation

Blank (BHH0547-BLK1)

Prepared: 08/20/24 Analyzed: 08/22/24

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

LCS (BHH0547-BS1)

Prepared: 08/20/24 Analyzed: 08/22/24

Calcium	4.96	0.0500	mg/L wet	5.00		99.2	70-130			
Magnesium	4.89	0.0500	"	5.00		97.8	70-130			
Sodium	4.78	0.0500	"	5.00		95.6	70-130			

Summit Scientific



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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

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

Summit Scientific

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

Batch BHH0556 - General Preparation

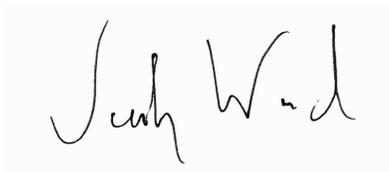
Duplicate (BHH0556-DUP1)

Source: 2408123-09

Prepared & Analyzed: 08/21/24

% Solids	93.3		%		92.8			0.580	20	
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Tasman Geosciences
6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

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

Summit Scientific

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

Batch BHH0548 - General Preparation

Blank (BHH0548-BLK1)

Prepared: 08/20/24 Analyzed: 08/21/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BHH0548-BS1)

Prepared: 08/20/24 Analyzed: 08/21/24

Specific Conductance (EC) 0.155 0.0100 mmhos/cm 0.150 104 95-105

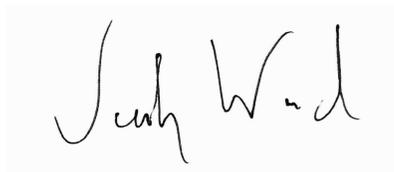
Duplicate (BHH0548-DUP1)

Source: 2408179-01

Prepared: 08/20/24 Analyzed: 08/21/24

Specific Conductance (EC) 0.264 0.0100 mmhos/cm 0.268 1.65 20

Summit Scientific



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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

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 BHH0549 - General Preparation

LCS (BHH0549-BS1)

Prepared: 08/20/24 Analyzed: 08/21/24

pH	9.08	pH Units	9.18	98.9	95-105
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Duplicate (BHH0549-DUP1)

Source: 2408179-01

Prepared: 08/20/24 Analyzed: 08/21/24

pH	8.22	pH Units	8.36	1.69	20
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Summit Scientific

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

Project: Noble - Five Rivers K09-21D

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
08/26/24 12:34

Notes and Definitions

- QR-04 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- QR-01 Analyses are not controlled on RPD values from sample concentrations below the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
- 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.
- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
- I-03 Sample was received and prepared outside of holding time.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- 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