

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 05, 2024

Jacob Whritenour  
Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield, CO 80020  
RE: Noble - Stroh H12-16  
Work Order #2408389

Enclosed are the results of analyses for samples received by Summit Scientific on 08/29/24 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Natalie Tessier". The signature is fluid and cursive, with the first name being more prominent.

Natalie Tessier For Paul Shrewsbury  
President



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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01R-W@2'	2408389-01	Soil	08/29/24 11:10	08/29/24 17:40

Summit Scientific

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# SUMMIT SCIENTIFIC

4653 Table Mountain Drive  
Golden, CO 80403  
303-277-9310

Lab ID	Page 1 of 1
2408389	

Client: Noble / Tasman		Send Data To:		Send Invoice To:	
Address: 6855 W. 119th Ave		Project Manager: Jake Whritenour		Company: Chevron	
City/State/Zip: Broomfield, CO 80020		E-Mail: Jwhritenour@tasman-geo.com		Project Name/Location: <u>Stroh H12.16</u>	
Phone: <u>978-857-4408</u>		Project Name: <u>Stroh H12.16</u>		AFE#: <u>UWRWE-A3133-ARN</u>	
Sampler Name: <u>Matthew Wentzel</u>		Project Number:		PO/Billing Codes:	
				Contact: <u>Miguel Barron</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	VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR	Boron - HWS	Metals - 915	HOLD				
1	<u>FLOOR-WQ2</u>	<u>8-29-24</u>	<u>1110</u>	<u>3</u>			<u>X</u>			<u>X</u>				<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		pH, EC, SAR by saturated paste
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							
15																							

Relinquished by:	Date/Time:	Received by: <u>Tasman Lock Box</u>	Date/Time:	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
				1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
				Standard	<u>X</u> Field Turb.	

Temperature Upon Receipt: <u>9.0</u>	Corrected Temperature <u>8</u>	IR gun #:	HNO3 lot #:
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S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2408389Client: Noble Gasman Client Project ID: Stroh H12-16Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: ☐

<input type="checkbox"/>	<input 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> 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? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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? 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)? <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.
  
 Custodian Printed Name

  
 Date/Time



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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

**FL01R-W@2'**  
**2408389-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHH0978	08/30/24	08/31/24	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: **08/29/24 11:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0398	99.4 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0396	99.1 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0386	96.5 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHH0981	08/30/24	08/31/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	9.08	72.7 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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**PAH by EPA Method 8270D SIM**

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHH0956	08/30/24	08/30/24	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: **08/29/24 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0262	78.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0263	79.0 %	40-150		"	"	"	"	

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

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHI0014	09/03/24	09/05/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**2408389-01 (Soil)**

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**Total Metals by EPA 6020B**

Arsenic	2.09	0.181	mg/kg dry	1	BHH0974	08/30/24	09/04/24	EPA 6020B
Barium	45.3	0.362	"	"	"	"	"	"
Cadmium	0.374	0.181	"	"	"	"	"	"
Copper	8.49	0.362	"	"	"	"	"	"
Lead	7.82	0.181	"	"	"	"	"	"
Nickel	3.98	0.362	"	"	"	"	"	"
Silver	0.0294	0.0181	"	"	"	"	"	"
Zinc	20.9	0.362	"	"	"	"	"	"
Selenium	ND	0.236	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHH0966	08/30/24	08/30/24	EPA 7196A	

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

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	292	0.0500	mg/L dry	1	BHI0023	09/03/24	09/04/24	EPA 6020B	
Magnesium	78.1	0.0500	"	"	"	"	"	"	
Sodium	40.3	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.541	0.00100	units	1	BHI0106	09/05/24	09/05/24	Calculation	

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

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**FL01R-W@2'**  
**2408389-01 (Soil)**

**Summit Scientific**

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

% Solids	92.6	%	1	BHI0005	09/03/24	09/03/24	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	2.26	0.0100		mmhos/cm	1	BHI0027	09/03/24	09/04/24	EPA 120.1	

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

Date Sampled: **08/29/24 11:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.80			pH Units	1	BHI0026	09/03/24	09/04/24	EPA 9045D	

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09/05/24 14:02

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

### Summit Scientific

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

#### Batch BHH0978 - EPA 5030 Soil MS

##### Blank (BHH0978-BLK1)

Prepared: 08/30/24 Analyzed: 08/31/24

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0385		"	0.0400		96.2	50-150			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0385		"	0.0400		96.2	50-150			

##### LCS (BHH0978-BS1)

Prepared: 08/30/24 Analyzed: 08/31/24

Benzene	0.117	0.0020	mg/kg	0.100		117	70-130			
Toluene	0.107	0.0050	"	0.100		107	70-130			
Ethylbenzene	0.108	0.0050	"	0.100		108	70-130			
m,p-Xylene	0.209	0.010	"	0.200		104	70-130			
o-Xylene	0.0983	0.0050	"	0.100		98.3	70-130			
1,2,4-Trimethylbenzene	0.0927	0.0050	"	0.100		92.7	70-130			
1,3,5-Trimethylbenzene	0.0949	0.0050	"	0.100		94.9	70-130			
Naphthalene	0.0942	0.0038	"	0.100		94.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0362		"	0.0400		90.6	50-150			
Surrogate: Toluene-d8	0.0391		"	0.0400		97.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.6	50-150			

##### Matrix Spike (BHH0978-MS1)

Source: 2408389-01

Prepared: 08/30/24 Analyzed: 08/31/24

Benzene	0.0934	0.0020	mg/kg	0.100	ND	93.4	70-130			
Toluene	0.0872	0.0050	"	0.100	ND	87.2	70-130			
Ethylbenzene	0.0939	0.0050	"	0.100	ND	93.9	70-130			
m,p-Xylene	0.184	0.010	"	0.200	ND	92.0	70-130			
o-Xylene	0.0870	0.0050	"	0.100	ND	87.0	70-130			
1,2,4-Trimethylbenzene	0.0786	0.0050	"	0.100	ND	78.6	70-130			
1,3,5-Trimethylbenzene	0.0843	0.0050	"	0.100	ND	84.3	70-130			
Naphthalene	0.0725	0.0038	"	0.100	ND	72.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0380		"	0.0400		95.0	50-150			
Surrogate: Toluene-d8	0.0398		"	0.0400		99.6	50-150			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.3	50-150			

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**Reported:**  
09/05/24 14:02

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch BHH0978 - EPA 5030 Soil MS**

Matrix Spike Dup (BHH0978-MSD1)	Source: 2408389-01			Prepared: 08/30/24 Analyzed: 08/31/24						
Benzene	0.0971	0.0020	mg/kg	0.100	ND	97.1	70-130	3.84	30	
Toluene	0.0867	0.0050	"	0.100	ND	86.7	70-130	0.656	30	
Ethylbenzene	0.0907	0.0050	"	0.100	ND	90.7	70-130	3.54	30	
m,p-Xylene	0.175	0.010	"	0.200	ND	87.6	70-130	4.91	30	
o-Xylene	0.0825	0.0050	"	0.100	ND	82.5	70-130	5.31	30	
1,2,4-Trimethylbenzene	0.0764	0.0050	"	0.100	ND	76.4	70-130	2.75	30	
1,3,5-Trimethylbenzene	0.0792	0.0050	"	0.100	ND	79.2	70-130	6.20	30	
Naphthalene	0.0688	0.0038	"	0.100	ND	68.8	70-130	5.27	30	QM-05
Surrogate: 1,2-Dichloroethane-d4	0.0371		"	0.0400		92.7	50-150			
Surrogate: Toluene-d8	0.0388		"	0.0400		97.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.1	50-150			

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**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch BHH0981 - EPA 3550A**

**Blank (BHH0981-BLK1)**

Prepared: 08/30/24 Analyzed: 08/31/24

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	11.6		"	12.5		93.2	30-150			

**LCS (BHH0981-BS1)**

Prepared: 08/30/24 Analyzed: 08/31/24

C10-C28 (DRO)	443	50	mg/kg	500		88.5	70-130			
Surrogate: o-Terphenyl	10.7		"	12.5		85.5	30-150			

**Matrix Spike (BHH0981-MS1)**

Source: 2408383-01

Prepared: 08/30/24 Analyzed: 08/31/24

C10-C28 (DRO)	437	50	mg/kg	500	13.3	84.8	70-130			
Surrogate: o-Terphenyl	6.01		"	12.5		48.1	30-150			

**Matrix Spike Dup (BHH0981-MSD1)**

Source: 2408383-01

Prepared: 08/30/24 Analyzed: 08/31/24

C10-C28 (DRO)	405	50	mg/kg	500	13.3	78.3	70-130	7.74	20	
Surrogate: o-Terphenyl	6.41		"	12.5		51.3	30-150			

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Project Manager: Jacob Whritenour

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09/05/24 14:02

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

### Summit Scientific

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

#### Batch BHH0956 - EPA 5030 Soil MS

##### Blank (BHH0956-BLK1)

Prepared & Analyzed: 08/30/24

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	"							
Surrogate: 2-Methylnaphthalene-d10	0.0391		"	0.0333		117	40-150			
Surrogate: Fluoranthene-d10	0.0364		"	0.0333		109	40-150			

##### LCS (BHH0956-BS1)

Prepared & Analyzed: 08/30/24

Acenaphthene	0.0237	0.00500	mg/kg	0.0333		71.2	31-137			
Anthracene	0.0245	0.00500	"	0.0333		73.6	30-120			
Benzo (a) anthracene	0.0260	0.00500	"	0.0333		78.0	30-120			
Benzo (a) pyrene	0.0248	0.00500	"	0.0333		74.5	30-120			
Benzo (b) fluoranthene	0.0233	0.00500	"	0.0333		70.0	30-120			
Benzo (k) fluoranthene	0.0233	0.00500	"	0.0333		69.8	30-120			
Chrysene	0.0245	0.00500	"	0.0333		73.5	30-120			
Dibenz (a,h) anthracene	0.0260	0.00500	"	0.0333		78.0	30-120			
Fluoranthene	0.0250	0.00500	"	0.0333		75.0	30-120			
Fluorene	0.0250	0.00500	"	0.0333		74.9	30-120			
Indeno (1,2,3-cd) pyrene	0.0279	0.00500	"	0.0333		83.8	30-120			
Pyrene	0.0254	0.00500	"	0.0333		76.1	35-142			
1-Methylnaphthalene	0.0240	0.00500	"	0.0333		72.1	35-142			
2-Methylnaphthalene	0.0233	0.00500	"	0.0333		69.9	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0243		"	0.0333		72.8	40-150			
Surrogate: Fluoranthene-d10	0.0250		"	0.0333		74.9	40-150			

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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

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

### Summit Scientific

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

#### Batch BHH0956 - EPA 5030 Soil MS

##### Matrix Spike (BHH0956-MS1)

Source: 2408389-01

Prepared & Analyzed: 08/30/24

Acenaphthene	0.0239	0.00500	mg/kg	0.0333	ND	71.8	31-137				
Anthracene	0.0241	0.00500	"	0.0333	ND	72.4	30-120				
Benzo (a) anthracene	0.0258	0.00500	"	0.0333	ND	77.5	30-120				
Benzo (a) pyrene	0.0228	0.00500	"	0.0333	ND	68.3	30-120				
Benzo (b) fluoranthene	0.0202	0.00500	"	0.0333	ND	60.5	30-120				
Benzo (k) fluoranthene	0.0188	0.00500	"	0.0333	ND	56.5	30-120				
Chrysene	0.0236	0.00500	"	0.0333	ND	70.9	30-120				
Dibenz (a,h) anthracene	0.0242	0.00500	"	0.0333	ND	72.7	30-120				
Fluoranthene	0.0253	0.00500	"	0.0333	ND	75.9	30-120				
Fluorene	0.0250	0.00500	"	0.0333	ND	75.0	30-120				
Indeno (1,2,3-cd) pyrene	0.0255	0.00500	"	0.0333	ND	76.5	30-120				
Pyrene	0.0273	0.00500	"	0.0333	ND	81.8	35-142				
1-Methylnaphthalene	0.0245	0.00500	"	0.0333	ND	73.5	15-130				
2-Methylnaphthalene	0.0233	0.00500	"	0.0333	ND	70.0	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0245		"	0.0333		73.4	40-150				
Surrogate: Fluoranthene-d10	0.0234		"	0.0333		70.3	40-150				

##### Matrix Spike Dup (BHH0956-MSD1)

Source: 2408389-01

Prepared & Analyzed: 08/30/24

Acenaphthene	0.0225	0.00500	mg/kg	0.0333	ND	67.5	31-137	6.09	30		
Anthracene	0.0237	0.00500	"	0.0333	ND	71.2	30-120	1.75	30		
Benzo (a) anthracene	0.0268	0.00500	"	0.0333	ND	80.5	30-120	3.79	30		
Benzo (a) pyrene	0.0230	0.00500	"	0.0333	ND	68.9	30-120	0.877	30		
Benzo (b) fluoranthene	0.0215	0.00500	"	0.0333	ND	64.4	30-120	6.21	30		
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.7	30-120	2.04	30		
Chrysene	0.0240	0.00500	"	0.0333	ND	71.9	30-120	1.39	30		
Dibenz (a,h) anthracene	0.0240	0.00500	"	0.0333	ND	71.9	30-120	1.05	30		
Fluoranthene	0.0267	0.00500	"	0.0333	ND	80.1	30-120	5.38	30		
Fluorene	0.0235	0.00500	"	0.0333	ND	70.6	30-120	6.01	30		
Indeno (1,2,3-cd) pyrene	0.0278	0.00500	"	0.0333	ND	83.5	30-120	8.73	30		
Pyrene	0.0298	0.00500	"	0.0333	ND	89.4	35-142	8.89	30		
1-Methylnaphthalene	0.0217	0.00500	"	0.0333	ND	65.0	15-130	12.2	50		
2-Methylnaphthalene	0.0215	0.00500	"	0.0333	ND	64.6	15-130	8.11	50		
Surrogate: 2-Methylnaphthalene-d10	0.0229		"	0.0333		68.8	40-150				
Surrogate: Fluoranthene-d10	0.0230		"	0.0333		69.1	40-150				

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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

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

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

**Batch BHI0014 - EPA 3050B**

**Blank (BHI0014-BLK1)**

Prepared: 09/03/24 Analyzed: 09/05/24

Boron ND 2.00 mg/L

**LCS (BHI0014-BS1)**

Prepared: 09/03/24 Analyzed: 09/05/24

Boron 5.38 2.00 mg/L 5.00 108 80-120

**Duplicate (BHI0014-DUP1)**

**Source: 2408389-01**

Prepared: 09/03/24 Analyzed: 09/05/24

Boron 0.730 2.00 mg/L 0.738 1.10 20

**Matrix Spike (BHI0014-MS1)**

**Source: 2408389-01**

Prepared: 09/03/24 Analyzed: 09/05/24

Boron 6.45 2.00 mg/L 5.00 0.738 114 75-125

**Matrix Spike Dup (BHI0014-MSD1)**

**Source: 2408389-01**

Prepared: 09/03/24 Analyzed: 09/05/24

Boron 6.37 2.00 mg/L 5.00 0.738 113 75-125 1.23 25

Summit Scientific

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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BHH0974 - EPA 3050B**

**Blank (BHH0974-BLK1)**

Prepared: 08/30/24 Analyzed: 09/04/24

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 (BHH0974-BS1)**

Prepared: 08/30/24 Analyzed: 09/04/24

Arsenic	35.7	0.200	mg/kg wet	37.0	96.5	80-120
Barium	34.5	0.400	"	37.0	93.1	80-120
Cadmium	1.89	0.200	"	1.85	102	80-120
Copper	38.6	0.400	"	37.0	104	80-120
Lead	18.3	0.200	"	18.5	98.6	80-120
Nickel	37.9	0.400	"	37.0	102	80-120
Silver	1.89	0.0200	"	1.85	102	80-120
Zinc	38.3	0.400	"	37.0	103	80-120
Selenium	3.46	0.260	"	3.70	93.3	80-120

**Duplicate (BHH0974-DUP1)**

Source: 2408375-01

Prepared: 08/30/24 Analyzed: 09/04/24

Arsenic	2.50	0.200	mg/kg dry	3.35	28.9	20	QR-02
Barium	22.4	0.400	"	36.4	47.7	20	QR-02
Cadmium	0.0366	0.200	"	0.0567	43.0	20	QR-01
Copper	1.82	0.400	"	2.18	17.9	20	
Lead	2.75	0.200	"	4.52	48.6	20	QR-02
Nickel	2.20	0.400	"	2.86	26.1	20	QR-01
Silver	0.00876	0.0200	"	0.00952	8.33	20	
Zinc	8.83	0.400	"	9.67	9.12	20	
Selenium	ND	0.260	"	ND		20	

Summit Scientific

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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BHH0974 - EPA 3050B**

**Matrix Spike (BHH0974-MS1)**

Source: 2408375-01

Prepared: 08/30/24 Analyzed: 09/04/24

Arsenic	40.4	0.200	mg/kg dry	40.1	3.35	92.5	75-125			
Barium	62.8	0.400	"	40.1	36.4	65.6	75-125			QM-05
Cadmium	2.11	0.200	"	2.01	0.0567	102	75-125			
Copper	38.2	0.400	"	40.1	2.18	89.9	75-125			
Lead	23.3	0.200	"	20.1	4.52	93.6	75-125			
Nickel	38.3	0.400	"	40.1	2.86	88.4	75-125			
Silver	2.01	0.0200	"	2.01	0.00952	99.9	75-125			
Zinc	46.3	0.400	"	40.1	9.67	91.2	75-125			
Selenium	3.51	0.260	"	4.01	ND	87.5	75-125			

**Matrix Spike Dup (BHH0974-MSD1)**

Source: 2408375-01

Prepared: 08/30/24 Analyzed: 09/04/24

Arsenic	40.0	0.200	mg/kg dry	38.1	3.35	96.2	75-125	1.16	25	
Barium	65.2	0.400	"	38.1	36.4	75.5	75-125	3.77	25	
Cadmium	2.03	0.200	"	1.90	0.0567	104	75-125	3.94	25	
Copper	36.7	0.400	"	38.1	2.18	90.7	75-125	4.07	25	
Lead	22.1	0.200	"	19.0	4.52	92.5	75-125	5.22	25	
Nickel	36.2	0.400	"	38.1	2.86	87.7	75-125	5.52	25	
Silver	1.93	0.0200	"	1.90	0.00952	101	75-125	4.12	25	
Zinc	46.2	0.400	"	38.1	9.67	95.9	75-125	0.202	25	
Selenium	3.33	0.260	"	3.81	ND	87.5	75-125	5.20	25	

**Post Spike (BHH0974-PS1)**

Source: 2408375-01

Prepared: 08/30/24 Analyzed: 09/04/24

Arsenic	106		ug/l	100	8.03	98.0	75-125			
Barium	185		"	100	87.3	97.7	75-125			
Cadmium	5.37		"	5.00	0.136	105	75-125			
Copper	98.8		"	100	5.22	93.6	75-125			
Lead	61.5		"	50.0	10.8	101	75-125			
Nickel	99.9		"	100	6.86	93.1	75-125			
Silver	5.11		"	5.00	0.0228	102	75-125			
Zinc	119		"	100	23.2	96.1	75-125			
Selenium	9.24		"	10.0	0.346	88.9	75-125			

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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

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

**Batch BHH0966 - 3060A Mod**

**Blank (BHH0966-BLK1)**

Prepared & Analyzed: 08/30/24

Chromium, Hexavalent ND 0.30 mg/kg wet

**LCS (BHH0966-BS1)**

Prepared & Analyzed: 08/30/24

Chromium, Hexavalent 25.2 0.30 mg/kg wet 25.0 101 80-120

**Duplicate (BHH0966-DUP1)**

**Source: 2408363-01**

Prepared & Analyzed: 08/30/24

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

**Matrix Spike (BHH0966-MS1)**

**Source: 2408363-01**

Prepared & Analyzed: 08/30/24

Chromium, Hexavalent 26.6 0.30 mg/kg dry 25.6 ND 104 75-125

**Matrix Spike Dup (BHH0966-MSD1)**

**Source: 2408363-01**

Prepared & Analyzed: 08/30/24

Chromium, Hexavalent 26.3 0.30 mg/kg dry 25.6 ND 103 75-125 0.966 20

Summit Scientific

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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

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

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

**Batch BHI0023 - General Preparation**

**Blank (BHI0023-BLK1)**

Prepared: 09/03/24 Analyzed: 09/04/24

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

**LCS (BHI0023-BS1)**

Prepared: 09/03/24 Analyzed: 09/04/24

Calcium	4.93	0.0500	mg/L wet	5.00	98.6	70-130
Magnesium	4.95	0.0500	"	5.00	99.1	70-130
Sodium	5.00	0.0500	"	5.00	100	70-130

Summit Scientific

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

Project: Noble - Stroh H12-16

Project Number: UWRWE-A3133-ABN

Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

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

**Summit Scientific**

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

**Batch BHI0005 - General Preparation**

Duplicate (BHI0005-DUP1)		Source: 2408389-01			Prepared & Analyzed: 09/03/24						
% Solids	92.3		%		92.6			0.271		20	

Summit Scientific

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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

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

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

**Batch BHI0027 - General Preparation**

**Blank (BHI0027-BLK1)**

Prepared: 09/03/24 Analyzed: 09/04/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BHI0027-BS1)**

Prepared: 09/03/24 Analyzed: 09/04/24

Specific Conductance (EC) 0.153 0.0100 mmhos/cm 0.150 102 95-105

**Duplicate (BHI0027-DUP1)**

**Source: 2408386-01**

Prepared: 09/03/24 Analyzed: 09/04/24

Specific Conductance (EC) 0.337 0.0100 mmhos/cm 0.336 0.178 20

Summit Scientific

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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BHI0026 - General Preparation**

**LCS (BHI0026-BS1)**

Prepared: 09/03/24 Analyzed: 09/04/24

pH	9.24	pH Units	9.18	101	95-105
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**Duplicate (BHI0026-DUP1)**

**Source: 2408386-01**

Prepared: 09/03/24 Analyzed: 09/04/24

pH	8.10	pH Units	8.10	0.00	20
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Summit Scientific

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

Project: Noble - Stroh H12-16  
Project Number: UWRWE-A3133-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
09/05/24 14:02

### Notes and Definitions

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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-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.
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