

# 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 written in a cursive, flowing style.

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	

<b>Send Data To:</b>		<b>Send Invoice To:</b>
Client: Noble / Tasman	Project Manager: Jake Whritenour	Company: Chevron
Address: 6855 W. 119th Ave	E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location: <i>Stroh H12.16</i>
City/State/Zip: Broomfield, CO 80020		AFE#: <i>UWRWE-A3133-ARN</i>
Phone: <i>978-857-4408</i>	Project Name: <i>Stroh H12.16</i>	PO/Billing Codes:
Sampler Name: <i>Matthew Wentzel</i>	Project Number:	Contact: <i>Miguel Barron</i>

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	<i>FLOIR-W@2'</i>	<i>8-29-24</i>	<i>1110</i>	<i>3</i>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		pH, EC, SAR by saturated paste									
2																						
3																						
4																						
5																						
6																						
7																						
8																						
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12																						
13																						
14																						
15																						

Relinquished by: <i>[Signature]</i>	Date/Time: <i>8-29-24 1430</i>	Received by: <b>Tasman Lock Box</b>	Date/Time: <i>8-29-24 1300</i>	TAT Business Days	Field DO	Notes:
Relinquished by: <i>Tasman Lock Box</i>	Date/Time: <i>8-29-24 1740</i>	Received by: <i>[Signature]</i>	Date/Time: <i>8-29-24 1740</i>	Same Day	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
Relinquished by:	Date/Time:	Received by:	Date/Time:	2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Standard	<input checked="" type="checkbox"/> Field Turb.	
Temperature Upon Receipt: <i>9.0</i>	Corrected Temperature: <i>8</i>	IR gun #:	HNO3 lot #:			

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2408389

Client: Noble Casman Client Project ID: Stroh H12-16

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? <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"/>	
If custody seals are present, are they intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OUTSIDE
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.				

AS  
Custodian Printed Name

8/29/24  
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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**2408389-01 (Soil)**

**Summit Scientific**

**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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6855 W. 119th Ave.  
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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**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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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Project Number: UWRWE-A3133-ABN  
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**Reported:**  
09/05/24 14:02

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

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

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

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

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

**Summit Scientific**

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

**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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Project Manager: Jacob Whritenour

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

**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 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: <i>o</i> -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: <i>o</i> -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: <i>o</i> -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: <i>o</i> -Terphenyl	6.41		"	12.5		51.3	30-150				

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Project Manager: Jacob Whritenour

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

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

**Summit Scientific**

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

**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	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0391</i>		"	<i>0.0333</i>		<i>117</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0364</i>		"	<i>0.0333</i>		<i>109</i>		<i>40-150</i>		

**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
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0243</i>		"	<i>0.0333</i>	<i>72.8</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0250</i>		"	<i>0.0333</i>	<i>74.9</i>	<i>40-150</i>

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch BHH0956 - EPA 5030 Soil MS**

<b>Matrix Spike (BHH0956-MS1)</b>	<b>Source: 2408389-01</b>			<b>Prepared &amp; Analyzed: 08/30/24</b>							
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				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0245</i>		<i>"</i>	<i>0.0333</i>		<i>73.4</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0234</i>		<i>"</i>	<i>0.0333</i>		<i>70.3</i>	<i>40-150</i>				

<b>Matrix Spike Dup (BHH0956-MSD1)</b>	<b>Source: 2408389-01</b>			<b>Prepared &amp; Analyzed: 08/30/24</b>							
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		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0229</i>		<i>"</i>	<i>0.0333</i>		<i>68.8</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0230</i>		<i>"</i>	<i>0.0333</i>		<i>69.1</i>	<i>40-150</i>				

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

**Batch BHI0014 - EPA 3050B**

<b>Blank (BHI0014-BLK1)</b>		Prepared: 09/03/24 Analyzed: 09/05/24								
Boron	ND	2.00	mg/L							
<b>LCS (BHI0014-BS1)</b>		Prepared: 09/03/24 Analyzed: 09/05/24								
Boron	5.38	2.00	mg/L	5.00		108	80-120			
<b>Duplicate (BHI0014-DUP1)</b>		<b>Source: 2408389-01</b>		Prepared: 09/03/24 Analyzed: 09/05/24						
Boron	0.730	2.00	mg/L		0.738			1.10	20	
<b>Matrix Spike (BHI0014-MS1)</b>		<b>Source: 2408389-01</b>		Prepared: 09/03/24 Analyzed: 09/05/24						
Boron	6.45	2.00	mg/L	5.00	0.738	114	75-125			
<b>Matrix Spike Dup (BHI0014-MSD1)</b>		<b>Source: 2408389-01</b>		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	

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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	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD		

**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	

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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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

**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		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit		

**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		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

**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				

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 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**

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

**Batch BHI0005 - General Preparation**

**Duplicate (BHI0005-DUP1)**

**Source: 2408389-01**

Prepared & Analyzed: 09/03/24

% Solids	92.3		%		92.6			0.271		20	
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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 Result	%REC		RPD		Notes
		Limit	Units			%REC	Limits	RPD	Limit	

**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	Source	%REC		RPD		Notes
		Limit	Units	Level	Result	%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