

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 12, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Gutttersen State USX D21-27D

Work Order #2409120

Enclosed are the results of analyses for samples received by Summit Scientific on 09/09/24 17:33. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Natalie Tessier For Paul Shrewsbury

President



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

Project: Noble - Gutterson State USX D21-27D

Project Number: UWRWE-A4224-AES

Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01R-W@3'	2409120-01	Soil	09/09/24 13:36	09/09/24 17:33
FL01-01@3'	2409120-02	Soil	09/09/24 10:18	09/09/24 17:33
FL01-08@3'	2409120-03	Soil	09/09/24 13:20	09/09/24 17:33
FL01R-S@3'	2409120-04	Soil	09/09/24 10:00	09/09/24 17:33
BKG01@0-6"	2409120-05	Soil	09/09/24 13:53	09/09/24 17:33
BKG01@3'	2409120-06	Soil	09/09/24 13:56	09/09/24 17:33

Summit Scientific

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<b>Send Data To:</b>		<b>Send Invoice To:</b>
Client: Noble/Tasman	Project Manager: Jake Whritenour	Company: Noble Energy, Inc.
Address: 6855 W. 119th Ave.	E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location: <i>Wittergen State USK 021-270</i>
City/State/Zip: Broomfield/CO/ 80020		AFE#: <i>UWPWE-AT221-AE S</i>
Phone: 602-881-5716	Project Name: <i>Wittergen State USK 021-270</i>	PO/Billing Codes:
Sampler Name: McKenzie Reynolds	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	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH		Boron - HWS	HOLD
1	FL01R-W@3'	9/9/24	1336	3			6			X			X	X	X	X	X	X		SAR, EC, pH by saturated paste
2	FL01-01@3'		1018	1																
3	FL01-08@3'		1320	1																
4	FL01R-S@2'	<i>FMF</i>	1000	1																
5	BKH7190-W"		1353	1																
6	BKH01@3"		1356	1																
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				

Relinquished by: <i>[Signature]</i>	Date/Time: 9/9/2024 1700	Received by: Tasman Lock Box	Date/Time: 9/9/2024 1700	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <i>[Signature]</i>	Date/Time: 9/9/24 1733	Received by: <i>[Signature]</i>	Date/Time: 9/9/24 1733	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	Field Turb. <input checked="" type="checkbox"/>	
Temperature Upon Receipt: 7.8	Corrected Temperature: <i>8</i>	IR gun #: 1	HNO3 lot #:			





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

Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01R-W@3'**  
**2409120-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHI0308	09/10/24	09/11/24	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: **09/09/24 13:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0406	102 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0393	98.2 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0405	101 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHI0311	09/10/24	09/11/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	12.0	95.6 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01R-W@3'**  
**2409120-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHI0275	09/10/24	09/10/24	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: **09/09/24 13:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0146	43.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0191	57.3 %	40-150		"	"	"	"	

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

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHI0288	09/10/24	09/11/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Gutterson State USX D21-27D  
Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01R-W@3'**  
**2409120-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.85	0.200	mg/kg dry	1	BHI0334	09/11/24	09/11/24	EPA 6020B	
Barium	96.7	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	3.92	0.400	"	"	"	"	"	"	
Lead	5.17	0.200	"	"	"	"	"	"	
Nickel	3.14	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	12.7	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHI0290	09/10/24	09/10/24	EPA 7196A	

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

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	57.0	0.0500	mg/L dry	1	BHI0297	09/10/24	09/11/24	EPA 6020B	
Magnesium	12.0	0.0500	"	"	"	"	"	"	
Sodium	51.4	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.62	0.00100	units	1	BHI0378	09/12/24	09/12/24	Calculation	

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

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Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01R-W@3'**  
**2409120-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	95.4			%	1	BHI0328	09/11/24	09/11/24	Calculation	

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

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.822	0.0100		mmhos/cm	1	BHI0305	09/10/24	09/11/24	EPA 120.1	

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

Date Sampled: **09/09/24 13:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.69			pH Units	1	BHI0304	09/10/24	09/11/24	EPA 9045D	

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**Reported:**  
09/12/24 13:02

**FL01-01@3'**  
**2409120-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHI0308	09/10/24	09/11/24	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: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0392	97.9 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0396	99.1 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0399	99.7 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHI0311	09/10/24	09/11/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	9.76	78.0 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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**Reported:**  
09/12/24 13:02

**FL01-01@3'**  
**2409120-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHI0275	09/10/24	09/10/24	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: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0173	52.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0228	68.3 %	40-150		"	"	"	"	

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

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHI0288	09/10/24	09/11/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Gutterson State USX D21-27D  
Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01-01@3'**  
**2409120-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.17	0.181	mg/kg dry	1	BHI0334	09/11/24	09/11/24	EPA 6020B	
Barium	34.3	0.362	"	"	"	"	"	"	
Cadmium	ND	0.181	"	"	"	"	"	"	
Copper	2.61	0.362	"	"	"	"	"	"	
Lead	3.59	0.181	"	"	"	"	"	"	
Nickel	2.53	0.362	"	"	"	"	"	"	
Silver	ND	0.0181	"	"	"	"	"	"	
Zinc	9.14	0.362	"	"	"	"	"	"	
Selenium	ND	0.236	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHI0290	09/10/24	09/10/24	EPA 7196A	

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

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	76.5	0.0500	mg/L dry	1	BHI0297	09/10/24	09/11/24	EPA 6020B	
Magnesium	12.3	0.0500	"	"	"	"	"	"	
Sodium	24.5	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.686	0.00100	units	1	BHI0378	09/12/24	09/12/24	Calculation	

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

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Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

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09/12/24 13:02

**FL01-01@3'**  
**2409120-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	93.7		%	1	BHI0328	09/11/24	09/11/24	Calculation	

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

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.850	0.0100	mmhos/cm	1	BHI0305	09/10/24	09/11/24	EPA 120.1	

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

Date Sampled: **09/09/24 10:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.85		pH Units	1	BHI0304	09/10/24	09/11/24	EPA 9045D	

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Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01-08@3'**  
**2409120-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHI0308	09/10/24	09/11/24	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: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0422	105 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0406	101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0405	101 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHI0311	09/10/24	09/11/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	9.44	75.5 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01-08@3'**  
**2409120-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHI0275	09/10/24	09/10/24	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: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0211	63.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0270	81.1 %	40-150		"	"	"	"	

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

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHI0288	09/10/24	09/11/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/24 13:20**

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

Project: Noble - Guttarsen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01-08@3'**  
**2409120-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.27	0.200	mg/kg dry	1	BHI0334	09/11/24	09/11/24	EPA 6020B	
Barium	32.9	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	2.75	0.400	"	"	"	"	"	"	
Lead	4.31	0.200	"	"	"	"	"	"	
Nickel	2.42	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	9.48	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHI0290	09/10/24	09/10/24	EPA 7196A	

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

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	30.6	0.0500	mg/L dry	1	BHI0297	09/10/24	09/11/24	EPA 6020B	
Magnesium	5.77	0.0500	"	"	"	"	"	"	
Sodium	2.69	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.117	0.00100	units	1	BHI0378	09/12/24	09/12/24	Calculation	

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

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

Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01-08@3'**  
**2409120-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	97.8			%	1	BHI0328	09/11/24	09/11/24	Calculation	

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

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.335	0.0100		mmhos/cm	1	BHI0305	09/10/24	09/11/24	EPA 120.1	

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

Date Sampled: **09/09/24 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.62			pH Units	1	BHI0304	09/10/24	09/11/24	EPA 9045D	

Summit Scientific

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

Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01R-S@3'**  
**2409120-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHI0308	09/10/24	09/11/24	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: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0387	96.7 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0398	99.5 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0395	98.8 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHI0311	09/10/24	09/11/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	6.42	51.4 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Guttersen State USX D21-27D  
Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01R-S@3'**  
**2409120-04 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHI0275	09/10/24	09/10/24	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: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0170	51.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0235	70.5 %	40-150		"	"	"	"	

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

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHI0288	09/10/24	09/11/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/24 10:00**

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

Project: Noble - Guttersen State USX D21-27D  
Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01R-S@3'**  
**2409120-04 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.19	0.200	mg/kg dry	1	BHI0334	09/11/24	09/11/24	EPA 6020B	
Barium	32.8	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	3.05	0.400	"	"	"	"	"	"	
Lead	3.62	0.200	"	"	"	"	"	"	
Nickel	2.47	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	9.36	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHI0290	09/10/24	09/10/24	EPA 7196A	

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

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	38.3	0.0500	mg/L dry	1	BHI0297	09/10/24	09/11/24	EPA 6020B	
Magnesium	6.19	0.0500	"	"	"	"	"	"	
Sodium	16.5	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.652	0.00100	units	1	BHI0378	09/12/24	09/12/24	Calculation	

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

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

Project: Noble - Gutterson State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**FL01R-S@3'**  
**2409120-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	86.6			%	1	BHI0328	09/11/24	09/11/24	Calculation	

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

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.434	0.0100		mmhos/cm	1	BHI0305	09/10/24	09/11/24	EPA 120.1	

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

Date Sampled: **09/09/24 10:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	7.75			pH Units	1	BHI0304	09/10/24	09/11/24	EPA 9045D	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**BKG01@0-6''**  
**2409120-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 13:53**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Boron	ND	2.00	mg/L	1	BHI0288	09/10/24	09/11/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/24 13:53**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Arsenic</b>	<b>1.23</b>	0.200	mg/kg dry	1	BHI0334	09/11/24	09/11/24	EPA 6020B	
<b>Barium</b>	<b>31.2</b>	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
<b>Copper</b>	<b>2.58</b>	0.400	"	"	"	"	"	"	
<b>Lead</b>	<b>4.97</b>	0.200	"	"	"	"	"	"	
<b>Nickel</b>	<b>2.14</b>	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
<b>Zinc</b>	<b>9.01</b>	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/09/24 13:53**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHI0290	09/10/24	09/10/24	EPA 7196A	

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

Date Sampled: **09/09/24 13:53**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Calcium</b>	<b>27.5</b>	0.0500	mg/L dry	1	BHI0297	09/10/24	09/11/24	EPA 6020B	
<b>Magnesium</b>	<b>6.41</b>	0.0500	"	"	"	"	"	"	
<b>Sodium</b>	<b>2.36</b>	0.0500	"	"	"	"	"	"	

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

Project: Noble - Guttarsen State USX D21-27D  
Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**BKG01@0-6''**  
**2409120-05 (Soil)**

**Summit Scientific**

**Calculated Analysis**

Date Sampled: **09/09/24 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.105	0.00100	units	1	BHI0378	09/12/24	09/12/24	Calculation	

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

Date Sampled: **09/09/24 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	97.9		%	1	BHI0328	09/11/24	09/11/24	Calculation	

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

Date Sampled: **09/09/24 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.172	0.0100	mmhos/cm	1	BHI0305	09/10/24	09/11/24	EPA 120.1	

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

Date Sampled: **09/09/24 13:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	6.11		pH Units	1	BHI0304	09/10/24	09/11/24	EPA 9045D	

Summit Scientific

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

Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**BKG01@3'**  
**2409120-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **09/09/24 13:56**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Boron	ND	2.00	mg/L	1	BHI0288	09/10/24	09/11/24	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **09/09/24 13:56**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	<b>1.98</b>	0.200	mg/kg dry	1	BHI0334	09/11/24	09/11/24	EPA 6020B	
Barium	<b>38.2</b>	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	<b>2.38</b>	0.400	"	"	"	"	"	"	
Lead	<b>3.99</b>	0.200	"	"	"	"	"	"	
Nickel	<b>2.96</b>	0.400	"	"	"	"	"	"	
Silver	<b>0.0206</b>	0.0200	"	"	"	"	"	"	
Zinc	<b>9.20</b>	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **09/09/24 13:56**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHI0290	09/10/24	09/10/24	EPA 7196A	

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

Date Sampled: **09/09/24 13:56**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	<b>28.5</b>	0.0500	mg/L dry	1	BHI0297	09/10/24	09/11/24	EPA 6020B	
Magnesium	<b>7.38</b>	0.0500	"	"	"	"	"	"	
Sodium	<b>3.70</b>	0.0500	"	"	"	"	"	"	

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

Project: Noble - Guttarsen State USX D21-27D  
Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**BKG01@3'**  
**2409120-06 (Soil)**

**Summit Scientific**

**Calculated Analysis**

Date Sampled: **09/09/24 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.160	0.00100	units	1	BHI0378	09/12/24	09/12/24	Calculation	

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

Date Sampled: **09/09/24 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	97.5		%	1	BHI0328	09/11/24	09/11/24	Calculation	

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

Date Sampled: **09/09/24 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.0738	0.0100	mmhos/cm	1	BHI0305	09/10/24	09/11/24	EPA 120.1	

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

Date Sampled: **09/09/24 13:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.22		pH Units	1	BHI0304	09/10/24	09/11/24	EPA 9045D	

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

Project: Noble - Guttersen State USX D21-27D  
Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

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

#### Summit Scientific

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

#### Batch BHI0308 - EPA 5030 Soil MS

##### Blank (BHI0308-BLK1)

Prepared: 09/10/24 Analyzed: 09/11/24

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	0.0442		"	0.0400		110	50-150				
Surrogate: Toluene-d8	0.0417		"	0.0400		104	50-150				
Surrogate: 4-Bromofluorobenzene	0.0399		"	0.0400		99.8	50-150				

##### LCS (BHI0308-BS1)

Prepared: 09/10/24 Analyzed: 09/11/24

Benzene	0.119	0.0020	mg/kg	0.100		119	70-130				
Toluene	0.110	0.0050	"	0.100		110	70-130				
Ethylbenzene	0.108	0.0050	"	0.100		108	70-130				
m,p-Xylene	0.208	0.010	"	0.200		104	70-130				
o-Xylene	0.0925	0.0050	"	0.100		92.5	70-130				
1,2,4-Trimethylbenzene	0.0882	0.0050	"	0.100		88.2	70-130				
1,3,5-Trimethylbenzene	0.0942	0.0050	"	0.100		94.2	70-130				
Naphthalene	0.0919	0.0038	"	0.100		91.9	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0427		"	0.0400		107	50-150				
Surrogate: Toluene-d8	0.0420		"	0.0400		105	50-150				
Surrogate: 4-Bromofluorobenzene	0.0396		"	0.0400		99.0	50-150				

##### Matrix Spike (BHI0308-MS1)

Source: 2409115-01

Prepared: 09/10/24 Analyzed: 09/11/24

Benzene	0.102	0.0020	mg/kg	0.100	ND	102	70-130				
Toluene	0.0918	0.0050	"	0.100	ND	91.8	70-130				
Ethylbenzene	0.0923	0.0050	"	0.100	ND	92.3	70-130				
m,p-Xylene	0.176	0.010	"	0.200	ND	87.9	70-130				
o-Xylene	0.0784	0.0050	"	0.100	ND	78.4	70-130				
1,2,4-Trimethylbenzene	0.0728	0.0050	"	0.100	ND	72.8	70-130				
1,3,5-Trimethylbenzene	0.0800	0.0050	"	0.100	ND	80.0	70-130				
Naphthalene	0.0774	0.0038	"	0.100	ND	77.4	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0418		"	0.0400		104	50-150				
Surrogate: Toluene-d8	0.0420		"	0.0400		105	50-150				
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.6	50-150				

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Project: Noble - Guttersen State USX D21-27D  
Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**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		

**Batch BHI0308 - EPA 5030 Soil MS**

Matrix Spike Dup (BHI0308-MSD1)	Source: 2409115-01			Prepared: 09/10/24 Analyzed: 09/11/24						
Benzene	0.0924	0.0020	mg/kg	0.100	ND	92.4	70-130	10.1	30	
Toluene	0.0837	0.0050	"	0.100	ND	83.7	70-130	9.23	30	
Ethylbenzene	0.0900	0.0050	"	0.100	ND	90.0	70-130	2.57	30	
m,p-Xylene	0.176	0.010	"	0.200	ND	87.9	70-130	0.0512	30	
o-Xylene	0.0770	0.0050	"	0.100	ND	77.0	70-130	1.81	30	
1,2,4-Trimethylbenzene	0.0722	0.0050	"	0.100	ND	72.2	70-130	0.703	30	
1,3,5-Trimethylbenzene	0.0789	0.0050	"	0.100	ND	78.9	70-130	1.40	30	
Naphthalene	0.0834	0.0038	"	0.100	ND	83.4	70-130	7.47	30	
Surrogate: 1,2-Dichloroethane-d4	0.0363		"	0.0400		90.8	50-150			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.5	50-150			

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Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**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 BHI0311 - EPA 3550A**

**Blank (BHI0311-BLK1)**

Prepared & Analyzed: 09/10/24

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	11.1		"	12.5		89.2	30-150				

**LCS (BHI0311-BS1)**

Prepared & Analyzed: 09/10/24

C10-C28 (DRO)	412	50	mg/kg	500		82.5	70-130				
Surrogate: <i>o</i> -Terphenyl	11.0		"	12.5		88.2	30-150				

**Matrix Spike (BHI0311-MS1)**

Source: 2409115-01

Prepared & Analyzed: 09/10/24

C10-C28 (DRO)	411	50	mg/kg	500	27.4	76.7	70-130				
Surrogate: <i>o</i> -Terphenyl	7.85		"	12.5		62.8	30-150				

**Matrix Spike Dup (BHI0311-MSD1)**

Source: 2409115-01

Prepared & Analyzed: 09/10/24

C10-C28 (DRO)	384	50	mg/kg	500	27.4	71.4	70-130	6.64	20		
Surrogate: <i>o</i> -Terphenyl	7.79		"	12.5		62.3	30-150				

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**Reported:**  
09/12/24 13:02

**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 BHI0275 - EPA 5030 Soil MS**

**Blank (BHI0275-BLK1)**

Prepared & Analyzed: 09/10/24

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>0.0155</i>		"	<i>0.0333</i>		<i>46.5</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0195</i>		"	<i>0.0333</i>		<i>58.6</i>	<i>40-150</i>			

**LCS (BHI0275-BS1)**

Prepared & Analyzed: 09/10/24

Acenaphthene	0.0191	0.00500	mg/kg	0.0333		57.3	31-137			
Anthracene	0.0200	0.00500	"	0.0333		60.1	30-120			
Benzo (a) anthracene	0.0201	0.00500	"	0.0333		60.3	30-120			
Benzo (a) pyrene	0.0184	0.00500	"	0.0333		55.3	30-120			
Benzo (b) fluoranthene	0.0186	0.00500	"	0.0333		55.9	30-120			
Benzo (k) fluoranthene	0.0193	0.00500	"	0.0333		57.8	30-120			
Chrysene	0.0197	0.00500	"	0.0333		59.2	30-120			
Dibenz (a,h) anthracene	0.0170	0.00500	"	0.0333		50.9	30-120			
Fluoranthene	0.0192	0.00500	"	0.0333		57.7	30-120			
Fluorene	0.0196	0.00500	"	0.0333		58.7	30-120			
Indeno (1,2,3-cd) pyrene	0.0167	0.00500	"	0.0333		50.1	30-120			
Pyrene	0.0210	0.00500	"	0.0333		62.9	35-142			
1-Methylnaphthalene	0.0167	0.00500	"	0.0333		50.1	35-142			
2-Methylnaphthalene	0.0151	0.00500	"	0.0333		45.4	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0164</i>		"	<i>0.0333</i>		<i>49.1</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0209</i>		"	<i>0.0333</i>		<i>62.8</i>	<i>40-150</i>			

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Broomfield CO, 80020

Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**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 BHI0275 - EPA 5030 Soil MS**

<b>Matrix Spike (BHI0275-MS1)</b>	<b>Source: 2409116-01</b>			<b>Prepared &amp; Analyzed: 09/10/24</b>							
Acenaphthene	0.0183	0.00500	mg/kg	0.0333	ND	54.9	31-137				
Anthracene	0.0170	0.00500	"	0.0333	ND	50.9	30-120				
Benzo (a) anthracene	0.0165	0.00500	"	0.0333	ND	49.4	30-120				
Benzo (a) pyrene	0.0153	0.00500	"	0.0333	ND	45.9	30-120				
Benzo (b) fluoranthene	0.0158	0.00500	"	0.0333	ND	47.4	30-120				
Benzo (k) fluoranthene	0.0159	0.00500	"	0.0333	ND	47.6	30-120				
Chrysene	0.0162	0.00500	"	0.0333	ND	48.5	30-120				
Dibenz (a,h) anthracene	0.0126	0.00500	"	0.0333	ND	37.8	30-120				
Fluoranthene	0.0166	0.00500	"	0.0333	ND	49.7	30-120				
Fluorene	0.0186	0.00500	"	0.0333	ND	55.8	30-120				
Indeno (1,2,3-cd) pyrene	0.0134	0.00500	"	0.0333	ND	40.1	30-120				
Pyrene	0.0189	0.00500	"	0.0333	ND	56.8	35-142				
1-Methylnaphthalene	0.0194	0.00500	"	0.0333	ND	58.1	15-130				
2-Methylnaphthalene	0.0164	0.00500	"	0.0333	ND	49.2	15-130				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0188</i>		<i>"</i>	<i>0.0333</i>		<i>56.4</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0174</i>		<i>"</i>	<i>0.0333</i>		<i>52.3</i>	<i>40-150</i>				

<b>Matrix Spike Dup (BHI0275-MSD1)</b>	<b>Source: 2409116-01</b>			<b>Prepared &amp; Analyzed: 09/10/24</b>							
Acenaphthene	0.0201	0.00500	mg/kg	0.0333	ND	60.4	31-137	9.54	30		
Anthracene	0.0196	0.00500	"	0.0333	ND	58.8	30-120	14.3	30		
Benzo (a) anthracene	0.0195	0.00500	"	0.0333	ND	58.4	30-120	16.6	30		
Benzo (a) pyrene	0.0172	0.00500	"	0.0333	ND	51.7	30-120	11.9	30		
Benzo (b) fluoranthene	0.0183	0.00500	"	0.0333	ND	54.8	30-120	14.3	30		
Benzo (k) fluoranthene	0.0180	0.00500	"	0.0333	ND	53.9	30-120	12.5	30		
Chrysene	0.0190	0.00500	"	0.0333	ND	57.1	30-120	16.4	30		
Dibenz (a,h) anthracene	0.0137	0.00500	"	0.0333	ND	41.2	30-120	8.66	30		
Fluoranthene	0.0192	0.00500	"	0.0333	ND	57.7	30-120	14.9	30		
Fluorene	0.0210	0.00500	"	0.0333	ND	63.1	30-120	12.2	30		
Indeno (1,2,3-cd) pyrene	0.0146	0.00500	"	0.0333	ND	43.8	30-120	8.83	30		
Pyrene	0.0221	0.00500	"	0.0333	ND	66.4	35-142	15.6	30		
1-Methylnaphthalene	0.0179	0.00500	"	0.0333	ND	53.8	15-130	7.68	50		
2-Methylnaphthalene	0.0150	0.00500	"	0.0333	ND	44.9	15-130	9.20	50		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0168</i>		<i>"</i>	<i>0.0333</i>		<i>50.4</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0202</i>		<i>"</i>	<i>0.0333</i>		<i>60.6</i>	<i>40-150</i>				

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

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

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

**Batch BHI0288 - EPA 3050B**

**Blank (BHI0288-BLK1)**

Prepared: 09/10/24 Analyzed: 09/11/24

Boron ND 2.00 mg/L

**LCS (BHI0288-BS1)**

Prepared: 09/10/24 Analyzed: 09/11/24

Boron 5.35 2.00 mg/L 5.00 107 80-120

**Duplicate (BHI0288-DUP1)**

**Source: 2409103-01**

Prepared: 09/10/24 Analyzed: 09/11/24

Boron 0.647 2.00 mg/L 0.613 5.43 20

**Matrix Spike (BHI0288-MS1)**

**Source: 2409103-01**

Prepared: 09/10/24 Analyzed: 09/11/24

Boron 5.42 2.00 mg/L 4.97 0.613 96.8 75-125

**Matrix Spike Dup (BHI0288-MSD1)**

**Source: 2409103-01**

Prepared: 09/10/24 Analyzed: 09/11/24

Boron 5.59 2.00 mg/L 4.97 0.613 100 75-125 3.06 25

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**Reported:**  
09/12/24 13:02

**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 BHI0334 - EPA 3050B**

**Blank (BHI0334-BLK1)**

Prepared & Analyzed: 09/11/24

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 (BHI0334-BS1)**

Prepared & Analyzed: 09/11/24

Arsenic	34.5	0.200	mg/kg wet	36.5	94.5	80-120
Barium	35.5	0.400	"	36.5	97.2	80-120
Cadmium	1.78	0.200	"	1.82	97.7	80-120
Copper	36.7	0.400	"	36.5	101	80-120
Lead	17.7	0.200	"	18.2	96.8	80-120
Nickel	36.6	0.400	"	36.5	100	80-120
Silver	1.79	0.0200	"	1.82	97.9	80-120
Zinc	35.1	0.400	"	36.5	96.1	80-120
Selenium	4.21	0.260	"	3.65	115	80-120

**Duplicate (BHI0334-DUP1)**

Source: 2409119-01

Prepared & Analyzed: 09/11/24

Arsenic	1.94	0.200	mg/kg dry	1.92	1.02	20
Barium	85.8	0.400	"	93.3	8.39	20
Cadmium	0.133	0.200	"	0.123	7.64	20
Copper	3.87	0.400	"	4.94	24.2	20
Lead	4.62	0.200	"	4.73	2.49	20
Nickel	3.28	0.400	"	3.27	0.311	20
Silver	0.0283	0.0200	"	0.0235	18.3	20
Zinc	11.6	0.400	"	12.6	7.66	20
Selenium	ND	0.260	"	ND		20

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Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**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 BHI0334 - EPA 3050B**

<b>Matrix Spike (BHI0334-MS1)</b>	<b>Source: 2409119-01</b>			<b>Prepared &amp; Analyzed: 09/11/24</b>								
Arsenic	39.4	0.200	mg/kg dry	40.4	1.92	92.9	75-125					
Barium	193	0.400	"	40.4	93.3	246	75-125					QM-05
Cadmium	2.05	0.200	"	2.02	0.123	95.5	75-125					
Copper	35.2	0.400	"	40.4	4.94	74.8	75-125					QM-05
Lead	24.0	0.200	"	20.2	4.73	95.5	75-125					
Nickel	32.1	0.400	"	40.4	3.27	71.2	75-125					QM-05
Silver	1.89	0.0200	"	2.02	0.0235	92.4	75-125					
Zinc	41.6	0.400	"	40.4	12.6	72.0	75-125					QM-05
Selenium	4.45	0.260	"	4.04	ND	110	75-125					

<b>Matrix Spike Dup (BHI0334-MSD1)</b>	<b>Source: 2409119-01</b>			<b>Prepared &amp; Analyzed: 09/11/24</b>								
Arsenic	40.4	0.200	mg/kg dry	41.3	1.92	93.0	75-125	2.40	25			
Barium	119	0.400	"	41.3	93.3	63.1	75-125	47.0	25			QM-05
Cadmium	2.12	0.200	"	2.07	0.123	96.7	75-125	3.31	25			
Copper	32.9	0.400	"	41.3	4.94	67.6	75-125	6.72	25			QM-05
Lead	23.8	0.200	"	20.7	4.73	92.4	75-125	0.718	25			
Nickel	32.2	0.400	"	41.3	3.27	69.9	75-125	0.318	25			QM-05
Silver	1.96	0.0200	"	2.07	0.0235	93.7	75-125	3.68	25			
Zinc	41.6	0.400	"	41.3	12.6	70.3	75-125	0.0731	25			QM-05
Selenium	4.52	0.260	"	4.13	ND	109	75-125	1.53	25			

Summit Scientific

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

Project: Noble - Gutterson State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**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 BHI0290 - 3060A Mod**

**Blank (BHI0290-BLK1)**

Prepared & Analyzed: 09/10/24

Chromium, Hexavalent      ND      0.30 mg/kg wet

**LCS (BHI0290-BS1)**

Prepared & Analyzed: 09/10/24

Chromium, Hexavalent      26.2      0.30 mg/kg wet      25.0      105      80-120

**Duplicate (BHI0290-DUP1)**

**Source: 2409102-01**

Prepared & Analyzed: 09/10/24

Chromium, Hexavalent      ND      0.30 mg/kg dry      ND      20

**Matrix Spike (BHI0290-MS1)**

**Source: 2409102-01**

Prepared & Analyzed: 09/10/24

Chromium, Hexavalent      30.8      0.30 mg/kg dry      33.7      ND      91.4      75-125

**Matrix Spike Dup (BHI0290-MSD1)**

**Source: 2409102-01**

Prepared & Analyzed: 09/10/24

Chromium, Hexavalent      33.7      0.30 mg/kg dry      33.7      ND      100      75-125      8.99      20

Summit Scientific

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

Project: Noble - Gutterson State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**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 BHI0297 - General Preparation**

**Blank (BHI0297-BLK1)**

Prepared: 09/10/24 Analyzed: 09/11/24

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

**LCS (BHI0297-BS1)**

Prepared: 09/10/24 Analyzed: 09/11/24

Calcium	5.35	0.0500	mg/L wet	5.00	107	70-130
Magnesium	5.46	0.0500	"	5.00	109	70-130
Sodium	4.99	0.0500	"	5.00	99.7	70-130

Summit Scientific

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

Project: Noble - Gutterson State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**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 BHI0328 - General Preparation**

**Duplicate (BHI0328-DUP1)**

**Source: 2409112-01**

Prepared & Analyzed: 09/11/24

% Solids	80.6		%		80.5			0.101	20	
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Summit Scientific

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

Project: Noble - Gutterson State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

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

**Summit Scientific**

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

**Batch BHI0305 - General Preparation**

**Blank (BHI0305-BLK1)**

Prepared: 09/10/24 Analyzed: 09/11/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BHI0305-BS1)**

Prepared: 09/10/24 Analyzed: 09/11/24

Specific Conductance (EC) 0.156 0.0100 mmhos/cm 0.150 104 95-105

**Duplicate (BHI0305-DUP1)**

**Source: 2409089-01**

Prepared: 09/10/24 Analyzed: 09/11/24

Specific Conductance (EC) 1.42 0.0100 mmhos/cm 1.43 1.19 20

Summit Scientific

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

Project: Noble - Gutterson State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

**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 BHI0304 - General Preparation**

**LCS (BHI0304-BS1)**

Prepared: 09/10/24 Analyzed: 09/11/24

pH	9.17	pH Units	9.18	99.9	95-105
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**Duplicate (BHI0304-DUP1)**

Source: 2409089-01

Prepared: 09/10/24 Analyzed: 09/11/24

pH	8.49	pH Units	8.50	0.118	20
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Summit Scientific

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

Project: Noble - Guttersen State USX D21-27D

Project Number: UWRWE-A4224-AES  
Project Manager: Jacob Whritenour

**Reported:**  
09/12/24 13:02

### Notes and Definitions

- 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