



Date: 5/15/2024

GENERAL OBSERVATION FORM

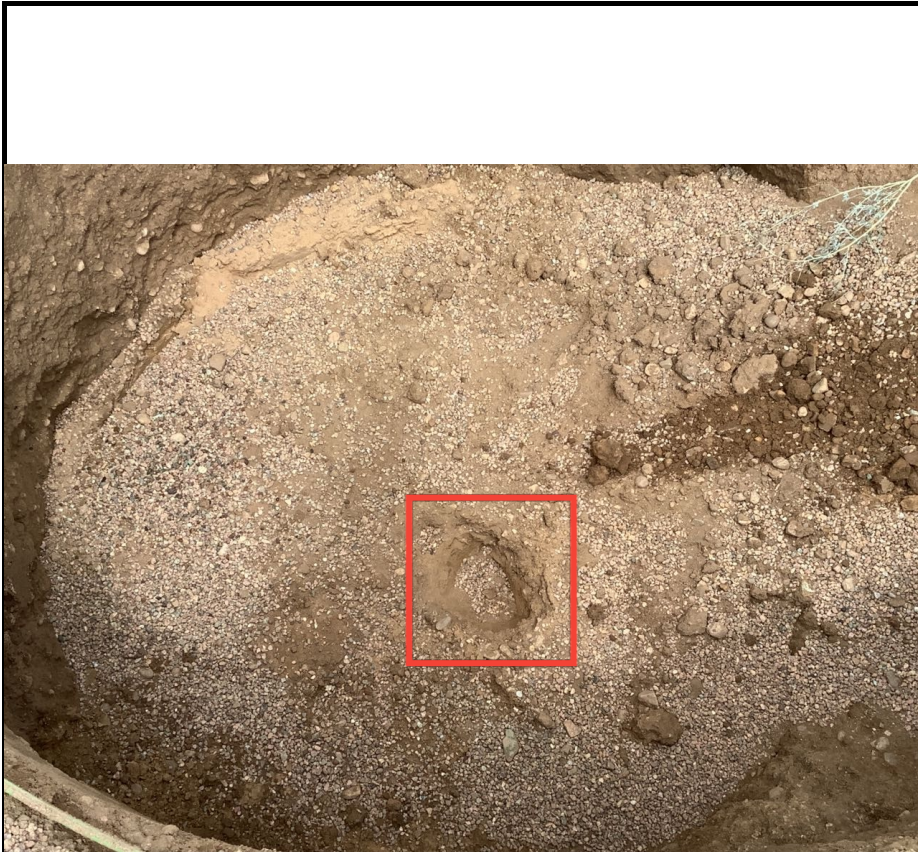
Site Area/AOC: CENTENNIAL STATE ECONODE Client: NOBLE

Daily Forecast/Weather: SUNNY 60s Personnel: MW

Task/Location Description: PWV Decommissioning soil sampling

Time	Description
12:00	Arrived on site began JSA
12:20	Completed JSA
12:23	Began sampling activities
12:52	Completed sampling activities
13:40	Departed site
	Background samples to be collected during full facility decommissioning

Need photo log?



Equipment ID: PWV01-B@4'		Equipment Type:	
Material:	Volume:	Contents:	
Notes/Conditions: FACING NORTH			

Equipment ID: PWV01-N@2'		Equipment Type:	
Material:	Volume:	Contents:	
Notes/Conditions: FACING NORTH			



Equipment ID: PWV01-E@2'		Equipment Type:	
Material:	Volume:	Contents:	
Notes/Conditions: FACING EAST			

Equipment ID: PWV01-S@2'		Equipment Type:	
Material:	Volume:	Contents:	
Notes/Conditions: FACING SOUTH			



Equipment ID: PWV01-W@2'		Equipment Type:	
Material:	Volume:	Contents:	
Notes/Conditions: FACING WEST			

Equipment ID:		Equipment Type:	
Material:	Volume:	Contents:	
Notes/Conditions: Excavation Overview			

TABLE 1
FIELD DATA SUMMARY TABLE
NOBLE - 100322
CENTENNIAL STATE ECONODE, WELD COUNTY, COLORADO
REM # 35086

Sample ID	Sample Date	Depth (ft. bgs)	GPS Data Latitude/Longitude		PDOP Value	VOC Concentration (ppm)
PWV01-B@4'	5/15/2024	4	40.269525	-104.622493	0.9	0.1
PWV01-N@2'	5/15/2024	2	40.269539	-104.622492	0.9	0.0
PWV01-E@2'	5/15/2024	2	40.269530	-104.622472	1.0	0.2
PWV01-S@2'	5/15/2024	2	40.269520	-104.622492	1.0	0.1
PWV01-W@2'	5/15/2024	2	40.269528	-104.622505	1.0	0.1

Notes:

1. Global Positioning System (GPS) data is provided in decimal degrees using North American Datum (NAD) 83 UTMZone 13 North.
 2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).
- PDOP = Position Dilution of Precision
ppm = Parts per million
ft. = Feet
bgs = Below ground surface

TABLE 2
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE - 100322
CENTENNIAL STATE ECONODE, WELD COUNTY, COLORADO
REM # 35086

Sample ID	Sample Date	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Xylenes (mg/kg)	1,2,4-Trimethyl-Benzene (mg/kg)	1,3,5-Trimethyl-Benzene (mg/kg)	Naphthalene (mg/kg)	TPH (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500	500**		
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	500**		
PWV01-B@4'	5/15/2024	4	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
PWV01-N@2'	5/15/2024	2	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
PWV01-E@2'	5/15/2024	2	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
PWV01-S@2'	5/15/2024	2	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
PWV01-W@2'	5/15/2024	2	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50

Notes:

1. **Bold** values exceed the ECMC Table 915-1 limit(s).
2. Pink & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL).
3. * Indicates laboratory minimum detection limit in excess of SSL.
4. ** Summation of GRO+DRO+ORO must be less than 500 mg/kg.

ECMC = Energy & Carbon Management Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

TPH-ORO = Total petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

ft. = Feet

bgs = Below ground surface

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE - 100322
CENTENNIAL STATE ECONODE, WELD COUNTY, COLORADO
REM # 35086

Sample ID	Sample Date	Depth (ft. bgs)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benzo (a) Anthracene (mg/kg)	Benzo (a) Pyrene (mg/kg)	Benzo (b) Fluoranthene (mg/kg)	Benzo (k) Fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo (a,h) Anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno (1,2,3-cd) Pyrene (mg/kg)	Pyrene (mg/kg)	1-Methyl - Naphthalene (mg/kg)	2-Methyl- Naphthalene (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
PWV01-B@4'	5/15/2024	4	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
PWV01-N@2'	5/15/2024	2	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
PWV01-E@2'	5/15/2024	2	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
PWV01-S@2'	5/15/2024	2	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
PWV01-W@2'	5/15/2024	2	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

Notes:

1. **Bold** values exceed the ECMC Table 915-1 limit(s).
2. Pink & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL).
3. * Indicates laboratory minimum detection limit in excess of SSL.

ECMC = Colorado Energy & Carbon Management Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

ft. = Feet

bgs = Below ground surface

mg/kg = Milligrams per kilogram

TABLE 4
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE - 100322
CENTENNIAL STATE ECONODE, WELD COUNTY, COLORADO
REM # 35086

Sample ID	Sample Date	Depth (ft. bgs)	pH (Standard Units)	EC (mmhos/cm)	SAR (Standard Units)	Boron (mg/L)
ECMC Table 915-1 Soil Suitability Limits			6 - 8.3	<4	<6	2
PWV01-B@4'	5/15/2024	4	9.03	0.246	0.597	<2.00
PWV01-N@2'	5/15/2024	2	8.61	0.156	0.351	<2.00
PWV01-E@2'	5/15/2024	2	8.42	0.207	0.136	<2.00
PWV01-S@2'	5/15/2024	2	8.24	0.172	0.217	<2.00
PWV01-W@2'	5/15/2024	2	8.39	0.104	0.0661	<2.00

Notes:

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within 1.25x background concentrations.
2. **Bold** faced values exceed the ECMC Table 915-1 limit(s) above native background concentrations.
3. Brown highlighted soil analytical values indicate a regulatory exceedance.

ECMC = Colorado Energy & Carbon Management Commission

EC = Electrical conductivity

SAR = Sodium adsorption ratio

mmhos/cm = millimhos per centimeter

mg/L = milligram per liter

(<) = Analytical result is less than the indicated laboratory reporting limit.

ft. = Feet

bgs = Below ground surface

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
NOBLE - 100322
CENTENNIAL STATE ECONODE, WELD COUNTY, COLORADO
REM # 35086

Sample ID	Sample Date	Depth (ft. bgs)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) ^[4] (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
PWV01-B@4'	5/15/2024	4	1.32	52.5	<0.181	<0.30*	1.92	3.43	1.99	<0.236	<0.0181	12.5
PWV01-N@2'	5/15/2024	2	1.90	47.1	<0.200	<0.30*	2.54	2.59	1.72	<0.260	<0.0200	11.0
PWV01-E@2'	5/15/2024	2	1.83	68.3	<0.180	<0.30*	2.52	4.54	2.10	<0.234	0.0255	20.9
PWV01-S@2'	5/15/2024	2	1.41	43.6	<0.200	<0.30*	1.93	3.68	1.70	<0.260	0.0269	13.1
PWV01-W@2'	5/15/2024	2	2.02	46.8	<0.200	<0.30*	2.60	2.90	1.78	<0.260	<0.0200	13.5

Notes:

- 1.** Bold faced values exceed the ECMC Table 915-1 limit(s), but are within 1.25x background concentrations.
- 2.** Bold faced values exceed the ECMC Table 915-1 limit(s) above native background concentrations.
3. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL).
4. Compound falls within ECMC Table 915-1 Footnote 9.
5. Non-detect background results accounted for in the highest background concentration by using the reporting limit.

ECMC = Energy & Carbon Management Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

mg/kg = Milligrams per kilogram

ft. = Feet

bgs = Below ground surface

* Indicates laboratory minimum detection limit in excess of SSL



Legend

- Excavation Extent (Collected via Trimble GPS)
- ⊕ Soil Sample Location (Collected via Trimble GPS)

Notes

- 1) All locations are approximate unless otherwise noted.
- 2) Buried infrastructure has been spatially projected.
- 3) Color coded sample exceedances are in reference to ECOM Table 915-1 Organic Compounds in Soil.

GPS – Global Positioning System
 mg/kg – Milligrams per kilogram
 PID – Photoionization Detector
 ppm – Parts per million
 GSSL – Protection of Groundwater Soil Screening Levels
 RSSLs – Residential Soil Screening Levels

0 ft. 10 ft. 20 ft.



Image Source: Google Earth; 2021 Google
 Projection: WGS 84 UTM Zone 13 North



DATE:	07/30/2024
DESIGNED BY:	JW
DRAWN BY:	LH



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

Noble Energy, Inc. (100322) – DJ Basin
Centennial State Econode
 SENE, Section 35, Township 4 North, Range 65 West
 Weld County, Colorado

Tank Battery Closure & Soil
 Analytical Results Map
 (05/15/2024)

FIGURE
 1

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 07, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

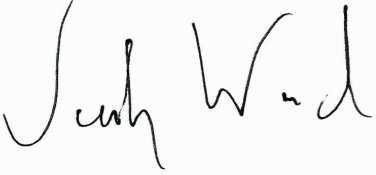
Broomfield, CO 80020

RE: Noble - Centennial State Econode

Work Order #2405232

Enclosed are the results of analyses for samples received by Summit Scientific on 05/15/24 18:16. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Jacob Wood For Paul Shrewsbury

President



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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PWV01-B@4'	2405232-01	Soil	05/15/24 12:35	05/15/24 18:16
PWV01-N@2'	2405232-02	Soil	05/15/24 12:23	05/15/24 18:16
PWV01-E@2'	2405232-03	Soil	05/15/24 12:26	05/15/24 18:16
PWV01-S@2'	2405232-04	Soil	05/15/24 12:29	05/15/24 18:16
PWV01-W@2'	2405232-05	Soil	05/15/24 12:32	05/15/24 18:16

Summit Scientific

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

Client: Noble/Tasman	Project Manager: Jake Whritenour	Send Invoice To:
Address: 6855 W. 119th Ave.	E-Mail: Jwhritenour@tasman-geo.com	Company: <i>Cherion</i>
City/State/Zip: Broomfield/CO/ 80020		Project Name/Location: <i>Centennial State Escarpment</i>
Phone: 978-857-4408	Project Location: <i>Centennial State Escarpment</i>	AFE#: <i>BCR3T03X</i>
Sampler Name: Matthew Wentzel	Project Number:	PO/Billing Codes:
		Contact: Miscel <i>Barbra</i> ^{MW} <i>Dan Peterson</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	PWV01-R@	5.15.24	1235	3			X			X			X	X	X	X	X	X	X		SAR, EC, pH by saturated paste	
2	PWV01-NO		1223	1			X			X			X	X	X	X	X	X	X			
3	PWV01-EE		1226	1			X			X			X	X	X	X	X	X	X			
4	PWV01-S@		1229	1			X			X			X	X	X	X	X	X	X			
5	PWV01-W@		1232	1			X			X			X	X	X	X	X	X	X			
6																						
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

Relinquished by: <i>[Signature]</i>	Date/Time: 5.14.24 1600	Received by: Tasman Lock Box	Date/Time: 5.14.24 1600	TAT Business Days	Field DO	Notes: ★ ORGANICS ON SAME DAY. OTHER SAMPLES ON STANDARD.
Relinquished by: <i>Tasman Lock Box</i>	Date/Time: 5/15/24 1816	Received by: <i>[Signature]</i>	Date/Time: 5/24 1816	Same Day* <input checked="" type="checkbox"/>	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
Temperature Upon Receipt: 8.2	Corrected Temperature: 8	IR gun #: 1	HNO3 lot #:	Standard* <input checked="" type="checkbox"/>	Field Turb.	

S2

Sample Receipt Checklist

S2 Work Order# 2405232

Client: Nick Fasman

Client Project ID: Centennial State Ecomade

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

Matrix (Check all that apply) Air Soil/Solid Water Other

Temp (°C) 8.2

Thermometer # 1

	Yes	No	N/A	Comments (If any)
If samples require cooling, is the temperature < 6°C? (1) NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>CMZCE</u>
Are samples due within 48 hours present?	<input checked="" type="checkbox"/>	<input 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 ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Same day</u>
Is a chain-of-custody (COC) form present and filled out Completely? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? (1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water - is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? (1) Note the type of preservative in the comments column - HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? (1) Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<u>Additional Comments (if any):</u>				
(1) If NO, then contact the client before proceeding with analysis and note in case narrative.				

AS

Custodian Printed Name

5/15/24
Date/Time



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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-B@4'
2405232-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHE0499	05/15/24	05/15/24	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: **05/15/24 12:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0256	64.1 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0411	103 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0392	98.0 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHE0501	05/15/24	05/15/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	10.3	82.2 %		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 - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-B@4'
2405232-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHE0507	05/16/24	05/17/24	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: **05/15/24 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0191	57.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0196	58.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHE0554	05/17/24	06/04/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/15/24 12:35**

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 - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-B@4'
2405232-01 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.32	0.181	mg/kg dry	1	BHE0536	05/16/24	05/17/24	EPA 6020B	
Barium	52.5	0.362	"	"	"	"	"	"	
Cadmium	ND	0.181	"	"	"	"	"	"	
Copper	1.92	0.362	"	"	"	"	"	"	
Lead	3.43	0.181	"	"	"	"	"	"	
Nickel	1.99	0.362	"	"	"	"	"	"	
Silver	ND	0.0181	"	"	"	"	"	"	
Zinc	12.5	0.362	"	"	"	"	"	"	
Selenium	ND	0.236	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0546	05/16/24	05/16/24	EPA 7196A	

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

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	164	0.0500	mg/L dry	1	BHE0526	05/16/24	05/26/24	EPA 6020B	
Magnesium	39.3	0.0500	"	"	"	"	"	"	
Sodium	32.8	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.597	0.00100	units	1	BHE0826	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-B@4'
2405232-01 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	95.2			%	1	BHE0542	05/16/24	05/16/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.246	0.0100		mmhos/cm	1	BHE0528	05/16/24	05/21/24	EPA 120.1	

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

Date Sampled: **05/15/24 12:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	9.03			pH Units	1	BHE0527	05/16/24	05/21/24	EPA 9045D	

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

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PWV01-N@2'
2405232-02 (Soil)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHE0499	05/15/24	05/15/24	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: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0282	70.5 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0388	97.1 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0405	101 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHE0501	05/15/24	05/15/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	7.85	62.8 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project Number: [none]
Project Manager: Jacob Whritenour

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PWV01-N@2'
2405232-02 (Soil)

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PAH by EPA Method 8270D SIM

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHE0507	05/16/24	05/17/24	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: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0145	43.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0152	45.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHE0554	05/17/24	06/04/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

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PWV01-N@2'
2405232-02 (Soil)

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Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.90	0.200	mg/kg dry	1	BHE0536	05/16/24	05/17/24	EPA 6020B	
Barium	47.1	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	2.54	0.400	"	"	"	"	"	"	
Lead	2.59	0.200	"	"	"	"	"	"	
Nickel	1.72	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	11.0	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0546	05/16/24	05/16/24	EPA 7196A	

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

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	50.9	0.0500	mg/L dry	1	BHE0526	05/16/24	05/26/24	EPA 6020B	
Magnesium	6.54	0.0500	"	"	"	"	"	"	
Sodium	10.0	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.351	0.00100	units	1	BHE0826	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-N@2'
2405232-02 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	94.4			%	1	BHE0542	05/16/24	05/16/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.156	0.0100		mmhos/cm	1	BHE0528	05/16/24	05/21/24	EPA 120.1	

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

Date Sampled: **05/15/24 12:23**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.61			pH Units	1	BHE0527	05/16/24	05/21/24	EPA 9045D	

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-E@2'
2405232-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHE0499	05/15/24	05/15/24	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: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0236	58.9 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0396	99.1 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0403	101 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHE0501	05/15/24	05/16/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	7.87	63.0 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-E@2'
2405232-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHE0507	05/16/24	05/17/24	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: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0226	67.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0248	74.5 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHE0554	05/17/24	06/04/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/15/24 12:26**

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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-E@2'
2405232-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	1.83	0.180	mg/kg dry	1	BHE0536	05/16/24	05/17/24	EPA 6020B
Barium	68.3	0.360	"	"	"	"	"	"
Cadmium	ND	0.180	"	"	"	"	"	"
Copper	2.52	0.360	"	"	"	"	"	"
Lead	4.54	0.180	"	"	"	"	"	"
Nickel	2.10	0.360	"	"	"	"	"	"
Silver	0.0255	0.0180	"	"	"	"	"	"
Zinc	20.9	0.360	"	"	"	"	"	"
Selenium	ND	0.234	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0546	05/16/24	05/16/24	EPA 7196A	

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

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	92.1	0.0500	mg/L dry	1	BHE0526	05/16/24	05/26/24	EPA 6020B	
Magnesium	12.0	0.0500	"	"	"	"	"	"	
Sodium	5.24	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.136	0.00100	units	1	BHE0826	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-E@2'
2405232-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.7		%	1	BHE0542	05/16/24	05/16/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.207	0.0100	mmhos/cm	1	BHE0528	05/16/24	05/21/24	EPA 120.1	

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

Date Sampled: **05/15/24 12:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.42		pH Units	1	BHE0527	05/16/24	05/21/24	EPA 9045D	

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-S@2'
2405232-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHE0499	05/15/24	05/15/24	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: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0243	60.8 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0382	95.4 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0408	102 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHE0501	05/15/24	05/16/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	9.53	76.3 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-S@2'
2405232-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHE0507	05/16/24	05/17/24	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: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0177	53.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0206	61.9 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHE0554	05/17/24	06/04/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/15/24 12:29**

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 - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-S@2'
2405232-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.41	0.200	mg/kg dry	1	BHE0536	05/16/24	05/17/24	EPA 6020B	
Barium	43.6	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	1.93	0.400	"	"	"	"	"	"	
Lead	3.68	0.200	"	"	"	"	"	"	
Nickel	1.70	0.400	"	"	"	"	"	"	
Silver	0.0269	0.0200	"	"	"	"	"	"	
Zinc	13.1	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0546	05/16/24	05/16/24	EPA 7196A	

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

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	65.3	0.0500	mg/L dry	1	BHE0526	05/16/24	05/26/24	EPA 6020B	
Magnesium	12.5	0.0500	"	"	"	"	"	"	
Sodium	7.31	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.217	0.00100	units	1	BHE0826	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

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06/07/24 14:05

PWV01-S@2'
2405232-04 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.2		%	1	BHE0542	05/16/24	05/16/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.172	0.0100	mmhos/cm	1	BHE0528	05/16/24	05/21/24	EPA 120.1	

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

Date Sampled: **05/15/24 12:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.24		pH Units	1	BHE0527	05/16/24	05/21/24	EPA 9045D	

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-W@2'
2405232-05 (Soil)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/15/24 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BHE0499	05/15/24	05/16/24	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: **05/15/24 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0239	59.7 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0392	98.0 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0396	98.9 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/15/24 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BHE0501	05/15/24	05/16/24	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/15/24 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	8.60	68.8 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-W@2'
2405232-05 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/15/24 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHE0507	05/16/24	05/17/24	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: **05/15/24 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0204	61.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0245	73.4 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/15/24 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHE0554	05/17/24	06/04/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/15/24 12:32**

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 - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-W@2'
2405232-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.02	0.200	mg/kg dry	1	BHE0536	05/16/24	05/17/24	EPA 6020B	
Barium	46.8	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
Copper	2.60	0.400	"	"	"	"	"	"	
Lead	2.90	0.200	"	"	"	"	"	"	
Nickel	1.78	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
Zinc	13.5	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: 05/15/24 12:32

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHE0546	05/16/24	05/16/24	EPA 7196A	

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

Date Sampled: 05/15/24 12:32

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	70.6	0.0500	mg/L dry	1	BHE0526	05/16/24	05/26/24	EPA 6020B	
Magnesium	9.04	0.0500	"	"	"	"	"	"	
Sodium	2.22	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: 05/15/24 12:32

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0661	0.00100	units	1	BHE0826	05/28/24	05/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PWV01-W@2'
2405232-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/15/24 12:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	93.6			%	1	BHE0542	05/16/24	05/16/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/15/24 12:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.104	0.0100		mmhos/cm	1	BHE0528	05/16/24	05/21/24	EPA 120.1	

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

Date Sampled: **05/15/24 12:32**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.39			pH Units	1	BHE0527	05/16/24	05/21/24	EPA 9045D	

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0499 - EPA 5030 Soil MS

Blank (BHE0499-BLK1)

Prepared: 05/15/24 Analyzed: 05/16/24

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0219		"	0.0400		54.8	50-150			
<i>Surrogate: Toluene-d8</i>	0.0394		"	0.0400		98.4	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0390		"	0.0400		97.4	50-150			

LCS (BHE0499-BS1)

Prepared: 05/15/24 Analyzed: 05/16/24

Benzene	0.0823	0.0020	mg/kg	0.100		82.3	70-130			
Toluene	0.112	0.0050	"	0.100		112	70-130			
Ethylbenzene	0.113	0.0050	"	0.100		113	70-130			
m,p-Xylene	0.221	0.010	"	0.200		111	70-130			
o-Xylene	0.110	0.0050	"	0.100		110	70-130			
1,2,4-Trimethylbenzene	0.0989	0.0050	"	0.100		98.9	70-130			
1,3,5-Trimethylbenzene	0.103	0.0050	"	0.100		103	70-130			
Naphthalene	0.0800	0.0038	"	0.100		80.0	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0231		"	0.0400		57.8	50-150			
<i>Surrogate: Toluene-d8</i>	0.0423		"	0.0400		106	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0390		"	0.0400		97.6	50-150			

Matrix Spike (BHE0499-MS1)

Source: 2405230-01

Prepared: 05/15/24 Analyzed: 05/16/24

Benzene	0.0718	0.0020	mg/kg	0.100	ND	71.8	70-130			
Toluene	0.102	0.0050	"	0.100	ND	102	70-130			
Ethylbenzene	0.0960	0.0050	"	0.100	ND	96.0	70-130			
m,p-Xylene	0.190	0.010	"	0.200	ND	95.0	70-130			
o-Xylene	0.0937	0.0050	"	0.100	ND	93.7	70-130			
1,2,4-Trimethylbenzene	0.0839	0.0050	"	0.100	ND	83.9	70-130			
1,3,5-Trimethylbenzene	0.0872	0.0050	"	0.100	ND	87.2	70-130			
Naphthalene	0.0706	0.0038	"	0.100	ND	70.6	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0208		"	0.0400		51.9	50-150			
<i>Surrogate: Toluene-d8</i>	0.0449		"	0.0400		112	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0398		"	0.0400		99.6	50-150			

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0499 - EPA 5030 Soil MS

Matrix Spike Dup (BHE0499-MSD1)	Source: 2405230-01			Prepared: 05/15/24 Analyzed: 05/16/24						
Benzene	0.0693	0.0020	mg/kg	0.100	ND	69.3	70-130	3.53	30	QM-07
Toluene	0.101	0.0050	"	0.100	ND	101	70-130	0.914	30	
Ethylbenzene	0.0930	0.0050	"	0.100	ND	93.0	70-130	3.18	30	
m,p-Xylene	0.185	0.010	"	0.200	ND	92.3	70-130	2.87	30	
o-Xylene	0.0906	0.0050	"	0.100	ND	90.6	70-130	3.32	30	
1,2,4-Trimethylbenzene	0.0829	0.0050	"	0.100	ND	82.9	70-130	1.29	30	
1,3,5-Trimethylbenzene	0.0867	0.0050	"	0.100	ND	86.7	70-130	0.552	30	
Naphthalene	0.0669	0.0038	"	0.100	ND	66.9	70-130	5.33	30	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.0244		"	0.0400		61.0	50-150			
Surrogate: Toluene-d8	0.0460		"	0.0400		115	50-150			
Surrogate: 4-Bromofluorobenzene	0.0405		"	0.0400		101	50-150			

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0501 - EPA 3550A

Blank (BHE0501-BLK1)

Prepared: 05/15/24 Analyzed: 05/16/24

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	12.9		"	12.5		103		30-150			

LCS (BHE0501-BS1)

Prepared: 05/15/24 Analyzed: 05/16/24

C10-C28 (DRO)	563	50	mg/kg	500		113		70-130			
Surrogate: <i>o</i> -Terphenyl	12.1		"	12.5		96.6		30-150			

Matrix Spike (BHE0501-MS1)

Source: 2405230-01

Prepared: 05/15/24 Analyzed: 05/16/24

C10-C28 (DRO)	526	50	mg/kg	500	ND	105		70-130			
Surrogate: <i>o</i> -Terphenyl	9.36		"	12.5		74.9		30-150			

Matrix Spike Dup (BHE0501-MSD1)

Source: 2405230-01

Prepared: 05/15/24 Analyzed: 05/16/24

C10-C28 (DRO)	505	50	mg/kg	500	ND	101		70-130	4.09	20	
Surrogate: <i>o</i> -Terphenyl	9.50		"	12.5		76.0		30-150			

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Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BHE0507 - EPA 5030 Soil MS

Blank (BHE0507-BLK1)

Prepared: 05/16/24 Analyzed: 05/17/24

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>0.0353</i>		"	<i>0.0333</i>		<i>106</i>		<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0392</i>		"	<i>0.0333</i>		<i>118</i>		<i>40-150</i>			

LCS (BHE0507-BS1)

Prepared: 05/16/24 Analyzed: 05/17/24

Acenaphthene	0.0345	0.00500	mg/kg	0.0333	104	31-137
Anthracene	0.0365	0.00500	"	0.0333	110	30-120
Benzo (a) anthracene	0.0334	0.00500	"	0.0333	100	30-120
Benzo (a) pyrene	0.0362	0.00500	"	0.0333	109	30-120
Benzo (b) fluoranthene	0.0380	0.00500	"	0.0333	114	30-120
Benzo (k) fluoranthene	0.0380	0.00500	"	0.0333	114	30-120
Chrysene	0.0374	0.00500	"	0.0333	112	30-120
Dibenz (a,h) anthracene	0.0274	0.00500	"	0.0333	82.1	30-120
Fluoranthene	0.0375	0.00500	"	0.0333	112	30-120
Fluorene	0.0380	0.00500	"	0.0333	114	30-120
Indeno (1,2,3-cd) pyrene	0.0205	0.00500	"	0.0333	61.5	30-120
Pyrene	0.0308	0.00500	"	0.0333	92.4	35-142
1-Methylnaphthalene	0.0371	0.00500	"	0.0333	111	35-142
2-Methylnaphthalene	0.0360	0.00500	"	0.0333	108	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0374</i>		"	<i>0.0333</i>	<i>112</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0400</i>		"	<i>0.0333</i>	<i>120</i>	<i>40-150</i>

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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0507 - EPA 5030 Soil MS

Matrix Spike (BHE0507-MS1)	Source: 2405227-01			Prepared: 05/16/24 Analyzed: 05/17/24							
Acenaphthene	0.0262	0.00500	mg/kg	0.0333	ND	78.5	31-137				
Anthracene	0.0297	0.00500	"	0.0333	ND	89.2	30-120				
Benzo (a) anthracene	0.0287	0.00500	"	0.0333	ND	86.2	30-120				
Benzo (a) pyrene	0.0268	0.00500	"	0.0333	ND	80.3	30-120				
Benzo (b) fluoranthene	0.0242	0.00500	"	0.0333	ND	72.7	30-120				
Benzo (k) fluoranthene	0.0211	0.00500	"	0.0333	ND	63.4	30-120				
Chrysene	0.0285	0.00500	"	0.0333	ND	85.6	30-120				
Dibenz (a,h) anthracene	0.0336	0.00500	"	0.0333	ND	101	30-120				
Fluoranthene	0.0279	0.00500	"	0.0333	ND	83.6	30-120				
Fluorene	0.0284	0.00500	"	0.0333	ND	85.1	30-120				
Indeno (1,2,3-cd) pyrene	0.0229	0.00500	"	0.0333	ND	68.7	30-120				
Pyrene	0.0296	0.00500	"	0.0333	ND	88.7	35-142				
1-Methylnaphthalene	0.0247	0.00500	"	0.0333	ND	74.2	15-130				
2-Methylnaphthalene	0.0265	0.00500	"	0.0333	ND	79.6	15-130				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0253</i>		<i>"</i>	<i>0.0333</i>		<i>75.8</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0305</i>		<i>"</i>	<i>0.0333</i>		<i>91.5</i>	<i>40-150</i>				

Matrix Spike Dup (BHE0507-MSD1)	Source: 2405227-01			Prepared: 05/16/24 Analyzed: 05/17/24							
Acenaphthene	0.0246	0.00500	mg/kg	0.0333	ND	73.9	31-137	6.00	30		
Anthracene	0.0257	0.00500	"	0.0333	ND	77.1	30-120	14.6	30		
Benzo (a) anthracene	0.0262	0.00500	"	0.0333	ND	78.7	30-120	9.16	30		
Benzo (a) pyrene	0.0246	0.00500	"	0.0333	ND	73.9	30-120	8.32	30		
Benzo (b) fluoranthene	0.0270	0.00500	"	0.0333	ND	80.9	30-120	10.7	30		
Benzo (k) fluoranthene	0.0231	0.00500	"	0.0333	ND	69.3	30-120	8.91	30		
Chrysene	0.0253	0.00500	"	0.0333	ND	75.9	30-120	12.1	30		
Dibenz (a,h) anthracene	0.0315	0.00500	"	0.0333	ND	94.6	30-120	6.20	30		
Fluoranthene	0.0245	0.00500	"	0.0333	ND	73.4	30-120	13.0	30		
Fluorene	0.0272	0.00500	"	0.0333	ND	81.6	30-120	4.22	30		
Indeno (1,2,3-cd) pyrene	0.0394	0.00500	"	0.0333	ND	118	30-120	52.9	30		QR-02
Pyrene	0.0264	0.00500	"	0.0333	ND	79.1	35-142	11.4	30		
1-Methylnaphthalene	0.0289	0.00500	"	0.0333	ND	86.8	15-130	15.6	50		
2-Methylnaphthalene	0.0290	0.00500	"	0.0333	ND	86.9	15-130	8.77	50		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0258</i>		<i>"</i>	<i>0.0333</i>		<i>77.3</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0271</i>		<i>"</i>	<i>0.0333</i>		<i>81.3</i>	<i>40-150</i>				

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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0554 - EPA 3050B

Blank (BHE0554-BLK1)

Prepared: 05/17/24 Analyzed: 06/04/24

Boron ND 2.00 mg/L

LCS (BHE0554-BS1)

Prepared: 05/17/24 Analyzed: 06/04/24

Boron 5.19 2.00 mg/L 5.00 104 80-120

Duplicate (BHE0554-DUP1)

Source: 2405084-03

Prepared: 05/17/24 Analyzed: 06/04/24

Boron 1.28 2.00 mg/L 1.24 3.10 20

Matrix Spike (BHE0554-MS1)

Source: 2405084-03

Prepared: 05/17/24 Analyzed: 06/04/24

Boron 6.52 2.00 mg/L 4.98 1.24 106 75-125

Matrix Spike Dup (BHE0554-MSD1)

Source: 2405084-03

Prepared: 05/17/24 Analyzed: 06/04/24

Boron 7.35 2.00 mg/L 4.98 1.24 123 75-125 12.0 25

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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0536 - EPA 3050B

Blank (BHE0536-BLK1)

Prepared: 05/16/24 Analyzed: 05/17/24

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 (BHE0536-BS1)

Prepared: 05/16/24 Analyzed: 05/17/24

Arsenic	38.4	0.200	mg/kg wet	40.0	96.0	80-120
Barium	39.7	0.400	"	40.0	99.2	80-120
Cadmium	1.95	0.200	"	2.00	97.4	80-120
Copper	40.8	0.400	"	40.0	102	80-120
Lead	20.2	0.200	"	20.0	101	80-120
Nickel	40.5	0.400	"	40.0	101	80-120
Silver	1.96	0.0200	"	2.00	97.9	80-120
Zinc	38.3	0.400	"	40.0	95.8	80-120
Selenium	3.87	0.260	"	4.00	96.7	80-120

Duplicate (BHE0536-DUP1)

Source: 2405232-01

Prepared: 05/16/24 Analyzed: 05/17/24

Arsenic	1.30	0.200	mg/kg dry	1.32	1.48	20
Barium	51.8	0.400	"	52.5	1.45	20
Cadmium	0.0878	0.200	"	0.0841	4.30	20
Copper	1.97	0.400	"	1.92	2.49	20
Lead	3.96	0.200	"	3.43	14.5	20
Nickel	2.11	0.400	"	1.99	5.96	20
Silver	0.0176	0.0200	"	0.0156	12.3	20
Zinc	13.7	0.400	"	12.5	9.64	20
Selenium	ND	0.260	"	ND		20

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0536 - EPA 3050B

Matrix Spike (BHE0536-MS1)	Source: 2405232-01			Prepared: 05/16/24		Analyzed: 05/17/24					
Arsenic	38.0	0.200	mg/kg dry	39.5	1.32	92.8	75-125				
Barium	91.8	0.400	"	39.5	52.5	99.5	75-125				
Cadmium	2.05	0.200	"	1.98	0.0841	99.7	75-125				
Copper	26.8	0.400	"	39.5	1.92	63.0	75-125				QM-07
Lead	23.0	0.200	"	19.8	3.43	99.0	75-125				
Nickel	27.0	0.400	"	39.5	1.99	63.3	75-125				QM-07
Silver	1.96	0.0200	"	1.98	0.0156	98.6	75-125				
Zinc	50.1	0.400	"	39.5	12.5	95.2	75-125				
Selenium	2.28	0.260	"	3.95	ND	57.8	75-125				QM-07

Matrix Spike Dup (BHE0536-MSD1)	Source: 2405232-01			Prepared: 05/16/24		Analyzed: 05/17/24					
Arsenic	38.0	0.200	mg/kg dry	39.5	1.32	92.9	75-125	0.181	25		
Barium	90.8	0.400	"	39.5	52.5	96.8	75-125	1.17	25		
Cadmium	2.05	0.200	"	1.98	0.0841	99.7	75-125	0.0192	25		
Copper	25.1	0.400	"	39.5	1.92	58.6	75-125	6.62	25		QM-07
Lead	22.1	0.200	"	19.8	3.43	94.8	75-125	3.75	25		
Nickel	24.8	0.400	"	39.5	1.99	57.8	75-125	8.31	25		QM-07
Silver	1.91	0.0200	"	1.98	0.0156	96.0	75-125	2.71	25		
Zinc	50.6	0.400	"	39.5	12.5	96.5	75-125	1.01	25		
Selenium	3.18	0.260	"	3.95	ND	80.6	75-125	33.0	25		QM-07

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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0546 - 3060A Mod

Blank (BHE0546-BLK1)

Prepared & Analyzed: 05/16/24

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BHE0546-BS1)

Prepared & Analyzed: 05/16/24

Chromium, Hexavalent 24.9 0.30 mg/kg wet 25.0 99.6 80-120

Duplicate (BHE0546-DUP1)

Source: 2405084-03

Prepared & Analyzed: 05/16/24

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BHE0546-MS1)

Source: 2405084-03

Prepared & Analyzed: 05/16/24

Chromium, Hexavalent 31.8 0.30 mg/kg dry 31.5 ND 101 75-125

Matrix Spike Dup (BHE0546-MSD1)

Source: 2405084-03

Prepared & Analyzed: 05/16/24

Chromium, Hexavalent 31.8 0.30 mg/kg dry 31.5 ND 101 75-125 0.00 20

Summit Scientific

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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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

Summit Scientific

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

Batch BHE0526 - General Preparation

Blank (BHE0526-BLK1)

Prepared: 05/16/24 Analyzed: 05/26/24

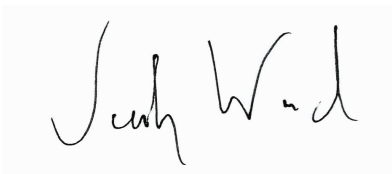
Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (BHE0526-BS1)

Prepared: 05/16/24 Analyzed: 05/26/24

Calcium	5.72	0.0500	mg/L wet	5.00	114	70-130				
Magnesium	5.22	0.0500	"	5.00	104	70-130				
Sodium	5.54	0.0500	"	5.00	111	70-130				

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 6855 W. 119th Ave.
 Broomfield CO, 80020

Project: Noble - Centennial State Econode

Project Number: [none]
 Project Manager: Jacob Whritenour

Reported:
 06/07/24 14:05

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

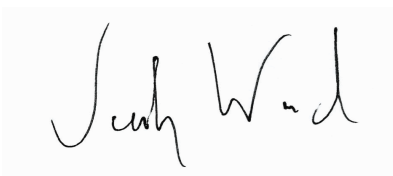
Summit Scientific

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

Batch BHE0542 - General Preparation

Duplicate (BHE0542-DUP1)	Source: 2405232-01			Prepared & Analyzed: 05/16/24							
% Solids	95.1		%		95.2				0.0931	20	

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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0528 - General Preparation

Blank (BHE0528-BLK1)

Prepared: 05/16/24 Analyzed: 05/21/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BHE0528-BS1)

Prepared: 05/16/24 Analyzed: 05/21/24

Specific Conductance (EC) 0.154 0.0100 mmhos/cm 0.150 103 95-105

Duplicate (BHE0528-DUP1)

Source: 2405218-01

Prepared: 05/16/24 Analyzed: 05/21/24

Specific Conductance (EC) 0.131 0.0100 mmhos/cm 0.132 0.608 20

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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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 BHE0527 - General Preparation

LCS (BHE0527-BS1)

Prepared: 05/16/24 Analyzed: 05/21/24

pH	9.16	pH Units	9.18	99.8	95-105
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Duplicate (BHE0527-DUP1)

Source: 2405218-01

Prepared: 05/16/24 Analyzed: 05/21/24

pH	8.60	pH Units	8.67	0.811	20
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Summit Scientific

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

Project: Noble - Centennial State Econode

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/07/24 14:05

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.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- 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