



# Tank Battery Closure Checklist

## COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional attachments (optional):		Pit Closure		Wellhead Closure		Flowline Closure		Partially Buried Vault Closure
Site Name & COGCC Facility Number: Castor Federal LD 13-78HN		Date: 11/20/2023						Remediation Project #: 30300
Associated Wells:		Age of Site:						Number of Photos Attached: 5
Location: (GPS coordinates of southeaster berm) 40.759533, -103.820196								Estimated Facility Size (acres):
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Site in good general condition.								
USCS Soil Type: SM					Estimated Depth to Groundwater: > 3'			
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None Observed								
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None Observed								
<b>Tanks</b>								
Tank Contents	Produced Water							
Size (barrels)	-							
Age	-							
Construction Material	Steel							
Tank type (AST/PBV, etc.)	PBV							
Visual Integrity of Tank	Good							
Condition of tank footings	NA							
PID Readings	NA							
Soil impacts present at valves or hatches?	NA							
PID Readings	0.0							
Sample taken? Location/ Sample ID#	Yes, see below							
Photo Number(s)	1-5							
Other observations regarding tanks: Samples were taken on the N-E-S-W sidewalls of the PBV excavation (SS01@2.5' - SS04@2.5') as well as at the base of the excavation (FS01@3').								
<b>Separators</b>								
Separator size								
Vertical or Horizontal								
Age								
Soil impacts								
PID Readings								
Sample taken? Location/ Sample ID#								
Photo Number(s)								
Other observations regarding separators								
<b>Third Party Equipment</b>								
Type								
Age								



Third Party <i>Owner</i>														
Removal Date														
Sample taken? <i>Location/ Sample</i>														
PID Readings														
Photo Number(s)														
<b>Other Facility Equipment</b>														
Equipment type														
Equipment <i>Condition</i>														
Age														
Soil impacts <i>Observed during</i>														
PID Readings														
Sample taken? <i>Location/ Sample</i>														
Photo Number(s)														
Other observations regarding other facility or third party equipment:														
<b>Summary</b>														
Was impacted soil identified?														
<div> <div>No</div> <div>Yes - less than 10 cubic yards</div> <div>Yes - more than 10 cubic yards</div> </div>														
Total number of samples field screened: 5					Total number of samples collected: 5									
Highest PID Reading: 0.0					Total number of samples submitted to lab for analysis: 5									
If more than 10 cubic yards of impacted soil were observed:														
Vertical extent:					Estimated spill volume:									
Lateral extent:					Volume of soil removed:									
Is additional investigation required?														
Was groundwater encountered during the investigation?														
<div> <div>No</div> <div>Yes - not impacted or in contact with impacted soils</div> <div>Yes - groundwater impacted and/or in contact with impacted soils</div> </div>														
Measured depth to groundwater:					Was remedial groundwater removal conducted?      Yes      No									
Date Groundwater was encountered:					Commencement date of removal:									
Sheen on groundwater?      Yes      No					Volume of groundwater removed prior to sampling:									
Free product observed?      Yes      No					Volume of groundwater removed post sampling:									
Total number of samples collected:					Total Volume of groundwater removed:									
Total number of samples submitted to lab for analysis:														

## Photographic Log

													
Equipment ID: FS01@3'			Equipment Type:			Equipment ID: SS01@2.5'			Equipment Type:				
Material:			Volume:		Contents:		Material:			Volume:		Contents:	
Notes/Conditions: Base						Notes/Conditions: North							




## Photographic Log

					
<b>Equipment ID:</b> SS02@2.5'		<b>Equipment Type:</b>			
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>			
<b>Notes/Conditions:</b> West					
<b>Equipment ID:</b> SS03@2.5'			<b>Equipment Type:</b>		
<b>Material:</b>	<b>Volume:</b>	<b>Contents:</b>			
<b>Notes/Conditions:</b> South					



## Photographic Log

									
						Equipment ID: SS04@2.5'		Equipment Type:	
						Material:	Volume:	Contents:	
						Notes/Conditions: East			
Equipment ID:		Equipment Type:							
Material:	Volume:	Contents:							
Notes/Conditions:									

**TABLE 1**  
**SOIL SAMPLE LOCATIONS**  
**NOBLE ENERGY, INC. - CASTOR FEDERAL LD13-78HN**

Soil Sample ID	Date	PID (ppm)	Visual	Olfactory	Sample Type (Grab/Lab)	Latitude <sup>1</sup>	Longitude	PDOP
FS01@3'	11/20/23	0.0	No Staining	No Odor	Lab	40.759422	-103.820200	1.0
SS01@2.5'	11/20/23	0.0	No Staining	No Odor	Lab	40.759430	-103.820200	NC
SS02@2.5'	11/20/23	0.0	No Staining	No Odor	Lab	40.759420	-103.820212	NC
SS03@2.5'	11/20/23	0.0	No Staining	No Odor	Lab	40.759415	-103.820198	NC
SS04@2.5'	11/20/23	0.0	No Staining	No Odor	Lab	40.759424	-103.820190	NC

Notes:

PID = Photoionization detector

ppm = parts per million

PDOP = Position dilution of precision

HC = Hydrocarbon

1.) Latitude and longitude coordinates will be provided in decimal degrees with an accuracy and precision of 5 decimals of a degree using the North American Datum ("NAD") of 1983

TABLE 2  
SOIL ANALYTICAL DATA  
NOBLE ENERGY, INC. - CASTOR FEDERAL LD13-78HN

Soil Sample ID	Date	<sup>1</sup> Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1,2,4 - TMB (mg/kg)	1,3,5 - TMB (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-ORO (mg/kg)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL <sup>1,2</sup>		1.2	490	5.8	58	30	27	2	500			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL <sup>1,2,3</sup>		0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500			0.55	6	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
FS01@3'	11/20/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<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
SS01@2.5'	11/20/23	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	60	<50	<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

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
SSR <sup>1,2</sup>		6 - 8.3	<6	<4mmhos/cm	2
FS01@3'	11/20/23	9.16	0.955	0.281	<2.00
SS01@2.5'	11/20/23	9.38	0.499	0.156	<2.00
SS02@2.5'	11/20/23	9.00	NA	NA	NA
SS03@2.5'	11/20/23	8.88	NA	NA	NA
SS04@2.5'	11/20/23	8.41	NA	NA	NA

Soil Sample ID	Date	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Residential SSL <sup>1,2</sup>		0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL <sup>1,2,3</sup>		0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
FS01@3'	11/20/23	1.00	123	<0.200	<0.30	1.83	5.80	1.38	<0.260	<0.0200	6.42
SS01@2.5'	11/20/23	1.03	105	<0.200	<0.30	1.95	6.53	1.53	<0.260	<0.0200	7.04
SS02@2.5'	11/20/23	0.562	151	<0.200	<0.30	0.919	7.00	0.696	<0.260	<0.0200	3.21
SS03@2.5'	11/20/23	0.579	69.5	<0.200	<0.30	1.69	7.57	1.28	<0.260	<0.0200	5.85
SS04@2.5'	11/20/23	1.14	186	<0.200	<0.30	1.52	8.41	1.11	<0.260	<0.0200	5.60

Notes:

1. Compounds referenced from 2 CCR 404-1, Table 915-1, effective January 15, 2021.

2. Soil Screening Levels (SSL) and Soil Suitability for Reclamation (SSR) standards referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites,

3. SSLs are applicable if a pathway for communication with groundwater is present.

Definitions:

ECMC = Energy and Carbon Management Commission

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

SAR = Sodium Adsorption Ratio

EC = Electrical Conductivity

mmhos/cm = Millmhos per centimeter

mg/L = Milligrams per liter

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

Highlighted results are equal to or exceed the ECMC Table 915-1 standard

1,2,4 - TMB = 1,2,4 Trimethylbenzene

1,3,5 - TMB = 1,3,5 Trimethylbenzene

Benz(a) = Benzo(a)anthracene

Benzo(b) = Benzo(b)fluoranthene

Benzo(k) = Benzo(k)fluoranthene

Benzo(a) = Benzo(a)pyrene

A,H = Dibenzo(a,h)anthracene

1,2,3-CD = Indeno(1,2,3-cd)pyrene

1-M = 1-methylnaphthalene

2-M = 2-methylnaphthalene

NA = Not Analyzed







# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 28, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

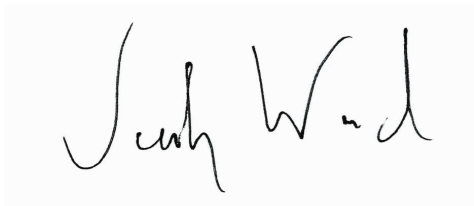
Broomfield, CO 80020

RE: Noble - Castor Federal LD13-78HN

Work Order #2311422

Enclosed are the results of analyses for samples received by Summit Scientific on 11/20/23 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Jacob Wood". The signature is written in a cursive, flowing style.

Jacob Wood For Ben Shrewsbury

Laboratory Manager



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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FS01@3'	2311422-01	Soil	11/20/23 11:00	11/20/23 17:30
SS01@2.5'	2311422-02	Soil	11/20/23 11:02	11/20/23 17:30
SS02@2.5'	2311422-03	Soil	11/20/23 11:04	11/20/23 17:30
SS03@2.5'	2311422-04	Soil	11/20/23 11:06	11/20/23 17:30
SS04@2.5'	2311422-05	Soil	11/20/23 11:08	11/20/23 17:30

#### Case Narrative

Sarah Quattrochi requested 915 Metals & pH be added to SS02 - SS04 samples on 12/6/2023.  
This report includes those results.

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		Send Data To:		Send Invoice To:	
Address: 6855 W. 119th Ave.		Project Manager: Jake Whritenour		Company:	
City/State/Zip: Broomfield/CO/ 80020		E-Mail: Jwhritenour@tasman-geo.com		Project Name/Location:	
Phone: 602-881-5716		Project Name: <u>Caster Federal LD13-784N</u>		AFE#:	
Sampler Name: <u>Dennis Gray</u> <sup>or</sup> <u>David Vigi</u>		Project Number:		PO/Billing Codes:	
				Contact:	

					Preservative				Matrix				Analysis Requested								Special Instructions				
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other _____	Water	Soil	Air-Canister #	Other _____	Metals - 915	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	HOLD			SAR, EC, pH by saturated paste			
1	F501 @ 3'	11/20/23	1100	2			X			X			X	X	X	X	X	X	X						
2	SS01 @ 2.5'	↓	1102	↓			↓			↓			X	X	X	X	X	X	X						
3	SS02 @ 2.5'		1104																				X		
4	SS03 @ 2.5'		1106																				X		
5	SS04 @ 2.5'		1108																				X		
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									

Relinquished by: <u>[Signature]</u>	Date/Time: <u>11/20/23</u> <u>1430</u>	Received by: <b>Tasman Lock Box</b>	Date/Time: <u>11/20/23</u> <u>1430</u>	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <u>Tasman Lock Box</u>	Date/Time: <u>11/20/23</u> <u>1730</u>	Received by: <u>[Signature]</u>	Date/Time: <u>11/20/23</u> <u>1730</u>	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	Field Turb.	
Temperature Upon Receipt: <u>9.8</u>	Corrected Temperature: <u>8</u>	IR gun #:		HNO3 lot #:		

S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2311422Client: Noble GasmanClient Project ID: Caster Federal WB-78HNShipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐Airbill #:                     

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply)

Air ☐Soil/Solid ☒Water ☐Other ☐

Temp (°C)

9.8Thermometer # 7

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

AS  
Custodian Printed Name

11/20/23  
Date/Time





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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**FS01@3'**  
**2311422-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BGK0843	11/21/23	11/21/23	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: **11/20/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0443	111 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0412	103 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0421	105 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BGK0845	11/21/23	11/21/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	8.64	69.1 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**FS01@3'**  
**2311422-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BGK0823	11/21/23	11/23/23	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: **11/20/23 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0169	50.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0218	65.5 %	40-150		"	"	"	"	

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

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BGK0871	11/22/23	11/23/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**FS01@3'**  
**2311422-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Arsenic	1.00	0.200	mg/kg dry	1	BGK0937	11/27/23	11/28/23	EPA 6020B
Barium	123	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	1.83	0.400	"	"	"	"	"	"
Lead	5.80	0.200	"	"	"	"	"	"
Nickel	1.38	0.400	"	"	"	"	"	"
Silver	ND	0.0200	"	"	"	"	"	"
Zinc	6.42	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGK0885	11/22/23	11/27/23	EPA 7196A	

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

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	74.4	0.0500	mg/L dry	1	BGK0898	11/22/23	11/27/23	EPA 6020B	
Magnesium	7.47	0.0500	"	"	"	"	"	"	
Sodium	32.3	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.955	0.00100	units	1	BGK1026	11/28/23	11/28/23	Calculation	

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

Summit Scientific

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**FS01@3'**  
**2311422-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	86.6			%	1	BGK0875	11/22/23	11/22/23	Calculation	

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

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.281	0.0100		mmhos/cm	1	BGK0970	11/27/23	11/27/23	EPA 120.1	

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

Date Sampled: **11/20/23 11:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	9.16			pH Units	1	BGK0971	11/27/23	11/27/23	EPA 9045D	

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**SS01@2.5'**  
**2311422-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BGK0843	11/21/23	11/22/23	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: **11/20/23 11:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0452	113 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0420	105 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0434	109 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	60	50	mg/kg	1	BGK0845	11/21/23	11/21/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	9.07	72.5 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**SS01@2.5'**  
**2311422-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BGK0823	11/21/23	11/23/23	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: **11/20/23 11:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.0156	46.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0221	66.3 %	40-150		"	"	"	"	

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

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Boron	ND	2.00	mg/L	1	BGK0871	11/22/23	11/23/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**SS01@2.5'**  
**2311422-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Arsenic	1.03	0.200	mg/kg dry	1	BGK0937	11/27/23	11/28/23	EPA 6020B
Barium	105	0.400	"	"	"	"	"	"
Cadmium	ND	0.200	"	"	"	"	"	"
Copper	1.95	0.400	"	"	"	"	"	"
Lead	6.53	0.200	"	"	"	"	"	"
Nickel	1.53	0.400	"	"	"	"	"	"
Silver	ND	0.0200	"	"	"	"	"	"
Zinc	7.04	0.400	"	"	"	"	"	"
Selenium	ND	0.260	"	"	"	"	"	"

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGK0885	11/22/23	11/27/23	EPA 7196A	

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

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	133	0.0500	mg/L dry	1	BGK0898	11/22/23	11/27/23	EPA 6020B	
Magnesium	12.7	0.0500	"	"	"	"	"	"	
Sodium	22.5	0.0500	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.499	0.00100	units	1	BGK1026	11/28/23	11/28/23	Calculation	

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

Summit Scientific

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**SS01@2.5'**  
**2311422-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
% Solids	84.6			%	1	BGK0875	11/22/23	11/22/23	Calculation	

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

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.156	0.0100		mmhos/cm	1	BGK0970	11/27/23	11/27/23	EPA 120.1	

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

Date Sampled: **11/20/23 11:02**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	9.38			pH Units	1	BGK0971	11/27/23	11/27/23	EPA 9045D	

Summit Scientific

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Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**SS02@2.5'**  
**2311422-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **11/20/23 11:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Arsenic</b>	<b>0.562</b>	0.200	mg/kg dry	1	BGL0587	12/15/23	12/27/23	EPA 6020B	
<b>Barium</b>	<b>151</b>	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
<b>Copper</b>	<b>0.919</b>	0.400	"	"	"	"	"	"	
<b>Lead</b>	<b>7.00</b>	0.200	"	"	"	"	"	"	
<b>Nickel</b>	<b>0.696</b>	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
<b>Zinc</b>	<b>3.21</b>	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **11/20/23 11:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGL0498	12/13/23	12/13/23	EPA 7196A	

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

Date Sampled: **11/20/23 11:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>% Solids</b>	<b>84.9</b>		%	1	BGL0639	12/18/23	12/18/23	Calculation	

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

Date Sampled: **11/20/23 11:04**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>9.00</b>		pH Units	1	BGL0387	12/11/23	12/11/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**SS03@2.5'**  
**2311422-04 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **11/20/23 11:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Arsenic</b>	<b>0.579</b>	0.200	mg/kg dry	1	BGL0587	12/15/23	12/27/23	EPA 6020B	
<b>Barium</b>	<b>69.5</b>	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
<b>Copper</b>	<b>1.69</b>	0.400	"	"	"	"	"	"	
<b>Lead</b>	<b>7.57</b>	0.200	"	"	"	"	"	"	
<b>Nickel</b>	<b>1.28</b>	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
<b>Zinc</b>	<b>5.85</b>	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **11/20/23 11:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGL0498	12/13/23	12/13/23	EPA 7196A	

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

Date Sampled: **11/20/23 11:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>% Solids</b>	<b>83.5</b>		%	1	BGL0639	12/18/23	12/18/23	Calculation	

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

Date Sampled: **11/20/23 11:06**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>8.88</b>		pH Units	1	BGL0387	12/11/23	12/11/23	EPA 9045D	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**SS04@2.5'**  
**2311422-05 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **11/20/23 11:08**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Arsenic</b>	<b>1.14</b>	0.200	mg/kg dry	1	BGL0587	12/15/23	12/27/23	EPA 6020B	
<b>Barium</b>	<b>186</b>	0.400	"	"	"	"	"	"	
Cadmium	ND	0.200	"	"	"	"	"	"	
<b>Copper</b>	<b>1.52</b>	0.400	"	"	"	"	"	"	
<b>Lead</b>	<b>8.41</b>	0.200	"	"	"	"	"	"	
<b>Nickel</b>	<b>1.11</b>	0.400	"	"	"	"	"	"	
Silver	ND	0.0200	"	"	"	"	"	"	
<b>Zinc</b>	<b>5.60</b>	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **11/20/23 11:08**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGL0498	12/13/23	12/13/23	EPA 7196A	

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

Date Sampled: **11/20/23 11:08**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>% Solids</b>	<b>82.2</b>		%	1	BGL0639	12/18/23	12/18/23	Calculation	

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

Date Sampled: **11/20/23 11:08**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>pH</b>	<b>8.41</b>		pH Units	1	BGL0387	12/11/23	12/11/23	EPA 9045D	

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

### Summit Scientific

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

#### Batch BGK0843 - EPA 5030 Soil MS

##### Blank (BGK0843-BLK1)

Prepared: 11/21/23 Analyzed: 11/22/23

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	0.0432		"	0.0400		108	50-150			
Surrogate: Toluene-d8	0.0405		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0430		"	0.0400		107	50-150			

##### LCS (BGK0843-BS1)

Prepared: 11/21/23 Analyzed: 11/22/23

Benzene	0.116	0.0020	mg/kg	0.100		116	70-130			
Toluene	0.114	0.0050	"	0.100		114	70-130			
Ethylbenzene	0.0987	0.0050	"	0.100		98.7	70-130			
m,p-Xylene	0.194	0.010	"	0.200		97.1	70-130			
o-Xylene	0.0941	0.0050	"	0.100		94.1	70-130			
1,2,4-Trimethylbenzene	0.0968	0.0050	"	0.100		96.8	70-130			
1,3,5-Trimethylbenzene	0.0952	0.0050	"	0.100		95.2	70-130			
Naphthalene	0.101	0.0038	"	0.100		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0400		109	50-150			
Surrogate: Toluene-d8	0.0419		"	0.0400		105	50-150			
Surrogate: 4-Bromofluorobenzene	0.0419		"	0.0400		105	50-150			

##### Matrix Spike (BGK0843-MS1)

Source: 2311433-21

Prepared: 11/21/23 Analyzed: 11/22/23

Benzene	0.121	0.0020	mg/kg	0.100	ND	121	70-130			
Toluene	0.111	0.0050	"	0.100	ND	111	70-130			
Ethylbenzene	0.0871	0.0050	"	0.100	ND	87.1	70-130			
m,p-Xylene	0.168	0.010	"	0.200	ND	84.2	70-130			
o-Xylene	0.0796	0.0050	"	0.100	ND	79.6	70-130			
1,2,4-Trimethylbenzene	0.0862	0.0050	"	0.100	ND	86.2	70-130			
1,3,5-Trimethylbenzene	0.0846	0.0050	"	0.100	ND	84.6	70-130			
Naphthalene	0.0838	0.0038	"	0.100	ND	83.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0529		"	0.0400		132	50-150			
Surrogate: Toluene-d8	0.0502		"	0.0400		125	50-150			
Surrogate: 4-Bromofluorobenzene	0.0491		"	0.0400		123	50-150			

Summit Scientific

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

### Summit Scientific

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

#### Batch BGK0843 - EPA 5030 Soil MS

##### Matrix Spike Dup (BGK0843-MSD1)

Source: 2311433-21

Prepared: 11/21/23 Analyzed: 11/22/23

Benzene	0.102	0.0020	mg/kg	0.100	ND	102	70-130	16.9	30	
Toluene	0.0955	0.0050	"	0.100	ND	95.5	70-130	15.4	30	
Ethylbenzene	0.0791	0.0050	"	0.100	ND	79.1	70-130	9.53	30	
m,p-Xylene	0.153	0.010	"	0.200	ND	76.5	70-130	9.52	30	
o-Xylene	0.0732	0.0050	"	0.100	ND	73.2	70-130	8.33	30	
1,2,4-Trimethylbenzene	0.0808	0.0050	"	0.100	ND	80.8	70-130	6.57	30	
1,3,5-Trimethylbenzene	0.0862	0.0050	"	0.100	ND	86.2	70-130	1.90	30	
Naphthalene	0.0872	0.0038	"	0.100	ND	87.2	70-130	4.07	30	
Surrogate: 1,2-Dichloroethane-d4	0.0530		"	0.0400		133	50-150			
Surrogate: Toluene-d8	0.0512		"	0.0400		128	50-150			
Surrogate: 4-Bromofluorobenzene	0.0515		"	0.0400		129	50-150			

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

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

**Batch BGK0845 - EPA 3550A**

**Blank (BGK0845-BLK1)**

Prepared: 11/21/23 Analyzed: 11/22/23

C10-C28 (DRO)	ND	50	mg/kg							
C28-C36 (ORO)	ND	50	"							
Surrogate: o-Terphenyl	12.0		"	12.5		95.7	30-150			

**LCS (BGK0845-BS1)**

Prepared: 11/21/23 Analyzed: 11/22/23

C10-C28 (DRO)	623	50	mg/kg	500		125	70-130			
Surrogate: o-Terphenyl	12.7		"	12.5		102	30-150			

**Matrix Spike (BGK0845-MS1)**

Source: 2311433-21

Prepared: 11/21/23 Analyzed: 11/22/23

C10-C28 (DRO)	616	50	mg/kg	500	ND	123	70-130			
Surrogate: o-Terphenyl	9.23		"	12.5		73.8	30-150			

**Matrix Spike Dup (BGK0845-MSD1)**

Source: 2311433-21

Prepared: 11/21/23 Analyzed: 11/22/23

C10-C28 (DRO)	548	50	mg/kg	500	ND	110	70-130	11.7	20	
Surrogate: o-Terphenyl	10.1		"	12.5		81.2	30-150			

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

Project: Noble - Castor Federal LD13-78HN  
Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

## 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 BGK0823 - EPA 5030 Soil MS

##### Blank (BGK0823-BLK1)

Prepared: 11/21/23 Analyzed: 11/23/23

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0269		"	0.0333		80.6	40-150			
Surrogate: Fluoranthene-d10	0.0324		"	0.0333		97.2	40-150			

##### LCS (BGK0823-BS1)

Prepared: 11/21/23 Analyzed: 11/23/23

Acenaphthene	0.0270	0.00500	mg/kg	0.0333		81.0	31-137			
Anthracene	0.0262	0.00500	"	0.0333		78.6	30-120			
Benzo (a) anthracene	0.0269	0.00500	"	0.0333		80.8	30-120			
Benzo (a) pyrene	0.0244	0.00500	"	0.0333		73.3	30-120			
Benzo (b) fluoranthene	0.0230	0.00500	"	0.0333		69.1	30-120			
Benzo (k) fluoranthene	0.0216	0.00500	"	0.0333		64.7	30-120			
Chrysene	0.0254	0.00500	"	0.0333		76.1	30-120			
Dibenz (a,h) anthracene	0.0264	0.00500	"	0.0333		79.1	30-120			
Fluoranthene	0.0237	0.00500	"	0.0333		71.0	30-120			
Fluorene	0.0253	0.00500	"	0.0333		75.9	30-120			
Indeno (1,2,3-cd) pyrene	0.0178	0.00500	"	0.0333		53.5	30-120			
Pyrene	0.0245	0.00500	"	0.0333		73.6	35-142			
1-Methylnaphthalene	0.0246	0.00500	"	0.0333		73.9	35-142			
2-Methylnaphthalene	0.0255	0.00500	"	0.0333		76.5	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0238		"	0.0333		71.5	40-150			
Surrogate: Fluoranthene-d10	0.0226		"	0.0333		67.8	40-150			

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

### Summit Scientific

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

#### Batch BGK0823 - EPA 5030 Soil MS

##### Matrix Spike (BGK0823-MS1)

Source: 2311396-01

Prepared: 11/21/23 Analyzed: 11/23/23

Acenaphthene	0.0185	0.00500	mg/kg	0.0333	ND	55.4	31-137				
Anthracene	0.0179	0.00500	"	0.0333	ND	53.6	30-120				
Benzo (a) anthracene	0.0186	0.00500	"	0.0333	ND	55.7	30-120				
Benzo (a) pyrene	0.0173	0.00500	"	0.0333	ND	51.8	30-120				
Benzo (b) fluoranthene	0.0164	0.00500	"	0.0333	ND	49.3	30-120				
Benzo (k) fluoranthene	0.0152	0.00500	"	0.0333	ND	45.5	30-120				
Chrysene	0.0174	0.00500	"	0.0333	ND	52.1	30-120				
Dibenz (a,h) anthracene	0.0185	0.00500	"	0.0333	ND	55.4	30-120				
Fluoranthene	0.0168	0.00500	"	0.0333	ND	50.4	30-120				
Fluorene	0.0170	0.00500	"	0.0333	ND	51.1	30-120				
Indeno (1,2,3-cd) pyrene	0.0206	0.00500	"	0.0333	ND	61.7	30-120				
Pyrene	0.0180	0.00500	"	0.0333	ND	54.0	35-142				
1-Methylnaphthalene	0.0182	0.00500	"	0.0333	ND	54.7	15-130				
2-Methylnaphthalene	0.0188	0.00500	"	0.0333	ND	56.5	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0168		"	0.0333		50.5	40-150				
Surrogate: Fluoranthene-d10	0.0156		"	0.0333		46.9	40-150				

##### Matrix Spike Dup (BGK0823-MSD1)

Source: 2311396-01

Prepared: 11/21/23 Analyzed: 11/23/23

Acenaphthene	0.0169	0.00500	mg/kg	0.0333	ND	50.6	31-137	9.06	30		
Anthracene	0.0180	0.00500	"	0.0333	ND	54.1	30-120	0.915	30		
Benzo (a) anthracene	0.0191	0.00500	"	0.0333	ND	57.4	30-120	2.94	30		
Benzo (a) pyrene	0.0174	0.00500	"	0.0333	ND	52.2	30-120	0.814	30		
Benzo (b) fluoranthene	0.0175	0.00500	"	0.0333	ND	52.4	30-120	6.05	30		
Benzo (k) fluoranthene	0.0161	0.00500	"	0.0333	ND	48.4	30-120	6.18	30		
Chrysene	0.0176	0.00500	"	0.0333	ND	52.7	30-120	1.04	30		
Dibenz (a,h) anthracene	0.0172	0.00500	"	0.0333	ND	51.7	30-120	6.90	30		
Fluoranthene	0.0193	0.00500	"	0.0333	ND	57.9	30-120	13.9	30		
Fluorene	0.0172	0.00500	"	0.0333	ND	51.7	30-120	1.17	30		
Indeno (1,2,3-cd) pyrene	0.0183	0.00500	"	0.0333	ND	55.0	30-120	11.5	30		
Pyrene	0.0177	0.00500	"	0.0333	ND	53.1	35-142	1.61	30		
1-Methylnaphthalene	0.0187	0.00500	"	0.0333	ND	56.0	15-130	2.39	50		
2-Methylnaphthalene	0.0187	0.00500	"	0.0333	ND	56.1	15-130	0.801	50		
Surrogate: 2-Methylnaphthalene-d10	0.0171		"	0.0333		51.2	40-150				
Surrogate: Fluoranthene-d10	0.0178		"	0.0333		53.5	40-150				

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

**Summit Scientific**

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

**Batch BGK0871 - EPA 3050B**

**Blank (BGK0871-BLK1)**

Prepared: 11/22/23 Analyzed: 11/23/23

Boron ND 2.00 mg/L

**LCS (BGK0871-BS1)**

Prepared: 11/22/23 Analyzed: 11/23/23

Boron 4.38 2.00 mg/L 5.00 87.7 80-120

**Duplicate (BGK0871-DUP1)**

Source: 2311422-01

Prepared: 11/22/23 Analyzed: 11/23/23

Boron 0.165 2.00 mg/L 0.175 5.84 20

**Matrix Spike (BGK0871-MS1)**

Source: 2311422-01

Prepared: 11/22/23 Analyzed: 11/23/23

Boron 4.73 2.00 mg/L 5.00 0.175 91.1 75-125

**Matrix Spike Dup (BGK0871-MSD1)**

Source: 2311422-01

Prepared: 11/22/23 Analyzed: 11/23/23

Boron 4.35 2.00 mg/L 5.00 0.175 83.5 75-125 8.38 25

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

### Total Metals by EPA 6020B - Quality Control

#### Summit Scientific

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

#### Batch BGK0937 - EPA 3050B

##### Blank (BGK0937-BLK1)

Prepared: 11/27/23 Analyzed: 11/28/23

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 (BGK0937-BS1)

Prepared: 11/27/23 Analyzed: 11/28/23

Arsenic	42.1	0.200	mg/kg wet	40.0	105	80-120
Barium	42.9	0.400	"	40.0	107	80-120
Cadmium	2.20	0.200	"	2.00	110	80-120
Copper	41.7	0.400	"	40.0	104	80-120
Lead	21.8	0.200	"	20.0	109	80-120
Nickel	41.4	0.400	"	40.0	103	80-120
Silver	2.15	0.0200	"	2.00	107	80-120
Zinc	43.4	0.400	"	40.0	109	80-120
Selenium	4.20	0.260	"	4.00	105	80-120

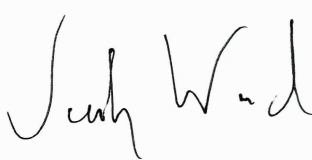
##### Duplicate (BGK0937-DUP1)

Source: 2311302-01

Prepared: 11/27/23 Analyzed: 11/28/23

Arsenic	0.711	0.200	mg/kg dry	0.725	2.03	20
Barium	58.8	0.400	"	55.4	5.93	20
Cadmium	0.0908	0.200	"	0.0904	0.473	20
Copper	1.97	0.400	"	1.87	4.93	20
Lead	4.35	0.200	"	3.83	12.8	20
Nickel	1.69	0.400	"	1.63	3.43	20
Silver	0.0253	0.0200	"	0.0210	18.5	20
Zinc	7.05	0.400	"	6.89	2.39	20
Selenium	ND	0.260	"	ND		20

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

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

**Batch BGK0937 - EPA 3050B**

Matrix Spike (BGK0937-MS1)		Source: 2311302-01			Prepared: 11/27/23 Analyzed: 11/28/23					
Arsenic	16.9	0.200	mg/kg dry	42.8	0.725	37.7	75-125			QM-07
Barium	115	0.400	"	42.8	55.4	139	75-125			QM-07
Cadmium	2.50	0.200	"	2.14	0.0904	112	75-125			
Copper	17.9	0.400	"	42.8	1.87	37.4	75-125			QM-07
Lead	25.3	0.200	"	21.4	3.83	100	75-125			
Nickel	17.1	0.400	"	42.8	1.63	36.1	75-125			QM-07
Silver	2.24	0.0200	"	2.14	0.0210	104	75-125			
Zinc	28.6	0.400	"	42.8	6.89	50.8	75-125			QM-07
Selenium	4.66	0.260	"	4.28	ND	109	75-125			

Matrix Spike Dup (BGK0937-MSD1)		Source: 2311302-01			Prepared: 11/27/23 Analyzed: 11/28/23					
Arsenic	16.7	0.200	mg/kg dry	42.8	0.725	37.3	75-125	0.992	25	QM-07
Barium	107	0.400	"	42.8	55.4	121	75-125	6.58	25	
Cadmium	2.28	0.200	"	2.14	0.0904	102	75-125	9.19	25	
Copper	17.9	0.400	"	42.8	1.87	37.4	75-125	0.0503	25	QM-07
Lead	23.7	0.200	"	21.4	3.83	92.8	75-125	6.47	25	
Nickel	17.2	0.400	"	42.8	1.63	36.3	75-125	0.380	25	QM-07
Silver	2.09	0.0200	"	2.14	0.0210	96.5	75-125	7.05	25	
Zinc	28.9	0.400	"	42.8	6.89	51.5	75-125	0.956	25	QM-07
Selenium	3.75	0.260	"	4.28	ND	87.5	75-125	21.6	25	

**Batch BGL0587 - EPA 3050B**

Blank (BGL0587-BLK1)		Prepared: 12/15/23 Analyzed: 12/27/23								
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	"							

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

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

**Batch BGL0587 - EPA 3050B**

**LCS (BGL0587-BS1)**

Prepared: 12/15/23 Analyzed: 12/27/23

Arsenic	33.9	0.200	mg/kg wet	40.0		84.7	80-120			
Barium	32.8	0.400	"	40.0		82.0	80-120			
Cadmium	1.67	0.200	"	2.00		83.7	80-120			
Copper	34.7	0.400	"	40.0		86.6	80-120			
Lead	16.5	0.200	"	20.0		82.5	80-120			
Nickel	34.0	0.400	"	40.0		85.0	80-120			
Silver	1.71	0.0200	"	2.00		85.3	80-120			
Zinc	34.3	0.400	"	40.0		85.7	80-120			
Selenium	3.56	0.260	"	4.00		89.0	80-120			

**Duplicate (BGL0587-DUP1)**

Source: 2311392-02

Prepared: 12/15/23 Analyzed: 12/27/23

Arsenic	0.602	0.200	mg/kg dry		0.618			2.68	20	
Barium	56.8	0.400	"		59.0			3.75	20	
Cadmium	0.0865	0.200	"		0.0764			12.5	20	
Copper	1.72	0.400	"		1.71			0.437	20	
Lead	7.43	0.200	"		5.37			32.2	20	QR-04
Nickel	1.43	0.400	"		1.55			7.94	20	
Silver	0.0331	0.0200	"		0.0318			4.08	20	
Zinc	5.88	0.400	"		6.00			2.05	20	
Selenium	ND	0.260	"		ND				20	

**Matrix Spike (BGL0587-MS1)**

Source: 2311392-02

Prepared: 12/15/23 Analyzed: 12/27/23

Arsenic	12.0	0.200	mg/kg dry	44.2	0.618	25.7	75-125			QM-07
Barium	96.5	0.400	"	44.2	59.0	84.8	75-125			
Cadmium	1.84	0.200	"	2.21	0.0764	79.8	75-125			
Copper	13.4	0.400	"	44.2	1.71	26.4	75-125			QM-07
Lead	22.2	0.200	"	22.1	5.37	76.3	75-125			
Nickel	13.1	0.400	"	44.2	1.55	26.1	75-125			QM-07
Silver	1.82	0.0200	"	2.21	0.0318	81.2	75-125			
Zinc	18.0	0.400	"	44.2	6.00	27.2	75-125			QM-07
Selenium	3.61	0.260	"	4.42	ND	81.8	75-125			

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

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

**Batch BGL0587 - EPA 3050B**

Matrix Spike Dup (BGL0587-MSD1)		Source: 2311392-02			Prepared: 12/15/23 Analyzed: 12/27/23					
Arsenic	12.1	0.200	mg/kg dry	44.2	0.618	26.0	75-125	0.793	25	QM-07
Barium	95.2	0.400	"	44.2	59.0	81.9	75-125	1.35	25	
Cadmium	1.81	0.200	"	2.21	0.0764	78.7	75-125	1.31	25	
Copper	13.5	0.400	"	44.2	1.71	26.7	75-125	0.743	25	QM-07
Lead	22.1	0.200	"	22.1	5.37	75.8	75-125	0.552	25	
Nickel	13.1	0.400	"	44.2	1.55	26.3	75-125	0.549	25	QM-07
Silver	1.80	0.0200	"	2.21	0.0318	80.3	75-125	1.05	25	
Zinc	18.2	0.400	"	44.2	6.00	27.6	75-125	0.834	25	QM-07
Selenium	3.51	0.260	"	4.42	ND	79.5	75-125	2.85	25	

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Broomfield CO, 80020

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

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

**Batch BGK0885 - 3060A Mod**

**Blank (BGK0885-BLK1)**

Prepared: 11/22/23 Analyzed: 11/27/23

Chromium, Hexavalent ND 0.30 mg/kg wet

**LCS (BGK0885-BS1)**

Prepared: 11/22/23 Analyzed: 11/27/23

Chromium, Hexavalent 25.0 0.30 mg/kg wet 25.0 100 80-120

**Duplicate (BGK0885-DUP1)**

**Source: 2311312-01**

Prepared: 11/22/23 Analyzed: 11/27/23

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

**Matrix Spike (BGK0885-MS1)**

**Source: 2311312-01**

Prepared: 11/22/23 Analyzed: 11/27/23

Chromium, Hexavalent 26.5 0.30 mg/kg dry 28.6 ND 92.6 75-125

**Matrix Spike Dup (BGK0885-MSD1)**

**Source: 2311312-01**

Prepared: 11/22/23 Analyzed: 11/27/23

Chromium, Hexavalent 26.6 0.30 mg/kg dry 28.6 ND 93.0 75-125 0.431 20

**Batch BGL0498 - 3060A Mod**

**Blank (BGL0498-BLK1)**

Prepared & Analyzed: 12/13/23

Chromium, Hexavalent ND 0.30 mg/kg wet

**LCS (BGL0498-BS1)**

Prepared & Analyzed: 12/13/23

Chromium, Hexavalent 26.1 0.30 mg/kg wet 25.0 104 80-120

**Duplicate (BGL0498-DUP1)**

**Source: 2311392-02**

Prepared & Analyzed: 12/13/23

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

**Matrix Spike (BGL0498-MS1)**

**Source: 2311392-02**

Prepared & Analyzed: 12/13/23

Chromium, Hexavalent 27.9 0.30 mg/kg dry 27.6 ND 101 75-125

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.*



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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**

12/28/23 15:29

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

**Summit Scientific**

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

**Batch BGL0498 - 3060A Mod**

**Matrix Spike Dup (BGL0498-MSD1)**

**Source: 2311392-02**

Prepared & Analyzed: 12/13/23

Chromium, Hexavalent	27.5	0.30	mg/kg dry	27.6	ND	99.6	75-125	1.40	20
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Summit Scientific

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

**Summit Scientific**

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

**Batch BGK0898 - General Preparation**

**Blank (BGK0898-BLK1)**

Prepared: 11/22/23 Analyzed: 11/27/23

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

**LCS (BGK0898-BS1)**

Prepared: 11/22/23 Analyzed: 11/27/23

Calcium	5.71	0.0500	mg/L wet	5.00	114	70-130
Magnesium	5.28	0.0500	"	5.00	106	70-130
Sodium	5.32	0.0500	"	5.00	106	70-130

Summit Scientific

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

**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 BGK0875 - General Preparation**

**Duplicate (BGK0875-DUP1)**

Source: 2311422-01

Prepared & Analyzed: 11/22/23

% Solids	83.8	%		86.6		3.38	20
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**Batch BGL0639 - General Preparation**

**Duplicate (BGL0639-DUP1)**

Source: 2311392-02

Prepared & Analyzed: 12/18/23

% Solids	90.6	%		90.6		0.0518	20
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Summit Scientific

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

**Summit Scientific**

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

**Batch BGK0970 - General Preparation**

**Blank (BGK0970-BLK1)**

Prepared & Analyzed: 11/27/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BGK0970-BS1)**

Prepared & Analyzed: 11/27/23

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 101 95-105

**Duplicate (BGK0970-DUP1)**

**Source: 2311320-01**

Prepared & Analyzed: 11/27/23

Specific Conductance (EC) 0.106 0.0100 mmhos/cm 0.106 0.00 20

Summit Scientific

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

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

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

**Batch BGK0971 - General Preparation**

**LCS (BGK0971-BS1)**

Prepared & Analyzed: 11/27/23

pH	9.09		pH Units	9.18		99.0	95-105
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**Duplicate (BGK0971-DUP1)**

**Source: 2311320-01**

Prepared & Analyzed: 11/27/23

pH	8.07		pH Units		8.07		0.00	20
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**Batch BGL0387 - General Preparation**

**LCS (BGL0387-BS1)**

Prepared & Analyzed: 12/11/23

pH	9.18		pH Units	9.18		100	95-105
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**Duplicate (BGL0387-DUP1)**

**Source: 2311368-03**

Prepared & Analyzed: 12/11/23

pH	8.25		pH Units		8.22		0.364	20
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Summit Scientific

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

Project: Noble - Castor Federal LD13-78HN

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
12/28/23 15:29

### Notes and Definitions

QR-04	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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