



Equipment ID: FL01R-W@3'		Equipment Type: Flowline		Equipment ID: BKG01 @3'		Equipment Type:	
Material: Steel	Volume:	Contents: Oil / Gas / Water		Material:	Volume:	Contents:	
Notes/Conditions: FACING NORTH				Notes/Conditions: Facing SW			



Equipment ID: BKG01 @3'		Equipment Type:	
Material:	Volume:	Contents:	
Notes/Conditions: Facing SW			

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

TABLE 1
FIELD DATA SUMMARY TABLE
NOBLE - 100322
ERIKSON A 4-12, WELD COUNTY, COLORADO
REM # 33825

Sample ID	Sample Date	Depth (ft. bgs)	GPS Data Latitude/Longitude		PDOP Value	VOC Concentration (ppm)
FL01R-W@3'	6/20/2024	3	40.513378	-104.562129	1.0	0.1
BKG01@3'	6/20/2024	3	40.513428	-104.561950	0.8	0.3

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
ERIKSON A 4-12, WELD COUNTY, COLORADO
REM # 33825

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**		
FL01R-W@3'	06/20/24	3	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<.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
ERIKSON A 4-12, WELD COUNTY, COLORADO
REM # 33825

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
FL01R-W@3'	06/20/24	3	<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

NA = Constituent not analyzed

TABLE 4
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE - 100322
ERIKSON A 4-12, WELD COUNTY, COLORADO
REM # 33825

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
FL01R-W@3'	06/20/24	3	8.58	0.268	0.482	<2.00
BKG01@3'	06/20/24	3	8.36	0.719	2.19	<2.00
Maximum Background Concentration			8.36	-	-	-

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

NA = Constituent not analyzed

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
NOBLE - 100322
ERIKSON A 4-12, WELD COUNTY, COLORADO
REM # 33825

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
FL01R-W@3'	06/20/24	3	2.37	87.3	0.340	<0.30*	7.95	11.6	5.83	0.303	0.0312	28.2
BKG01@3'	06/20/24	3	2.24	162	0.588	<0.30*	6.30	18.4	8.04	<0.260	0.0371	27.5
Maximum Background Concentration			2.24	162	-	-	-	-	-	0.260	-	-
Maximum Background Concentration X 1.25			2.80	203	-	-	-	-	-	0.325	-	-

Notes:

- Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within 1.25x background concentrations.
- Red** faced values exceed the ECMC Table 915-1 limit(s) above native background concentrations.
- Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
- Compound falls within ECMC Table 915-1 Footnote 9.
- 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

NA = Constituent not analyzed



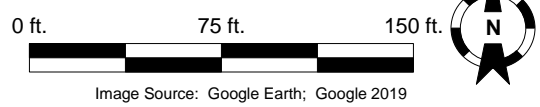
Legend

- - - Flowline Location
 - +
- Soil Sample Location – No Organic Exceedances
(Collected via Trimble GPS)

Notes

1) All locations are approximate unless otherwise noted.

GPS – Global Positioning System
 mg/kg – Milligrams per kilogram
 PID – Photoionization Detector
 ppm – Parts per million



DATE:	07/08/2024
DESIGNED BY:	JW
DRAWN BY:	EH



TASMAN
GEOSCIENCES

Tasman Geosciences, Inc.
6855 W 119th Avenue
Broomfield, CO 80020

Noble Energy, Inc. – DJ Basin
Erikson A 4-12
 NWSW, Section 4, Township 6 North, Range 64 West
 Weld County, Colorado

Flowline Closure & Soil
 Analytical Results Map
 (06/20/2024)

FIGURE
1

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 28, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Erickson A4-12 Flowline

Work Order #2406302

Enclosed are the results of analyses for samples received by Summit Scientific on 06/20/24 17:55. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Natalie Tessier For Paul Shrewsbury

President



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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN

Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01R-W@4'	2406302-01	Soil	06/20/24 09:46	06/20/24 17:55
BKG01@3'	2406302-02	Soil	06/20/24 10:15	06/20/24 17:55

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.



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

Lab ID	Page 1 of 1
* 2406302	

Client: Noble/Tasman		Project Manager: Jake Whritenour		Company: Chevron	
Address: 6855 W 119th Ave		E-Mail: Jwhritenour@tasman-geo.com		Project Name/Location: Erickson A4-12 Flowline	
City/State/Zip: Broomfield / CO / 80020				AFE#: UIWRWE - A4034-ABN	
Phone: 970-214-7901		Project Name: Erickson A4-12 Flowline		PO/Billing Codes:	
Sampler Name: Lillian Buck		Project Number:		Contact: Dan Peterson Mike Montoya	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested							Special Instructions				
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR	Boron - HWS	Metals - 915		HOLD			
1	FL01R-W e 4'	6/20/24	0946	3			X			X				X	X	X	X	X	X	X		pH, EC, SAR by saturated paste	
2	Bkg 01 e 3'	↓	1015	2			X			X						X	X	X					
3																							
4																							
5																							
6																							
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9																							
10																							
11																							
12																							
13																							
14																							
15																							

Relinquished by: <i>[Signature]</i>	Date/Time: 6/20/24 1450	Received by: Tasman Lochbox	Date/Time: 6/20/24 1450	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: Tasman Lochbox	Date/Time: 6/20/24 1755	Received by: <i>[Signature]</i>	Date/Time: 6/20/24 1755	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	Field Turb. <input checked="" type="checkbox"/>	
Temperature Upon Receipt: 9.0	Corrected Temperature: e	IR gun #: 1	HNO3 lot #:			

S₂

Sample Receipt Checklist

S2 Work Order# 2406302

Client: Nadjet Casman Client Project ID: Erickson A4-12 Flowline

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

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

Temp (°C)

Thermometer #

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽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"/>	ON ICE
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe 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"/>	
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"/>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

AS
Custodian Printed Name
6/20/24
Date/Time



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

Project: Noble - Erickson A4-12 Flowline
Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

FL01R-W@4'
2406302-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BHF0700	06/23/24	06/24/24	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: **06/20/24 09:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0517	129 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0386	96.6 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0416	104 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BHF0706	06/23/24	06/23/24	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	12.0	96.2 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

FL01R-W@4'
2406302-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BHF0652	06/21/24	06/22/24	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: **06/20/24 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0253	75.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0242	72.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	ND	2.00	mg/L	1	BHF0668	06/21/24	06/25/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **06/20/24 09:46**

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 - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

FL01R-W@4'
2406302-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	2.37	0.200	mg/kg dry	1	BHF0670	06/21/24	06/25/24	EPA 6020B	
Barium	87.3	0.400	"	"	"	"	"	"	
Cadmium	0.340	0.200	"	"	"	"	"	"	
Copper	7.95	0.400	"	"	"	"	"	"	
Lead	11.6	0.200	"	"	"	"	"	"	
Nickel	5.83	0.400	"	"	"	"	"	"	
Silver	0.0312	0.0200	"	"	"	"	"	"	
Zinc	28.2	0.400	"	"	"	"	"	"	
Selenium	0.303	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHF0730	06/24/24	06/25/24	EPA 7196A	

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

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	60.5	0.0500	mg/L dry	1	BHF0801	06/25/24	06/27/24	EPA 6020B	
Magnesium	4.90	0.0500	"	"	"	"	"	"	
Sodium	14.5	0.0500	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.482	0.00100	units	1	BHF0946	06/28/24	06/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Noble - Erickson A4-12 Flowline
Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

FL01R-W@4'
2406302-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	84.4	%	1	BHF0654	06/21/24	06/24/24	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.268	0.0100	mmhos/cm	1	BHF0811	06/25/24	06/26/24	EPA 120.1	

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

Date Sampled: **06/20/24 09:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.58		pH Units	1	BHF0810	06/25/24	06/26/24	EPA 9045D	

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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

BKG01@3'
2406302-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **06/20/24 10:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Boron	ND	2.00	mg/L	1	BHF0668	06/21/24	06/25/24	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **06/20/24 10:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.24	0.200	mg/kg dry	1	BHF0670	06/21/24	06/25/24	EPA 6020B	
Barium	162	0.400	"	"	"	"	"	"	
Cadmium	0.588	0.200	"	"	"	"	"	"	
Copper	6.30	0.400	"	"	"	"	"	"	
Lead	18.4	0.200	"	"	"	"	"	"	
Nickel	8.04	0.400	"	"	"	"	"	"	
Silver	0.0371	0.0200	"	"	"	"	"	"	
Zinc	27.5	0.400	"	"	"	"	"	"	
Selenium	ND	0.260	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **06/20/24 10:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BHF0730	06/24/24	06/25/24	EPA 7196A	

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

Date Sampled: **06/20/24 10:15**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	51.3	0.0500	mg/L dry	1	BHF0801	06/25/24	06/27/24	EPA 6020B	
Magnesium	17.1	0.0500	"	"	"	"	"	"	
Sodium	71.0	0.0500	"	"	"	"	"	"	

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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

BKG01@3'
2406302-02 (Soil)

Summit Scientific

Calculated Analysis

Date Sampled: **06/20/24 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.19	0.00100	units	1	BHF0946	06/28/24	06/28/24	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **06/20/24 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.4		%	1	BHF0654	06/21/24	06/24/24	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **06/20/24 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.719	0.0100	mmhos/cm	1	BHF0811	06/25/24	06/26/24	EPA 120.1	

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

Date Sampled: **06/20/24 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.36		pH Units	1	BHF0810	06/25/24	06/26/24	EPA 9045D	

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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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 BHF0700 - EPA 5030 Soil MS

Blank (BHF0700-BLK1)

Prepared: 06/23/24 Analyzed: 06/24/24

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0495		"	0.0400		124	50-150				
Surrogate: Toluene-d8	0.0387		"	0.0400		96.8	50-150				
Surrogate: 4-Bromofluorobenzene	0.0407		"	0.0400		102	50-150				

LCS (BHF0700-BS1)

Prepared: 06/23/24 Analyzed: 06/24/24

Benzene	0.104	0.0020	mg/kg	0.100		104	70-130				
Toluene	0.107	0.0050	"	0.100		107	70-130				
Ethylbenzene	0.105	0.0050	"	0.100		105	70-130				
m,p-Xylene	0.206	0.010	"	0.200		103	70-130				
o-Xylene	0.102	0.0050	"	0.100		102	70-130				
1,2,4-Trimethylbenzene	0.101	0.0050	"	0.100		101	70-130				
1,3,5-Trimethylbenzene	0.100	0.0050	"	0.100		100	70-130				
Naphthalene	0.0977	0.0038	"	0.100		97.7	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0525		"	0.0400		131	50-150				
Surrogate: Toluene-d8	0.0418		"	0.0400		104	50-150				
Surrogate: 4-Bromofluorobenzene	0.0416		"	0.0400		104	50-150				

Matrix Spike (BHF0700-MS1)

Source: 2406287-01

Prepared: 06/23/24 Analyzed: 06/24/24

Benzene	0.0652	0.0020	mg/kg	0.100	ND	65.2	70-130				QM-07
Toluene	0.0729	0.0050	"	0.100	ND	72.9	70-130				
Ethylbenzene	0.0944	0.0050	"	0.100	ND	94.4	70-130				
m,p-Xylene	0.193	0.010	"	0.200	ND	96.7	70-130				
o-Xylene	0.0873	0.0050	"	0.100	ND	87.3	70-130				
1,2,4-Trimethylbenzene	0.0919	0.0050	"	0.100	ND	91.9	70-130				
1,3,5-Trimethylbenzene	0.0946	0.0050	"	0.100	ND	94.6	70-130				
Naphthalene	0.0794	0.0038	"	0.100	ND	79.4	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0514		"	0.0400		129	50-150				
Surrogate: Toluene-d8	0.0396		"	0.0400		99.0	50-150				
Surrogate: 4-Bromofluorobenzene	0.0419		"	0.0400		105	50-150				

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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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 BHF0700 - EPA 5030 Soil MS

Matrix Spike Dup (BHF0700-MSD1)	Source: 2406287-01			Prepared: 06/23/24 Analyzed: 06/24/24						
Benzene	0.0594	0.0020	mg/kg	0.100	ND	59.4	70-130	9.39	30	QM-07
Toluene	0.0694	0.0050	"	0.100	ND	69.4	70-130	4.98	30	QM-07
Ethylbenzene	0.0931	0.0050	"	0.100	ND	93.1	70-130	1.38	30	
m,p-Xylene	0.190	0.010	"	0.200	ND	94.9	70-130	1.96	30	
o-Xylene	0.0840	0.0050	"	0.100	ND	84.0	70-130	3.92	30	
1,2,4-Trimethylbenzene	0.0921	0.0050	"	0.100	ND	92.1	70-130	0.261	30	
1,3,5-Trimethylbenzene	0.0948	0.0050	"	0.100	ND	94.8	70-130	0.285	30	
Naphthalene	0.0743	0.0038	"	0.100	ND	74.3	70-130	6.56	30	
Surrogate: 1,2-Dichloroethane-d4	0.0537		"	0.0400		134	50-150			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0422		"	0.0400		105	50-150			

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

Project: Noble - Erickson A4-12 Flowline
Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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 BHF0706 - EPA 3550A

Blank (BHF0706-BLK1)

Prepared & Analyzed: 06/23/24

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	14.8		"	12.5	119	30-150					

LCS (BHF0706-BS1)

Prepared & Analyzed: 06/23/24

C10-C28 (DRO)	534	50	mg/kg	500	107	70-130					
Surrogate: <i>o</i> -Terphenyl	14.7		"	12.5	118	30-150					

Matrix Spike (BHF0706-MS1)

Source: 2406287-01

Prepared & Analyzed: 06/23/24

C10-C28 (DRO)	510	50	mg/kg	500	18.9	98.2	70-130				
Surrogate: <i>o</i> -Terphenyl	17.4		"	12.5	139	30-150					

Matrix Spike Dup (BHF0706-MSD1)

Source: 2406287-01

Prepared & Analyzed: 06/23/24

C10-C28 (DRO)	455	50	mg/kg	500	18.9	87.2	70-130	11.4	20		
Surrogate: <i>o</i> -Terphenyl	9.68		"	12.5	77.4	30-150					

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

Project: Noble - Erickson A4-12 Flowline
Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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 BHF0652 - EPA 5030 Soil MS

Blank (BHF0652-BLK1)

Prepared & Analyzed: 06/21/24

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>0.0201</i>		<i>"</i>	<i>0.0333</i>		<i>60.3</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0196</i>		<i>"</i>	<i>0.0333</i>		<i>58.7</i>	<i>40-150</i>			

LCS (BHF0652-BS1)

Prepared & Analyzed: 06/21/24

Acenaphthene	0.0233	0.00500	mg/kg	0.0333		70.0	31-137			
Anthracene	0.0232	0.00500	"	0.0333		69.5	30-120			
Benzo (a) anthracene	0.0237	0.00500	"	0.0333		71.2	30-120			
Benzo (a) pyrene	0.0239	0.00500	"	0.0333		71.6	30-120			
Benzo (b) fluoranthene	0.0257	0.00500	"	0.0333		77.2	30-120			
Benzo (k) fluoranthene	0.0259	0.00500	"	0.0333		77.6	30-120			
Chrysene	0.0243	0.00500	"	0.0333		72.9	30-120			
Dibenz (a,h) anthracene	0.0202	0.00500	"	0.0333		60.6	30-120			
Fluoranthene	0.0252	0.00500	"	0.0333		75.7	30-120			
Fluorene	0.0229	0.00500	"	0.0333		68.6	30-120			
Indeno (1,2,3-cd) pyrene	0.0196	0.00500	"	0.0333		58.8	30-120			
Pyrene	0.0201	0.00500	"	0.0333		60.2	35-142			
1-Methylnaphthalene	0.0207	0.00500	"	0.0333		62.1	35-142			
2-Methylnaphthalene	0.0206	0.00500	"	0.0333		61.7	35-142			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0207</i>		<i>"</i>	<i>0.0333</i>		<i>62.1</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0256</i>		<i>"</i>	<i>0.0333</i>		<i>76.9</i>	<i>40-150</i>			

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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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 BHF0652 - EPA 5030 Soil MS

Matrix Spike (BHF0652-MS1)	Source: 2406288-01			Prepared & Analyzed: 06/21/24								
Acenaphthene	0.0231	0.00500	mg/kg	0.0333	ND	69.4	31-137					
Anthracene	0.0226	0.00500	"	0.0333	ND	67.7	30-120					
Benzo (a) anthracene	0.0310	0.00500	"	0.0333	0.00682	72.7	30-120					
Benzo (a) pyrene	0.0301	0.00500	"	0.0333	0.0103	59.4	30-120					
Benzo (b) fluoranthene	0.0303	0.00500	"	0.0333	0.0140	48.9	30-120					
Benzo (k) fluoranthene	0.0261	0.00500	"	0.0333	0.00808	54.1	30-120					
Chrysene	0.0342	0.00500	"	0.0333	0.00945	74.2	30-120					
Dibenz (a,h) anthracene	0.0190	0.00500	"	0.0333	ND	57.0	30-120					
Fluoranthene	0.0355	0.00500	"	0.0333	0.00905	79.4	30-120					
Fluorene	0.0226	0.00500	"	0.0333	ND	67.7	30-120					
Indeno (1,2,3-cd) pyrene	0.0264	0.00500	"	0.0333	ND	79.1	30-120					
Pyrene	0.0437	0.00500	"	0.0333	0.0111	98.0	35-142					
1-Methylnaphthalene	0.0223	0.00500	"	0.0333	ND	66.8	15-130					
2-Methylnaphthalene	0.0220	0.00500	"	0.0333	ND	66.1	15-130					
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0225</i>		<i>"</i>	<i>0.0333</i>		<i>67.4</i>	<i>40-150</i>					
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0211</i>		<i>"</i>	<i>0.0333</i>		<i>63.3</i>	<i>40-150</i>					

Matrix Spike Dup (BHF0652-MSD1)	Source: 2406288-01			Prepared & Analyzed: 06/21/24								
Acenaphthene	0.0233	0.00500	mg/kg	0.0333	ND	69.9	31-137	0.642	30			
Anthracene	0.0216	0.00500	"	0.0333	ND	64.7	30-120	4.43	30			
Benzo (a) anthracene	0.0307	0.00500	"	0.0333	0.00682	71.6	30-120	1.22	30			
Benzo (a) pyrene	0.0321	0.00500	"	0.0333	0.0103	65.3	30-120	6.36	30			
Benzo (b) fluoranthene	0.0327	0.00500	"	0.0333	0.0140	56.0	30-120	7.56	30			
Benzo (k) fluoranthene	0.0284	0.00500	"	0.0333	0.00808	60.9	30-120	8.30	30			
Chrysene	0.0341	0.00500	"	0.0333	0.00945	73.9	30-120	0.269	30			
Dibenz (a,h) anthracene	0.0202	0.00500	"	0.0333	ND	60.5	30-120	5.94	30			
Fluoranthene	0.0327	0.00500	"	0.0333	0.00905	71.0	30-120	8.17	30			
Fluorene	0.0221	0.00500	"	0.0333	ND	66.4	30-120	2.04	30			
Indeno (1,2,3-cd) pyrene	0.0257	0.00500	"	0.0333	ND	77.2	30-120	2.40	30			
Pyrene	0.0396	0.00500	"	0.0333	0.0111	85.6	35-142	9.89	30			
1-Methylnaphthalene	0.0223	0.00500	"	0.0333	ND	66.9	15-130	0.200	50			
2-Methylnaphthalene	0.0221	0.00500	"	0.0333	ND	66.4	15-130	0.430	50			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0226</i>		<i>"</i>	<i>0.0333</i>		<i>67.9</i>	<i>40-150</i>					
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0219</i>		<i>"</i>	<i>0.0333</i>		<i>65.8</i>	<i>40-150</i>					

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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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 BHF0668 - EPA 3050B

Blank (BHF0668-BLK1)

Prepared: 06/21/24 Analyzed: 06/25/24

Boron ND 2.00 mg/L

LCS (BHF0668-BS1)

Prepared: 06/21/24 Analyzed: 06/25/24

Boron 5.63 2.00 mg/L 5.00 113 80-120

Duplicate (BHF0668-DUP1)

Source: 2405004-01RE1

Prepared: 06/21/24 Analyzed: 06/25/24

Boron 5.81 2.00 mg/L 5.03 14.3 20

Matrix Spike (BHF0668-MS1)

Source: 2405004-01RE1

Prepared: 06/21/24 Analyzed: 06/25/24

Boron 11.6 2.00 mg/L 4.98 5.03 131 75-125 QM-01

Matrix Spike Dup (BHF0668-MSD1)

Source: 2405004-01RE1

Prepared: 06/21/24 Analyzed: 06/25/24

Boron 12.6 2.00 mg/L 4.98 5.03 153 75-125 8.96 25 QM-01

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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BHF0670 - EPA 3050B

Blank (BHF0670-BLK1)

Prepared: 06/21/24 Analyzed: 06/25/24

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 (BHF0670-BS1)

Prepared: 06/21/24 Analyzed: 06/25/24

Arsenic	42.6	0.200	mg/kg wet	40.0		106	80-120			
Barium	40.6	0.400	"	40.0		101	80-120			
Cadmium	1.98	0.200	"	2.00		98.9	80-120			
Copper	42.7	0.400	"	40.0		107	80-120			
Lead	20.3	0.200	"	20.0		101	80-120			
Nickel	42.5	0.400	"	40.0		106	80-120			
Silver	1.99	0.0200	"	2.00		99.6	80-120			
Zinc	42.4	0.400	"	40.0		106	80-120			
Selenium	4.57	0.260	"	4.00		114	80-120			

Duplicate (BHF0670-DUP1)

Source: 2406290-10

Prepared: 06/21/24 Analyzed: 06/25/24

Arsenic	3.21	0.200	mg/kg dry	2.23		35.8	20		QR-04
Barium	105	0.400	"	108		3.27	20		
Cadmium	0.349	0.200	"	0.192		58.0	20		QR-01
Copper	4.54	0.400	"	3.38		29.4	20		QR-04
Lead	10.7	0.200	"	7.04		41.3	20		QR-04
Nickel	4.87	0.400	"	3.62		29.5	20		QR-04
Silver	0.0606	0.0200	"	0.0404		40.0	20		QR-01
Zinc	20.1	0.400	"	15.8		24.0	20		QR-04
Selenium	0.303	0.260	"	0.222		30.9	20		QR-01

Summit Scientific

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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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 BHF0670 - EPA 3050B

Matrix Spike (BHF0670-MS1)	Source: 2406290-10			Prepared: 06/21/24 Analyzed: 06/25/24								
Arsenic	32.2	0.200	mg/kg dry	43.9	2.23	68.4	75-125					QM-07
Barium	153	0.400	"	43.9	108	102	75-125					
Cadmium	2.51	0.200	"	2.19	0.192	106	75-125					
Copper	32.1	0.400	"	43.9	3.38	65.6	75-125					QM-07
Lead	30.2	0.200	"	21.9	7.04	106	75-125					
Nickel	32.8	0.400	"	43.9	3.62	66.6	75-125					QM-07
Silver	2.30	0.0200	"	2.19	0.0404	103	75-125					
Zinc	47.4	0.400	"	43.9	15.8	71.9	75-125					QM-07
Selenium	5.81	0.260	"	4.39	0.222	127	75-125					QM-07

Matrix Spike Dup (BHF0670-MSD1)	Source: 2406290-10			Prepared: 06/21/24 Analyzed: 06/25/24								
Arsenic	31.7	0.200	mg/kg dry	45.2	2.23	65.1	75-125	1.82	25			QM-07
Barium	162	0.400	"	45.2	108	119	75-125	5.62	25			
Cadmium	2.56	0.200	"	2.26	0.192	105	75-125	1.78	25			
Copper	32.5	0.400	"	45.2	3.38	64.5	75-125	1.22	25			QM-07
Lead	29.2	0.200	"	22.6	7.04	97.9	75-125	3.58	25			
Nickel	33.3	0.400	"	45.2	3.62	65.7	75-125	1.53	25			QM-07
Silver	2.37	0.0200	"	2.26	0.0404	103	75-125	3.09	25			
Zinc	47.0	0.400	"	45.2	15.8	69.0	75-125	0.730	25			QM-07
Selenium	5.66	0.260	"	4.52	0.222	120	75-125	2.63	25			

Post Spike (BHF0670-PS1)	Source: 2406290-10			Prepared: 06/21/24 Analyzed: 06/25/24								
Arsenic	84.4		ug/l	100	4.98	79.4	75-125					
Barium	339		"	100	242	97.9	75-125					
Cadmium	5.75		"	5.00	0.428	106	75-125					
Copper	85.4		"	100	7.54	77.9	75-125					
Lead	67.1		"	50.0	15.7	103	75-125					
Nickel	86.7		"	100	8.06	78.6	75-125					
Silver	5.37		"	5.00	0.0900	106	75-125					
Zinc	116		"	100	35.2	80.4	75-125					
Selenium	13.0		"	10.0	0.494	125	75-125					

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Project: Noble - Erickson A4-12 Flowline
Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BHF0730 - 3060A Mod

Blank (BHF0730-BLK1)

Prepared: 06/24/24 Analyzed: 06/25/24

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BHF0730-BS1)

Prepared: 06/24/24 Analyzed: 06/25/24

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

Duplicate (BHF0730-DUP1)

Source: 2406285-01

Prepared: 06/24/24 Analyzed: 06/25/24

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BHF0730-MS1)

Source: 2406285-01

Prepared: 06/24/24 Analyzed: 06/25/24

Chromium, Hexavalent 28.7 0.30 mg/kg dry 29.2 ND 98.4 75-125

Matrix Spike Dup (BHF0730-MSD1)

Source: 2406285-01

Prepared: 06/24/24 Analyzed: 06/25/24

Chromium, Hexavalent 28.8 0.30 mg/kg dry 29.2 ND 98.6 75-125 0.203 20

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Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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

Summit Scientific

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

Batch BHF0801 - General Preparation

Blank (BHF0801-BLK1)

Prepared: 06/25/24 Analyzed: 06/27/24

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

LCS (BHF0801-BS1)

Prepared: 06/25/24 Analyzed: 06/27/24

Calcium	5.57	0.0500	mg/L wet	5.00	111	70-130
Magnesium	4.89	0.0500	"	5.00	97.8	70-130
Sodium	4.43	0.0500	"	5.00	88.6	70-130

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Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
 Project Manager: Jacob Whritenour

Reported:
 06/28/24 11:01

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 BHF0654 - General Preparation

Duplicate (BHF0654-DUP1)		Source: 2406290-01		Prepared: 06/21/24 Analyzed: 06/24/24	
% Solids	78.1	%		92.3	16.6 20

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Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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 BHF0811 - General Preparation

Blank (BHF0811-BLK1)

Prepared: 06/25/24 Analyzed: 06/26/24

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BHF0811-BS1)

Prepared: 06/25/24 Analyzed: 06/26/24

Specific Conductance (EC) 0.150 0.0100 mmhos/cm 0.150 100 95-105

Duplicate (BHF0811-DUP1)

Source: 2406301-01

Prepared: 06/25/24 Analyzed: 06/26/24

Specific Conductance (EC) 0.0520 0.0100 mmhos/cm 0.0519 0.154 20

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

Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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 BHF0810 - General Preparation

LCS (BHF0810-BS1)

Prepared: 06/25/24 Analyzed: 06/26/24

pH	9.15	pH Units	9.18	99.7	95-105
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Duplicate (BHF0810-DUP1)

Source: 2406301-01

Prepared: 06/25/24 Analyzed: 06/26/24

pH	7.04	pH Units	7.14	1.41	20
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Tasman Geosciences
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Project: Noble - Erickson A4-12 Flowline

Project Number: UWRWE-A4034-ABN
Project Manager: Jacob Whritenour

Reported:
06/28/24 11:01

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.
- QR-01 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit. QC batch accepted based on LCS and/or LCSD QC results.
- 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.
- QM-01 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
- 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