

**THIRD QUARTER 2023 SITE MONITORING DATA
HIGHLAND 12-20 (FAC)**

**ECMC SPILL TRACKING # 483859
ECMC REMEDIATION # 24052**

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6855 W. 119th Ave
Broomfield, CO 80020

TABLE 1
GROUNDWATER ELEVATION DATA
NOBLE ENERGY, INC. - HIGHLAND 12-20 FACILITY



Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft. BGS) ⁽¹⁾	Depth to LNAPL (ft.) ⁽¹⁾	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH01	05/24/23	4722.73	18.47	6.68	ND	ND	4716.23
BH01	08/10/23	4722.73	17.09	7.17	ND	ND	4715.74
BH02	05/24/23	4725.33	20.05	7.02	ND	ND	4715.95
BH02	08/10/23	4725.33	19.80	7.35	ND	ND	4715.62
BH03	05/24/23	4721.39	17.07	5.20	ND	ND	4716.33
BH03	08/10/23	4721.39	17.67	5.92	ND	ND	4715.61
BH04	05/24/23	4722.87	17.99	6.60	ND	ND	4716.43
BH04	08/10/23	4722.87	17.79	7.26	ND	ND	4715.77
BH05	05/24/23	4723.50	17.50	7.44	ND	ND	4716.24
BH05	08/10/23	4723.50	17.48	7.89	ND	ND	4715.79
BH06	05/24/23	4723.57	17.64	7.18	ND	ND	4716.59
BH06	08/10/23	4723.57	17.64	7.92	ND	ND	4715.85

Notes:

⁽¹⁾ Depth to water measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

* Groundwater elevation is corrected for product thickness (when present) using the following calculation:

Groundwater elevation = (TOC Elevation - Measured Depth to Water)+(LNAPL Thickness in Well x LNAPL Relative Density)
 LNAPL relative density was estimated to be 0.75

Definitions:

- ft. = Feet
- AMSL = Above mean sea level
- BTOC = Below top of casing
- BGS = Below ground surface
- LNAPL = Light non-aqueous phase liquid
- ND = No LNAPL detected

TABLE 2
GROUNDWATER ANALYTICAL DATA
NOBLE ENERGY, INC. - HIGHLAND 12-20 FACILITY



Monitoring Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Benz(a) (µg/L)	1-M (µg/L)	2-M (µg/L)	TDS (mg/L)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
ECMC Standard ⁽¹⁾		5	560	700	1,400	140	67	67	0.16 ⁽²⁾	1.1 ⁽³⁾	3.6 ⁽³⁾	<1.25 x Background	250 or <1.25 x Background	250 or <1.25 x Background
BH01	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,120	452	1,870
BH01	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	1.83	0.574	3,060	570	2,040
BH02	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,490	493	2,160
BH02	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,980	521	2,310
BH03	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,080	419	1,970
BH03	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,220	296	1,450
BH04 ⁽⁴⁾	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,620	580	2,260
BH04 ⁽⁴⁾	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,500	203	2,250
BH05	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,190	449	2,000
BH05	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,770	474	2,000
BH06 ⁽⁴⁾	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,590	259	1,220
BH06 ⁽⁴⁾	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,410	702	2,480

Notes:

⁽¹⁾ Groundwater standards referenced from 2 CCR 404-1, Table 915-1 (January 15, 2021).

⁽²⁾ Groundwater standards referenced from 5 CCR 1002-41, Table A (June 30, 2020).

⁽³⁾ Groundwater standards referenced from USEPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=0.1) November 2022.

⁽⁴⁾ Monitoring well used for inorganic background levels.

Definitions:

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

ECMC = Colorado Energy and Carbon Management Commission

mg/L = Milligrams per liter

µg/L = Micrograms per liter

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

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

Benz(a) = Benzantracene

1-M = 1-Methylnaphthalene

2-M = 2-Methylnaphthalene

TDS = Total Dissolved Solids

Highlighted results are equal to or exceed the regulatory standard

The site-specific background assessment is on-going for groundwater inorganic constituents.

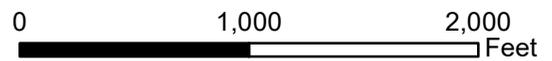
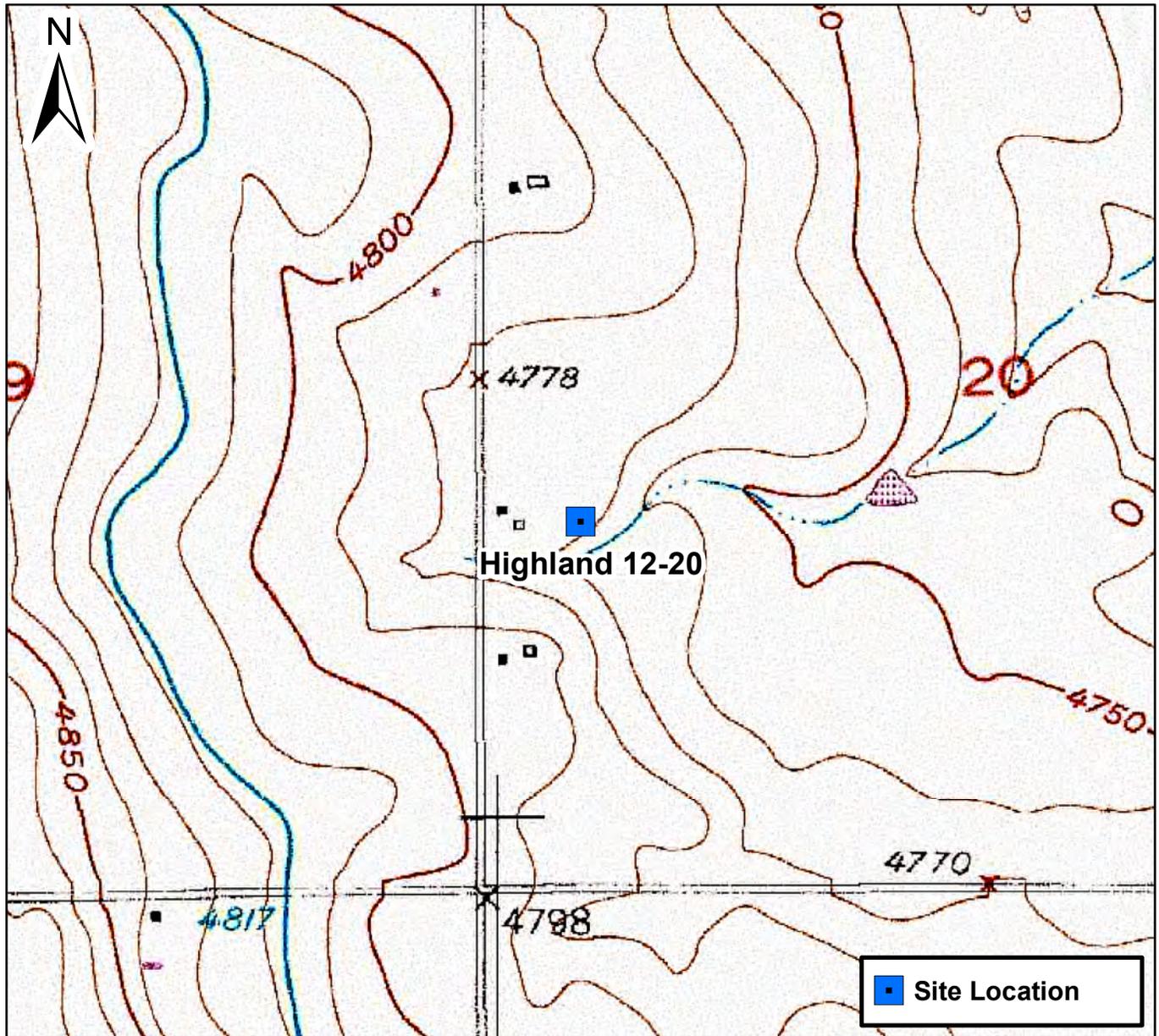
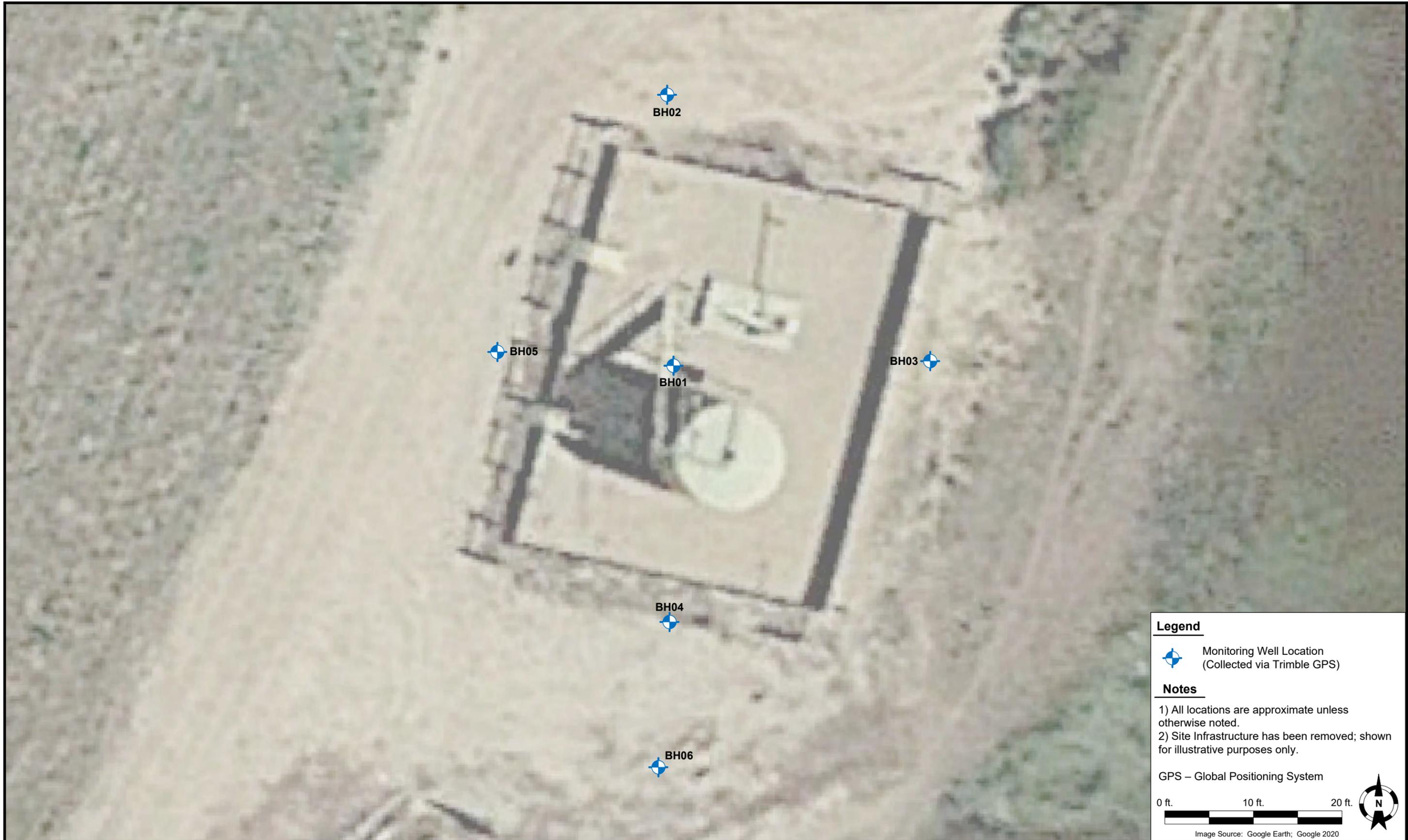


Figure 1

Site Location Map
 Highland 12-20
 NWSW S20 T4N R64W
 Weld County, Colorado





Legend

 Monitoring Well Location
(Collected via Trimble GPS)

Notes

1) All locations are approximate unless otherwise noted.
 2) Site Infrastructure has been removed; shown for illustrative purposes only.

GPS – Global Positioning System

0 ft. 10 ft. 20 ft.

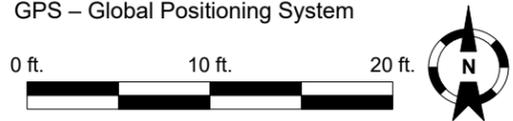


Image Source: Google Earth; Google 2020

DATE:	07/25/2023
DESIGNED BY:	JW
DRAWN BY:	HM



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

**Noble Energy, Inc. – DJ Basin
 Highland 12-20 Facility**
 NWSW, Section 20, Township 4 North, Range 64 West
 Weld County, Colorado

Site Overview Map

FIGURE
 2



DATE:	06/08/2023
DESIGNED BY:	JW
DRAWN BY:	JC



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

Noble Energy, Inc. – DJ Basin
Highland 12-20 FAC
NWSW, Section 20, Township 4 North, Range 64 West
Weld County, Colorado

Site Assessment
Groundwater Potentiometric
Surface Contour Map
(05/24/2023)

FIGURE
3



DATE:	08/18/2023
DESIGNED BY:	JW
DRAWN BY:	MK



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

Noble Energy, Inc. – DJ Basin
Highland 12-20 FAC
NWSW, Section 20, Township 4 North, Range 64 West
Weld County, Colorado

Groundwater Potentiometric
Surface Contour Map
(08/10/2023)

FIGURE
4

BH02	
Compound	05/24/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3,490
Chloride (mg/L)	493
Sulfate (mg/L)	2,160

BH01	
Compound	05/24/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3,120
Chloride (mg/L)	452
Sulfate (mg/L)	1,870

BH05	
Compound	05/24/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3,190
Chloride (mg/L)	449
Sulfate (mg/L)	2,000

BH06	
Compound	05/24/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	2,590
Chloride (mg/L)	259
Sulfate (mg/L)	1,220

BH04	
Compound	05/24/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3,620
Chloride (mg/L)	580
Sulfate (mg/L)	2,260

BH03	
Compound	05/24/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3,080
Chloride (mg/L)	419
Sulfate (mg/L)	1,970

Legend

 Monitoring Well Location
(Collected via Trimble GPS)

Notes

- 1) All locations are approximate unless otherwise noted.
- 2) Site Infrastructure has been removed; shown for illustrative purposes only.
- 3) Laboratory organic analytical results shown for samples with any concentration above detection limits.
- 4) **RED** value indicates organics concentration > ECMC Table 915-1 groundwater standard
- 5) Groundwater standards referenced from 5 CCR 1002-41, Table A (June 30, 2020)
- 6) Groundwater standards referenced from USEPA Regional Screening Levels (RSL) Residential Tapwater Table (TR=1E-06, HQ=0.1) November 2022.

GPS – Global Positioning System
mg/L – Milligrams per liter
µg/L – Micrograms per liter

Contaminant of Concern	ECMC Concentration Standard
B - Benzene	5 ug/L
T - Toluene	560 ug/L
E - Ethylbenzene	700 ug/L
X – Total Xylenes	1,400 ug/L
N – Naphthalene	140 ug/L
1,2,4-TMB – 1, 2, 4-Trimethylbenzene	67 ug/L
1,3,5-TMB – 1, 3, 5-Trimethylbenzene	67 ug/L
Benz(a) – Benzo(a)anthracene	0.16 ug/L ⁽⁵⁾
1-M – 1-Methylnaphthalene	1.1 ug/L ⁽⁶⁾
2-M – 2-Methylnaphthalene	3.6 ug/L ⁽⁶⁾
TDS – Total Dissolved Solids	1.25 x background
Cl – Chloride Ion	250 mg/L or 1.25 x background
SO ₄ – Sulfate Ion	250 mg/L or 1.25 x background

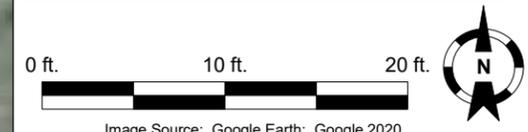


Image Source: Google Earth; Google 2020

DATE:	07/25/2023
DESIGNED BY:	JW
DRAWN BY:	HM



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

Noble Energy, Inc. – DJ Basin
Highland 12-20 Facility
NWSW, Section 20, Township 4 North, Range 64 West
Weld County, Colorado

Groundwater Analytical
Results Map
(05/24/2023)

FIGURE
5

BH02	
Compound	08/10/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	2,980
Chloride (mg/L)	521
Sulfate (mg/L)	2,310

BH01	
Compound	08/10/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	1.83
2-M (ug/L)	0.574
TDS (mg/L)	3,060
Chloride (mg/L)	570
Sulfate (mg/L)	2,040

BH05	
Compound	08/10/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	2,770
Chloride (mg/L)	474
Sulfate (mg/L)	2,000

BH06	
Compound	08/10/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	3,410
Chloride (mg/L)	702
Sulfate (mg/L)	2,480

BH04	
Compound	08/10/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	2,500
Chloride (mg/L)	203
Sulfate (mg/L)	2,250

BH03	
Compound	08/10/23
Benzene (ug/L)	<1.0
Toluene (ug/L)	<1.0
Ethylbenzene (ug/L)	<1.0
Total Xylenes (ug/L)	<2.0
Naphthalene (ug/L)	<1.0
1,2,4-TMB (ug/L)	<1.0
1,3,5-TMB (ug/L)	<1.0
Benz(a) (ug/L)	<0.100
1-M (ug/L)	<0.500
2-M (ug/L)	<0.500
TDS (mg/L)	2,220
Chloride (mg/L)	296
Sulfate (mg/L)	1,450

Legend

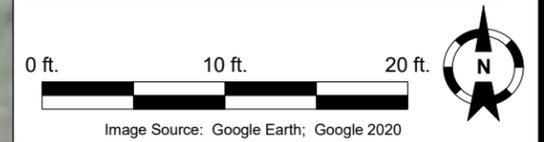
 Monitoring Well Location (Collected via Trimble GPS)

Notes

- 1) All locations are approximate unless otherwise noted.
- 2) Site Infrastructure has been removed; shown for illustrative purposes only.
- 3) **RED** value indicates organics concentration > regulatory groundwater standard
- 4) Groundwater standards referenced from 5 CCR 1002-41, Table A (June 30,2020)
- 5) Groundwater standards referenced from USEPA Regional Screening Levels (RSL) Residential Tapwater Table (TR=1E-06, HQ=0.1) November 2022.

GPS – Global Positioning System
 mg/L – Milligrams per liter
 ug/L – Micrograms per liter
 ECMC – Colorado Energy and Carbon Management Commission

Contaminant of Concern	ECMC Concentration Standard
B - Benzene	5 ug/L
T - Toluene	560 ug/L
E - Ethylbenzene	700 ug/L
X – Total Xylenes	1,400 ug/L
N – Naphthalene	140 ug/L
1,2,4-TMB – 1, 2, 4-Trimethylbenzene	67 ug/L
1,3,5-TMB – 1, 3, 5-Trimethylbenzene	67 ug/L
Benz(a) – Benzo(a)anthracene	0.16 ug/L ⁽⁴⁾
1-M – 1-Methylnaphthalene	1.1 ug/L ⁽⁵⁾
2-M – 2-Methylnaphthalene	3.6 ug/L ⁽⁵⁾
TDS – Total Dissolved Solids	1.25 x background
Cl – Chloride Ion	250 mg/L or 1.25 x background
SO ₄ – Sulfate Ion	250 mg/L or 1.25 x background



DATE: 09/22/2023

DESIGNED BY: JW

DRAWN BY: HM



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

**Noble Energy, Inc. – DJ Basin
 Highland 12-20 Facility**
 NWSW, Section 20, Township 4 North, Range 64 West
 Weld County, Colorado

Groundwater Analytical
 Results Map
 (08/10/2023)

FIGURE
 6

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 05, 2023

Jacob Whritenour
Tasman Geosciences
6855 W. 119th Ave.
Broomfield, CO 80020
RE: Noble - Highland 12-20
Work Order #2305577

Enclosed are the results of analyses for samples received by Summit Scientific on 05/24/23 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott Sheely For Paul Shrewsbury
President



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2305577-01	Water	05/24/23 10:46	05/24/23 16:30
BH02	2305577-02	Water	05/24/23 10:11	05/24/23 16:30
BH03	2305577-03	Water	05/24/23 10:18	05/24/23 16:30
BH04	2305577-04	Water	05/24/23 10:24	05/24/23 16:30
BH05	2305577-05	Water	05/24/23 10:33	05/24/23 16:30
BH06	2305577-06	Water	05/24/23 10:38	05/24/23 16:30

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.

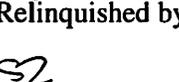
SUMMIT SCIENTIFIC

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

Lab ID	Page 1 of 1
2305579	

Send Data To:		Send Invoice To:
Client: Noble / Tasman Inc.	Project Manager: Jake Whritenour	Company: Noble Energy, Inc.
Address: 6855 W. 119th. Ave.	E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location: Highland 12-20
City/State/Zip: Broomfield / CO / 80020		AFE#:
Phone: 303-487-1228	Project Name: Highland 12-20	PO/Billing Codes:
Sampler Name: Dalton Hagen	Project Number: N/A	Contact: Dan Peterson

ID	Sample Description	Date Sampled	Time Sampled	Preservative				Matrix		Analysis Requested								Special Instructions				
				# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEX	Naphthalene	1,2,4-TMB	1,3,5-TMB	TDS		Chloride	Sulfate	PAH	
1	BHD1	5/21/23	1046	5	3		2		X												PAH list: 1-MN, 2-MN, Benzanthracene	
2	BHD2		1011																			
3	BHD3		1018																			
4	BHD4		1024																			
5	BHD5		1033																			
6	BHD6		1038																			
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

Relinquished by:  1430	Date/Time: 5/24/23	Received by: Summit North Office	Date/Time: 5/24/23 1430	TAT Business Days	Field DO	Notes:
Relinquished by:  52	Date/Time: 5/24/23 1630	Received by: 	Date/Time: 5/24/23 1630	Same Day	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
				Standard	Field Turb.	
Temperature Upon Receipt: 87	Corrected Temperature: 	IR gun #: 1	HNO3 lot #:			

S₂

Sample Receipt Checklist

S2 Work Order# 2305577

Client: Noble Fusman Client Project ID: Highland 12-20

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"/>	OK
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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl
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.

[Signature]
Custodian Printed Name

5-24-23
Date/Time



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH01
2305577-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/24/23 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGE0974	05/26/23	05/27/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	11.6	87.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	12.7	95.5 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.7	95.4 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/24/23 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGE0944	05/26/23	05/27/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.47	73.7 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.49	74.4 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH01
2305577-01 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **05/24/23 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	452	12.0		mg/L	200	BGE0897	05/24/23	05/25/23	EPA 300.0	
Sulfate	1870	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/24/23 10:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3120	10.0		mg/L	1	BGE1019	05/30/23	05/30/23	SM2540C	

Summit Scientific

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH02
2305577-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/24/23 10:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGE0974	05/26/23	05/27/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	11.7	87.5 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	12.8	95.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.4	93.2 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/24/23 10:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGE0944	05/26/23	05/27/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.41	70.5 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.10	54.9 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

Summit Scientific

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Tasman Geosciences
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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH02
2305577-02 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **05/24/23 10:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	493	12.0		mg/L	200	BGE0897	05/24/23	05/25/23	EPA 300.0	
Sulfate	2160	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/24/23 10:11**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3490	10.0		mg/L	1	BGE1019	05/30/23	05/30/23	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH03
2305577-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/24/23 10:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGE0974	05/26/23	05/27/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	11.4	85.9 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	12.6	94.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.3	92.1 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/24/23 10:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGE0944	05/26/23	05/27/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.36	68.2 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.18	58.9 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH03
2305577-03 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **05/24/23 10:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	419	12.0		mg/L	200	BGE0897	05/24/23	05/25/23	EPA 300.0	
Sulfate	1970	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/24/23 10:18**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3080	10.0		mg/L	1	BGE1019	05/30/23	05/30/23	SM2540C	

Summit Scientific

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH04
2305577-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/24/23 10:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGE0974	05/26/23	05/27/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	11.9	89.0 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.1	98.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.4	93.4 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/24/23 10:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGE0944	05/26/23	05/27/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.44	72.2 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.19	59.5 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH04
2305577-04 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **05/24/23 10:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	580	12.0		mg/L	200	BGE0897	05/24/23	05/25/23	EPA 300.0	
Sulfate	2260	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/24/23 10:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3620	10.0		mg/L	1	BGE1019	05/30/23	05/30/23	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH05
2305577-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/24/23 10:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGE0974	05/26/23	05/27/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	11.8	88.9 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	12.9	96.5 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.4	92.6 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/24/23 10:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGE0944	05/26/23	05/27/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.38	68.9 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.24	62.2 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH05
2305577-05 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **05/24/23 10:33**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	449	12.0	mg/L	200	BGE0897	05/24/23	05/25/23	EPA 300.0	
Sulfate	2000	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/24/23 10:33**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	3190	10.0	mg/L	1	BGE1019	05/30/23	05/30/23	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH06
2305577-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/24/23 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGE0974	05/26/23	05/27/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	11.7	88.0 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.1	98.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.5	93.9 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **05/24/23 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGE0944	05/26/23	05/27/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/24/23 10:38**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.37	68.4 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.19	59.6 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

BH06
2305577-06 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **05/24/23 10:38**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	259	12.0	mg/L	200	BGE0897	05/24/23	05/25/23	EPA 300.0	
Sulfate	1220	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/24/23 10:38**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	2590	10.0	mg/L	1	BGE1019	05/30/23	05/30/23	SM2540C	

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BGE0974 - EPA 5030 Water MS

Blank (BGE0974-BLK1)

Prepared: 05/26/23 Analyzed: 05/27/23

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Naphthalene	ND	1.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.3		108		23-173		
Surrogate: Toluene-d8	14.5		"	13.3		109		20-170		
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102		21-167		

LCS (BGE0974-BS1)

Prepared: 05/26/23 Analyzed: 05/27/23

Benzene	33.8	1.0	ug/l	33.3		101		51-132		
Toluene	34.8	1.0	"	33.3		104		51-138		
Ethylbenzene	45.9	1.0	"	33.3		138		58-146		
m,p-Xylene	91.0	2.0	"	66.7		136		57-144		
o-Xylene	39.6	1.0	"	33.3		119		53-146		
Naphthalene	24.8	1.0	"	33.3		74.6		70-130		
1,2,4-Trimethylbenzene	35.3	1.0	"	33.3		106		70-130		
1,3,5-Trimethylbenzene	32.7	1.0	"	33.3		98.2		70-130		
Surrogate: 1,2-Dichloroethane-d4	14.5		"	13.3		109		23-173		
Surrogate: Toluene-d8	12.6		"	13.3		94.3		20-170		
Surrogate: 4-Bromofluorobenzene	4.69		"	13.3		35.2		21-167		

Matrix Spike (BGE0974-MS1)

Source: 2305549-01

Prepared: 05/26/23 Analyzed: 05/27/23

Benzene	30.5	1.0	ug/l	33.3	ND	91.6		34-141		
Toluene	32.3	1.0	"	33.3	ND	96.8		27-151		
Ethylbenzene	34.9	1.0	"	33.3	ND	105		29-160		
m,p-Xylene	69.9	2.0	"	66.7	ND	105		20-166		
o-Xylene	33.6	1.0	"	33.3	ND	101		33-159		
Naphthalene	37.9	1.0	"	33.3	ND	114		70-130		
1,2,4-Trimethylbenzene	38.8	1.0	"	33.3	ND	116		70-130		
1,3,5-Trimethylbenzene	33.3	1.0	"	33.3	ND	100		70-130		
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3		97.4		23-173		
Surrogate: Toluene-d8	13.0		"	13.3		97.7		20-170		
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.4		21-167		

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BGE0974 - EPA 5030 Water MS

Matrix Spike Dup (BGE0974-MSD1)	Source: 2305549-01			Prepared: 05/26/23 Analyzed: 05/27/23					
Benzene	31.2	1.0	ug/l	33.3	ND	93.6	34-141	2.17	30
Toluene	32.5	1.0	"	33.3	ND	97.6	27-151	0.771	30
Ethylbenzene	35.2	1.0	"	33.3	ND	106	29-160	0.969	30
m,p-Xylene	71.0	2.0	"	66.7	ND	107	20-166	1.56	30
o-Xylene	33.6	1.0	"	33.3	ND	101	33-159	0.0298	30
Naphthalene	30.2	1.0	"	33.3	ND	90.6	70-130	22.7	30
1,2,4-Trimethylbenzene	38.8	1.0	"	33.3	ND	116	70-130	0.00	30
1,3,5-Trimethylbenzene	33.6	1.0	"	33.3	ND	101	70-130	0.837	30
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.6	23-173		
Surrogate: Toluene-d8	13.0		"	13.3		97.5	20-170		
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.0	21-167		

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGE0944 - EPA 5030 Water MS

Blank (BGE0944-BLK1)

Prepared & Analyzed: 05/26/23

Acenaphthene	ND	0.500	ug/l							
Acenaphthylene	ND	0.200	"							
Anthracene	ND	0.200	"							
Benzo (a) anthracene	ND	0.100	"							
Benzo (b) fluoranthene	ND	0.200	"							
Benzo (k) fluoranthene	ND	0.200	"							
Benzo (g,h,i) perylene	ND	0.200	"							
Benzo (a) pyrene	ND	0.200	"							
Chrysene	ND	0.200	"							
Dibenz (a,h) anthracene	ND	0.200	"							
Fluoranthene	ND	2.00	"							
Fluorene	ND	0.200	"							
Indeno (1,2,3-cd) pyrene	ND	0.300	"							
Phenanthrene	ND	0.500	"							
Pyrene	ND	1.00	"							
1-Methylnaphthalene	ND	0.500	"							
2-Methylnaphthalene	ND	0.500	"							
Surrogate: 2-Methylnaphthalene-d10	1.48		"	2.00		73.8	40-150			
Surrogate: Fluoranthene-d10	1.49		"	2.00		74.5	40-150			

LCS (BGE0944-BS1)

Prepared & Analyzed: 05/26/23

Acenaphthene	1.90	0.500	ug/l	2.00		94.9	30-120			
Acenaphthylene	2.07	0.200	"	2.00		104	30-120			
Anthracene	1.61	0.200	"	2.00		80.7	30-120			
Benzo (a) anthracene	1.48	0.100	"	2.00		73.8	30-120			
Benzo (b) fluoranthene	1.48	0.200	"	2.00		74.0	30-120			
Benzo (k) fluoranthene	1.71	0.200	"	2.00		85.6	30-120			
Benzo (g,h,i) perylene	1.56	0.200	"	2.00		78.0	30-120			
Benzo (a) pyrene	1.54	0.200	"	2.00		77.2	30-120			
Chrysene	1.73	0.200	"	2.00		86.3	30-120			
Dibenz (a,h) anthracene	1.52	0.200	"	2.00		76.0	30-120			
Fluoranthene	1.73	2.00	"	2.00		86.3	30-120			
Fluorene	1.66	0.200	"	2.00		82.9	30-120			
Indeno (1,2,3-cd) pyrene	2.00	0.300	"	2.00		99.8	30-120			
Phenanthrene	1.62	0.500	"	2.00		81.0	30-120			
Pyrene	1.74	1.00	"	2.00		86.8	30-120			
1-Methylnaphthalene	1.67	0.500	"	2.00		83.4	30-120			
2-Methylnaphthalene	1.61	0.500	"	2.00		80.5	0-200			

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

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		

Batch BGE0944 - EPA 5030 Water MS

LCS (BGE0944-BS1)

Prepared & Analyzed: 05/26/23

Surrogate: 2-Methylnaphthalene-d10	1.68		ug/l	2.00		84.2	40-150		
Surrogate: Fluoranthene-d10	1.66		"	2.00		82.8	40-150		

LCS Dup (BGE0944-BSD1)

Prepared & Analyzed: 05/26/23

Acenaphthene	1.77	0.500	ug/l	2.00		88.3	30-120	7.22	30
Acenaphthylene	2.17	0.200	"	2.00		109	30-120	4.62	30
Anthracene	1.62	0.200	"	2.00		80.9	30-120	0.178	30
Benzo (a) anthracene	1.49	0.100	"	2.00		74.4	30-120	0.752	30
Benzo (b) fluoranthene	1.47	0.200	"	2.00		73.7	30-120	0.371	30
Benzo (k) fluoranthene	1.69	0.200	"	2.00		84.4	30-120	1.34	30
Benzo (g,h,i) perylene	1.66	0.200	"	2.00		83.1	30-120	6.41	30
Benzo (a) pyrene	1.56	0.200	"	2.00		78.1	30-120	1.15	30
Chrysene	1.74	0.200	"	2.00		86.8	30-120	0.568	30
Dibenz (a,h) anthracene	1.59	0.200	"	2.00		79.7	30-120	4.67	30
Fluoranthene	1.68	2.00	"	2.00		84.2	30-120	2.52	30
Fluorene	1.76	0.200	"	2.00		87.8	30-120	5.71	30
Indeno (1,2,3-cd) pyrene	2.00	0.300	"	2.00		99.8	30-120	0.0481	30
Phenanthrene	1.61	0.500	"	2.00		80.5	30-120	0.644	30
Pyrene	1.82	1.00	"	2.00		90.8	30-120	4.48	30
1-Methylnaphthalene	1.66	0.500	"	2.00		83.2	30-120	0.282	30
2-Methylnaphthalene	1.55	0.500	"	2.00		77.4	0-200	3.98	200
Surrogate: 2-Methylnaphthalene-d10	1.72		"	2.00		86.0	40-150		
Surrogate: Fluoranthene-d10	1.66		"	2.00		82.9	40-150		

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch BGE0897 - General Preparation

Blank (BGE0897-BLK1)

Prepared: 05/24/23 Analyzed: 05/25/23

Chloride	ND	0.0600	mg/L						
Sulfate	ND	0.300	"						

LCS (BGE0897-BS1)

Prepared: 05/24/23 Analyzed: 05/25/23

Chloride	2.82	0.0600	mg/L	3.00	94.0	90-110		
Sulfate	14.2	0.300	"	15.0	94.8	90-110		

Duplicate (BGE0897-DUP1)

Source: 2305532-01

Prepared: 05/24/23 Analyzed: 05/25/23

Chloride	8.80	12.0	mg/L		8.40		4.65	20
Sulfate	91.4	60.0	"		94.6		3.44	20

Matrix Spike (BGE0897-MS1)

Source: 2305532-01

Prepared: 05/24/23 Analyzed: 05/25/23

Chloride	691	12.0	mg/L	600	8.40	114	80-120	
Sulfate	3540	60.0	"	3000	94.6	115	80-120	

Summit Scientific

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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

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

Batch BGE1019 - General Preparation

Blank (BGE1019-BLK1)

Prepared & Analyzed: 05/30/23

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BGE1019-DUP1)

Source: 2305575-01

Prepared & Analyzed: 05/30/23

Total Dissolved Solids 1340 10.0 mg/L 1290 4.04 20

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 - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
06/05/23 15:16

Notes and Definitions

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

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

October 31, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Highland 12-20 Wellhead

Work Order #2308246

Enclosed are the results of analyses for samples received by Summit Scientific on 08/10/23 17:34. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2308246-01	Water	08/10/23 12:48	08/10/23 17:34
BH02	2308246-02	Water	08/10/23 12:22	08/10/23 17:34
BH03	2308246-03	Water	08/10/23 12:22	08/10/23 17:34
BH04	2308246-04	Water	08/10/23 12:33	08/10/23 17:34
BH05	2308246-05	Water	08/10/23 12:34	08/10/23 17:34
BH06	2308246-06	Water	08/10/23 12:46	08/10/23 17:34

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.

SUMMIT SCIENTIFIC

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

Lab ID	Page 1 of 1
2308246	

Send Data To:		Send Invoice To:	
Client: Noble/Tasman	Project Manager: Jake Whritenour	Company: <i>Noble</i>	
Address: 6855 W. 119th Ave.	E-Mail: Jwhritenour@tasman-geo.com	Project Name/Location:	
City/State/Zip: Broomfield/CO/ 80020		AFE#:	
Phone: 602-881-5716	Project Name: <i>Highland 12:20 wellhead</i>	PO/Billing Codes:	
Sampler Name: <i>Aiden Franklin</i>	Project Number: <i>9</i>	Contact:	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested							Special Instructions			
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEX	Napthalene	1,2,4 TMB	1,3,5 TMB	TDS	Chloride		Sulfate	Mn-1, Mn-2	
1	BH01	8/10/23	12:48	5	3		2		X				X	X	X	X	X	X	X	X	X	SAR, EC, pH by saturated paste
2	BH02	↓	12:22	↓	↓		↓		↓				↓	↓	↓	↓	↓	↓	↓	↓	↓	
3	BH03	↓	12:22	↓	↓		↓		↓				↓	↓	↓	↓	↓	↓	↓	↓	↓	
4	BH04	↓	12:33	↓	↓		↓		↓				↓	↓	↓	↓	↓	↓	↓	↓	↓	
5	BH05	↓	12:34	↓	↓		↓		↓				↓	↓	↓	↓	↓	↓	↓	↓	↓	
6	BH06	↓	12:46	↓	↓		↓		↓				↓	↓	↓	↓	↓	↓	↓	↓	↓	
7																						
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

Relinquished by: <i>Aiden Franklin</i>	Date/Time: 8/10/23 14:30	Received by: Tasman Lock Box	Date/Time:	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <i>Tasman Lock Box</i>	Date/Time: 8/10/23 17:34	Received by: <i>[Signature]</i>	Date/Time: 8/10/23 17:34	1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: 10.1	Corrected Temperature: 6	IR gun #:		HNO3 lot #:		

S₂

Sample Receipt Checklist

S2 Work Order# 2308246

Client: Noble Gasman Client Project ID: Highland 12-20 wellhead

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"/>	
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NO ICE
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 checked="" type="checkbox"/>	<input 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.				

Josh
Custodian Printed Name

08/10/23
Date/Time



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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH01
2308246-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/10/23 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGH0475	08/11/23	08/12/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	20.0	150 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.9	104 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.4	108 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **08/10/23 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGH0521	08/14/23	08/15/23	EPA 8270D SIM	
1-Methylnaphthalene	1.83	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	0.574	0.500		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.93	96.7 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.43	71.7 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH01
2308246-01 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **08/10/23 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	570	12.0		mg/L	200	BGH0481	08/11/23	08/12/23	EPA 300.0	
Sulfate	2040	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/10/23 12:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3060	10.0		mg/L	1	BGH0485	08/11/23	08/11/23	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH02
2308246-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGH0475	08/11/23	08/12/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	16.4	123 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	15.2	114 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.0	105 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGH0521	08/14/23	08/15/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	2.02	101 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.16	57.8 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH02
2308246-02 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	521	12.0		mg/L	200	BGH0481	08/11/23	08/12/23	EPA 300.0	
Sulfate	2310	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2980	10.0		mg/L	1	BGH0485	08/11/23	08/11/23	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH03
2308246-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGH0475	08/11/23	08/12/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	19.5	147 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	17.6	132 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.3	100 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGH0521	08/14/23	08/15/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	2.22	111 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.46	72.9 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH03
2308246-03 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	296	12.0	mg/L	200	BGH0481	08/11/23	08/12/23	EPA 300.0	
Sulfate	1450	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/10/23 12:22**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	2220	10.0	mg/L	1	BGH0485	08/11/23	08/11/23	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH04
2308246-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/10/23 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGH0475	08/11/23	08/12/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	18.3	137 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	14.4	108 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.2	106 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **08/10/23 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGH0521	08/14/23	08/15/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.99	99.3 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.31	65.6 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH04
2308246-04 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **08/10/23 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	203	12.0		mg/L	200	BGH0481	08/11/23	08/12/23	EPA 300.0	
Sulfate	2250	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/10/23 12:33**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2500	10.0		mg/L	1	BGH0485	08/11/23	08/11/23	SM2540C	

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Tasman Geosciences
6855 W. 119th Ave.
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Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH05
2308246-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/10/23 12:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGH0475	08/11/23	08/12/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	17.4	131 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	14.9	112 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.0	105 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **08/10/23 12:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGH0521	08/14/23	08/15/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.25	62.7 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.79	89.7 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH05
2308246-05 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **08/10/23 12:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	474	12.0	mg/L	200	BGH0481	08/11/23	08/12/23	EPA 300.0	
Sulfate	2000	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/10/23 12:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	2770	10.0	mg/L	1	BGH0485	08/11/23	08/11/23	SM2540C	

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH06
2308246-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/10/23 12:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGH0475	08/11/23	08/12/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	19.4	145 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	17.0	128 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.0	105 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **08/10/23 12:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BGH0521	08/14/23	08/15/23	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **08/10/23 12:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	2.20	110 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.20	60.0 %		40-150		"	"	"	"	

Anions by EPA Method 300.0

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

BH06
2308246-06 (Water)

Summit Scientific

Anions by EPA Method 300.0

Date Sampled: **08/10/23 12:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	702	12.0		mg/L	200	BGH0481	08/11/23	08/12/23	EPA 300.0	
Sulfate	2480	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/10/23 12:46**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	3410	10.0		mg/L	1	BGH0485	08/11/23	08/11/23	SM2540C	

Summit Scientific

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Tasman Geosciences
6855 W. 119th Ave.
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Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BGH0475 - EPA 5030 Water MS

Blank (BGH0475-BLK1)

Prepared: 08/11/23 Analyzed: 08/12/23

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Naphthalene	ND	1.0	"								
1,2,4-Trimethylbenzene	ND	1.0	"								
1,3,5-Trimethylbenzene	ND	1.0	"								
Surrogate: 1,2-Dichloroethane-d4	17.6		"	13.3		132		23-173			
Surrogate: Toluene-d8	17.8		"	13.3		133		20-170			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.0		21-167			

LCS (BGH0475-BS1)

Prepared: 08/11/23 Analyzed: 08/12/23

Benzene	37.3	1.0	ug/l	50.0		74.7		51-132			
Toluene	35.1	1.0	"	50.0		70.2		51-138			
Ethylbenzene	46.6	1.0	"	50.0		93.2		58-146			
m,p-Xylene	112	2.0	"	100		112		57-144			
o-Xylene	68.0	1.0	"	50.0		136		53-146			
Naphthalene	46.4	1.0	"	50.0		92.8		70-130			
1,2,4-Trimethylbenzene	57.6	1.0	"	50.0		115		70-130			
1,3,5-Trimethylbenzene	57.5	1.0	"	50.0		115		70-130			
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.3		96.4		23-173			
Surrogate: Toluene-d8	8.42		"	13.3		63.2		20-170			
Surrogate: 4-Bromofluorobenzene	15.4		"	13.3		115		21-167			

Matrix Spike (BGH0475-MS1)

Source: 2308193-01

Prepared: 08/11/23 Analyzed: 08/12/23

Benzene	51.7	1.0	ug/l	50.0	ND	103		34-141			
Toluene	49.2	1.0	"	50.0	ND	98.3		27-151			
Ethylbenzene	40.1	1.0	"	50.0	ND	80.2		29-160			
m,p-Xylene	84.1	2.0	"	100	ND	84.1		20-166			
o-Xylene	56.9	1.0	"	50.0	ND	114		33-159			
Naphthalene	50.8	1.0	"	50.0	9.01	83.6		70-130			
1,2,4-Trimethylbenzene	58.2	1.0	"	50.0	ND	116		70-130			
1,3,5-Trimethylbenzene	59.5	1.0	"	50.0	ND	119		70-130			
Surrogate: 1,2-Dichloroethane-d4	18.6		"	13.3		139		23-173			
Surrogate: Toluene-d8	11.8		"	13.3		88.4		20-170			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		103		21-167			

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BGH0475 - EPA 5030 Water MS

Matrix Spike Dup (BGH0475-MSD1)	Source: 2308193-01			Prepared: 08/11/23 Analyzed: 08/12/23						
Benzene	39.6	1.0	ug/l	50.0	ND	79.1	34-141	26.6	30	
Toluene	40.2	1.0	"	50.0	ND	80.5	27-151	20.0	30	
Ethylbenzene	36.7	1.0	"	50.0	ND	73.4	29-160	8.85	30	
m,p-Xylene	81.0	2.0	"	100	ND	81.0	20-166	3.73	30	
o-Xylene	51.7	1.0	"	50.0	ND	103	33-159	9.61	30	
Naphthalene	48.9	1.0	"	50.0	9.01	79.7	70-130	3.91	30	
1,2,4-Trimethylbenzene	42.6	1.0	"	50.0	ND	85.2	70-130	30.9	30	QM-07
1,3,5-Trimethylbenzene	43.8	1.0	"	50.0	ND	87.6	70-130	30.4	30	QM-07
Surrogate: 1,2-Dichloroethane-d4	19.9		"	13.3		149	23-173			
Surrogate: Toluene-d8	12.7		"	13.3		95.0	20-170			
Surrogate: 4-Bromofluorobenzene	16.2		"	13.3		122	21-167			

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGH0521 - EPA 5030 Water MS

Blank (BGH0521-BLK1)

Prepared: 08/14/23 Analyzed: 08/15/23

Benzo (a) anthracene	ND	0.100	ug/l								
1-Methylnaphthalene	ND	0.500	"								
2-Methylnaphthalene	ND	0.500	"								
Surrogate: 2-Methylnaphthalene-d10	1.26		"	2.00	62.8	40-150					
Surrogate: Fluoranthene-d10	1.88		"	2.00	93.9	40-150					

LCS (BGH0521-BS1)

Prepared: 08/14/23 Analyzed: 08/15/23

Benzo (a) anthracene	2.21	0.100	ug/l	2.00	110	30-120					
1-Methylnaphthalene	2.04	0.500	"	2.00	102	30-120					
2-Methylnaphthalene	2.32	0.500	"	2.00	116	0-200					
Surrogate: 2-Methylnaphthalene-d10	2.45		"	2.00	123	40-150					
Surrogate: Fluoranthene-d10	2.16		"	2.00	108	40-150					

LCS Dup (BGH0521-BS1)

Prepared: 08/14/23 Analyzed: 08/15/23

Benzo (a) anthracene	1.93	0.100	ug/l	2.00	96.3	30-120	13.6	30			
1-Methylnaphthalene	2.37	0.500	"	2.00	119	30-120	15.1	30			
2-Methylnaphthalene	2.45	0.500	"	2.00	122	0-200	5.30	200			
Surrogate: 2-Methylnaphthalene-d10	2.27		"	2.00	114	40-150					
Surrogate: Fluoranthene-d10	2.28		"	2.00	114	40-150					

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Reported:
10/31/23 13:16

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch BGH0481 - General Preparation

Blank (BGH0481-BLK1)

Prepared & Analyzed: 08/11/23

Chloride	ND	0.0600	mg/L							
Sulfate	ND	0.300	"							

LCS (BGH0481-BS1)

Prepared & Analyzed: 08/11/23

Chloride	3.04	0.0600	mg/L	3.00	101	90-110				
Sulfate	13.7	0.300	"	15.0	91.3	90-110				

Duplicate (BGH0481-DUP1)

Source: 2308242-21

Prepared & Analyzed: 08/11/23

Chloride	23.4	12.0	mg/L		16.2			36.4	20	QR-01
Sulfate	89.2	60.0	"		80.6			10.1	20	

Matrix Spike (BGH0481-MS1)

Source: 2308242-21

Prepared & Analyzed: 08/11/23

Chloride	596	12.0	mg/L	600	16.2	96.7	80-120			
Sulfate	2700	60.0	"	3000	80.6	87.2	80-120			

Summit Scientific

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Reported:
10/31/23 13:16

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

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

Batch BGH0485 - General Preparation

Blank (BGH0485-BLK1)

Prepared & Analyzed: 08/11/23

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BGH0485-DUP1)

Source: 2308223-01

Prepared & Analyzed: 08/11/23

Total Dissolved Solids 446 10.0 mg/L 462 3.59 20

Summit Scientific

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

Project: Noble - Highland 12-20 Wellhead

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
10/31/23 13:16

Notes and Definitions

- 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.
- 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