

FIRST QUARTER 2024 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
BH01	11/09/23	4722.73	18.08	5.02	ND	ND	4717.89
BH01	02/14/24	4722.73	10.02	6.76	ND	ND	4716.15
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
BH02	11/09/23	Monitoring Well Destroyed					
BH02R	02/14/24	4723.06	16.99	7.57	ND	ND	4716.01
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
BH03	11/09/23	4721.39	17.68	3.77	ND	ND	4717.76
BH03	02/14/24	Monitoring Well Destroyed					
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
BH04	11/09/23	4722.87	17.68	5.11	ND	ND	4717.92
BH04	02/14/24	4722.87	17.69	6.79	ND	ND	4716.24
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
BH05	11/09/23	4723.50	17.41	5.70	ND	ND	4717.98
BH05	02/14/24	4723.50	17.40	7.38	ND	ND	4716.30
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
BH06	11/09/23	4723.57	17.84	5.87	ND	ND	4717.90
BH06	02/14/24	4723.57	17.50	9.44	ND	ND	4714.33
BH07 ⁽²⁾	03/29/24	4723.58	17.75	7.76	ND	ND	4716.08

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.

⁽²⁾ Due to a clerical error, BH07 was sampled on March 29, 2024.

* 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)	Dissolved Barium (µg/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	2,000 ⁽⁵⁾
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	NA
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	NA
BH01	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	1.49	<0.500	2,610	262	1,210	NA
BH01	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,120	590	2,330	35.5
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	NA
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	NA
BH02	11/09/23	Well Not Sampled - Monitoring Well Destroyed													
BH02R	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,600	651	2,750	33.4
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	NA
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	NA
BH03	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,110	112	486	NA
BH03	02/14/24	Well Not Sampled - Monitoring Well Destroyed													
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	NA
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	NA
BH04 ⁽⁴⁾	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,510	128	579	NA
BH04	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,320	591	2,600	20.1
BH05 ⁽⁴⁾	05/24/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,190	449	2,000	NA
BH05 ⁽⁴⁾	08/10/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,770	474	2,000	NA
BH05 ⁽⁴⁾	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	2,930	277	1,600	NA
BH05 ⁽⁴⁾	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,490	653	2,770	21.4
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	NA
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	NA
BH06 ⁽⁴⁾	11/09/23	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,200	104	560	NA
BH06	02/14/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,470	659	2,730	19.4
BH07 ⁽⁶⁾	03/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,660	655	2,580	38.9

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.

⁽⁵⁾ Dissolved barium groundwater standard referenced from the 5 CCR 1002-41, Regulation No. 41, Table 1, Domestic Water Supply Standards, January 31, 2013.

⁽⁶⁾ Due to a clerical error, BH07 was sampled on March 29, 2024.

Definitions:

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

ECMC = Colorado Energy and Carbon Management Commission

NA = Constituent not analyzed

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

Bold results exceed the regulatory standard for inorganic parameters and are greater than 1.25x the site background concentrations

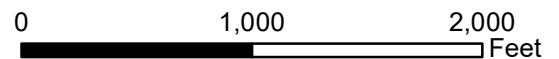
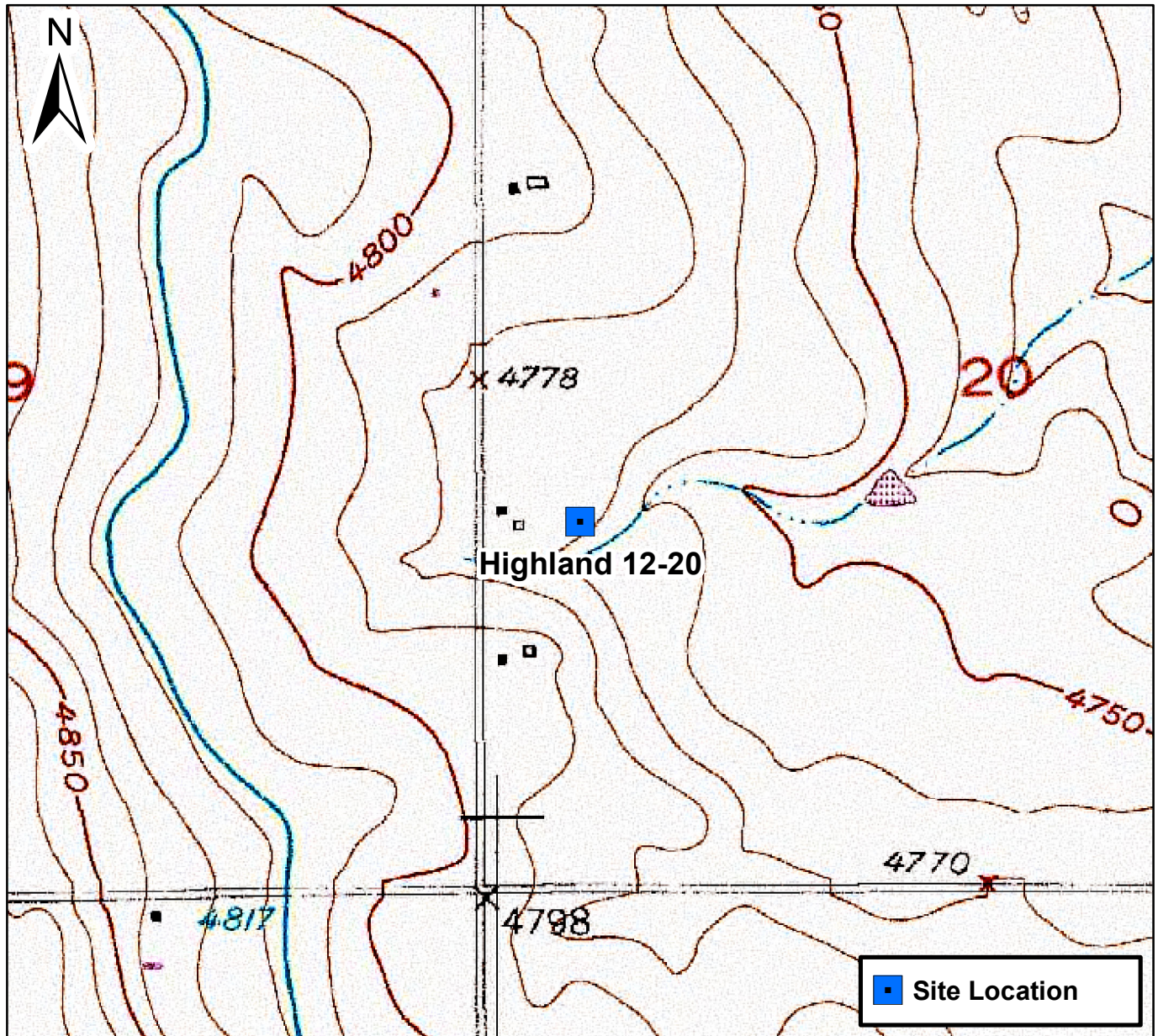


Figure 1

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





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

**TASMAN**


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

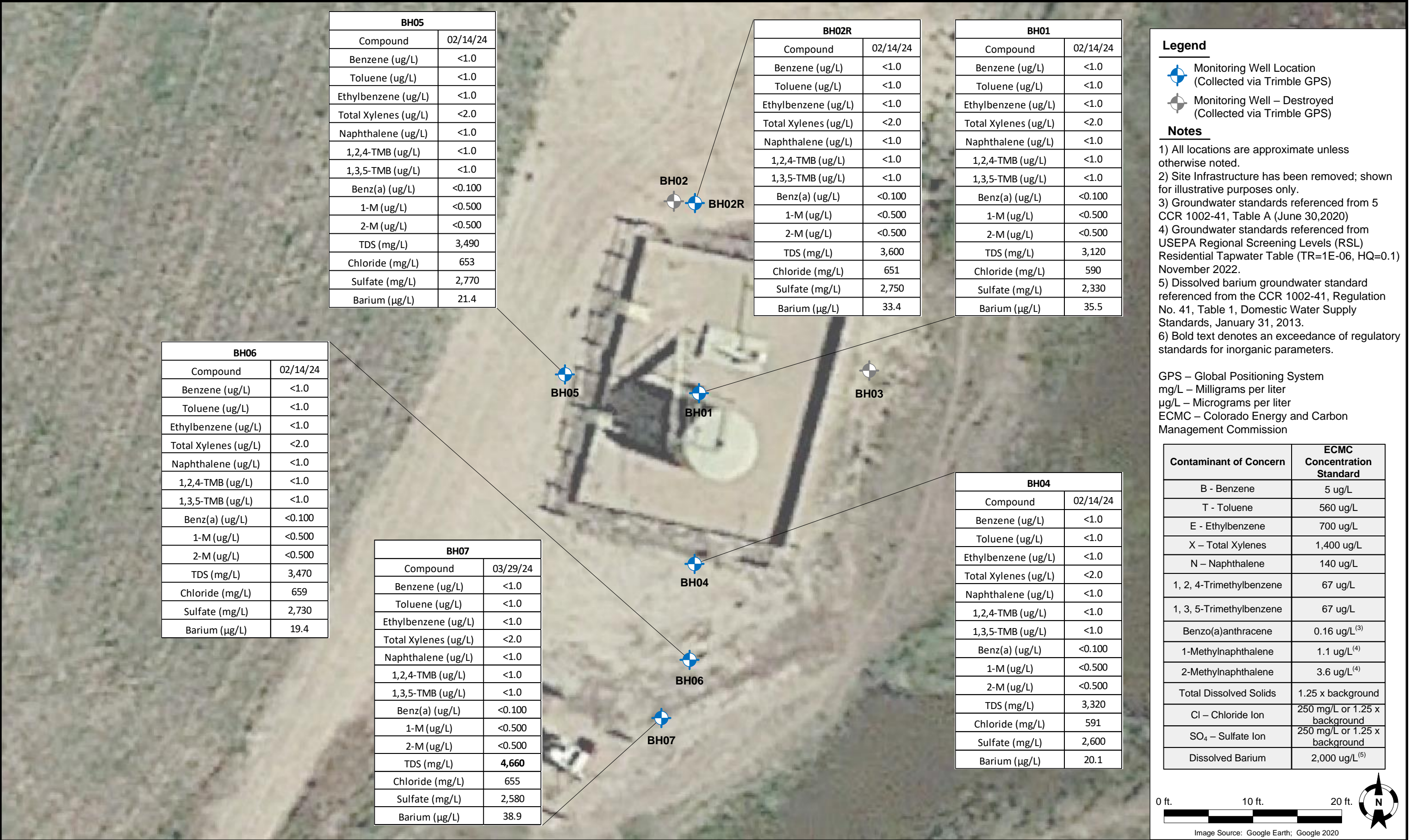
**Noble Energy, Inc. – DJ Basin
Highland 12-20 Facility**
NWSW, Section 20, Township 4 North, Range 64 West
Weld County, Colorado

Site Overview Map

FIGURE
2



DATE: 02/16/2024	 TASMAN Tasman, Inc. 6855 W 119 th 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 (02/14/2024)	FIGURE 3
DESIGNED BY: JW				
DRAWN BY: J. Woffinden				



Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 29, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

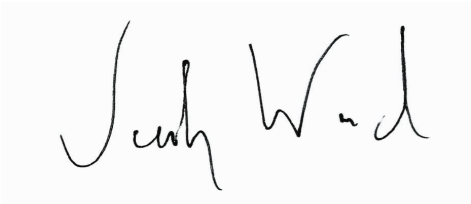
Broomfield, CO 80020

RE: Noble - Highland 12-20

Work Order #2402278

Enclosed are the results of analyses for samples received by Summit Scientific on 02/14/24 17:51. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Jacob Wood". The signature is written in a cursive style with a large initial "J" and a stylized "W".

Jacob Wood 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:
02/29/24 15:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2402278-01	Water	02/14/24 13:23	02/14/24 17:51
BH02R	2402278-02	Water	02/14/24 12:51	02/14/24 17:51
BH04	2402278-03	Water	02/14/24 12:45	02/14/24 17:51
BH05	2402278-04	Water	02/14/24 12:16	02/14/24 17:51
BH06	2402278-05	Water	02/14/24 12:08	02/14/24 17:51

Summit Scientific

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

Client: Noble/Tasman		Send Data To:		Send Invoice To:	
Address: 6855 W. 119th Ave.		Project Manager: Jake Whritenour		Company: Noble	
City/State/Zip: Broomfield/CO/ 80020		E-Mail: Jwhritenour@tasman-geo.com		Project Name/Location: Highland 12-20	
Phone:		Project Name: Highland 12-20		AFE#:	
Sampler Name: Molly P. / Lilli B.		Project Number:		PO/Billing Codes:	
				Contact: Dan Peterson	

				Preservative				Matrix				Analysis Requested				Special Instructions			
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN	1,2,4 & 1,3,5-TMBs	TDS, Cl, SO4	PAHs*	metals*		
1	BH01	2-14-24	1323	7	3		4		X				X	X	X				
2	BH0212		1251																
3	BH04		1245																
4	BH05		1216																
5	BH06		1208																
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			

Relinquished by: MP	Date/Time: 2-14-24 / 1535	Received by: Tasman Lock Box	Date/Time: 2-14-24 / 1535	TAT Business Days	Field DO	Notes: *PAHs (1-m, 2-m, and (Benzol(a)anthracene) *metals Dissolved Barium
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day	Field EC	
Tasman Lock Box	21424	[Signature]	21424	1 Day	Field ORP	
	1751		1751	2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: 7.0	Corrected Temperature: 0	IR gun #: 1	HNO3 lot #:			

S₂

Sample Receipt Checklist

S2 Work Order# 240 2278Client: Noble GasmanClient Project ID: Highland 12-20Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐Airbill #: ☐

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

Matrix (Check all that apply)

Air

☐

Soil/Solid

☐

Water

☒

Other

☐

Temp (°C)

7.0

Thermometer #

1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	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 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.
AS
Custodian Printed Name

2/14/24
Date/Time



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

BH01
2402278-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/14/24 13:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHB0525	02/15/24	02/17/24	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: **02/14/24 13:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	13.9	104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.4	93.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.7	95.0 %	21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **02/14/24 13:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHB0581	02/19/24	02/20/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **02/14/24 13:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.897	44.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.57	78.4 %	40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

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:
02/29/24 15:12

BH01
2402278-01 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **02/14/24 13:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Barium	35.5	1.00	ug/l	1	BHB0659	02/20/24	02/21/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **02/14/24 13:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	590	12.0	mg/L	200	BHB0573	02/19/24	02/20/24	EPA 300.0	
Sulfate	2330	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/14/24 13:23**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	3120	10.0	mg/L	1	BHB0519	02/15/24	02/15/24	SM2540C	

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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:
02/29/24 15:12

BH02R
2402278-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/14/24 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHB0525	02/15/24	02/17/24	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: **02/14/24 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	13.8	103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.3	92.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.4	92.6 %	21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **02/14/24 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHB0581	02/19/24	02/20/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **02/14/24 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.906	45.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.62	81.0 %	40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

Summit Scientific

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Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

BH02R
2402278-02 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **02/14/24 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Barium	33.4	1.00	ug/l	1	BHB0659	02/20/24	02/21/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **02/14/24 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	651	12.0	mg/L	200	BHB0573	02/19/24	02/20/24	EPA 300.0	
Sulfate	2750	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/14/24 12:51**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	3600	10.0	mg/L	1	BHB0519	02/15/24	02/15/24	SM2540C	

Summit Scientific

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

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

BH04
2402278-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/14/24 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHB0525	02/15/24	02/17/24	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: **02/14/24 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	14.0	105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.2	91.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.5	94.1 %	21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **02/14/24 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHB0581	02/19/24	02/20/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **02/14/24 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.880	44.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.55	77.4 %	40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

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Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

BH04
2402278-03 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **02/14/24 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Barium	20.1	1.00	ug/l	1	BHB0659	02/20/24	02/21/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **02/14/24 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	591	12.0	mg/L	200	BHB0573	02/19/24	02/20/24	EPA 300.0	
Sulfate	2600	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/14/24 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	3320	10.0	mg/L	1	BHB0519	02/15/24	02/15/24	SM2540C	

Summit Scientific

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

BH05
2402278-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/14/24 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHB0525	02/15/24	02/17/24	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: **02/14/24 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	13.7	103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.1	90.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.6	94.3 %	21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **02/14/24 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHB0581	02/19/24	02/20/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **02/14/24 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.808	40.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.58	79.1 %	40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

BH05
2402278-04 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **02/14/24 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Barium	21.4	1.00	ug/l	1	BHB0659	02/20/24	02/21/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **02/14/24 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	653	12.0	mg/L	200	BHB0573	02/19/24	02/20/24	EPA 300.0	
Sulfate	2770	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/14/24 12:16**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	3490	10.0	mg/L	1	BHB0519	02/15/24	02/15/24	SM2540C	

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

BH06
2402278-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/14/24 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHB0525	02/15/24	02/17/24	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: **02/14/24 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	13.6	102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	12.5	93.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	12.6	94.1 %	21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **02/14/24 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHB0581	02/19/24	02/20/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **02/14/24 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	0.867	43.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.61	80.3 %	40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

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Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

BH06
2402278-05 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **02/14/24 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Barium	19.4	1.00	ug/l	1	BHB0659	02/20/24	02/21/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **02/14/24 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	659	12.0	mg/L	200	BHB0573	02/19/24	02/20/24	EPA 300.0	
Sulfate	2730	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **02/14/24 12:08**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	3470	10.0	mg/L	1	BHB0519	02/15/24	02/15/24	SM2540C	

Summit Scientific

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BHB0525 - EPA 5030 Water MS

Blank (BHB0525-BLK1)

Prepared: 02/15/24 Analyzed: 02/17/24

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	13.3		"	13.3		99.7	23-173			
Surrogate: Toluene-d8	12.3		"	13.3		92.3	20-170			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.0	21-167			

LCS (BHB0525-BS1)

Prepared: 02/15/24 Analyzed: 02/17/24

Benzene	27.3	1.0	ug/l	33.3		81.9	51-132			
Toluene	26.0	1.0	"	33.3		78.0	51-138			
Ethylbenzene	34.2	1.0	"	33.3		103	58-146			
m,p-Xylene	68.6	2.0	"	66.7		103	57-144			
o-Xylene	33.3	1.0	"	33.3		100	53-146			
Naphthalene	25.1	1.0	"	33.3		75.4	70-130			
1,2,4-Trimethylbenzene	32.7	1.0	"	33.3		98.0	70-130			
1,3,5-Trimethylbenzene	32.2	1.0	"	33.3		96.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	23-173			
Surrogate: Toluene-d8	12.6		"	13.3		94.6	20-170			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		92.7	21-167			

Matrix Spike (BHB0525-MS1)

Source: 2402257-01

Prepared: 02/15/24 Analyzed: 02/17/24

Benzene	26.8	1.0	ug/l	33.3	ND	80.3	34-141			
Toluene	25.5	1.0	"	33.3	ND	76.4	27-151			
Ethylbenzene	33.9	1.0	"	33.3	ND	102	29-160			
m,p-Xylene	68.2	2.0	"	66.7	ND	102	20-166			
o-Xylene	32.4	1.0	"	33.3	ND	97.2	33-159			
Naphthalene	24.3	1.0	"	33.3	ND	72.8	70-130			
1,2,4-Trimethylbenzene	32.7	1.0	"	33.3	ND	98.2	70-130			
1,3,5-Trimethylbenzene	32.2	1.0	"	33.3	ND	96.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3		101	23-173			
Surrogate: Toluene-d8	12.6		"	13.3		94.2	20-170			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		92.6	21-167			

Summit Scientific

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Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch BHB0525 - EPA 5030 Water MS

Matrix Spike Dup (BHB0525-MSD1)	Source: 2402257-01			Prepared: 02/15/24 Analyzed: 02/17/24						
Benzene	26.9	1.0	ug/l	33.3	ND	80.6	34-141	0.410	30	
Toluene	25.8	1.0	"	33.3	ND	77.3	27-151	1.05	30	
Ethylbenzene	33.2	1.0	"	33.3	ND	99.7	29-160	1.91	30	
m,p-Xylene	65.8	2.0	"	66.7	ND	98.7	20-166	3.60	30	
o-Xylene	32.2	1.0	"	33.3	ND	96.5	33-159	0.650	30	
Naphthalene	25.5	1.0	"	33.3	ND	76.4	70-130	4.79	30	
1,2,4-Trimethylbenzene	31.4	1.0	"	33.3	ND	94.2	70-130	4.15	30	
1,3,5-Trimethylbenzene	31.3	1.0	"	33.3	ND	93.8	70-130	2.81	30	
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3		102	23-173			
Surrogate: Toluene-d8	12.5		"	13.3		93.5	20-170			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.8	21-167			

Summit Scientific

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

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BHB0581 - EPA 5030 Water MS

Blank (BHB0581-BLK1)

Prepared: 02/19/24 Analyzed: 02/20/24

Benzo (a) anthracene	ND	0.100	ug/l							
1-Methylnaphthalene	ND	0.500	"							
2-Methylnaphthalene	ND	0.500	"							
Surrogate: 2-Methylnaphthalene-d10	0.942		"	2.00		47.1	40-150			
Surrogate: Fluoranthene-d10	1.63		"	2.00		81.7	40-150			

LCS (BHB0581-BS1)

Prepared: 02/19/24 Analyzed: 02/20/24

Benzo (a) anthracene	1.44	0.100	ug/l	2.00		72.2	30-120			
1-Methylnaphthalene	1.33	0.500	"	2.00		66.5	30-120			
2-Methylnaphthalene	1.80	0.500	"	2.00		90.2	0-200			
Surrogate: 2-Methylnaphthalene-d10	1.41		"	2.00		70.4	40-150			
Surrogate: Fluoranthene-d10	1.65		"	2.00		82.5	40-150			

LCS Dup (BHB0581-BSD1)

Prepared: 02/19/24 Analyzed: 02/20/24

Benzo (a) anthracene	1.51	0.100	ug/l	2.00		75.3	30-120	4.09	30	
1-Methylnaphthalene	1.32	0.500	"	2.00		66.0	30-120	0.839	30	
2-Methylnaphthalene	1.92	0.500	"	2.00		96.0	0-200	6.24	200	
Surrogate: 2-Methylnaphthalene-d10	1.32		"	2.00		66.1	40-150			
Surrogate: Fluoranthene-d10	1.69		"	2.00		84.4	40-150			

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch BHB0659 - EPA 200.8

Blank (BHB0659-BLK1)

Prepared: 02/20/24 Analyzed: 02/21/24

Barium ND 1.00 ug/l

LCS (BHB0659-BS1)

Prepared: 02/20/24 Analyzed: 02/21/24

Barium 530 1.00 ug/l 500 106 85-115

Duplicate (BHB0659-DUP1)

Source: 2402075-01

Prepared: 02/20/24 Analyzed: 02/21/24

Barium 36.0 1.00 ug/l 35.9 0.487 20

Matrix Spike (BHB0659-MS1)

Source: 2402075-01

Prepared: 02/20/24 Analyzed: 02/21/24

Barium 566 1.00 ug/l 500 35.9 106 70-130

Matrix Spike Dup (BHB0659-MSD1)

Source: 2402075-01

Prepared: 02/20/24 Analyzed: 02/21/24

Barium 565 1.00 ug/l 500 35.9 106 70-130 0.223 25

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
02/29/24 15:12

Anions by EPA Method 300.0 - Quality Control

Summit Scientific

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

Batch BHB0573 - General Preparation

Blank (BHB0573-BLK1)

Prepared & Analyzed: 02/19/24

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

LCS (BHB0573-BS1)

Prepared & Analyzed: 02/19/24

Chloride	3.15	0.0600	mg/L	3.00	105	90-110
Sulfate	15.3	0.300	"	15.0	102	90-110

Duplicate (BHB0573-DUP1)

Source: 2402262-01

Prepared & Analyzed: 02/19/24

Chloride	193	12.0	mg/L	198	2.76	20
Sulfate	891	60.0	"	900	1.05	20

Matrix Spike (BHB0573-MS1)

Source: 2402262-01

Prepared & Analyzed: 02/19/24

Chloride	828	12.0	mg/L	600	198	105	80-120
Sulfate	4030	60.0	"	3000	900	104	80-120

Matrix Spike (BHB0573-MS2)

Source: 2402263-03

Prepared & Analyzed: 02/19/24

Chloride	650	12.0	mg/L	600	16.8	106	80-120
Sulfate	3190	60.0	"	3000	82.0	104	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:
02/29/24 15:12

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

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

Batch BHB0519 - General Preparation

Blank (BHB0519-BLK1)

Prepared & Analyzed: 02/15/24

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BHB0519-DUP1)

Source: 2402262-01

Prepared & Analyzed: 02/15/24

Total Dissolved Solids 1480 10.0 mg/L 1460 1.36 20

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:
02/29/24 15:12

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

April 22, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

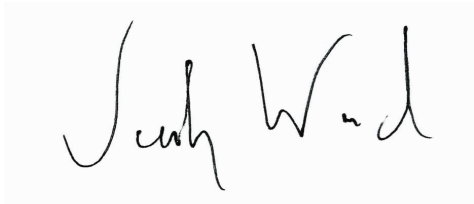
Broomfield, CO 80020

RE: Noble - Highland 12-20

Work Order #2403487

Enclosed are the results of analyses for samples received by Summit Scientific on 03/29/24 17:51. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Jacob Wood For 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:
04/22/24 11:44

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH07	2403487-01	Water	03/29/24 10:22	03/29/24 17:51

Summit Scientific

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

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

				Preservative				Matrix				Analysis Requested				Special Instructions			
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN	1,2,4 & 1,3,5-TMBs	TDS, Cl, SO4	Benzo(a)anthracene	1-m & 2-m	dissolved Barium	
1	BMD7	03-29-24	1022	7	3				X				X	X	X	X	X	X	
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			

Relinquished by: <i>Edy 006</i>	Date/Time: 03-29-24 1725	Received by: Tasman Lock Box	Date/Time: 03-29-24 1725	TAT Business Days	Field DO	Notes:
Relinquished by: Tasman Lock Box	Date/Time: 3/29/24 1751	Received by: <i>[Signature]</i>	Date/Time: 3/29/24 1751	Same Day	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
Relinquished by:	Date/Time:	Received by:	Date/Time:	2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
Temperature Upon Receipt: 74	Corrected Temperature: 0	IR gun #: 1	HNO3 lot #:	Standard	X Field Turb.	

S₂

Sample Receipt Checklist

S2 Work Order# 2403487Client: Ndab TasmanClient Project ID: Highland 12-20Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other

Airbill #:

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

Matrix (Check all that apply)

Air

☐

Soil/Solid

☐

Water

☒

Other

☐

Temp (°C)

7.4

Thermometer #

1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>ANDE</u>
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"/>	<u>HCl</u>
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.

Custodian Printed Name

Date/Time

AS

3/29/24



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

Project: Noble - Highland 12-20

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
04/22/24 11:44

BH07
2403487-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/29/24 10:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BHC1105	03/31/24	04/01/24	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: **03/29/24 10:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	16.2	121 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	14.0	105 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.1	106 %		21-167		"	"	"	"	

PAH by EPA Method 8270D SIM

Date Sampled: **03/29/24 10:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BHC1098	03/31/24	04/02/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **03/29/24 10:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	1.76	88.2 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	1.87	93.3 %		40-150		"	"	"	"	

Dissolved Metals by EPA Method 200.8

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:
04/22/24 11:44

BH07
2403487-01 (Water)

Summit Scientific

Dissolved Metals by EPA Method 200.8

Date Sampled: **03/29/24 10:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Barium	38.9	1.00	ug/l	1	BHD0048	04/02/24	04/02/24	EPA 200.8	

Anions by EPA Method 300.0

Date Sampled: **03/29/24 10:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	655	12.0	mg/L	200	BHD0135	04/03/24	04/05/24	EPA 300.0	
Sulfate	2580	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **03/29/24 10:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	4660	10.0	mg/L	1	BHD0214	04/08/24	04/08/24	SM2540C	I-03

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:
04/22/24 11:44

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BHC1105 - EPA 5030 Water MS

Blank (BHC1105-BLK1)

Prepared: 03/31/24 Analyzed: 04/01/24

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	14.9		"	13.3		112	23-173			
Surrogate: Toluene-d8	13.7		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

LCS (BHC1105-BS1)

Prepared: 03/31/24 Analyzed: 04/02/24

Benzene	34.5	1.0	ug/l	33.3		103	51-132			
Toluene	33.4	1.0	"	33.3		100	51-138			
Ethylbenzene	33.0	1.0	"	33.3		99.1	58-146			
m,p-Xylene	64.5	2.0	"	66.7		96.8	57-144			
o-Xylene	31.8	1.0	"	33.3		95.5	53-146			
Naphthalene	26.3	1.0	"	33.3		78.8	70-130			
1,2,4-Trimethylbenzene	28.4	1.0	"	33.3		85.4	70-130			
1,3,5-Trimethylbenzene	28.0	1.0	"	33.3		83.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	14.9		"	13.3		112	23-173			
Surrogate: Toluene-d8	14.1		"	13.3		105	20-170			
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3		104	21-167			

LCS Dup (BHC1105-BSD1)

Prepared: 03/31/24 Analyzed: 04/02/24

Benzene	34.6	1.0	ug/l	33.3		104	51-132	0.347	20	
Toluene	33.2	1.0	"	33.3		99.8	51-138	0.360	20	
Ethylbenzene	33.9	1.0	"	33.3		102	58-146	2.57	20	
m,p-Xylene	66.3	2.0	"	66.7		99.4	57-144	2.68	20	
o-Xylene	32.6	1.0	"	33.3		98.0	53-146	2.54	20	
Naphthalene	27.4	1.0	"	33.3		82.3	70-130	4.39	20	
1,2,4-Trimethylbenzene	29.4	1.0	"	33.3		88.1	70-130	3.11	20	
1,3,5-Trimethylbenzene	28.8	1.0	"	33.3		86.5	70-130	3.03	20	
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3		105	23-173			
Surrogate: Toluene-d8	13.8		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167			

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:
04/22/24 11:44

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BHC1098 - EPA 5030 Water MS

Blank (BHC1098-BLK1)

Prepared: 03/31/24 Analyzed: 04/02/24

Benzo (a) anthracene	ND	0.100	ug/l							
1-Methylnaphthalene	ND	0.500	"							
2-Methylnaphthalene	ND	0.500	"							
Surrogate: 2-Methylnaphthalene-d10	1.98		"	2.00		99.2	40-150			
Surrogate: Fluoranthene-d10	2.05		"	2.00		103	40-150			

LCS (BHC1098-BS1)

Prepared: 03/31/24 Analyzed: 04/02/24

Benzo (a) anthracene	1.90	0.100	ug/l	2.00		95.0	30-120			
1-Methylnaphthalene	2.07	0.500	"	2.00		104	30-120			
2-Methylnaphthalene	1.92	0.500	"	2.00		95.9	0-200			
Surrogate: 2-Methylnaphthalene-d10	2.04		"	2.00		102	40-150			
Surrogate: Fluoranthene-d10	2.08		"	2.00		104	40-150			

LCS Dup (BHC1098-BS1)

Prepared: 03/31/24 Analyzed: 04/02/24

Benzo (a) anthracene	1.81	0.100	ug/l	2.00		90.7	30-120	4.64	30	
1-Methylnaphthalene	2.01	0.500	"	2.00		100	30-120	2.99	30	
2-Methylnaphthalene	1.77	0.500	"	2.00		88.7	0-200	7.82	200	
Surrogate: 2-Methylnaphthalene-d10	2.03		"	2.00		101	40-150			
Surrogate: Fluoranthene-d10	1.97		"	2.00		98.5	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:
04/22/24 11:44

Dissolved Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch BHD0048 - EPA 200.8

Blank (BHD0048-BLK1)

Prepared & Analyzed: 04/02/24

Barium ND 1.00 ug/l

LCS (BHD0048-BS1)

Prepared & Analyzed: 04/02/24

Barium 481 1.00 ug/l 500 96.1 85-115

Duplicate (BHD0048-DUP1)

Source: 2403428-01

Prepared & Analyzed: 04/02/24

Barium 56.3 1.00 ug/l 55.6 1.17 20

Matrix Spike (BHD0048-MS1)

Source: 2403428-01

Prepared & Analyzed: 04/02/24

Barium 544 1.00 ug/l 500 55.6 97.7 70-130

Matrix Spike Dup (BHD0048-MSD1)

Source: 2403428-01

Prepared & Analyzed: 04/02/24

Barium 547 1.00 ug/l 500 55.6 98.3 70-130 0.489 25

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:
04/22/24 11:44

Anions by EPA Method 300.0 - Quality Control

Summit Scientific

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

Batch BHD0135 - General Preparation

Blank (BHD0135-BLK1)

Prepared: 04/03/24 Analyzed: 04/04/24

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

LCS (BHD0135-BS1)

Prepared: 04/03/24 Analyzed: 04/04/24

Chloride	3.05	0.0600	mg/L	3.00	102	90-110
Sulfate	15.5	0.300	"	15.0	104	90-110

Duplicate (BHD0135-DUP1)

Source: 2403465-01

Prepared: 04/03/24 Analyzed: 04/04/24

Chloride	73.6	12.0	mg/L	71.2	3.31	20
Sulfate	136	60.0	"	139	2.33	20

Matrix Spike (BHD0135-MS1)

Source: 2403465-01

Prepared: 04/03/24 Analyzed: 04/04/24

Chloride	658	12.0	mg/L	600	71.2	97.9	80-120
Sulfate	3090	60.0	"	3000	139	98.5	80-120

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:
04/22/24 11:44

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

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

Batch BHD0214 - General Preparation

Blank (BHD0214-BLK1)

Prepared & Analyzed: 04/08/24

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BHD0214-DUP1)

Source: 2403475-01

Prepared & Analyzed: 04/08/24

Total Dissolved Solids 1080 10.0 mg/L 1110 2.82 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:
04/22/24 11:44

Notes and Definitions

I-03 This sample was recieved and analyzed outside of the recommended holding time.

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