

# **SECOND 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. 119<sup>th</sup> 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) <sup>(1)</sup>	Depth to LNAPL (ft.) <sup>(1)</sup>	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
BH01	05/06/24	4722.73	10.05	6.87	ND	ND	4716.04
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
BH02R	05/06/24	4723.06	16.98	7.67	ND	ND	4715.91
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 Not Located					
BH03	05/06/24	4721.39	17.49	6.53	ND	ND	4715.00
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
BH04	05/06/24	4722.87	17.70	6.86	ND	ND	4716.17
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
BH05	05/06/24	4723.50	17.46	7.49	ND	ND	4716.19
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
BH06	05/06/24	4723.57	17.54	9.52	ND	ND	4714.25
BH07 <sup>(2)</sup>	03/29/24	4723.58	17.75	7.76	ND	ND	4716.08
BH07	05/06/24	4723.58	17.75	7.81	ND	ND	4716.03

**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.) <sup>(1)</sup>	Depth to LNAPL (ft.) <sup>(1)</sup>	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
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**Notes:**

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

<sup>(2)</sup> 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 <sup>(1)</sup>		5	560	700	1,400	140	67	67	0.16 <sup>(2)</sup>	1.1 <sup>(3)</sup>	3.6 <sup>(3)</sup>	<1.25 x Background	250 or <1.25 x Background	250 or <1.25 x Background	2,000 <sup>(5)</sup>
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
BH01	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,690	557	2,250	24.9
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
BH02R	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,880	538	2,550	21.1
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 - Unable to Locate													
BH03	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,950	581	2,650	21.8
BH04 <sup>(4)</sup>	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 <sup>(4)</sup>	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 <sup>(4)</sup>	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
BH04	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,310	738	2,920	17.7
BH05 <sup>(4)</sup>	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 <sup>(4)</sup>	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 <sup>(4)</sup>	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 <sup>(4)</sup>	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
BH05 <sup>(4)</sup>	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,860	553	2,640	26.2
BH06 <sup>(4)</sup>	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 <sup>(4)</sup>	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 <sup>(4)</sup>	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
BH06	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	3,620	403	2,570	21.4
BH07 <sup>(6)</sup>	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
BH07 <sup>(4)</sup>	05/06/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.100	<0.500	<0.500	4,280	698	2,810	19.0

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



**Notes:**

- <sup>(1)</sup> Groundwater standards referenced from 2 CCR 404-1, Table 915-1 (January 15, 2021).  
<sup>(2)</sup> Groundwater standards referenced from 5 CCR 1002-41, Table A (June 30, 2020).  
<sup>(3)</sup> Groundwater standards referenced from USEPA Regional Screening Level (RSL) Resident Tapwater Table (TR=1E-06, HQ=0.1) November 2022.  
<sup>(4)</sup> Monitoring well used for inorganic background levels.  
<sup>(5)</sup> Dissolved barium groundwater standard referenced from the 5 CCR 1002-41, Regulation No. 41, Table 1, Domestic Water Supply Standards, January 31, 2013.  
<sup>(6)</sup> Due to a clerical error, BH07 was sampled on March 29, 2024.

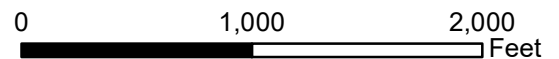
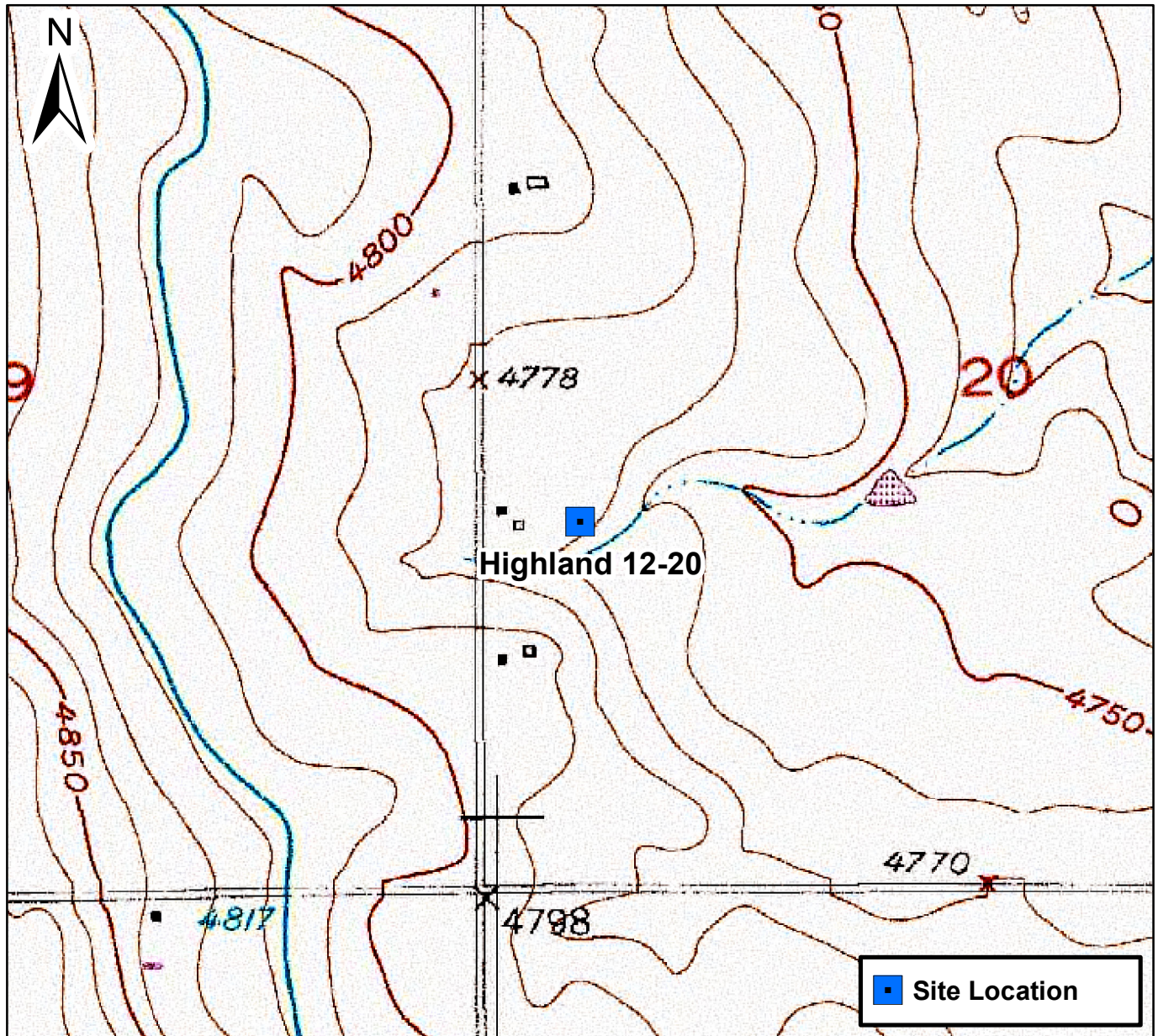
**Definitions:**

< =	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) =	Benz(a)anthracene
1-M =	1-Methylnaphthalene
2-M =	2-Methylnaphthalene
TDS =	Total Dissolved Solids

Highlighted results are equal to or exceed the regulatory standard

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



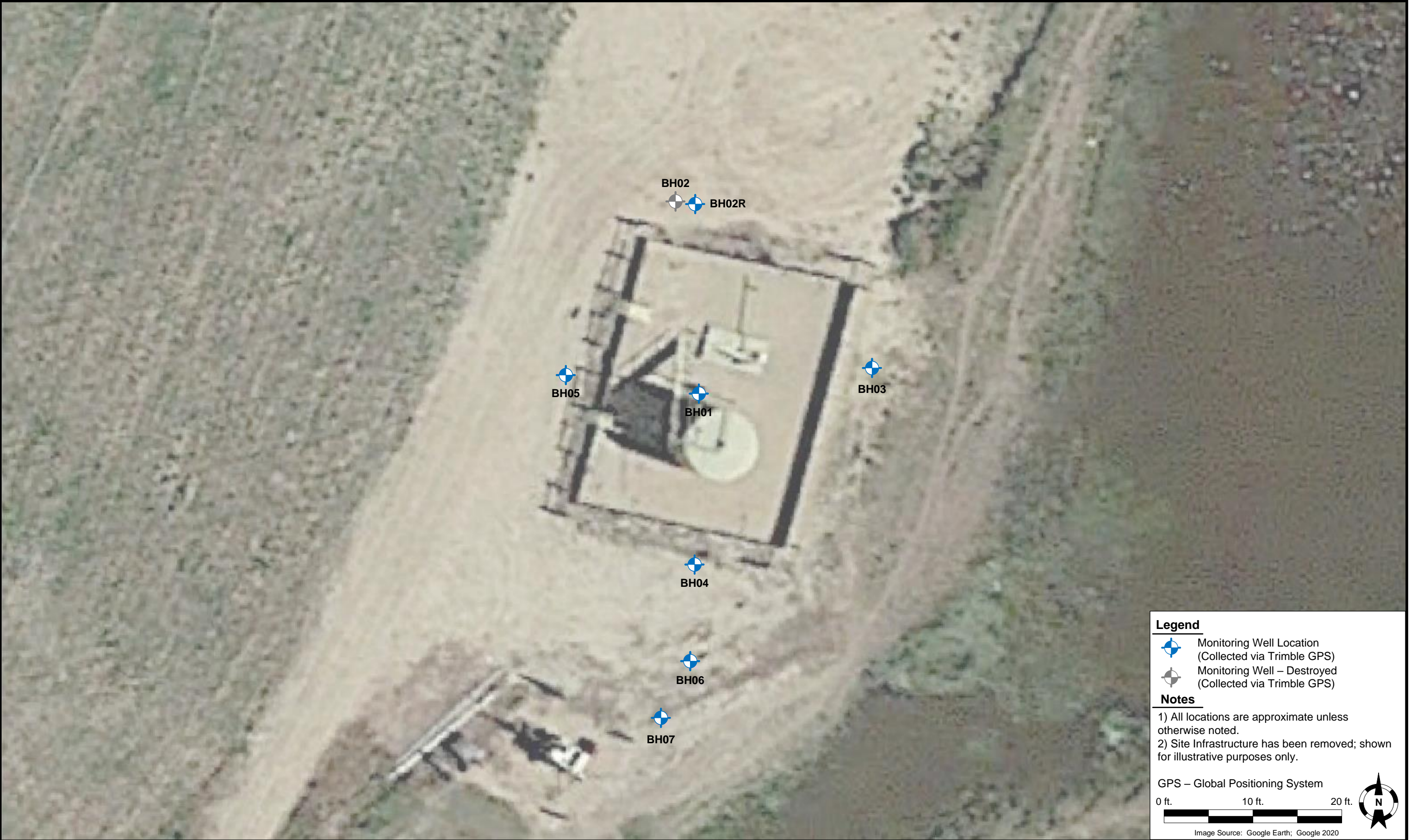



## Figure 1

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







DATE:	07/25/2023	 <div>Tasman, Inc. 6855 W 119<sup>th</sup> Avenue Broomfield, CO 80020</div>	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
DESIGNED BY:	JW				
DRAWN BY:	HM				





**Legend**

- Monitoring Well (Collected via Trimble GPS)
- Destroyed Monitoring Well (Collected via Trimble GPS)
- Groundwater Elevation Contour (Dashed Where Inferred)
- 4763.81 Measured Groundwater Elevation–ft. amsl
- Approximate Groundwater Flow Direction

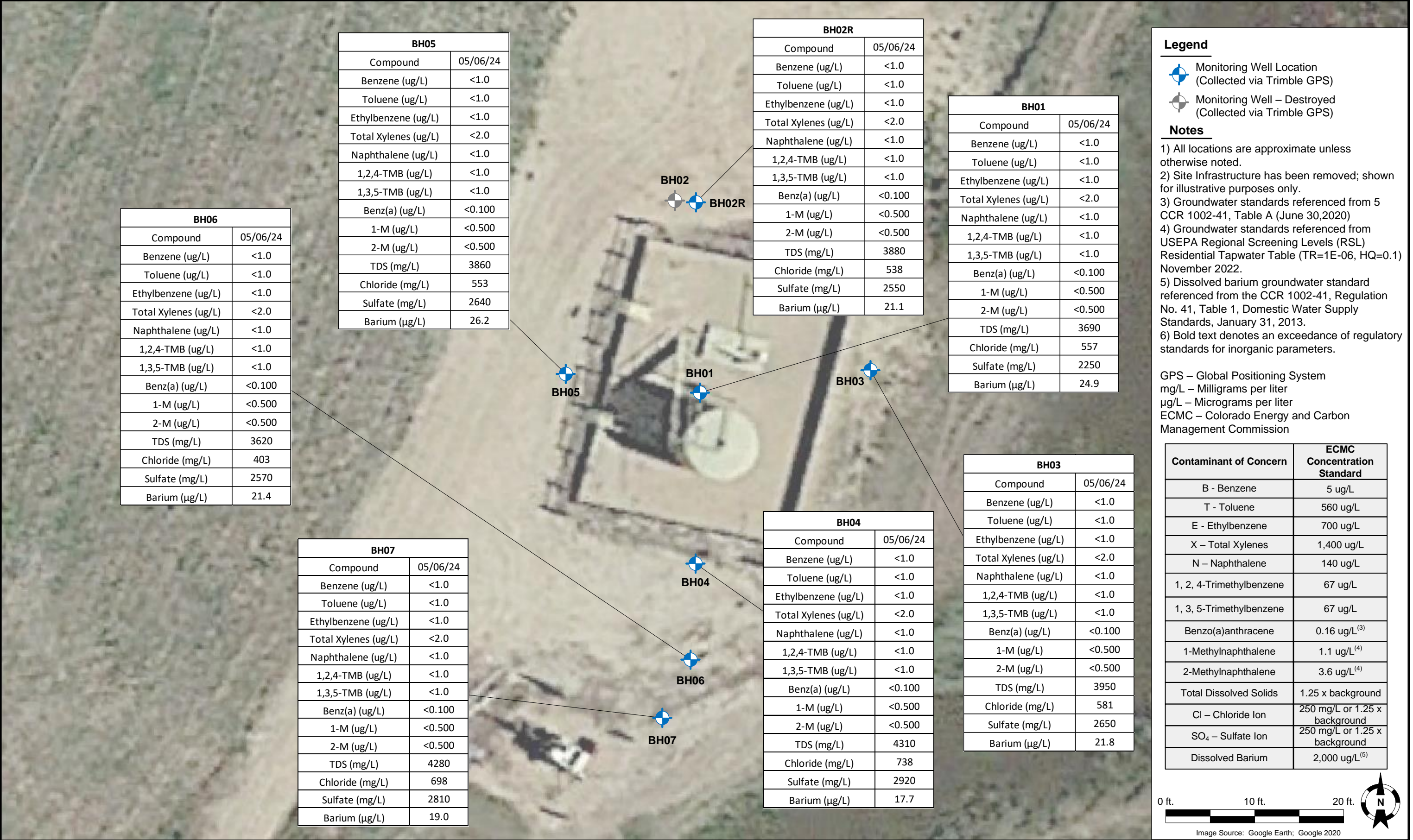
**Notes**

1) All locations are approximate unless otherwise noted  
2) Site Infrastructure has been removed; shown for illustrative purposes only.  
\*- Monitoring well not used for contouring purposes due to anomalous groundwater elevation  
GPS – Global Positioning System  
ft. amsl – Feet above mean sea level

0 ft. 15 ft. 30 ft.

Image Source: Google Earth; Google 2021





# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 18, 2024

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Highland 12-20

Work Order #2405090

Enclosed are the results of analyses for samples received by Summit Scientific on 05/06/24 17:49. 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:**  
06/18/24 12:22

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2405090-01	Water	05/06/24 12:55	05/06/24 17:49
BH02R	2405090-02	Water	05/06/24 13:11	05/06/24 17:49
BH03	2405090-03	Water	05/06/24 13:45	05/06/24 17:49
BH04	2405090-04	Water	05/06/24 12:18	05/06/24 17:49
BH05	2405090-05	Water	05/06/24 12:36	05/06/24 17:49
BH06	2405090-06	Water	05/06/24 11:49	05/06/24 17:49
BH07	2405090-07	Water	05/06/24 13:29	05/06/24 17:49


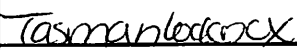
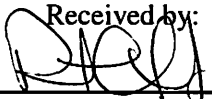
Summit Scientific

*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.*



<b>Send Data To:</b>		<b>Send Invoice To:</b>
Client: Noble/Tasman	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: 602-881-5716	Project Name: Highland 12-20	PO/Billing Codes:
Sampler Name: McKenzie Keynolds	Project Number: N/A	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	BTEX	Napthalene	1,2,4 TMB	1,3,5 TMB	TDS	Chlorine	Sulfate	PAH		
1	BH01	5/6/24	1255	7	3		4		X				X	X	X	X	X	X	X	X		PAHs - benzo(a)anthracene, 1-m, 2-m + dissolved barium
2	BH02R		1311																			
3	BH03		1345																			
4	BH04		1218																			
5	BH05		1236																			
6	BH06		1149																			
7	BH07		1329																			
8																						
9																						
10																						
11																						
12																						
13																						
14																						
15																						

Relinquished by: 	Date/Time: 5/6/2024 1530	Received by: Tasman Lock Box	Date/Time: 5/6/2024 1530	TAT Business Days	Field DO	Notes:
Relinquished by: 	Date/Time: 5/6/24 1749	Received by: 	Date/Time: 5/6/24 1749	Same Day	Field EC	
				1 Day	Field ORP	
				2 Days	Field pH	
				3 Days	Field Temp.	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Standard	Field Turb.	
Temperature Upon Receipt: 66.4		Corrected Temperature: 66		IR gun #:		HNO3 lot #:

S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2405090Client: Noble GasmanClient Project ID: Highland 12-20Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #:

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

Matrix (Check all that apply)

Air

☐

Soil/Solid

☐

Water

☒

Other

☐

Temp (°C)

Thermometer #

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? <sup>(1)</sup> NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on 205
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? <sup>(1)</sup> Note the type of preservative in the comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl
If samples are acid preserved for metals, is the pH ≤ 2? <sup>(1)</sup> Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

Custodian Printed Name

Date/Time

AS

5/6/24

5/6/24



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

Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**BH01**  
**2405090-01 (Water)**

**Summit Scientific**

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

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BHE0242	05/07/24	05/10/24	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: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	14.0	105 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.4	100 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.5	101 %		21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzo (a) anthracene	ND	0.100		ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500		"	"	"	"	"	"	

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 2-Methylnaphthalene-d10	7.50	375 %		40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.83	91.4 %		40-150		"	"	"	"	

**Dissolved Metals by EPA Method 200.8**

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**BH01**  
**2405090-01 (Water)**

**Summit Scientific**

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Barium	24.9	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

**Anions by EPA Method 300.0**

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	557	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2250	0.300	"	"	"	"	"	"	I-02

**Total Dissolved Solids by SM2540C**

Date Sampled: **05/06/24 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	3690	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

Summit Scientific

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Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**BH02R**  
**2405090-02 (Water)**

**Summit Scientific**

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

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHE0242	05/07/24	05/10/24	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: **05/06/24 13:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	13.7	103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.3	100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.0	97.6 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	6.38	319 %	40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.79	89.3 %	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:**  
06/18/24 12:22

**BH02R**  
**2405090-02 (Water)**

**Summit Scientific**

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	21.1	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

**Anions by EPA Method 300.0**

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	538	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2550	0.300	"	"	"	"	"	"	I-02

**Total Dissolved Solids by SM2540C**

Date Sampled: **05/06/24 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3880	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

Summit Scientific

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Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**BH03**  
**2405090-03 (Water)**

**Summit Scientific**

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

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHE0242	05/07/24	05/10/24	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: **05/06/24 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	14.2	106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.3	99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.3	99.5 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	6.47	324 %	40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.81	90.7 %	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:**

06/18/24 12:22

**BH03**

**2405090-03 (Water)**

**Summit Scientific**

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	21.8	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

**Anions by EPA Method 300.0**

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	581	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2650	0.300	"	"	"	"	"	"	I-02

**Total Dissolved Solids by SM2540C**

Date Sampled: **05/06/24 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3950	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

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Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**BH04**  
**2405090-04 (Water)**

**Summit Scientific**

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

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHE0242	05/07/24	05/10/24	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: **05/06/24 12:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	13.8	103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.2	98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.4	100 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	6.36	318 %	40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.85	92.6 %	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:**  
06/18/24 12:22

**BH04**  
**2405090-04 (Water)**

**Summit Scientific**

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	17.7	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

**Anions by EPA Method 300.0**

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	738	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2920	0.300	"	"	"	"	"	"	I-02

**Total Dissolved Solids by SM2540C**

Date Sampled: **05/06/24 12:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	4310	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

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Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**BH05**  
**2405090-05 (Water)**

**Summit Scientific**

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

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHE0242	05/07/24	05/10/24	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: **05/06/24 12:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	14.1	106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.2	98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.2	99.3 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	6.02	301 %	40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.81	90.3 %	40-150		"	"	"	"	

**Dissolved Metals by EPA Method 200.8**

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Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**BH05**  
**2405090-05 (Water)**

**Summit Scientific**

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	26.2	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

**Anions by EPA Method 300.0**

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	553	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2640	0.300	"	"	"	"	"	"	I-02

**Total Dissolved Solids by SM2540C**

Date Sampled: **05/06/24 12:36**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	3860	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	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:**  
06/18/24 12:22

**BH06**  
**2405090-06 (Water)**

**Summit Scientific**

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

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHE0242	05/07/24	05/10/24	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: **05/06/24 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	13.9	104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.1	98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.2	99.1 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	5.40	270 %	40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.56	78.0 %	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:**  
06/18/24 12:22

**BH06**  
**2405090-06 (Water)**

**Summit Scientific**

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Barium	21.4	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

**Anions by EPA Method 300.0**

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	403	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2570	0.300	"	"	"	"	"	"	I-02

**Total Dissolved Solids by SM2540C**

Date Sampled: **05/06/24 11:49**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	3620	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

Summit Scientific

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Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**BH07**  
**2405090-07 (Water)**

**Summit Scientific**

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

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BHE0242	05/07/24	05/10/24	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: **05/06/24 13:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	14.0	105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.3	99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	13.1	98.6 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzo (a) anthracene	ND	0.100	ug/l	1	BHE0210	05/07/24	05/08/24	EPA 8270D SIM	
1-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.500	"	"	"	"	"	"	

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10	6.22	311 %	40-150		"	"	"	"	S-07
Surrogate: Fluoranthene-d10	1.85	92.5 %	40-150		"	"	"	"	

**Dissolved Metals by EPA Method 200.8**

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Highland 12-20

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**BH07**  
**2405090-07 (Water)**

**Summit Scientific**

**Dissolved Metals by EPA Method 200.8**

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Barium	19.0	1.00	ug/l	1	BHE0314	05/09/24	05/10/24	EPA 200.8	

**Anions by EPA Method 300.0**

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	698	0.0600	mg/L	1	BHF0164	06/06/24	06/14/24	EPA 300.0	I-02
Sulfate	2810	0.300	"	"	"	"	"	"	I-02

**Total Dissolved Solids by SM2540C**

Date Sampled: **05/06/24 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	4280	10.0	mg/L	1	BHE0205	05/07/24	05/07/24	SM2540C	

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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:**  
06/18/24 12:22

## 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 BHE0242 - EPA 5030 Water MS

##### Blank (BHE0242-BLK1)

Prepared: 05/07/24 Analyzed: 05/09/24

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	13.7		"	13.3		103	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.7	21-167			

##### LCS (BHE0242-BS1)

Prepared: 05/07/24 Analyzed: 05/09/24

Benzene	37.6	1.0	ug/l	33.3		113	51-132			
Toluene	36.5	1.0	"	33.3		109	51-138			
Ethylbenzene	37.6	1.0	"	33.3		113	58-146			
m,p-Xylene	72.5	2.0	"	66.7		109	57-144			
o-Xylene	35.9	1.0	"	33.3		108	53-146			
Naphthalene	37.2	1.0	"	33.3		112	70-130			
1,2,4-Trimethylbenzene	37.0	1.0	"	33.3		111	70-130			
1,3,5-Trimethylbenzene	37.2	1.0	"	33.3		112	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.3		99.8	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.2	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.7	21-167			

##### Matrix Spike (BHE0242-MS1)

Source: 2405074-01

Prepared: 05/07/24 Analyzed: 05/09/24

Benzene	31.8	1.0	ug/l	33.3	ND	95.3	34-141			
Toluene	31.1	1.0	"	33.3	ND	93.4	27-151			
Ethylbenzene	31.2	1.0	"	33.3	ND	93.7	29-160			
m,p-Xylene	61.2	2.0	"	66.7	ND	91.7	20-166			
o-Xylene	29.9	1.0	"	33.3	ND	89.6	33-159			
Naphthalene	30.8	1.0	"	33.3	ND	92.5	70-130			
1,2,4-Trimethylbenzene	30.8	1.0	"	33.3	ND	92.3	70-130			
1,3,5-Trimethylbenzene	30.9	1.0	"	33.3	ND	92.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.5	21-167			

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Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

## 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 BHE0242 - EPA 5030 Water MS

##### Matrix Spike Dup (BHE0242-MSD1)

Source: 2405074-01

Prepared: 05/07/24 Analyzed: 05/09/24

Benzene	35.7	1.0	ug/l	33.3	ND	107	34-141	11.5	30	
Toluene	34.8	1.0	"	33.3	ND	104	27-151	11.2	30	
Ethylbenzene	34.8	1.0	"	33.3	ND	104	29-160	10.7	30	
m,p-Xylene	67.0	2.0	"	66.7	ND	100	20-166	9.10	30	
o-Xylene	33.5	1.0	"	33.3	ND	100	33-159	11.4	30	
Naphthalene	34.4	1.0	"	33.3	ND	103	70-130	11.1	30	
1,2,4-Trimethylbenzene	34.6	1.0	"	33.3	ND	104	70-130	11.8	30	
1,3,5-Trimethylbenzene	34.5	1.0	"	33.3	ND	104	70-130	11.0	30	
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.3		104	23-173			
Surrogate: Toluene-d8	13.5		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.4	21-167			

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Project Number: [none]  
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06/18/24 12:22

## 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 BHE0210 - EPA 5030 Water MS

##### Blank (BHE0210-BLK1)

Prepared & Analyzed: 05/07/24

Benzo (a) anthracene	ND	0.100	ug/l							
1-Methylnaphthalene	ND	0.500	"							
2-Methylnaphthalene	ND	0.500	"							
Surrogate: 2-Methylnaphthalene-d10	7.17		"	2.00		359	40-150			S-07
Surrogate: Fluoranthene-d10	2.11		"	2.00		106	40-150			

##### LCS (BHE0210-BS1)

Prepared & Analyzed: 05/07/24

Benzo (a) anthracene	1.41	0.100	ug/l	2.00		70.3	30-120			
1-Methylnaphthalene	2.01	0.500	"	2.00		101	30-120			
2-Methylnaphthalene	3.16	0.500	"	2.00		158	0-200			
Surrogate: 2-Methylnaphthalene-d10	1.87		"	2.00		93.6	40-150			
Surrogate: Fluoranthene-d10	1.42		"	2.00		71.2	40-150			

##### LCS Dup (BHE0210-BSD1)

Prepared & Analyzed: 05/07/24

Benzo (a) anthracene	1.67	0.100	ug/l	2.00		83.6	30-120	17.3	30	
1-Methylnaphthalene	2.27	0.500	"	2.00		113	30-120	12.0	30	
2-Methylnaphthalene	2.65	0.500	"	2.00		132	0-200	17.6	200	
Surrogate: 2-Methylnaphthalene-d10	2.18		"	2.00		109	40-150			
Surrogate: Fluoranthene-d10	1.68		"	2.00		83.9	40-150			

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Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**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 BHE0314 - EPA 200.8**

**Blank (BHE0314-BLK1)**

Prepared: 05/09/24 Analyzed: 05/10/24

Barium ND 1.00 ug/l

**LCS (BHE0314-BS1)**

Prepared: 05/09/24 Analyzed: 05/10/24

Barium 508 1.00 ug/l 500 102 85-115

**Duplicate (BHE0314-DUP1)**

**Source: 2405032-01**

Prepared: 05/09/24 Analyzed: 05/10/24

Barium 192 1.00 ug/l 181 6.17 20

**Matrix Spike (BHE0314-MS1)**

**Source: 2405032-01**

Prepared: 05/09/24 Analyzed: 05/10/24

Barium 736 1.00 ug/l 500 181 111 70-130

**Matrix Spike Dup (BHE0314-MSD1)**

**Source: 2405032-01**

Prepared: 05/09/24 Analyzed: 05/10/24

Barium 688 1.00 ug/l 500 181 101 70-130 6.72 25

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Project Number: [none]

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**Reported:**

06/18/24 12:22

### 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 BHF0164 - General Preparation

##### Blank (BHF0164-BLK1)

Prepared: 06/06/24 Analyzed: 06/14/24

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

##### LCS (BHF0164-BS1)

Prepared: 06/06/24 Analyzed: 06/14/24

Chloride	3.12	0.0600	mg/L	3.00	104	90-110
Sulfate	15.2	0.300	"	15.0	101	90-110

##### Duplicate (BHF0164-DUP1)

Source: 2405090-01

Prepared: 06/06/24 Analyzed: 06/14/24

Chloride	613	0.0600	mg/L	557	9.64	20
Sulfate	2480	0.300	"	2250	9.46	20

##### Matrix Spike (BHF0164-MS1)

Source: 2405090-01

Prepared: 06/06/24 Analyzed: 06/14/24

Chloride	1300	0.0600	mg/L	600	557	123	80-120	QM-01
Sulfate	5680	0.300	"	3000	2250	114	80-120	

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Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

**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 BHE0205 - General Preparation**

**Blank (BHE0205-BLK1)**

Prepared & Analyzed: 05/07/24

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (BHE0205-DUP1)**

Source: 2405083-10

Prepared & Analyzed: 05/07/24

Total Dissolved Solids 2540 10.0 mg/L 2610 2.64 20

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Project: Noble - Highland 12-20

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
06/18/24 12:22

### Notes and Definitions

S-07	The surrogate recovery was outside acceptance limits indicating a potential high bias. The sample did not exhibit concentrations above reporting level for analytes represented by this surrogate. Data quality is not affected.
QM-01	The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
I-02	This sample was 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