

**SITE ASSESSMENT REPORT**  
**WERNING 7-2 (WH)**  
**COGCC SPILL TRACKING # 479589**  
**COGCC REMEDIATION # 16540**

Prepared for:



2115 117th Avenue  
Greeley, CO 80631

Prepared by:



6855 W. 119<sup>th</sup> Ave  
Broomfield, CO 80020



6855 W. 119<sup>th</sup> Ave  
Broomfield, CO 80020  
www.Tasman-Geo.com

March 25, 2022

Mr. Jacob Evans  
Environmental Coordinator, EHSR  
Noble Energy Inc.  
2115 117<sup>th</sup> Avenue  
Greeley, CO 80631

Subject:       **Site Assessment Report**  
                  ***Werning 7-2 (WH)***  
                  Spill/Release Point ID #: 479589  
                  Remediation Project #: 16540  
                  SWNE S2 T4N R66W  
                  Weld County, Colorado

Dear Mr. Evans:

Below please find a copy of the above referenced Site Assessment Report (Report) for the Werning 7-2 site (Site) located in Weld County, Colorado. The text below describes decommissioning, assessment, and associated groundwater and soil sampling activities conducted by Tasman Geosciences, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble) between February 23, 2021, and November 15, 2021.

## Introduction

The purpose of this document is to describe the results of soil and groundwater sampling activities conducted at the Site to evaluate potential subsurface impacts. The activities described below were performed in response to the discovery of impacted material adjacent to the wellhead during the wellhead cut and cap operations and decommissioning activities on February 23, 2021.

## Facility Background

The Site is located approximately 10 miles northeast of the Town of Platteville in Weld County, Colorado, as shown on Figure 1. The Site is surrounded by crop land, and the legal description is the southwest ¼ of the northeast ¼ of Section 2, Township 4 North, Range 66 West, of the 6<sup>th</sup> Principal Meridian. The Site is located on terrain that slopes to the north-northeast. The Site is approximately 0.5 miles east of Weld County Road 31 and Hwy 394 and has coordinates of 40.34248461°, -104.7420688°.

Tasman was retained by Noble on February 23, 2021, to complete soil and groundwater sampling and documentation during decommissioning and abandonment activities. As reported in the initial Form 19, a historical groundwater impact was discovered beneath the Werning 7-2 wellhead. The Form 19 was submitted to the Colorado Oil and Gas Conservation Commission (COGCC) on

March 9, 2021. The COGCC subsequently issued Spill/Release Point ID Number 479589 for this event. The COGCC assigned Remediation Number 16540 for the project.

## Site Decommissioning Activities

On February 23, 2021, Tasman completed decommissioning soil and groundwater sampling and documentation for the Werning 7-2 wellhead and the off-location flowline. Excavation soil samples were collected from the hole around the plugged well casing along all four sidewalls (SS01@3.5', SS02@3.5', SS03@3.5', SS04@3.5'), and from beneath the flowline riser (FL01@4.5') at the inlet to the tank battery separator. Groundwater was encountered in the excavation at approximately four and one-half feet below ground surface (ft. bgs) where a sample, GW01, was collected. All soil samples collected were field screened for volatile organic compounds (VOC) using a photoionization detector (PID) and standard headspace sampling techniques. Soil sample FL01@4.5' collected at the end of the flowline was submitted to Summit Scientific (Summit) in Golden, Colorado for laboratory analysis of COGCC Table 915-1 list of organics in soil using United States Environmental Protection Agency (USEPA) Method 8260B and USEPA Method 8270D, and total petroleum hydrocarbons (TPH) using USEPA Methods 8260B and 8015. Groundwater sample, GW01, was also submitted to Summit for analysis of COGCC Table 915-1 organic compounds in groundwater using USEPA Method 8260B. All soil samples collected from the wellhead and flowline were also analyzed for pH, electrical conductivity (EC), sodium absorption ratio (SAR) using USEPA saturated paste extraction method, and boron using hot water-soluble soil extract method. Due to the soil sample FL01@4.5' being collected at the flowline separator location at the tank battery, the analytical results will be discussed in the site assessment report for the Werning 7-2 tank battery. Field screening of soil samples collected during decommissioning of the Werning 7-2 wellhead is illustrated on Figure 2. Groundwater analytical results are summarized in Table 2 and illustrated in Figure 2. Laboratory groundwater analytical reports are included in Attachment C.

## Site Assessment Activities

On November 11, 2021, Tasman assessed potential soil and groundwater impacts associated with the release at the Site. A total of 5 boreholes (BH01\_WH-BH05\_WH) were advanced using direct push drilling techniques and all 5 were completed as groundwater monitoring wells. During soil boring activities, soil samples were collected and field screened for volatile organic compounds (VOCs) using a photo-ionization detector (PID) and standard head space sampling techniques. Soil samples were collected from all borings at depths corresponding to initial observed impacts, the interval of the highest observed PID reading, and the terminal depth of the boring. All soil samples were submitted to Summit Scientific (Summit) in Golden, Colorado for laboratory analysis of COGCC Table 915-1 list of organics in soil using United States Environmental Protection Agency USEPA Method 8260B and USEPA Method 8270D, and total petroleum hydrocarbons (TPH) using USEPA Methods 8260B and 8015. Soil borings BH01\_WH through BH05\_WH were converted to temporary groundwater monitoring wells. Soil analytical results are summarized in Table 1 and sample locations are illustrated in Figure 3. The complete laboratory analytical report is included in Attachment A, and borings logs are included in Attachment B.

On November 15, 2021, Tasman collected groundwater samples from the installed groundwater monitoring wells to evaluate dissolved phase petroleum hydrocarbon groundwater impacts. Groundwater samples were submitted to Summit for laboratory analysis of organic compounds benzene, toluene, ethylbenzene, total xylenes, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene using USEPA Method 8260B. Groundwater samples were also analyzed for inorganic parameters total dissolved solids (TDS) using Method SM2540C, chloride ion, and sulfate ion using USEPA Method 300.0. During groundwater sampling activities, groundwater levels are recorded and subsequently converted to elevations which are presented in Table 2 and groundwater elevation contours are illustrated on Figure 4. Groundwater analytical results are summarized in Table 3 and illustrated on Figure 5. The complete groundwater laboratory analytical report is included in Attachment C.

## Results

Laboratory analytical results for soil samples collected during initial decommissioning and subsequent site assessment activities indicate a soil impact above COGCC Table 915-1 standards for naphthalene is present at the Site. This soil impact was identified from a borehole soil sample collected during the site assessment from BH01\_WH at depths between 4 and 6 feet below ground surface (bgs).

Groundwater laboratory analytical results indicate all samples are compliant with COGCC Table 915-1 standards for organic compounds in groundwater, except for GW01 collected during the initial site decommissioning. GW01, collected at the base of the wellhead excavation at a depth of approximately 4.5 feet bgs, exceeded the COGCC Table 915-1 standards for 1,2,4-Trimethylbenzene (1,2,4-TMB). Sulfate ion concentrations in groundwater samples ranged from 99 to 388 mg/L, with two (BH03 and BH04) of five samples exceeding the 250 mg/L and 1.25 times the background (BH05\_WH) sulfate standards from COGCC Table 915-1. As illustrated in Figure 4, groundwater on November 15, 2022, appears to flow to the southeast.

## Conclusions

The soil hydrocarbon impact observed during the site assessment at BH01\_WH has been delineated vertically and horizontally to the north, south, east and west by the November 2021 borehole samples (BH02\_WH to BH05\_WH). Soil impacts will be addressed through excavation for off-site disposal, during which confirmation soil samples will be collected. Petroleum hydrocarbon compounds were not detected in groundwater from any of the five monitoring well locations. Sulfate concentrations seem to be relatively elevated in groundwater samples BH03\_WH and BH04\_WH, and the total dissolved solids and chloride concentrations are in compliance with COGCC groundwater standards, and below the background levels observed in the upgradient well, BH05\_WH. Following source removal from the wellhead excavation area, groundwater monitoring wells will be replaced, and quarterly monitoring will be initiated until four consecutive quarters of compliant results has been achieved.

## Remarks

The discussion and conclusions contained in this report represent the professional opinions of Tasman Geosciences, Inc. These opinions are based on currently available information and are arrived at in accordance with currently accepted geologic and engineering practices. Please contact me at (720) 616-8383 or at [jwhritenour@tasman-geo.com](mailto:jwhritenour@tasman-geo.com) if you require additional information.

Sincerely,  
Tasman Geosciences, Inc.



Jake Whritenour, Program Manager

## Attachments:

Table 1 – Soil Analytical Data  
Table 2 – Groundwater Elevation Data  
Table 3 – Groundwater Analytical Data

Figure 1 – Site Location Map  
Figure 2 – Decommissioning Soil and Groundwater Analytical Results Map (2/23/21)  
Figure 3 – Site Assessment Soil Analytical Results Map (11/11/21)  
Figure 4 – Site Assessment Groundwater Potentiometric Surface Contour Map (11/15/2021)  
Figure 5 – Site Assessment Groundwater Analytical Results Map (11/15/2021)

Attachment A – Laboratory Soil Analytical Data Reports  
Attachment B – Boring Logs  
Attachment C – Laboratory Groundwater Analytical Data Reports

## **TABLES**

TABLE 2  
SOIL ANALYTICAL DATA  
NOBLE ENERGY, INC. - WERNING 7-2 WH

Soil Sample ID	Date	<sup>1</sup> Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1,2,4 - TMB (mg/kg)	1,3,5 - TMB (mg/kg)	Naphthalene (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-ORO (mg/kg)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL <sup>2</sup>		1.2	490	5.8	58	30	27	2	500			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL <sup>2,3</sup>		0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500			0.55	6	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
BH01_WH@4-6'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	0.0086	<0.50	18	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH01_WH@8-10'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH01_WH@10-12	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH01_WH@4-6'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH02_WH@8-10'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH02_WH@10-12	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH03_WH@4-6'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH03_WH@8-10'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH03_WH@10-12	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH04_WH@4-6'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH04_WH@8-10'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH04_WH@10-12	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH05_WH@4-6'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH05_WH@8-10'	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
BH05_WH@10-12	11/11/21	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

Notes:

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

2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.

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

Definitions:

COGCC = Colorado Oil and Gas Conservation Commission

TPH-GRO = Total petroleum hydrocarbons - gasoline range organics

TPH-DRO = Total petroleum hydrocarbons - diesel range organics

TPH-ORO = Total petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

SAR = Sodium Adsorption Ratio

EC = Electrical Conductivity

mmhos/cm = Millmhos per centimeter

mg/L = Milligrams per liter

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

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

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

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

Benz(a) = Benzanthracene

Benzo(b) = Benzofluoranthene

Benzo(k) = Benzofluoranthene

Benzo(a) = Benzopyrene

A,H = Dibenzoanthracene

1,2,3-CD = Indenopyrene

1-M = 1-methylnaphthalene

2-M = 2-methylnaphthalene

**TABLE 2**  
**GROUNDWATER ELEVATION DATA**  
**NOBLE ENERGY, INC. - Werning 7-2 WH**

Monitoring Well ID	Date	Top of Casing Elevation (ft. AMSL)	Total Depth (ft. BTOC)	Depth to Water (ft.)	Depth to LNAPL (ft.)	LNAPL Thickness (ft.)	Groundwater Elevation* (ft. AMSL)
BH01_WH	11/15/21	4665.18	14.72	3.59	ND	ND	4658.31
BH02_WH	11/15/21	4665.20	14.84	3.40	ND	ND	4658.41
BH03_WH	11/15/21	4665.40	14.89	3.66	ND	ND	4658.27
BH04_WH	11/15/21	4665.22	14.83	3.29	ND	ND	4658.44
BH05_WH	11/15/21	4665.23	14.90	3.56	ND	ND	4658.38

**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.

\* Groundwater elevation was 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 approximately 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 3  
GROUNDWATER ANALYTICAL DATA  
NOBLE ENERGY, INC. - Werning 7-2 WH

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)	TDS (mg/L)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
COGCC Groundwater Standard <sup>(1)</sup>		5	560	700	1,400	140	67	67	<1.25 x Background	250 or <1.25 x Background	250 or <1.25 x Background
GW01	02/23/21	<1.0	<1.0	2.1	8.2	<1.0	150	51	NA	NA	NA
BH01_WH	11/15/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	937	27.6	131
BH02_WH	11/15/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	889	51.4	173
BH03_WH	11/15/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	892	166	388
BH04_WH	11/15/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	841	153	364
<sup>(2)</sup> BH05_WH	11/15/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	879	16.4	99.0

Notes:

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

<sup>(2)</sup> Monitoring well used to calculate inorganic background standards.

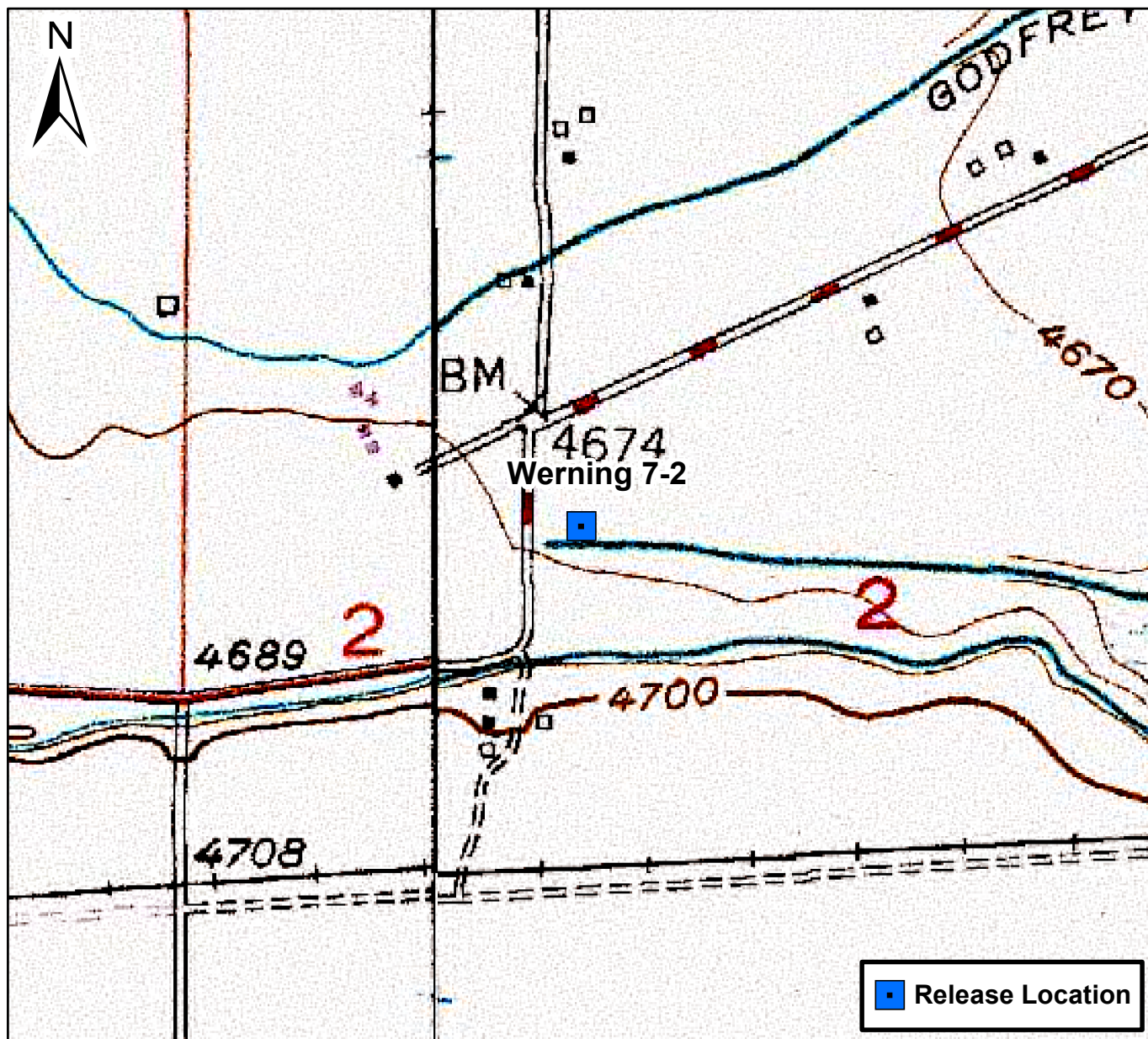
Definitions:

- < = Analytical result is less than the indicated laboratory reporting limit
- COGCC = Colorado Oil and Gas Conservation Commission
- µg/L = Micrograms per liter
- mg/L = Milligrams per liter
- NA = Not analyzed
- 1,2,4 - TMB = 1,2,4 Trimethylbenzene
- 1,3,5 - TMB = 1,3,5 Trimethylbenzene
- TDS = Total Dissolved Solids

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

Bold results exceed the COGCC Table 915-1 standard for groundwater inorganic parameters, site-specific background assessment is on-going for groundwater inorganic constituents.

## **FIGURES**



0 750 1,500 Feet


## Figure 1

Site Location Map  
Werning 7-2  
SWNE S2 T4N R66W  
Weld County, Colorado





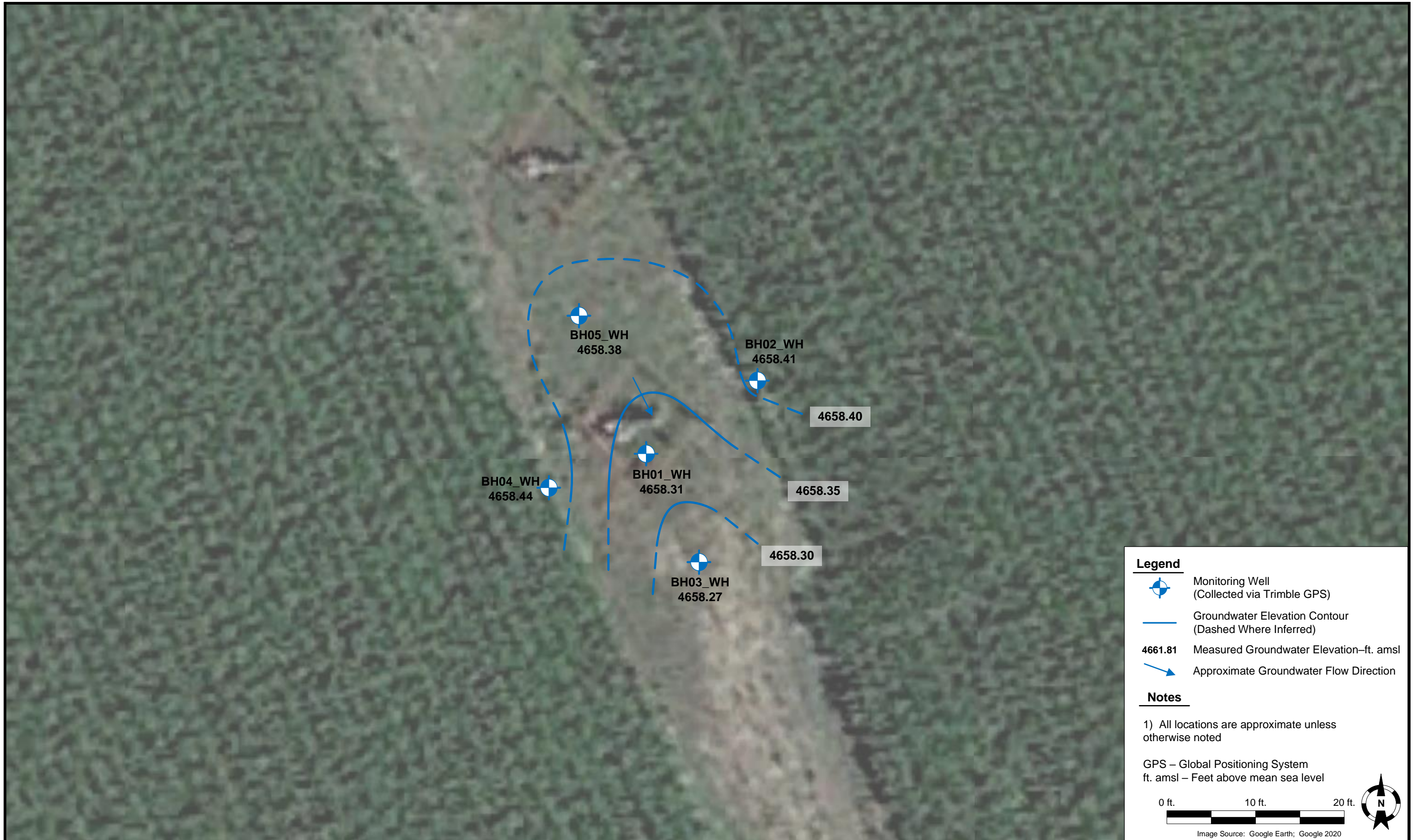


DATE: 2/23/2021	 <b>TASMAN</b> GEOSCIENCES Tasman Geosciences, Inc. 6855 W 119 <sup>th</sup> Avenue Broomfield, CO 80020	<b>Noble Energy, Inc. – DJ Basin</b> <b>Werning 7-2</b> SWNE, Section 2, Township 4 North, Range 66 West Weld County, Colorado	Decomissioning Soil and Groundwater Analytical Results Map (02/23/2021)	FIGURE 2
DESIGNED BY: JW				
DRAWN BY: JW				












**Legend**

-  Monitoring Well  
(Collected via Trimble GPS)
-  Groundwater Elevation Contour  
(Dashed Where Inferred)
- 4661.81** Measured Groundwater Elevation–ft. amsl
-  Approximate Groundwater Flow Direction

**Notes**

- 1) All locations are approximate unless otherwise noted
- GPS – Global Positioning System  
ft. amsl – Feet above mean sea level

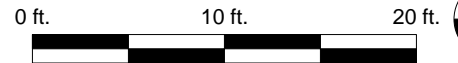

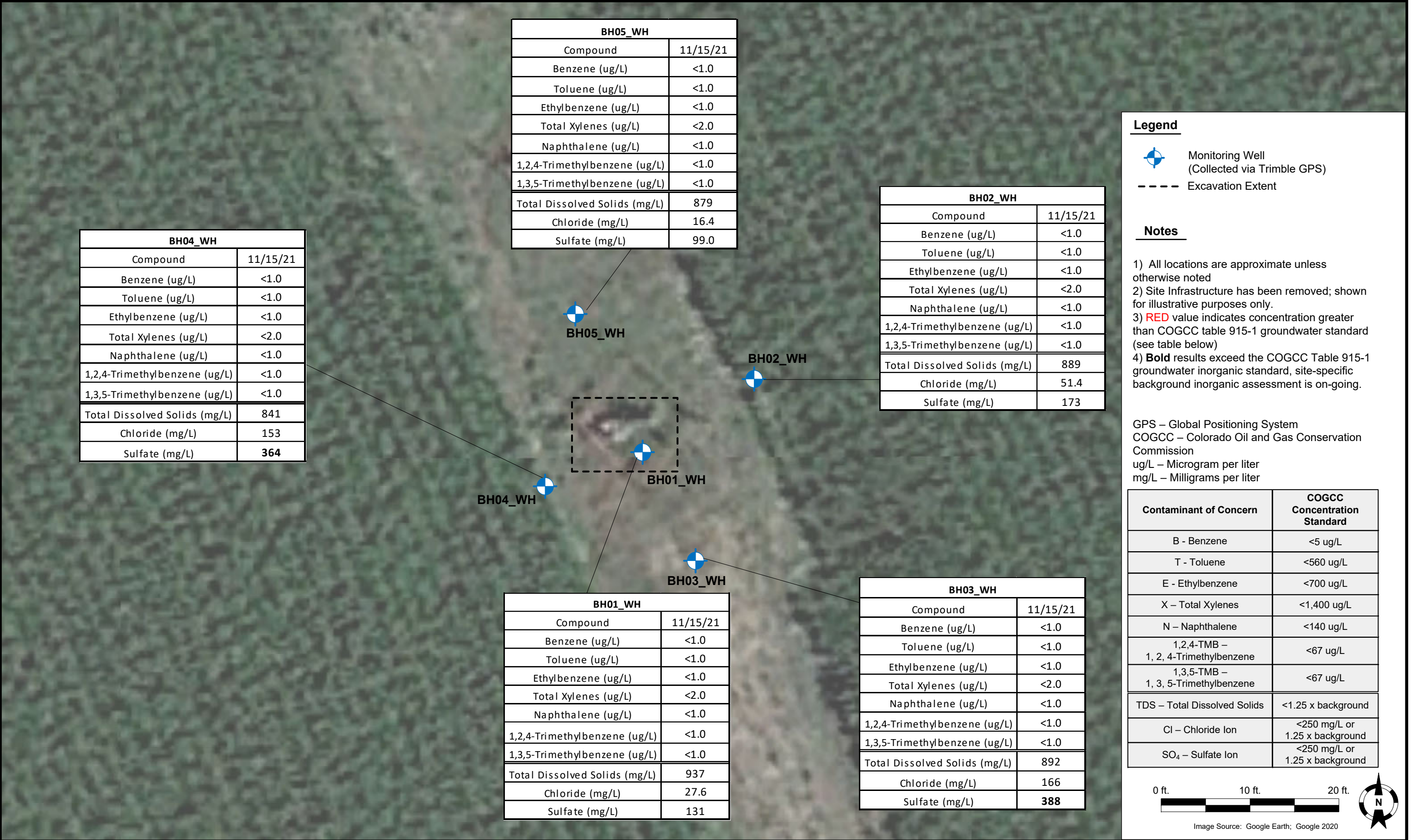


Image Source: Google Earth; Google 2020



DATE: 11/23/2021	 <b>TASMAN</b> GEOSCIENCES Tasman Geosciences, Inc. 6855 W 119 <sup>th</sup> Avenue Broomfield, CO 80020	<b>Noble Energy, Inc. – DJ Basin</b> <b>Werning 7-2</b> SWNE, Section 2, Township 4 North, Range 66 West Weld County, Colorado	Site Assessment Groundwater Potentiometric Surface Contour Map (11/15/2021)	<b>FIGURE</b> 4
DESIGNED BY: JW				
DRAWN BY: CA				





**ATTACHMENT A**  
**LABORATORY SOIL ANALYTICAL DATA REPORTS**



# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

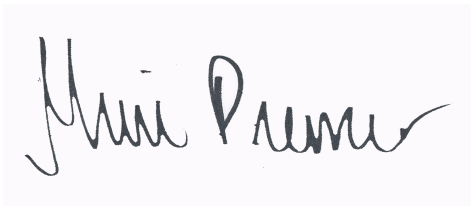
303.277.9310

November 23, 2021

Jacob Whritenour  
Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield, CO 80020  
RE: Noble - Werning 7-2  
Work Order #2111227

Enclosed are the results of analyses for samples received by Summit Scientific on 11/11/21 15:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Muri Premier", is shown on a light purple rectangular background.

Muri Premier For Paul Shrewsbury  
President



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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01_WH@4-6'	2111227-01	Soil	11/11/21 10:40	11/11/21 15:50
BH01_WH@8-10'	2111227-02	Soil	11/11/21 12:25	11/11/21 15:50
BH01_WH@10-12'	2111227-03	Soil	11/11/21 12:30	11/11/21 15:50
BH01_WH@4-6'	2111227-04	Soil	11/11/21 10:50	11/11/21 15:50
BH02_WH@8-10'	2111227-05	Soil	11/11/21 12:50	11/11/21 15:50
BH02_WH@10-12'	2111227-06	Soil	11/11/21 12:55	11/11/21 15:50
BH03_WH@4-6'	2111227-07	Soil	11/11/21 11:10	11/11/21 15:50
BH03_WH@8-10'	2111227-08	Soil	11/11/21 13:45	11/11/21 15:50
BH03_WH@10-12'	2111227-09	Soil	11/11/21 13:50	11/11/21 15:50
BH04_WH@4-6'	2111227-10	Soil	11/11/21 11:25	11/11/21 15:50
BH04_WH@8-10'	2111227-11	Soil	11/11/21 13:30	11/11/21 15:50
BH04_WH@10-12'	2111227-12	Soil	11/11/21 13:35	11/11/21 15:50
BH05_WH@4-6'	2111227-13	Soil	11/11/21 11:15	11/11/21 15:50
BH05_WH@8-10'	2111227-14	Soil	11/11/21 13:15	11/11/21 15:50
BH05_WH@10-12'	2111227-15	Soil	11/11/21 13:20	11/11/21 15:50

Sample ID's have been changed per request of KC on 11/16  
MP11/16

Summit Scientific

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## 2111227.1

Page 1 of 2

Project Manager: Jake Whritenour, Invoice: Jacob Evans

E-Mail: [jwhritenour@tasman-geo.com/](mailto:jwhritenour@tasman-geo.com/) Noble Group

Phone: 303-487-1228 303-827-1511

Project Name: Werning 7-2 (WH)

Project Number:

[www.s2scientific.com](http://www.s2scientific.com)

$S_2$ 

**4653 Table Mountain Drive ♦ Golden, Colorado 80403**  
**303-277-9310**

Page 2 of 2

**Project Manager:** Jake Whritenour, Invoice:

E-Mail: [jwritenour@tasman-geo.com/](mailto:jwritenour@tasman-geo.com/) Noble Group

Phone: 303-487-1228, 303-427-1511

Project Name: Werning 7-2 (WH)

Project Number:

[www.s2scientific.com](http://www.s2scientific.com)

S<sub>2</sub>

212

2111227

## Sample Receipt Checklist

S2 Work Order# \_\_\_\_\_

Client: Noble/Tasman Client Project ID: Werning 7-2 (WM)

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

☐ ☒ ☐ ☐ ☐
Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_  
(Describe)

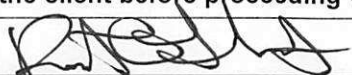
Temp (°C)

9.1

Thermometer ID: G86A9201901378

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°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"/>	on ICE
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"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<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"/>	
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"/>	
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"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.
  
Custodian Printed Name or Initials

11.11.21  
Date/Time



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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH01\_WH@4-6'**  
**2111227-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
<b>1,3,5-Trimethylbenzene</b>	<b>0.0086</b>	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>18</b>	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		94.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		178 %	21-167		"	"	"	"	S-02

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/19/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.9 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH01\_WH@4-6'**  
**2111227-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 10:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		44.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		49.6 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH01\_WH@8-10'**  
**2111227-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		94.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/21/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		86.9 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH01\_WH@8-10'**  
**2111227-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		66.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		62.3 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH01\_WH@10-12'**  
**2111227-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		98.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		108 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/21/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		117 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH01\_WH@10-12'**  
**2111227-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		76.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		71.4 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH01\_WH@4-6'**  
**2111227-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		96.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/21/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		91.1 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH01\_WH@4-6'**  
**2111227-04 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 10:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		55.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		55.8 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH02\_WH@8-10'**  
**2111227-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		93.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/21/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		111 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH02\_WH@8-10'**  
**2111227-05 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		51.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		49.9 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH02\_WH@10-12'**  
**2111227-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		95.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/21/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		81.6 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH02\_WH@10-12'**  
**2111227-06 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 12:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		49.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		49.3 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH03\_WH@4-6'**  
**2111227-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		98.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/21/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		86.4 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH03\_WH@4-6'**  
**2111227-07 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 11:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		70.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		66.0 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH03\_WH@8-10'**  
**2111227-08 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		96.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/18/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		79.8 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH03\_WH@8-10'**  
**2111227-08 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		73.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		67.8 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH03\_WH@10-12'**  
**2111227-09 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		99.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/18/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		79.0 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH03\_WH@10-12'**  
**2111227-09 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		53.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		56.2 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH04\_WH@4-6'**  
**2111227-10 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		95.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/18/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		81.8 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH04\_WH@4-6'**  
**2111227-10 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		81.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		79.0 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH04\_WH@8-10'**  
**2111227-11 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		96.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		108 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/18/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		91.0 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH04\_WH@8-10'**  
**2111227-11 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		65.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		66.6 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH04\_WH@10-12'**  
**2111227-12 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		98.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/18/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH04\_WH@10-12'**  
**2111227-12 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		67.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		64.8 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH05\_WH@4-6'**  
**2111227-13 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		95.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/18/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 11:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		119 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH05\_WH@4-6'**  
**2111227-13 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: 11/11/21 11:15

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: 11/11/21 11:15

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		66.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		65.7 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH05\_WH@8-10'**  
**2111227-14 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/19/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH05\_WH@8-10'**  
**2111227-14 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/19/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		62.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		62.6 %	40-150		"	"	"	"	

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH05\_WH@10-12'**  
**2111227-15 (Soil)**

**Summit Scientific**

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

Date Sampled: **11/11/21 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEK0377	11/17/21	11/18/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		94.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/11/21 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEK0378	11/17/21	11/19/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		87.7 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

**BH05\_WH@10-12'**  
**2111227-15 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **11/11/21 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Acenaphthene	ND	0.00500	mg/kg	1	BEK0359	11/16/21	11/20/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **11/11/21 13:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		83.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		80.9 %	40-150		"	"	"	"	

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 - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

## 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 BEK0377 - EPA 5030 Soil MS

##### Blank (BEK0377-BLK1)

Prepared: 11/17/21 Analyzed: 11/18/21

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0370		"	0.0400		92.5	23-173			
Surrogate: Toluene-d8	0.0420		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0417		"	0.0400		104	21-167			

##### LCS (BEK0377-BS1)

Prepared: 11/17/21 Analyzed: 11/18/21

Benzene	0.121	0.0020	mg/kg	0.100		121	70-130			
Toluene	0.117	0.0050	"	0.100		117	70-130			
Ethylbenzene	0.0974	0.0050	"	0.100		97.4	70-130			
m,p-Xylene	0.181	0.010	"	0.200		90.5	70-130			
o-Xylene	0.0922	0.0050	"	0.100		92.2	70-130			
1,2,4-Trimethylbenzene	0.0888	0.0050	"	0.100		88.8	70-130			
1,3,5-Trimethylbenzene	0.0852	0.0050	"	0.100		85.2	70-130			
Naphthalene	0.0703	0.0038	"	0.100		70.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0370		"	0.0400		92.6	23-173			
Surrogate: Toluene-d8	0.0426		"	0.0400		107	20-170			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	21-167			

##### Matrix Spike (BEK0377-MS1)

Source: 2111227-01

Prepared: 11/17/21 Analyzed: 11/18/21

Benzene	0.0966	0.0020	mg/kg	0.100	ND	96.6	70-130			
Toluene	0.0888	0.0050	"	0.100	ND	88.8	70-130			
Ethylbenzene	0.105	0.0050	"	0.100	ND	105	70-130			
m,p-Xylene	0.180	0.010	"	0.200	ND	89.9	70-130			
o-Xylene	0.0966	0.0050	"	0.100	ND	96.6	70-130			
1,2,4-Trimethylbenzene	0.0880	0.0050	"	0.100	ND	88.0	70-130			
1,3,5-Trimethylbenzene	0.0960	0.0050	"	0.100	0.00861	87.4	70-130			
Naphthalene	0.108	0.0038	"	0.100	ND	108	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0380		"	0.0400		95.1	23-173			
Surrogate: Toluene-d8	0.0412		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0706		"	0.0400		176	21-167			

S-02

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 - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**

11/23/21 11:08

## 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 BEK0377 - EPA 5030 Soil MS

##### Matrix Spike Dup (BEK0377-MSD1)

Source: 2111227-01

Prepared: 11/17/21 Analyzed: 11/18/21

Benzene	0.0736	0.0020	mg/kg	0.100	ND	73.6	70-130	27.0	30	
Toluene	0.0978	0.0050	"	0.100	ND	97.8	70-130	9.65	30	
Ethylbenzene	0.108	0.0050	"	0.100	ND	108	70-130	3.22	30	
m,p-Xylene	0.167	0.010	"	0.200	ND	83.3	70-130	7.59	30	
o-Xylene	0.0746	0.0050	"	0.100	ND	74.6	70-130	25.7	30	
1,2,4-Trimethylbenzene	0.0943	0.0050	"	0.100	ND	94.3	70-130	6.84	30	
1,3,5-Trimethylbenzene	0.107	0.0050	"	0.100	0.00861	98.2	70-130	10.7	30	
Naphthalene	0.102	0.0038	"	0.100	ND	102	70-130	4.94	30	
Surrogate: 1,2-Dichloroethane-d4	0.0380		"	0.0400		95.0	23-173			
Surrogate: Toluene-d8	0.0418		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0570		"	0.0400		143	21-167			

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

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

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

**Batch BEK0378 - EPA 3550A**

**Blank (BEK0378-BLK1)**

Prepared: 11/17/21 Analyzed: 11/19/21

C10-C28 (DRO)	ND	50	mg/kg
C28-C36 (ORO)	ND	50	"

**LCS (BEK0378-BS1)**

Prepared: 11/17/21 Analyzed: 11/19/21

C10-C28 (DRO)	488	50	mg/kg	500	97.5	70-130
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**Matrix Spike (BEK0378-MS1)**

Source: 2111227-01

Prepared: 11/17/21 Analyzed: 11/19/21

C10-C28 (DRO)	461	50	mg/kg	500	42.0	83.8	70-130
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**Matrix Spike Dup (BEK0378-MSD1)**

Source: 2111227-01

Prepared: 11/17/21 Analyzed: 11/19/21

C10-C28 (DRO)	430	50	mg/kg	500	42.0	77.6	70-130	7.01	20
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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 - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

### 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 BEK0359 - EPA 5030 Soil MS

##### Blank (BEK0359-BLK1)

Prepared: 11/16/21 Analyzed: 11/17/21

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0256		"	0.0333		76.7	40-150			
Surrogate: Fluoranthene-d10	0.0242		"	0.0333		72.5	40-150			

##### LCS (BEK0359-BS1)

Prepared: 11/16/21 Analyzed: 11/17/21

Acenaphthene	0.0186	0.00500	mg/kg	0.0333		55.8	31-137			
Anthracene	0.0200	0.00500	"	0.0333		60.1	30-120			
Benzo (a) anthracene	0.0203	0.00500	"	0.0333		60.8	30-120			
Benzo (a) pyrene	0.0191	0.00500	"	0.0333		57.2	30-120			
Benzo (b) fluoranthene	0.0198	0.00500	"	0.0333		59.4	30-120			
Benzo (k) fluoranthene	0.0215	0.00500	"	0.0333		64.6	30-120			
Chrysene	0.0202	0.00500	"	0.0333		60.6	30-120			
Dibenz (a,h) anthracene	0.0136	0.00500	"	0.0333		40.8	30-120			
Fluoranthene	0.0196	0.00500	"	0.0333		58.9	30-120			
Fluorene	0.0207	0.00500	"	0.0333		62.0	30-120			
Indeno (1,2,3-cd) pyrene	0.0154	0.00500	"	0.0333		46.1	30-120			
Pyrene	0.0185	0.00500	"	0.0333		55.6	35-142			
1-Methylnaphthalene	0.0200	0.00500	"	0.0333		59.9	35-142			
2-Methylnaphthalene	0.0211	0.00500	"	0.0333		63.2	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0243		"	0.0333		73.0	40-150			
Surrogate: Fluoranthene-d10	0.0238		"	0.0333		71.3	40-150			

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

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

### Summit Scientific

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

#### Batch BEK0359 - EPA 5030 Soil MS

Matrix Spike (BEK0359-MS1)		Source: 2111194-01		Prepared: 11/16/21		Analyzed: 11/17/21				
Acenaphthene	0.0135	0.00500	mg/kg	0.0333	ND	40.6	31-137			
Anthracene	0.0159	0.00500	"	0.0333	ND	47.7	30-120			
Benzo (a) anthracene	0.0163	0.00500	"	0.0333	ND	49.0	30-120			
Benzo (a) pyrene	0.0153	0.00500	"	0.0333	ND	45.9	30-120			
Benzo (b) fluoranthene	0.0168	0.00500	"	0.0333	0.00740	28.1	30-120			QM-07
Benzo (k) fluoranthene	0.0179	0.00500	"	0.0333	ND	53.8	30-120			
Chrysene	0.0208	0.00500	"	0.0333	0.0335	NR	30-120			QM-07
Dibenz (a,h) anthracene	0.00531	0.00500	"	0.0333	ND	15.9	30-120			QM-07
Fluoranthene	0.0130	0.00500	"	0.0333	ND	39.1	30-120			
Fluorene	0.0148	0.00500	"	0.0333	ND	44.3	30-120			
Indeno (1,2,3-cd) pyrene	0.0139	0.00500	"	0.0333	ND	41.8	30-120			
Pyrene	0.0193	0.00500	"	0.0333	0.0118	22.4	35-142			QM-07
1-Methylnaphthalene	0.0145	0.00500	"	0.0333	ND	43.5	15-130			
2-Methylnaphthalene	0.0160	0.00500	"	0.0333	ND	48.0	15-130			
Surrogate: 2-Methylnaphthalene-d10	0.0182		"	0.0333		54.7	40-150			
Surrogate: Fluoranthene-d10	0.0172		"	0.0333		51.5	40-150			

Matrix Spike Dup (BEK0359-MSD1)		Source: 2111194-01		Prepared: 11/16/21		Analyzed: 11/17/21				
Acenaphthene	0.0130	0.00500	mg/kg	0.0333	ND	39.0	31-137	4.18	30	
Anthracene	0.0127	0.00500	"	0.0333	ND	38.2	30-120	22.1	30	
Benzo (a) anthracene	0.0126	0.00500	"	0.0333	ND	37.7	30-120	26.2	30	
Benzo (a) pyrene	0.0119	0.00500	"	0.0333	ND	35.7	30-120	25.0	30	
Benzo (b) fluoranthene	0.0140	0.00500	"	0.0333	0.00740	19.8	30-120	17.9	30	QM-07
Benzo (k) fluoranthene	0.0166	0.00500	"	0.0333	ND	49.7	30-120	7.83	30	
Chrysene	0.0256	0.00500	"	0.0333	0.0335	NR	30-120	20.6	30	QM-07
Dibenz (a,h) anthracene	0.0154	0.00500	"	0.0333	ND	46.3	30-120	97.7	30	QM-07
Fluoranthene	0.0150	0.00500	"	0.0333	ND	44.9	30-120	13.8	30	
Fluorene	0.0119	0.00500	"	0.0333	ND	35.8	30-120	21.4	30	
Indeno (1,2,3-cd) pyrene	0.0157	0.00500	"	0.0333	ND	47.2	30-120	12.2	30	
Pyrene	0.0208	0.00500	"	0.0333	0.0118	26.9	35-142	7.46	30	QM-07
1-Methylnaphthalene	0.0119	0.00500	"	0.0333	ND	35.7	15-130	19.7	50	
2-Methylnaphthalene	0.0137	0.00500	"	0.0333	ND	41.1	15-130	15.6	50	
Surrogate: 2-Methylnaphthalene-d10	0.0157		"	0.0333		47.2	40-150			
Surrogate: Fluoranthene-d10	0.0120		"	0.0333		36.0	40-150			S-02

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 11:08

### Notes and Definitions

S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

**ATTACHMENT B**  
**BORING LOGS**



6855 W 119th Avenue  
Broomfield, CO, 80020

CLIENT: Noble Energy

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman Geosciences

DRILLING EQUIPMENT: AMS Power Probe

DRILL BIT SIZE (INCHES): 3

DATE STARTED - COMPLETED: 11/11/2021

TOTAL WELL DEPTH (FT. BGS): 12

DEPTH TO WATER (FT. BGS): 3

Werning 7-2

BORING / WELL ID: BH01\_WH

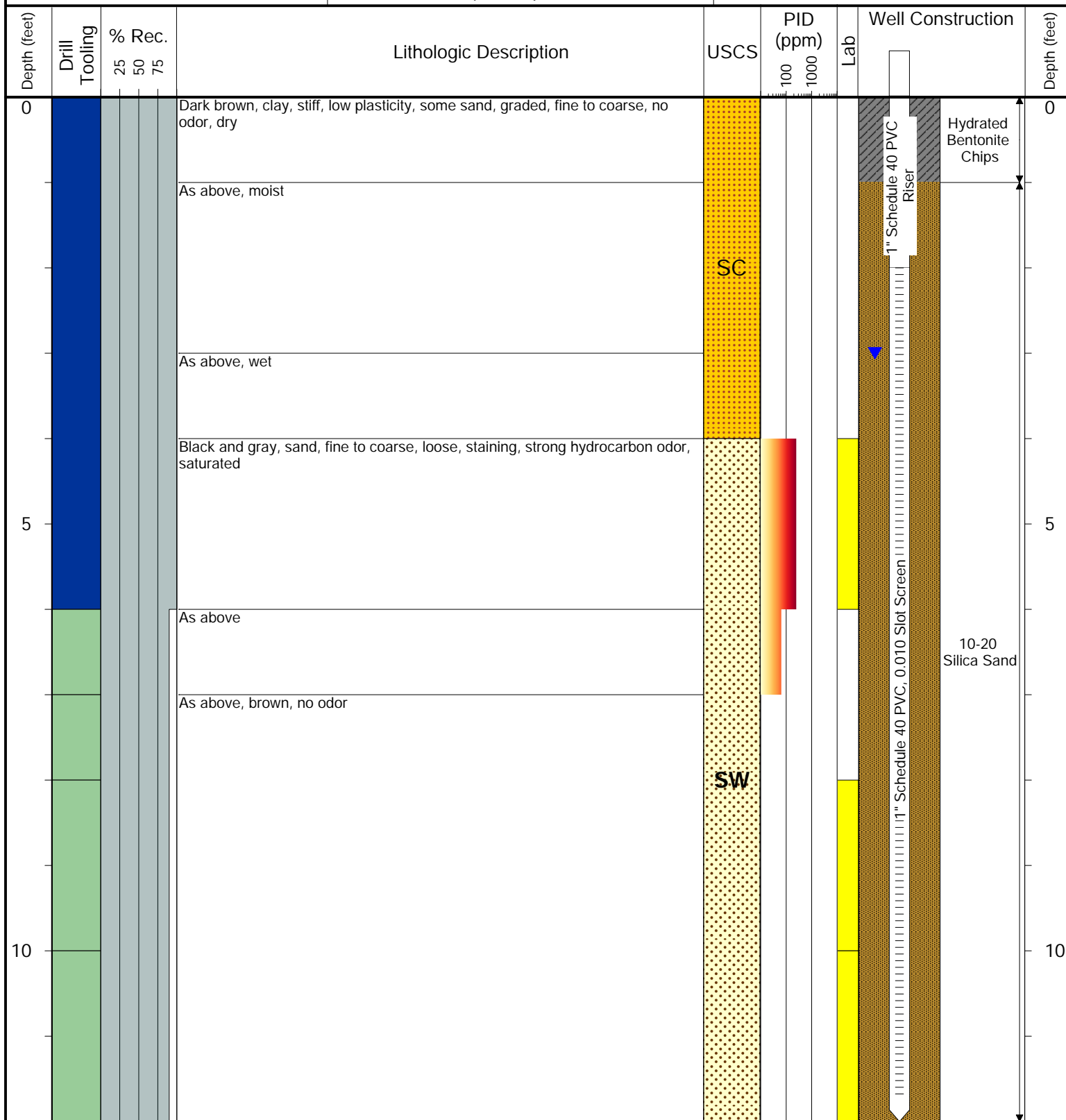
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.342484611

LONGITUDE (WGS 84): -104.742068823

CASING ELEVATION (FT. AMSL): 4665.1762

GROUND ELEVATION (FT. AMSL): 4661.8962



Drilling / Sample Method:

Macro-Core

Solid Stem Auger

Hollow Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab





6855 W 119th Avenue  
Broomfield, CO, 80020

CLIENT: Noble Energy

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman Geosciences

DRILLING EQUIPMENT: AMS Power Probe

DRILL BIT SIZE (INCHES): 3

DATE STARTED - COMPLETED: 11/11/2021

TOTAL WELL DEPTH (FT. BGS): 12

DEPTH TO WATER (FT. BGS): 3

Werning 7-2

BORING / WELL ID: BH02\_WH

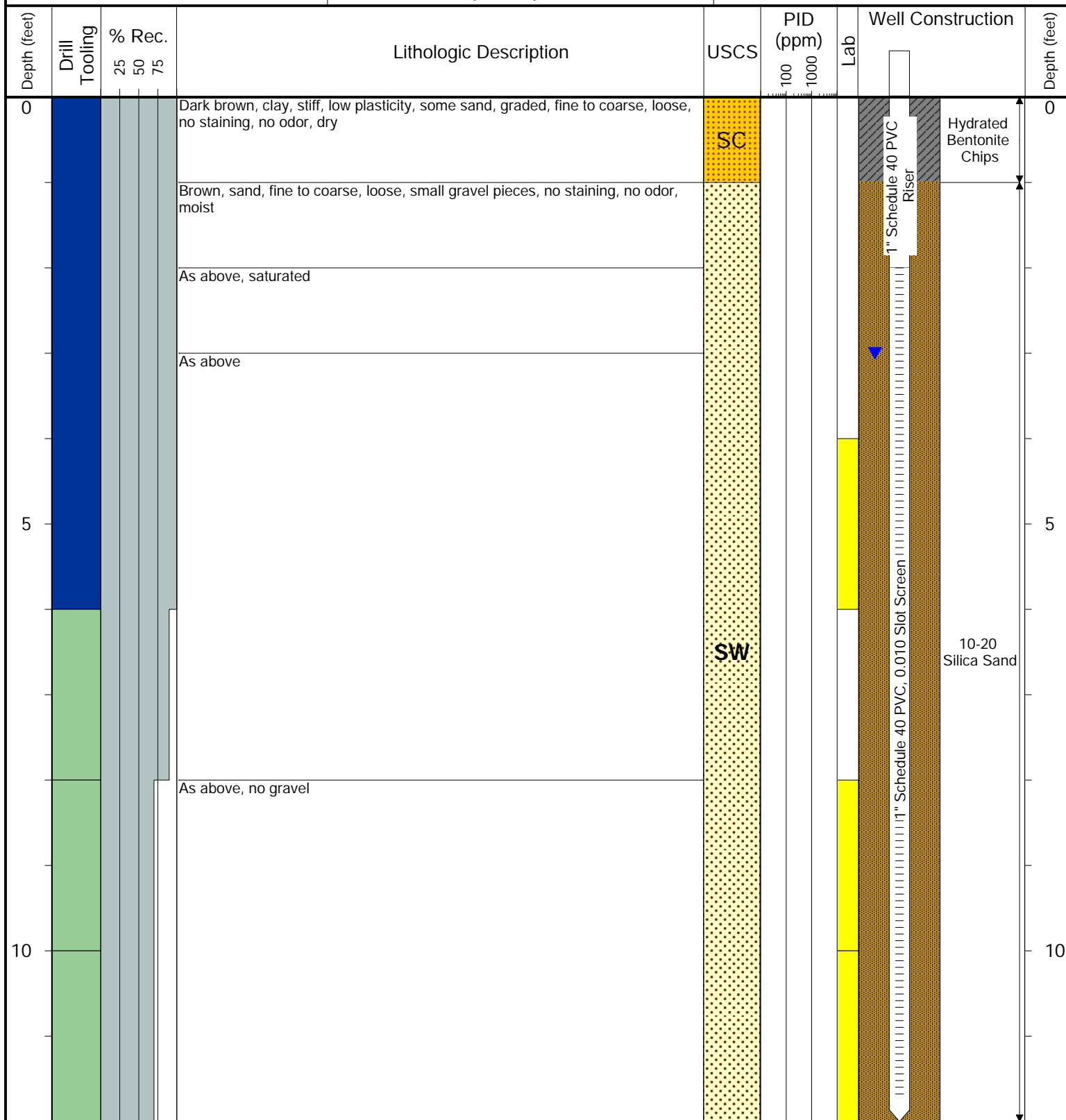
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.342507008

LONGITUDE (WGS 84): -104.742023633

CASING ELEVATION (FT. AMSL): 4665.2

GROUND ELEVATION (FT. AMSL): 4661.8062



Drilling / Sample Method:

Macro-Core

Solid Stem Auger

Hollow Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6855 W 119th Avenue  
Broomfield, CO, 80020

CLIENT: Noble Energy

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman Geosciences

DRILLING EQUIPMENT: AMS Power Probe

DRILL BIT SIZE (INCHES): 3

DATE STARTED - COMPLETED: 11/11/2021

TOTAL WELL DEPTH (FT. BGS): 12

DEPTH TO WATER (FT. BGS): 3

Werning 7-2

BORING / WELL ID: BH03\_WH

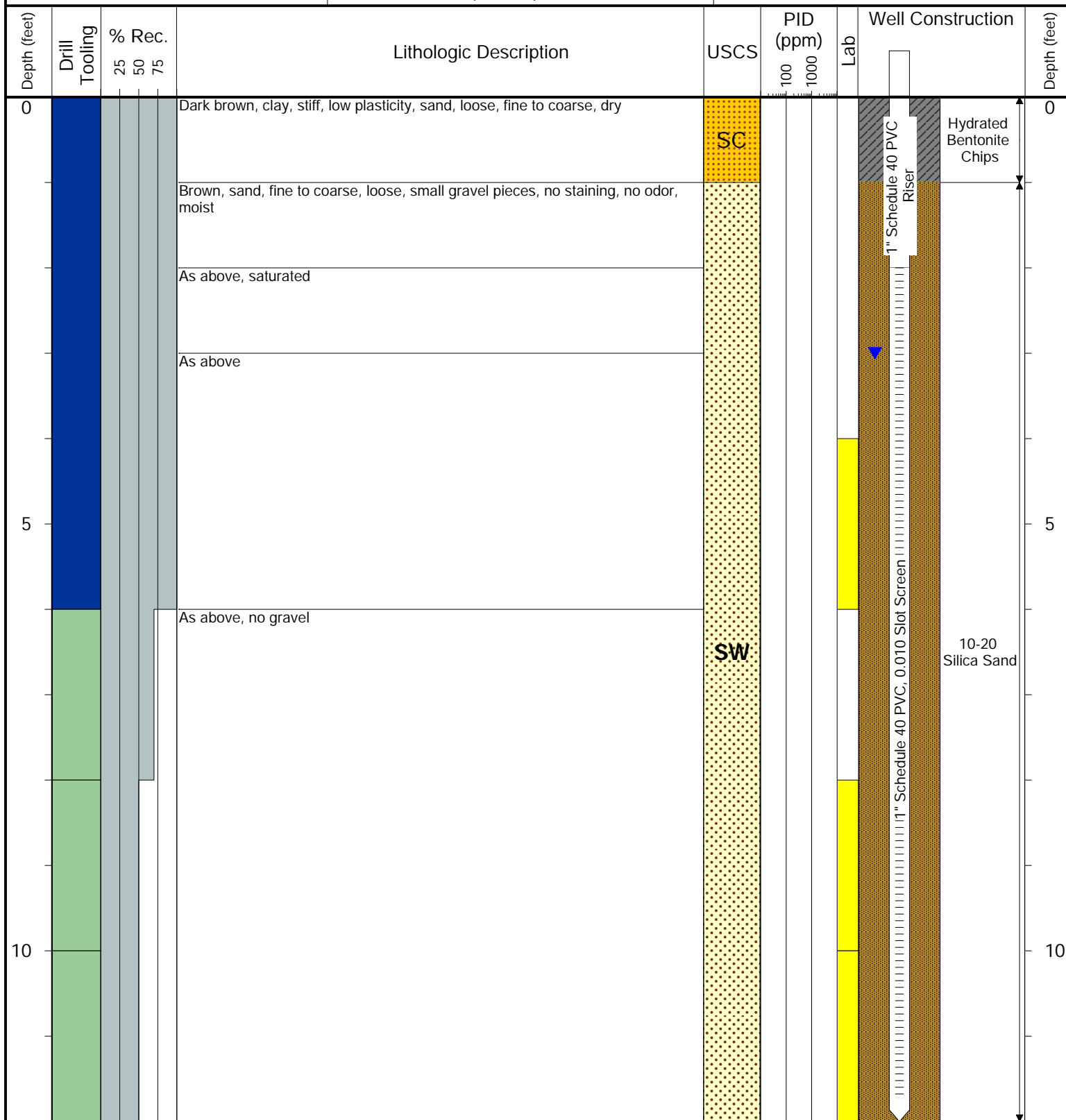
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.34245128

LONGITUDE (WGS 84): -104.742046909

CASING ELEVATION (FT. AMSL): 4665.3962

GROUND ELEVATION (FT. AMSL): 4661.93



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6855 W 119th Avenue  
Broomfield, CO, 80020

CLIENT: Noble Energy

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman Geosciences

DRILLING EQUIPMENT: AMS Power Probe

DRILL BIT SIZE (INCHES): 3

DATE STARTED - COMPLETED: 11/11/2021

TOTAL WELL DEPTH (FT. BGS): 12

DEPTH TO WATER (FT. BGS): 3

Werning 7-2

BORING / WELL ID: BH04\_WH

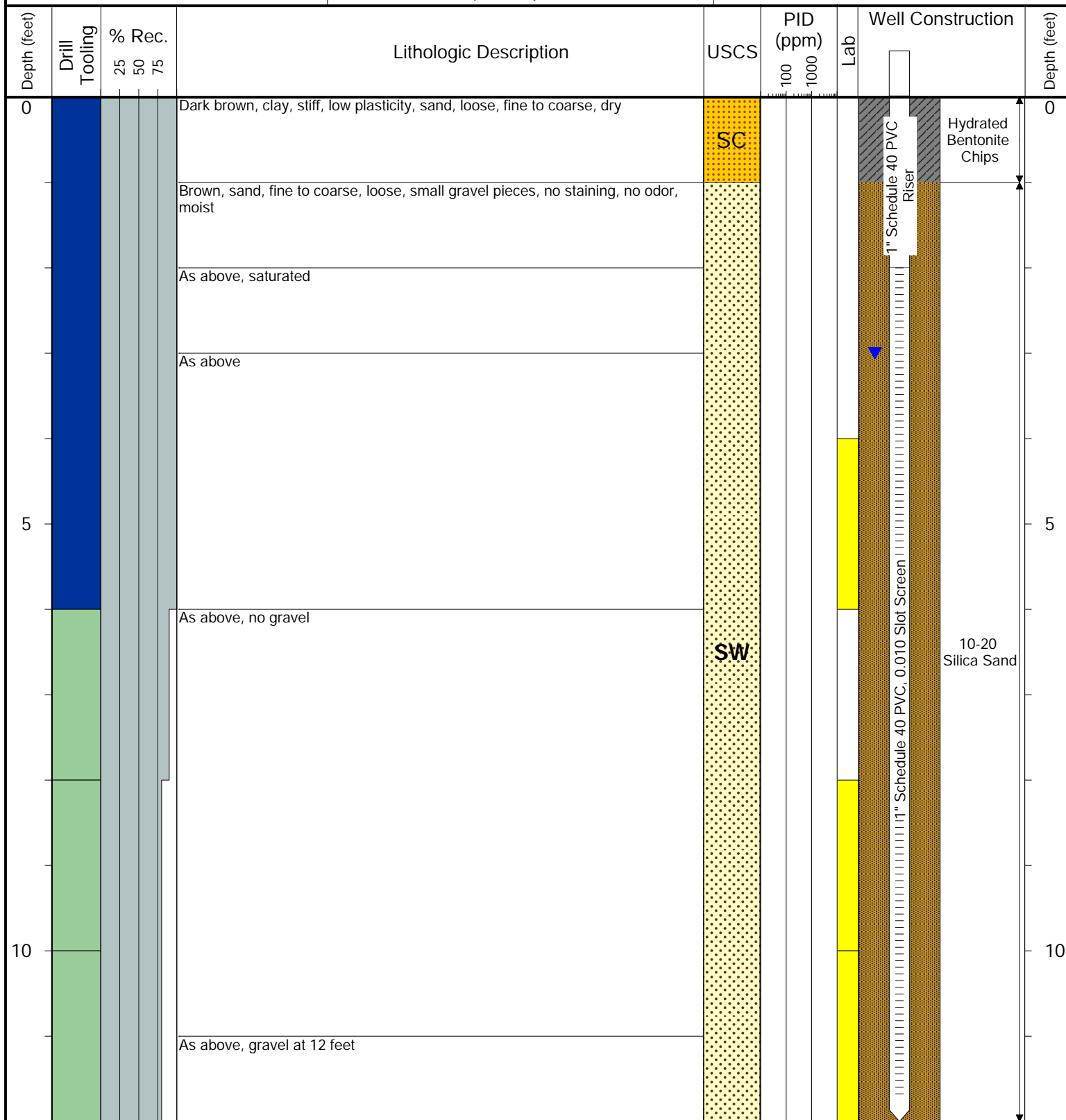
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.342474

LONGITUDE (WGS 84): -104.742109485

CASING ELEVATION (FT. AMSL): 4665.2162

GROUND ELEVATION (FT. AMSL): 4661.73



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab



6855 W 119th Avenue  
Broomfield, CO, 80020

CLIENT: Noble Energy

LOGGED BY: Hunter Merlo

PROJECT MANAGER: Jake Whritenour

DRILLING CONTRACTOR: Tasman Geosciences

DRILLING EQUIPMENT: AMS Power Probe

DRILL BIT SIZE (INCHES): 3

DATE STARTED - COMPLETED: 11/11/2021

TOTAL WELL DEPTH (FT. BGS): 12

DEPTH TO WATER (FT. BGS): 3

Werning 7-2

BORING / WELL ID: BH05\_WH

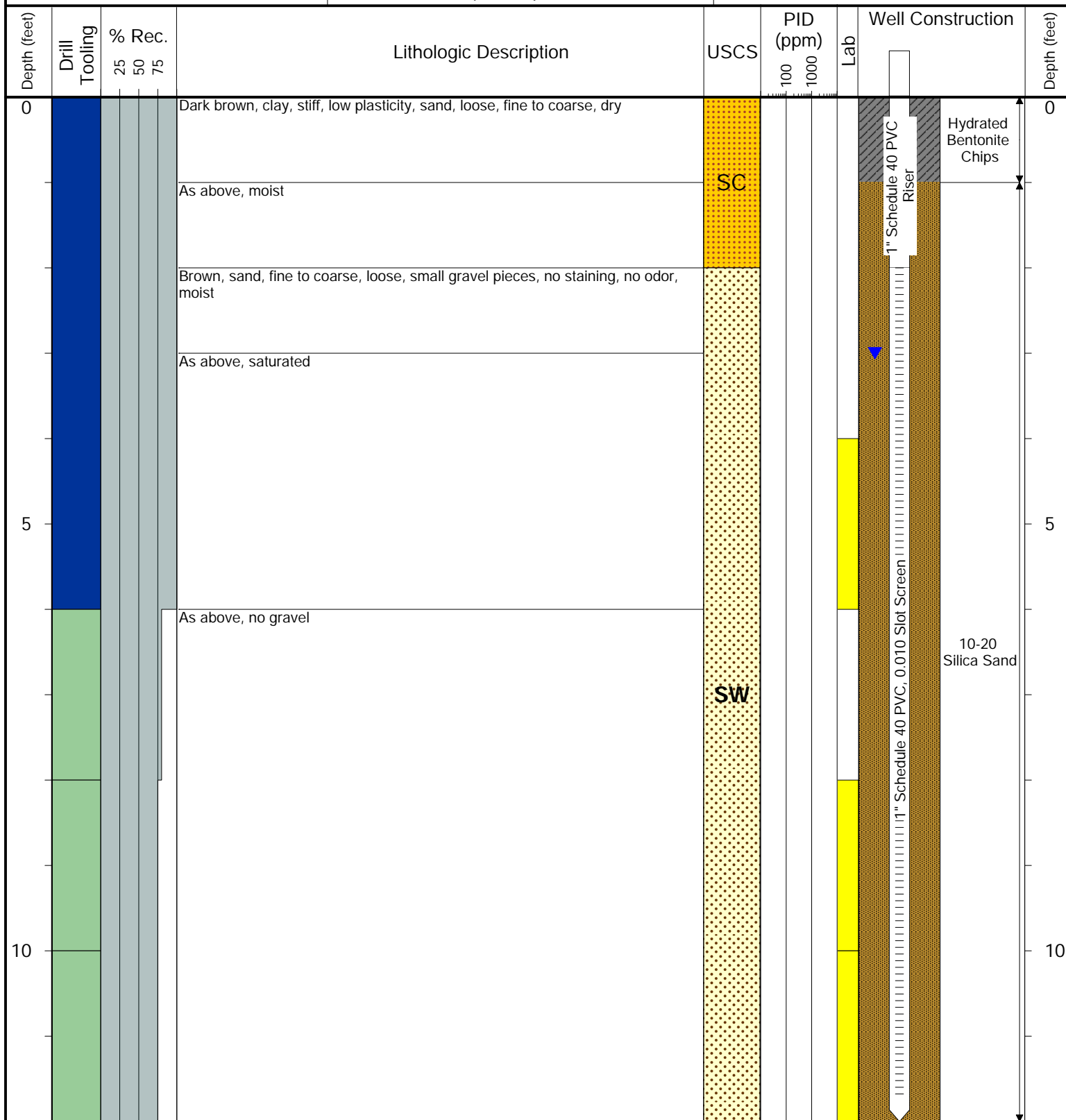
LOCATION: Weld County, Colorado

LATITUDE (WGS 84): 40.342528096

LONGITUDE (WGS 84): -104.742094463

CASING ELEVATION (FT. AMSL): 4665.2262

GROUND ELEVATION (FT. AMSL): 4661.9362



Drilling / Sample Method:

Macro-Core

Hollow Stem Auger

Solid Stem Auger

Hand Auger

Laboratory Sample Types:

Geotechnical Lab

Analytical Chemistry Lab

Geotechnical & Analytical Chemistry Lab

## **ATTACHMENT C**

### **LABORATORY GROUNDWATER ANALYTICAL DATA REPORTS**

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

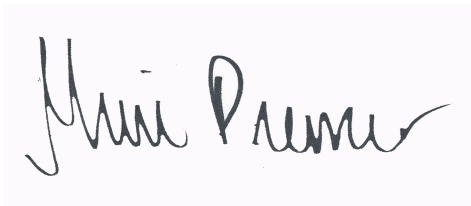
303.277.9310

November 23, 2021

Jacob Whritenour  
Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield, CO 80020  
RE: Noble - Werning 7-2  
Work Order #2111268

Enclosed are the results of analyses for samples received by Summit Scientific on 11/15/21 14:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Muri Premier", is displayed on a light purple rectangular background.

Muri Premier For Paul Shrewsbury  
President



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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01-WH	2111268-01	Water	11/15/21 12:21	11/15/21 14:45
BH02-WH	2111268-02	Water	11/15/21 12:36	11/15/21 14:45
BH03-WH	2111268-03	Water	11/15/21 11:48	11/15/21 14:45
BH04-WH	2111268-04	Water	11/15/21 11:49	11/15/21 14:45
BH05-WH	2111268-05	Water	11/15/21 12:10	11/15/21 14:45

Summit Scientific

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



# Summit Scientific

2111268

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310

Page 1 of 1

Client: Noble / Tasman Geosciences Project Manager: Jake Whritenour, Invoice: Jacob Evans  
Address: 6855 W. 119th Ave. E-Mail: Jwhritenour@tasman-geo.com

City/State/Zip: Broomfield / CO / 80020  
Phone: 303-487-1228, 303-829-0530 Project Name: Werning 7-2  
Sampler Name: Halina North / Daniel Qua Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested								Special Instructions
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	Naphthalene	1,2,4-TMB	1,3,5-TMB	TDS	Chloride	Sulfate	
1	BH01 - WH	11/15	12:21	4			X		X				X	X	X	X	X	X		
2	BH02 - WH	↓	12:36	↓			↓		↓				↓	↓	↓	↓	↓	↓		
3	BH03 - WH	↓	11:48	↓			↓		↓				↓	↓	↓	↓	↓	↓		
4	BH04 - WH	↓	11:49	↓			↓		↓				↓	↓	↓	↓	↓	↓		
5	BH05 - WH	↓	12:10	↓			↓		↓				↓	↓	↓	↓	↓	↓		
6																				
7																				
8																				
9																				
10																				

Relinquished by: <u>Halina North</u>	Date/Time: <u>11/15 2:45pm</u>	Received by: <u>Tasman's Lock Box</u>	Date/Time: <u>11/15 2:45pm</u>	<b>Turn Around Time (Check)</b> ___ Same Day 72 hours ___ 24 hours <input checked="" type="checkbox"/> Standard ___ 48 hours ___ <b>Sample Integrity:</b> Temperature Upon Receipt: <u>4.2</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by: <u>Tasman's Lock Box</u>	Date/Time:	Received by: <u>[Signature]</u>	Date/Time: <u>11/15 14:45pm</u>		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

# Sample Receipt Checklist

2111268

S2 Work Order \_\_\_\_\_

Client: Noble/Tasman Client Project ID: Werning 7-2

Shipped Via: ☐ H.D./P.U./FedEx/UPS/USPS/Other \_\_\_\_\_ Airbill #: \_\_\_\_\_

☐ ☒ ☐ ☐ ☐

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: \_\_\_\_\_  
(Describe)

Temp (°C)	4.2
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ICE
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"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<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"/>	
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"/>	
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"/>	
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>	<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, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

Custodian Printed Name or Initials

Signature of Custodian

Date/Time

11-15-21



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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

**BH01-WH**  
**2111268-01 (Water)**

**Summit Scientific**

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

Date Sampled: **11/15/21 12:21**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BEK0402	11/17/21	11/18/21	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: **11/15/21 12:21**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		96.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.7 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **11/15/21 12:21**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	27.6	12.0	mg/L	200	BEK0459	11/19/21	11/19/21	EPA 300.0	
Sulfate	131	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **11/15/21 12:21**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	937	10.0	mg/L	1	BEK0505	11/22/21	11/23/21	SM2540C	

Summit Scientific

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

**BH02-WH**  
**2111268-02 (Water)**

**Summit Scientific**

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

Date Sampled: **11/15/21 12:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEK0402	11/17/21	11/18/21	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: **11/15/21 12:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		101 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **11/15/21 12:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	51.4	12.0		mg/L	200	BEK0459	11/19/21	11/20/21	EPA 300.0	
Sulfate	173	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **11/15/21 12:36**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	889	10.0		mg/L	1	BEK0505	11/22/21	11/23/21	SM2540C	

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

**BH03-WH**  
**2111268-03 (Water)**

**Summit Scientific**

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

Date Sampled: **11/15/21 11:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEK0402	11/17/21	11/18/21	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: **11/15/21 11:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		98.6 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.9 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **11/15/21 11:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>166</b>	3.00		mg/L	50	BEK0459	11/19/21	11/20/21	EPA 300.0	
Sulfate	<b>388</b>	15.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **11/15/21 11:48**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>892</b>	10.0		mg/L	1	BEK0505	11/22/21	11/23/21	SM2540C	

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

**BH04-WH**  
**2111268-04 (Water)**

**Summit Scientific**

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

Date Sampled: **11/15/21 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEK0402	11/17/21	11/18/21	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: **11/15/21 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		98.0 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.6 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **11/15/21 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>153</b>	3.00		mg/L	50	BEK0459	11/19/21	11/20/21	EPA 300.0	
Sulfate	<b>364</b>	15.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **11/15/21 11:49**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>841</b>	10.0		mg/L	1	BEK0505	11/22/21	11/23/21	SM2540C	

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

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

**BH05-WH**  
**2111268-05 (Water)**

**Summit Scientific**

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

Date Sampled: **11/15/21 12:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEK0402	11/17/21	11/19/21	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: **11/15/21 12:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		99.2 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.8 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **11/15/21 12:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>16.4</b>	12.0		mg/L	200	BEK0459	11/19/21	11/20/21	EPA 300.0	
Sulfate	<b>99.0</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **11/15/21 12:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>879</b>	10.0		mg/L	1	BEK0505	11/22/21	11/23/21	SM2540C	

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

## 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 BEK0402 - EPA 5030 Water MS

##### Blank (BEK0402-BLK1)

Prepared: 11/17/21 Analyzed: 11/19/21

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	13.6		"	13.3		102	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167			

##### LCS (BEK0402-BS1)

Prepared: 11/17/21 Analyzed: 11/19/21

Benzene	32.4	1.0	ug/l	33.3		97.3	51-132			
Toluene	34.3	1.0	"	33.3		103	51-138			
Ethylbenzene	40.4	1.0	"	33.3		121	58-146			
m,p-Xylene	78.6	2.0	"	66.7		118	57-144			
o-Xylene	38.0	1.0	"	33.3		114	53-146			
Naphthalene	31.7	1.0	"	33.3		95.0	70-130			
1,2,4-Trimethylbenzene	34.9	1.0	"	33.3		105	70-130			
1,3,5-Trimethylbenzene	35.1	1.0	"	33.3		105	70-130			
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3		105	23-173			
Surrogate: Toluene-d8	13.0		"	13.3		97.6	20-170			
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3		103	21-167			

##### Matrix Spike (BEK0402-MS1)

Source: 2111314-03

Prepared: 11/17/21 Analyzed: 11/19/21

Benzene	31.9	1.0	ug/l	33.3	ND	95.8	34-141			
Toluene	34.0	1.0	"	33.3	ND	102	27-151			
Ethylbenzene	40.5	1.0	"	33.3	ND	121	29-160			
m,p-Xylene	78.0	2.0	"	66.7	ND	117	20-166			
o-Xylene	38.1	1.0	"	33.3	ND	114	33-159			
Naphthalene	36.4	1.0	"	33.3	ND	109	70-130			
1,2,4-Trimethylbenzene	34.6	1.0	"	33.3	ND	104	70-130			
1,3,5-Trimethylbenzene	35.0	1.0	"	33.3	ND	105	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		100	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		102	21-167			

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

Project: Noble - Werning 7-2

Project Number: [none]

Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

## 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 BEK0402 - EPA 5030 Water MS

##### Matrix Spike Dup (BEK0402-MSD1)

Source: 2111314-03

Prepared: 11/17/21 Analyzed: 11/19/21

Benzene	32.6	1.0	ug/l	33.3	ND	97.8	34-141	2.08	30	
Toluene	34.5	1.0	"	33.3	ND	103	27-151	1.31	30	
Ethylbenzene	41.2	1.0	"	33.3	ND	124	29-160	1.79	30	
m,p-Xylene	79.3	2.0	"	66.7	ND	119	20-166	1.64	30	
o-Xylene	39.0	1.0	"	33.3	ND	117	33-159	2.10	30	
Naphthalene	38.5	1.0	"	33.3	ND	116	70-130	5.74	30	
1,2,4-Trimethylbenzene	35.6	1.0	"	33.3	ND	107	70-130	2.62	30	
1,3,5-Trimethylbenzene	33.2	1.0	"	33.3	ND	99.7	70-130	5.13	30	
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.6	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 - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

### 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 BEK0459 - General Preparation

##### Blank (BEK0459-BLK1)

Prepared & Analyzed: 11/19/21

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

##### LCS (BEK0459-BS1)

Prepared & Analyzed: 11/19/21

Chloride	2.88	0.0600	mg/L	3.00	96.0	90-110
Sulfate	14.7	0.300	"	15.0	97.7	90-110

##### Duplicate (BEK0459-DUP1)

Source: 2111267-01

Prepared & Analyzed: 11/19/21

Chloride	202	3.00	mg/L	186	8.09	20
Sulfate	305	15.0	"	288	5.65	20

##### Matrix Spike (BEK0459-MS1)

Source: 2111267-01

Prepared & Analyzed: 11/19/21

Chloride	722	12.0	mg/L	600	186	89.3	80-120
Sulfate	3390	60.0	"	3000	288	103	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 - Werning 7-2

Project Number: [none]

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**Reported:**  
11/23/21 17:31

**Total Dissolved Solids by SM2540C - Quality Control**

**Summit Scientific**

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

**Batch BEK0505 - General Preparation**

**Blank (BEK0505-BLK1)**

Prepared & Analyzed: 11/23/21

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (BEK0505-DUP1)**

Source: 2111268-01

Prepared & Analyzed: 11/23/21

Total Dissolved Solids 938 10.0 mg/L 937 0.0960 20

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Werning 7-2

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
11/23/21 17:31

### 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