

REMEDIAL EXCAVATION REPORT
WERNING 7-2 WELLHEAD
COGCC SPILL TRACKING # 479589
COGCC REMEDIATION # 16540

Prepared for:



2115 117th Avenue
Greeley, CO 80631

Prepared by:



6855 W. 119th Ave
Broomfield, CO 80020

March 10, 2023

Mr. Dan Peterson
Environmental Specialist
Noble Energy Inc.
2115 117th Avenue
Greeley, CO 80631

Subject: **Remedial Excavation Report**
 Werning 7-2 Wellhead
 API #: 05-123-22019
 Spill/Release Point ID #: 479589
 Remediation Project #: 16540
 SWNE S2 T4N R66W
 Weld County, Colorado

Dear Mr. Peterson:

Below please find a copy of the above referenced Remedial Excavation Report (Report) for the Werning 7-2 Wellhead (Site) in Weld County, Colorado. The text below describes the environmental assessment and associated soil and sampling conducted at the Site between February 23, 2021 (Decommissioning) and December 14, 2022 (Excavation) by Tasman, Inc. (Tasman), on behalf of Noble Energy, Inc. (Noble).

Introduction

The purpose of this document is to describe the results of the remedial excavation and associated sampling activities. The activities described below were performed in response to the discovery of suspected impacted material adjacent to the Werning 7-2 Wellhead during decommissioning activities and confirmed 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 6th 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 sampling and documentation during decommissioning and abandonment activities at the former Werning 7-2 Wellhead. During decommissioning and abandonment activities at the Site historic impacts were discovered adjacent to the wellhead and confirmed on March 8, 2021. A 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 and the Site was plugged and abandoned. The COGCC issued Remediation Number 16540 for this project. The Initial Site investigation was reported in the *Supplemental Form 27* (COGCC Document # 402656990) that was submitted to the COGCC on 04/14/2021. The Site Assessment Report (COGCC Document # 403015753) was submitted to the COGCC on 04/14/2022.

Field Activities- Remedial Excavation

Remedial excavation activities were conducted on December 12, 2022 and December 14, 2022, to remove impacted soil in the area of the former wellhead location. The excavation was guided in the field using a PID and standard headspace sampling techniques. A total of six soil samples (SS06@6' through SS11@6') were collected from the final perimeter of the excavation along with one excavation base sample (FS02@7'). All soil samples were submitted to Summit for laboratory analysis of COGCC Table 915-1 list of organics in soil using USEPA Method 8260B and USEPA Method 8270D, and TPH using USEPA Methods 8260B and 8015 per the approved amended sampling plan (COGCC Document # 403124773). During the remedial excavation, groundwater was encountered at approximately 6 feet (ft) below ground surface (bgs). Excavation soil analytical data is summarized in Table 1 and the remedial excavation extent and sample locations are illustrated on Figure 2. The laboratory analytical report is included as Attachment A.

A total of approximately 84 cubic yards of impacted material were removed for off-Site disposal at the Waste Management Buffalo Ridge Landfill undersigned Noble waste manifests. A total of approximately 84 cubic yards of imported clean fill was used to backfill the excavation. The final remedial excavation extent measured approximately 19 ft. by 27 ft. by 7 ft. bgs.

Results

Laboratory analytical results for the remedial excavation soil samples collected along the final lateral excavation extent were below applicable COGCC Table 915-1 soil standards. However, laboratory analytical results for the remedial excavation the base sample (FS02@7') exceeded applicable COGCC Table 915-1 soil standards for benzene, ethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene, and total petroleum hydrocarbons (TPH). Due to the presence of shallow groundwater destabilizing the sidewalls of the open excavation, the excavation could not be advanced deeper than 7 ft bgs to remove the impacts identified at FS02@7'. As such, the excavation was backfilled, and additional remedial alternatives will be evaluated to address the impacts at FS02@7'.

Conclusions

Based upon field and laboratory data collected during remedial excavation activities, monitoring wells damaged during the remedial excavation will be reinstalled to monitor groundwater and to delineate the remaining impacts to soil at the site. Additional remedial action will be taken to address the residual impacts that remain at the site following the remedial excavation.

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 if you require additional information.

Sincerely,
Tasman Geosciences, Inc.



Jake Whritenour, Program Manager

Attachments:

Table 1 – Soil Analytical Data

Figure 1 – Site Location Map

Figure 2 – Excavation Soil Analytical Results Map (11/11/2021, 12/12/2022, & 12/14/2022)

Attachment A – Laboratory Analytical Report

TABLES

TABLE 1
SOIL ANALYTICAL DATA
NOBLE ENERGY, INC. - WERNING 7-2 WH

Soil Sample ID	Date	¹ 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 ²		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 ^{2,3}		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
BH02_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
SS06@6'	12/12/22	<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
FS02@7'	12/12/22	0.035	<0.0050	3.0	5.7	14	5.1	0.44	760	540	52	<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
SS07@6'	12/14/22	<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
SS08@6'	12/14/22	<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
SS09@6'	12/14/22	<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
SS10@6'	12/14/22	<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
SS11@6'	12/14/22	<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:

- Compounds referenced from 2 CCR 404-1, Table 915-1, effective January 15, 2021.
- Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
- 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 = Millimhos 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

FIGURES

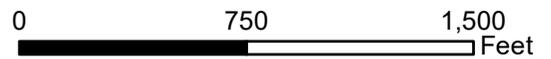
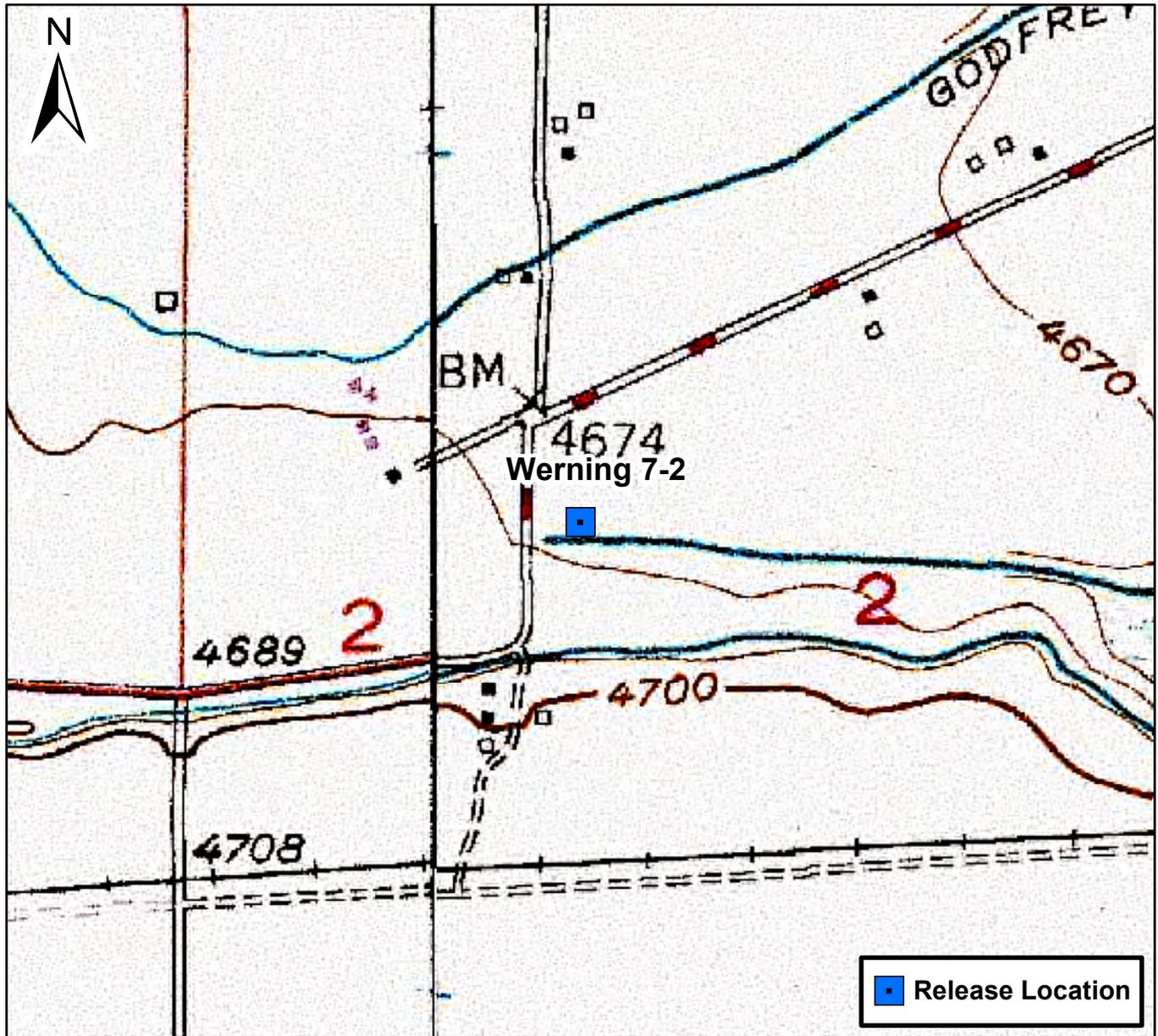


Figure 1

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



FS02@7'
(12/12/2022)

PID = 0.0
 Benzene = 0.035 mg/kg
 Ethylbenzene = 3.0 mg/kg
 1,2,4- Trimethylbenzene = 14 mg/kg
 1,3,5- Trimethylbenzene = 5.1 mg/kg
 Naphthalene = 0.44 mg/kg
 TPH = 1,352 mg/kg

SS06@6'
(12/12/2022)

PID = 0.0

SS07@6'
(12/14/2022)

PID = 0.0

SS05@6'
(12/12/2022)

PID = 500.6

SS08@6'
(12/14/2022)

PID = 0.0

SS11@6'
(12/14/2022)

PID = 0.0

SS10@6'
(12/14/2022)

PID = 0.0

SS09@6'
(12/14/2022)

PID = 0.0

BH01_WH@4-6'
(11/11/2021)

Naphthalene = 0.0086 mg/kg
 PID = 248.3 ppm

- Legend**
-  Soil Boring Location (Collected via Trimble GPS)
 -  Excavation Extent
 -  Soil Sample Location – Lab Analyzed (Collected via Trimble GPS)
 -  Soil Sample Location – Field Screen (Collected via Trimble GPS)

- Notes**
- 1) All locations are approximate unless otherwise noted.
 - 2) Buried infrastructure has been spatially projected.
 - 3) Analytical results below laboratory detection limits or within compliance of COGCC Table 915-1 not shown.
 - 4) Concentration in exceedance of COGCC table 915-1 standards indicated in RED.

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

0 ft. 10 ft. 20 ft. 

Image Source: Google Earth; Google 2020

DATE:	12/15/2022
DESIGNED BY:	JW
DRAWN BY:	JW



TASMAN
GEOSCIENCES

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

Noble Energy, Inc. – DJ Basin
Werning 7-2
 SENW, Section 2, Township 4 North, Range 66 West
 Weld County, Colorado

Excavation Soil
 Analytical Results Map
 (11/11/2021, 12/12/2022,
 & 12/14/2022)

FIGURE
 2

ATTACHMENT A

LABORATORY ANALYTICAL DATA REPORT

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 14, 2022

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

RE: Noble - Werning 7-2 WH

Work Order #2212222

Enclosed are the results of analyses for samples received by Summit Scientific on 12/12/22 16:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott Sheely For Paul Shrewsbury
President



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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS06@6'	2212222-01	Soil	12/12/22 14:50	12/12/22 16:10
FS02@7'	2212222-02	Soil	12/12/22 12:30	12/12/22 16:10

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

S₂

2212222

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

Page 1 of 1

Client: Noble / Tasman Geosciences Project Manager: Jake Whritenour, Invoice: *Jacob Kella*
 Address: 6855 W. 119th Ave. E-Mail: jwhritenour@tasman-geo.com/ Noble Group
 City/State/Zip: Broomfield / CO/ 80020
 Phone: 303-827-1511 Project Name: *Worning 7-2 WH*
 Sampler Name: Hunter Merlo Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested					Special Instructions				
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR		Boron - HWS			
1	SS06 @ 6'	12/2/22	1450	2			X			X			X	X	X						pH, EC, SAR by saturated paste
2	FS02 @ 7'	↓	1650	2			X			X			X	X	X						
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by: <i>H. Merlo</i>	Date/Time: 12/12/22 1610	Received by: Summit North Office	Date/Time: 12/12/22 1610	Turn Around Time (Check) <input checked="" type="checkbox"/> Same Day 72 hours <input type="checkbox"/> 24 hours Standard <input type="checkbox"/> 48 hours Sample Integrity: Temperature Upon Receipt: <u>8.1</u> Samples Intact: <input checked="" type="checkbox"/> Yes No	Notes:
Relinquished by: Summit	Date/Time: 12/12/22 1610	Received by: <i>[Signature]</i>	Date/Time: 1610		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

Sample Receipt Checklist

S2 Work Order# 2212222

Client: Noble Tasmann Client Project ID: warning 7-2 WH

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

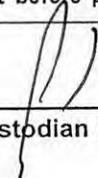
Matrix (Check all that apply) Air Soil/Solid Water Other

Temp (°C) Thermometer #

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

Additional Comments (if any):

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


Custodian Printed Name

12-12-22 1610
Date/Time



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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

SS06@6'
221222-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/12/22 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BFL0311	12/12/22	12/12/22	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: **12/12/22 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0394	98.5 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0380	95.0 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0404	101 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/12/22 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BFL0312	12/12/22	12/12/22	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **12/12/22 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	8.39	67.1 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

SS06@6'
2212222-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **12/12/22 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFL0314	12/13/22	12/13/22	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: **12/12/22 14:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0171	51.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0277	83.1 %	40-150		"	"	"	"	

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Broomfield CO, 80020

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

FS02@7'
2212222-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/12/22 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.035	0.0020	mg/kg	1	BFL0311	12/12/22	12/12/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	3.0	0.050	"	10	"	"	"	"	
Xylenes (total)	5.7	0.10	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	14	0.050	"	"	"	"	"	"	E
1,3,5-Trimethylbenzene	5.1	0.050	"	"	"	"	"	"	
Naphthalene	0.44	0.0038	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	760	5.0	"	10	"	"	"	"	E

Date Sampled: **12/12/22 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0532	133 %	50-150		"	"	"	"	
<i>Surrogate: Toluene-d8</i>	0.0315	78.8 %	50-150		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0492	123 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/12/22 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	540	50	mg/kg	1	BFL0312	12/12/22	12/12/22	EPA 8015M	
C28-C36 (ORO)	52	50	"	"	"	"	"	"	

Date Sampled: **12/12/22 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>	10.5	84.3 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Broomfield CO, 80020

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

FS02@7'
2212222-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **12/12/22 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFL0314	12/13/22	12/13/22	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: **12/12/22 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0187	56.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0260	78.0 %	40-150		"	"	"	"	

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFL0311 - EPA 5030 Soil MS

Blank (BFL0311-BLK1)

Prepared: 12/12/22 Analyzed: 12/13/22

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0440</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>50-150</i>			

LCS (BFL0311-BS1)

Prepared: 12/12/22 Analyzed: 12/13/22

Benzene	0.129	0.0020	mg/kg	0.125		103	70-130			
Toluene	0.127	0.0050	"	0.125		101	70-130			
Ethylbenzene	0.140	0.0050	"	0.125		112	70-130			
m,p-Xylene	0.268	0.010	"	0.250		107	70-130			
o-Xylene	0.129	0.0050	"	0.125		103	70-130			
1,2,4-Trimethylbenzene	0.138	0.0050	"	0.125		111	70-130			
1,3,5-Trimethylbenzene	0.144	0.0050	"	0.125		115	70-130			
Naphthalene	0.105	0.0038	"	0.125		84.3	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.3</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>50-150</i>			

Matrix Spike (BFL0311-MS1)

Source: 2212221-01

Prepared: 12/12/22 Analyzed: 12/13/22

Benzene	0.128	0.0020	mg/kg	0.125	ND	103	70-130			
Toluene	0.128	0.0050	"	0.125	ND	102	70-130			
Ethylbenzene	0.141	0.0050	"	0.125	ND	113	70-130			
m,p-Xylene	0.268	0.010	"	0.250	ND	107	70-130			
o-Xylene	0.131	0.0050	"	0.125	ND	105	70-130			
1,2,4-Trimethylbenzene	0.138	0.0050	"	0.125	ND	111	70-130			
1,3,5-Trimethylbenzene	0.145	0.0050	"	0.125	ND	116	70-130			
Naphthalene	0.115	0.0038	"	0.125	ND	91.8	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.2</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>50-150</i>			

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFL0311 - EPA 5030 Soil MS

Matrix Spike Dup (BFL0311-MSD1)	Source: 2212221-01			Prepared: 12/12/22 Analyzed: 12/13/22						
Benzene	0.128	0.0020	mg/kg	0.125	ND	102	70-130	0.281	30	
Toluene	0.127	0.0050	"	0.125	ND	102	70-130	0.165	30	
Ethylbenzene	0.140	0.0050	"	0.125	ND	112	70-130	0.899	30	
m,p-Xylene	0.269	0.010	"	0.250	ND	107	70-130	0.123	30	
o-Xylene	0.131	0.0050	"	0.125	ND	105	70-130	0.0230	30	
1,2,4-Trimethylbenzene	0.140	0.0050	"	0.125	ND	112	70-130	0.950	30	
1,3,5-Trimethylbenzene	0.145	0.0050	"	0.125	ND	116	70-130	0.0414	30	
Naphthalene	0.113	0.0038	"	0.125	ND	90.1	70-130	1.82	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>50-150</i>			

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFL0312 - EPA 3550A

Blank (BFL0312-BLK1)

Prepared: 12/12/22 Analyzed: 12/13/22

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	12.2		"	12.5		97.9	30-150				

LCS (BFL0312-BS1)

Prepared: 12/12/22 Analyzed: 12/13/22

C10-C28 (DRO)	447	50	mg/kg	500		89.4	70-130				
Surrogate: <i>o</i> -Terphenyl	14.2		"	12.5		114	30-150				

Matrix Spike (BFL0312-MS1)

Source: 2212221-01

Prepared: 12/12/22 Analyzed: 12/13/22

C10-C28 (DRO)	477	50	mg/kg	500	40.6	87.3	70-130				
Surrogate: <i>o</i> -Terphenyl	10.3		"	12.5		82.4	30-150				

Matrix Spike Dup (BFL0312-MSD1)

Source: 2212221-01

Prepared: 12/12/22 Analyzed: 12/13/22

C10-C28 (DRO)	458	50	mg/kg	500	40.6	83.4	70-130	4.18	20		
Surrogate: <i>o</i> -Terphenyl	9.53		"	12.5		76.2	30-150				

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6855 W. 119th Ave.
Broomfield CO, 80020

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFL0314 - EPA 5030 Soil MS

Blank (BFL0314-BLK1)

Prepared & Analyzed: 12/13/22

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0261</i>		"	<i>0.0333</i>		<i>78.3</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0331</i>		"	<i>0.0333</i>		<i>99.3</i>	<i>40-150</i>			

LCS (BFL0314-BS1)

Prepared & Analyzed: 12/13/22

Acenaphthene	0.0301	0.00500	mg/kg	0.0333	90.4	31-137
Anthracene	0.0302	0.00500	"	0.0333	90.5	30-120
Benzo (a) anthracene	0.0272	0.00500	"	0.0333	81.7	30-120
Benzo (a) pyrene	0.0294	0.00500	"	0.0333	88.1	30-120
Benzo (b) fluoranthene	0.0259	0.00500	"	0.0333	77.6	30-120
Benzo (k) fluoranthene	0.0311	0.00500	"	0.0333	93.4	30-120
Chrysene	0.0329	0.00500	"	0.0333	98.6	30-120
Dibenz (a,h) anthracene	0.0239	0.00500	"	0.0333	71.7	30-120
Fluoranthene	0.0304	0.00500	"	0.0333	91.1	30-120
Fluorene	0.0294	0.00500	"	0.0333	88.3	30-120
Indeno (1,2,3-cd) pyrene	0.0218	0.00500	"	0.0333	65.4	30-120
Pyrene	0.0300	0.00500	"	0.0333	90.0	35-142
1-Methylnaphthalene	0.0237	0.00500	"	0.0333	71.2	35-142
2-Methylnaphthalene	0.0334	0.00500	"	0.0333	100	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0252</i>		"	<i>0.0333</i>	<i>75.7</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0309</i>		"	<i>0.0333</i>	<i>92.7</i>	<i>40-150</i>

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFL0314 - EPA 5030 Soil MS

Matrix Spike (BFL0314-MS1)	Source: 2212225-01			Prepared & Analyzed: 12/13/22						
Acenaphthene	0.0214	0.00500	mg/kg	0.0333	ND	64.1	31-137			
Anthracene	0.0219	0.00500	"	0.0333	ND	65.8	30-120			
Benzo (a) anthracene	0.0233	0.00500	"	0.0333	ND	70.0	30-120			
Benzo (a) pyrene	0.0171	0.00500	"	0.0333	ND	51.2	30-120			
Benzo (b) fluoranthene	0.0185	0.00500	"	0.0333	ND	55.6	30-120			
Benzo (k) fluoranthene	0.0209	0.00500	"	0.0333	ND	62.8	30-120			
Chrysene	0.0241	0.00500	"	0.0333	ND	72.4	30-120			
Dibenz (a,h) anthracene	0.0177	0.00500	"	0.0333	ND	53.0	30-120			
Fluoranthene	0.0221	0.00500	"	0.0333	ND	66.2	30-120			
Fluorene	0.0214	0.00500	"	0.0333	ND	64.2	30-120			
Indeno (1,2,3-cd) pyrene	0.0167	0.00500	"	0.0333	ND	50.2	30-120			
Pyrene	0.0228	0.00500	"	0.0333	ND	68.4	35-142			
1-Methylnaphthalene	0.0212	0.00500	"	0.0333	0.00575	46.5	15-130			
2-Methylnaphthalene	0.0235	0.00500	"	0.0333	ND	70.5	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0215</i>		<i>"</i>	<i>0.0333</i>		<i>64.6</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0237</i>		<i>"</i>	<i>0.0333</i>		<i>71.1</i>	<i>40-150</i>			

Matrix Spike Dup (BFL0314-MSD1)	Source: 2212225-01			Prepared & Analyzed: 12/13/22						
Acenaphthene	0.0220	0.00500	mg/kg	0.0333	ND	66.1	31-137	3.07	30	
Anthracene	0.0210	0.00500	"	0.0333	ND	62.9	30-120	4.40	30	
Benzo (a) anthracene	0.0238	0.00500	"	0.0333	ND	71.3	30-120	1.87	30	
Benzo (a) pyrene	0.0173	0.00500	"	0.0333	ND	52.0	30-120	1.55	30	
Benzo (b) fluoranthene	0.0190	0.00500	"	0.0333	ND	56.9	30-120	2.31	30	
Benzo (k) fluoranthene	0.0206	0.00500	"	0.0333	ND	61.7	30-120	1.83	30	
Chrysene	0.0237	0.00500	"	0.0333	ND	71.0	30-120	1.95	30	
Dibenz (a,h) anthracene	0.0178	0.00500	"	0.0333	ND	53.4	30-120	0.757	30	
Fluoranthene	0.0217	0.00500	"	0.0333	ND	65.0	30-120	1.82	30	
Fluorene	0.0219	0.00500	"	0.0333	ND	65.8	30-120	2.43	30	
Indeno (1,2,3-cd) pyrene	0.0171	0.00500	"	0.0333	ND	51.3	30-120	2.32	30	
Pyrene	0.0227	0.00500	"	0.0333	ND	68.2	35-142	0.255	30	
1-Methylnaphthalene	0.0198	0.00500	"	0.0333	0.00575	42.2	15-130	7.00	50	
2-Methylnaphthalene	0.0253	0.00500	"	0.0333	ND	76.0	15-130	7.47	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0203</i>		<i>"</i>	<i>0.0333</i>		<i>61.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0231</i>		<i>"</i>	<i>0.0333</i>		<i>69.3</i>	<i>40-150</i>			

Summit Scientific

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/14/22 14:49

Notes and Definitions

- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 16, 2022

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

RE: Noble - Werning 7-2 WH

Work Order #2212271

Enclosed are the results of analyses for samples received by Summit Scientific on 12/14/22 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott Sheely For Paul Shrewsbury
President



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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS07@6'	2212271-01	Soil	12/14/22 12:30	12/14/22 16:00
SS08@6'	2212271-02	Soil	12/14/22 12:40	12/14/22 16:00
SS09@6'	2212271-03	Soil	12/14/22 14:20	12/14/22 16:00
SS10@6'	2212271-04	Soil	12/14/22 14:30	12/14/22 16:00
SS11@6'	2212271-05	Soil	12/14/22 12:50	12/14/22 16:00

Summit Scientific

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Summit Scientific

S₂

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

Client:	Noble / Tasman Geosciences	Project Manager:	Jake Whritenour, Invoice: <i>Jacob Rulla</i>
Address:	6855 W. 119th Ave.	E-Mail:	jwhritenour@tasman-geo.com/ Noble Group
City/State/Zip:	Broomfield / CO/ 80020	Project Name:	<i>Warning 7-2 WH</i>
Phone:	303-827-1511	Project Number:	
Sampler Name:	Hunter Merlo		

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested					Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR	Boron - HWS		
1	SS07 @ 6'	12/14/22	1230	2			X			X				X	X	X			pH, EC, SAR by saturated paste
2	SS08 @ 6'	↓	1240	↓										↓	↓	↓			
3	SS09 @ 6'	↓	1420	↓										↓	↓	↓			
4	SS10 @ 6'	↓	1430	↓										↓	↓	↓			
5	SS11 @ 6'	↓	1250	↓										↓	↓	↓			
6																			
7																			
8																			
9																			
10																			

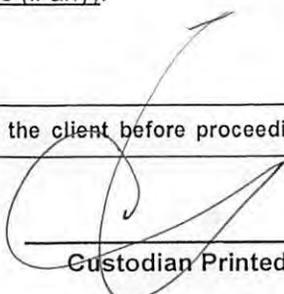
Relinquished by: <i>MM</i>	Date/Time: 12/14/22 1535	Received by: Summit North office	Date/Time: 12/14/22 1535	Turn Around Time (Check)	Notes:
				<input checked="" type="checkbox"/> Same Day	72 hours
				<input type="checkbox"/> 24 hours	Standard
				<input type="checkbox"/> 48 hours	
Relinquished by: Summit North office	Date/Time: 12/14/22 1600	Received by: <i>[Signature]</i>	Date/Time: 12/14/22 1600	Sample Integrity:	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Temperature Upon Receipt: 7.2	
				Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

S₂

Sample Receipt Checklist

S2 Work Order# 2212271Client: Noble/Tosman Client Project ID: Warning 7-2 WHShipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #:
 Matrix (Check all that apply) Air Soil/Solid Water Other Temp (°C) Thermometer #

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


Custodian Printed Name12-14-22
Date/Time



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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS07@6'
2212271-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/22 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BFL0374	12/14/22	12/14/22	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: **12/14/22 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0379	94.6 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0391	97.8 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0405	101 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/22 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BFL0375	12/14/22	12/14/22	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **12/14/22 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	13.3	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 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS07@6'
2212271-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **12/14/22 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFL0378	12/15/22	12/15/22	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: **12/14/22 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0204	61.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0250	74.8 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS08@6'
2212271-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/22 12:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BFL0374	12/14/22	12/14/22	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: **12/14/22 12:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0389	97.4 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0398	99.6 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0406	102 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/22 12:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BFL0375	12/14/22	12/14/22	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **12/14/22 12:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	13.6	109 %		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 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS08@6'
2212271-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **12/14/22 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFL0378	12/15/22	12/15/22	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: **12/14/22 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0187	56.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0237	71.2 %	40-150		"	"	"	"	

Summit Scientific

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS09@6'
2212271-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFL0374	12/14/22	12/14/22	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: **12/14/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0385	96.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0398	99.4 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0408	102 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFL0375	12/14/22	12/14/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **12/14/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	13.4	107 %	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 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS09@6'
2212271-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **12/14/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFL0378	12/15/22	12/15/22	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: **12/14/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0181	54.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0242	72.5 %	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 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS10@6'
2212271-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFL0374	12/14/22	12/14/22	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: **12/14/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0375	93.7 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0394	98.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0406	102 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFL0375	12/14/22	12/15/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **12/14/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	11.9	95.5 %	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 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS10@6'
2212271-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **12/14/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFL0378	12/15/22	12/15/22	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: **12/14/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0193	57.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0245	73.4 %	40-150		"	"	"	"	

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS11@6'
2212271-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/22 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFL0374	12/14/22	12/15/22	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: **12/14/22 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0376	94.0 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0394	98.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0398	99.5 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/22 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFL0375	12/14/22	12/15/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **12/14/22 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	12.4	99.1 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

SS11@6'
2212271-05 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **12/14/22 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Acenaphthene	ND	0.00500	mg/kg	1	BFL0378	12/15/22	12/15/22	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: **12/14/22 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 2-Methylnaphthalene-d10	0.0206	61.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0250	74.9 %	40-150		"	"	"	"	

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFL0374 - EPA 5030 Soil MS

Blank (BFL0374-BLK1)

Prepared: 12/14/22 Analyzed: 12/15/22

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0375		"	0.0400		93.8	50-150			
<i>Surrogate: Toluene-d8</i>	0.0395		"	0.0400		98.7	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0396		"	0.0400		99.1	50-150			

LCS (BFL0374-BS1)

Prepared: 12/14/22 Analyzed: 12/15/22

Benzene	0.121	0.0020	mg/kg	0.125		96.4	70-130			
Toluene	0.141	0.0050	"	0.125		113	70-130			
Ethylbenzene	0.161	0.0050	"	0.125		129	70-130			
m,p-Xylene	0.310	0.010	"	0.250		124	70-130			
o-Xylene	0.145	0.0050	"	0.125		116	70-130			
1,2,4-Trimethylbenzene	0.151	0.0050	"	0.125		121	70-130			
1,3,5-Trimethylbenzene	0.160	0.0050	"	0.125		128	70-130			
Naphthalene	0.127	0.0038	"	0.125		102	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0364		"	0.0400		91.0	50-150			
<i>Surrogate: Toluene-d8</i>	0.0398		"	0.0400		99.6	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0375		"	0.0400		93.8	50-150			

Matrix Spike (BFL0374-MS1)

Source: 2212270-01

Prepared: 12/14/22 Analyzed: 12/15/22

Benzene	0.119	0.0020	mg/kg	0.125	ND	95.6	70-130			
Toluene	0.142	0.0050	"	0.125	ND	114	70-130			
Ethylbenzene	0.156	0.0050	"	0.125	ND	125	70-130			
m,p-Xylene	0.307	0.010	"	0.250	ND	123	70-130			
o-Xylene	0.144	0.0050	"	0.125	ND	115	70-130			
1,2,4-Trimethylbenzene	0.156	0.0050	"	0.125	ND	125	70-130			
1,3,5-Trimethylbenzene	0.163	0.0050	"	0.125	ND	130	70-130			
Naphthalene	0.154	0.0038	"	0.125	ND	123	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0382		"	0.0400		95.6	50-150			
<i>Surrogate: Toluene-d8</i>	0.0400		"	0.0400		100	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0389		"	0.0400		97.2	50-150			

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFL0374 - EPA 5030 Soil MS

Matrix Spike Dup (BFL0374-MSD1)	Source: 2212270-01			Prepared: 12/14/22 Analyzed: 12/15/22						
Benzene	0.120	0.0020	mg/kg	0.125	ND	96.2	70-130	0.651	30	
Toluene	0.144	0.0050	"	0.125	ND	115	70-130	1.43	30	
Ethylbenzene	0.158	0.0050	"	0.125	ND	127	70-130	1.51	30	
m,p-Xylene	0.310	0.010	"	0.250	ND	124	70-130	1.05	30	
o-Xylene	0.146	0.0050	"	0.125	ND	117	70-130	1.41	30	
1,2,4-Trimethylbenzene	0.155	0.0050	"	0.125	ND	124	70-130	0.714	30	
1,3,5-Trimethylbenzene	0.163	0.0050	"	0.125	ND	130	70-130	0.0921	30	
Naphthalene	0.155	0.0038	"	0.125	ND	124	70-130	0.543	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>96.9</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0380</i>		<i>"</i>	<i>0.0400</i>		<i>95.0</i>	<i>50-150</i>			

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFL0375 - EPA 3550A

Blank (BFL0375-BLK1)

Prepared: 12/14/22 Analyzed: 12/15/22

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	14.0		"	12.5		112		30-150			

LCS (BFL0375-BS1)

Prepared: 12/14/22 Analyzed: 12/15/22

C10-C28 (DRO)	502	50	mg/kg	500		100		70-130			
Surrogate: <i>o</i> -Terphenyl	12.6		"	12.5		100		30-150			

Matrix Spike (BFL0375-MS1)

Source: 2212270-01

Prepared: 12/14/22 Analyzed: 12/15/22

C10-C28 (DRO)	519	50	mg/kg	500	24.5	99.0		70-130			
Surrogate: <i>o</i> -Terphenyl	14.4		"	12.5		115		30-150			

Matrix Spike Dup (BFL0375-MSD1)

Source: 2212270-01

Prepared: 12/14/22 Analyzed: 12/15/22

C10-C28 (DRO)	548	50	mg/kg	500	24.5	105		70-130	5.28	20	
Surrogate: <i>o</i> -Terphenyl	12.5		"	12.5		99.9		30-150			

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFL0378 - EPA 5030 Soil MS

Blank (BFL0378-BLK1)

Prepared & Analyzed: 12/15/22

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	0.0165		"	0.0333	49.4	40-150				
Surrogate: Fluoranthene-d10	0.0256		"	0.0333	76.7	40-150				

LCS (BFL0378-BS1)

Prepared & Analyzed: 12/15/22

Acenaphthene	0.0262	0.00500	mg/kg	0.0333	78.6	31-137				
Anthracene	0.0263	0.00500	"	0.0333	78.9	30-120				
Benzo (a) anthracene	0.0241	0.00500	"	0.0333	72.2	30-120				
Benzo (a) pyrene	0.0213	0.00500	"	0.0333	64.0	30-120				
Benzo (b) fluoranthene	0.0236	0.00500	"	0.0333	70.9	30-120				
Benzo (k) fluoranthene	0.0270	0.00500	"	0.0333	81.1	30-120				
Chrysene	0.0295	0.00500	"	0.0333	88.5	30-120				
Dibenz (a,h) anthracene	0.0176	0.00500	"	0.0333	52.7	30-120				
Fluoranthene	0.0264	0.00500	"	0.0333	79.1	30-120				
Fluorene	0.0257	0.00500	"	0.0333	77.1	30-120				
Indeno (1,2,3-cd) pyrene	0.0176	0.00500	"	0.0333	52.7	30-120				
Pyrene	0.0280	0.00500	"	0.0333	83.9	35-142				
1-Methylnaphthalene	0.0169	0.00500	"	0.0333	50.7	35-142				
2-Methylnaphthalene	0.0217	0.00500	"	0.0333	65.2	35-142				
Surrogate: 2-Methylnaphthalene-d10	0.0273		"	0.0333	81.8	40-150				
Surrogate: Fluoranthene-d10	0.0267		"	0.0333	80.0	40-150				

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

Project: Noble - Werning 7-2 WH

Project Number: [none]
Project Manager: Jacob Whritenour

Reported:
12/16/22 10:36

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFL0378 - EPA 5030 Soil MS

Matrix Spike (BFL0378-MS1)	Source: 2212271-01			Prepared & Analyzed: 12/15/22						
Acenaphthene	0.0183	0.00500	mg/kg	0.0333	ND	55.0	31-137			
Anthracene	0.0190	0.00500	"	0.0333	ND	56.9	30-120			
Benzo (a) anthracene	0.0207	0.00500	"	0.0333	ND	62.0	30-120			
Benzo (a) pyrene	0.0163	0.00500	"	0.0333	ND	48.9	30-120			
Benzo (b) fluoranthene	0.0174	0.00500	"	0.0333	ND	52.1	30-120			
Benzo (k) fluoranthene	0.0184	0.00500	"	0.0333	ND	55.1	30-120			
Chrysene	0.0203	0.00500	"	0.0333	ND	60.8	30-120			
Dibenz (a,h) anthracene	0.0134	0.00500	"	0.0333	ND	40.3	30-120			
Fluoranthene	0.0211	0.00500	"	0.0333	ND	63.3	30-120			
Fluorene	0.0182	0.00500	"	0.0333	ND	54.7	30-120			
Indeno (1,2,3-cd) pyrene	0.0136	0.00500	"	0.0333	ND	40.7	30-120			
Pyrene	0.0203	0.00500	"	0.0333	ND	60.8	35-142			
1-Methylnaphthalene	0.0140	0.00500	"	0.0333	ND	42.0	15-130			
2-Methylnaphthalene	0.0162	0.00500	"	0.0333	ND	48.6	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0222</i>		<i>"</i>	<i>0.0333</i>		<i>66.6</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0224</i>		<i>"</i>	<i>0.0333</i>		<i>67.3</i>	<i>40-150</i>			

Matrix Spike Dup (BFL0378-MSD1)	Source: 2212271-01			Prepared & Analyzed: 12/15/22						
Acenaphthene	0.0185	0.00500	mg/kg	0.0333	ND	55.4	31-137	0.817	30	
Anthracene	0.0193	0.00500	"	0.0333	ND	58.0	30-120	1.98	30	
Benzo (a) anthracene	0.0207	0.00500	"	0.0333	ND	62.1	30-120	0.224	30	
Benzo (a) pyrene	0.0164	0.00500	"	0.0333	ND	49.2	30-120	0.430	30	
Benzo (b) fluoranthene	0.0173	0.00500	"	0.0333	ND	51.8	30-120	0.560	30	
Benzo (k) fluoranthene	0.0179	0.00500	"	0.0333	ND	53.6	30-120	2.87	30	
Chrysene	0.0202	0.00500	"	0.0333	ND	60.6	30-120	0.443	30	
Dibenz (a,h) anthracene	0.0138	0.00500	"	0.0333	ND	41.4	30-120	2.70	30	
Fluoranthene	0.0206	0.00500	"	0.0333	ND	61.8	30-120	2.42	30	
Fluorene	0.0182	0.00500	"	0.0333	ND	54.5	30-120	0.266	30	
Indeno (1,2,3-cd) pyrene	0.0141	0.00500	"	0.0333	ND	42.4	30-120	3.96	30	
Pyrene	0.0198	0.00500	"	0.0333	ND	59.5	35-142	2.17	30	
1-Methylnaphthalene	0.0144	0.00500	"	0.0333	ND	43.3	15-130	2.97	50	
2-Methylnaphthalene	0.0170	0.00500	"	0.0333	ND	50.9	15-130	4.63	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0212</i>		<i>"</i>	<i>0.0333</i>		<i>63.5</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0220</i>		<i>"</i>	<i>0.0333</i>		<i>66.0</i>	<i>40-150</i>			

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.



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Project Number: [none]
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Reported:
12/16/22 10:36

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