

**SITE ASSESSMENT REPORT**  
**PETRIKIN A34-08 FACILITY**  
ECMC SPILL TRACKING # 481756  
ECMC REMEDIATION # 20470

Prepared for:



2115 117th Avenue  
Greeley, CO 80631

Prepared by:



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

August 15, 2023

Mr. Dan Peterson  
Environmental Specialist,  
Chevron Rockies Business Unit  
Noble Energy Inc.  
2115 117<sup>th</sup> Avenue  
Greeley, CO 80631

**Re: Site Assessment Report**  
***Petrikin A34-08 Facility***  
Spill/Release Point ID: 481756  
Remediation #: 20470  
NESE S34 T6N R64W  
Weld County, Colorado

Dear Mr. Peterson:

Below please find a copy of the above referenced Site Assessment Report (Report) for the Petrikin A34-08 Facility (Site) located in Weld County, Colorado. The text below describes decommissioning, assessment, and associated soil sampling conducted by Tasman, Inc. (Tasman) and WSP Global, Inc. (WSP), on behalf of Noble Energy, Inc. (Noble) between March 3, 2022, and February 28, 2023.

## Introduction

This document describes the results of soil 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 during decommissioning activities conducted at the Site.

## Site Background

The Site is located approximately 4.4 miles north-northeast of Kersey in Weld County, Colorado. The Site legal description is the northeast quarter of the southeast quarter of Section 34, Township 6 North, Range 64 West, 6<sup>th</sup> Principal Meridian. The Site is on terrain that slopes gradually to the east at latitude 40.446231° and longitude -104.529526° [North American Datum of 1983(NAD83)] and is located approximately 0.14 miles west of the intersection of County Road 57 and County Road 62¾ (Figure 1).

Tasman was initially retained by Noble on March 3, 2022, to complete soil sampling and documentation during Site decommissioning and abandonment activities at the facility. As reported in the initial Form 19, historical impacts were confirmed on March 14, 2022. The Form 19 was submitted to the Energy and Carbon Management Commission (ECMC) on March 15, 2022. The ECMC subsequently issued Spill/Release Point ID Number 481756 for this event. The ECMC assigned Remediation Number 20470 for the project.

## Site Decommissioning Activities

On March 3, 2022, Tasman completed decommissioning soil sampling and documentation for the Petrikin A34-08 Facility. Soil samples were collected throughout the Site targeting the following different areas and pieces of production equipment:

Area of Site	Sampling	Sample description
Aboveground storage tank (AST)	AST01@0.5'	Surface soil sample below former tank location.
Horizontal separator	SEP01-DL01@3'	Soil sample beneath separator dump line riser.
Meter house	MH01@0.5'	Surface sample beneath aboveground run of meter piping.
Partially buried produced water vault (PWV)	SS01@2.5' through SS04@2.5', and FS01@5'	Four sidewall samples and one excavation floor sample.

All soil samples collected were field screened for volatile organic compounds (VOC) using a photoionization detector (PID) and standard headspace sampling techniques. Seven soil samples collected during decommissioning activities were submitted to Summit Scientific (Summit) in Golden, Colorado for laboratory analysis of the ECMC Table 915-1 list of organic compounds 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 8015D. The samples were also submitted for laboratory analysis of pH, electrical conductivity (EC), sodium adsorption ratio (SAR) using USEPA saturated paste extraction method, and boron using the hot water-soluble soil extract method. Soil sample FS01@5' was also submitted to Summit for laboratory analysis of ECMC Table 915-1 metals in soil using USEPA Method 6020B. Groundwater was not encountered during decommissioning activities at the Facility. Facility decommissioning soil analytical results are summarized in Table 1 and the laboratory results from soil samples SS01@2.5', and FS01@5' illustrated on Figure 2. The Facility decommissioning soil laboratory analytical reports are included in Attachment A.

## Site Assessment Activities

On March 28, 2022, WSP conducted an initial site assessment to delineate subsurface soil impacts identified during Site decommissioning. WSP advanced boring FS01 to 14 feet below ground surface (ft bgs) in the area of decommissioning sample FS01@5'. WSP advanced four additional borings, FS02 through FS05, to 6.5 ft bgs and laterally bounding decommissioning sample FS01@5'. Concurrently with the soil borings, WSP collected one background sample east of the Site to assess background native soil conditions. The soil borings were advanced using a Geoprobe via direct push, and during soil boring operations, soil samples were collected, and field screened for VOCs using a PID and standard headspace sampling techniques. The following soil samples were collected by WSP during the initial site assessment:



While advancing soil boring BH04 a terminal depth sample was unable to be collected due to the drill rods breaking and obstructing recovery from 12-14 ft bgs. All eight site assessment soil samples, shown above, were submitted to Summit for laboratory analysis of the ECMC Table 915-1 list of organic compounds in soil using USEPA Methods 8260B and 8270D, and TPH using USEPA Methods 8260B and 8015D. Additionally, the soil boring samples were submitted for analysis of ECMC Table 915-1 metals in soil using USEPA Method 6020B as well as analysis of pH, EC, SAR using USEPA saturated paste extraction method, and boron using the hot water-soluble soil extract method. The 10 background samples, shown above, were submitted to Summit for laboratory analysis of arsenic, barium, lead, and selenium in soil using USEPA Method 6020B as well as analysis of SAR using USEPA saturated paste extraction method. Site assessment and background soil sample analytical results are summarized in Table 1 and illustrated on Figure 3. Laboratory analytical reports are included in Attachment A and the boring logs are included in Attachment B.

Groundwater was not encountered during the site assessment conducted by Tasman. At the conclusion of the site assessment, boreholes BH01 through BH06 were backfilled with bentonite.

## Results

Laboratory analytical results indicate hydrocarbon concentrations above ECMC Table 915-1 Protection of Groundwater Soil Screening Levels (GSSLs) in decommissioning soil samples SS01@2.5' and FS01@5', and in WSP initial site assessment soil sample FS01@6.5'. Hydrocarbon compounds detected above ECMC Table 915-1 GSSLs included a combination of 1,2,4-trimethylbenzene (1,2,4-TMB), 1,3,5-trimethylbenzene (1,3,5-TMB), naphthalene, 1-methylnaphthalene (1-M), and 2-methylnaphthalene (2-M). Hydrocarbon compounds were not detected above laboratory reporting limits in any of the other five initial site assessment soil samples collected by WSP, or in any of the eight soil samples collected during the site assessment conducted by Tasman. Elevated concentrations of metals above applicable ECMC Table 915-1 GSSLs were observed in all analyzed soil samples and consisted of a combination of arsenic, and selenium. In addition, barium was detected above ECMC Table 915-1 GSSLs in soil sample FS01@5' and lead was detected above ECMC Table 915-1 GSSLs in soil sample BH06@10-12'. Laboratory analytical results indicate pH is above ECMC Table 915-1 Soil Suitability for Reclamation (SSR) standards in four of the 22 analyzed soil samples, but all detections are within 0.5 the upper ECMC Table 915-1 SSR standard which is consistent with natural variability of pH in the region. Laboratory analytical results indicate SAR is in exceedance of ECMC Table 915-1 SSR standards in five of the 22 analyzed soil samples at the site.

A total of eleven background samples were collected from six discrete locations and analyzed for arsenic, barium, lead, selenium, and SAR. The average background concentrations of arsenic, barium, lead, and selenium with a 1.25 multiplier applied were calculated to be 8.02 milligrams per kilogram (mg/kg), 27.2 mg/kg, 12.3 mg/kg, and 1.53 mg/kg, respectively. The average release area concentrations of arsenic, barium, lead, and selenium were calculated to be 6.14 mg/kg, 32.0 mg/kg, 10.3 mg/kg, and 1.14 mg/kg, respectively. Average background concentrations for arsenic, lead, and selenium were all calculated to be higher than their average concentrations in the soil boring samples. As such, arsenic, lead, and selenium should not be considered contaminants of concern at the Site.

The average background concentration for SAR was calculated to be 5.33, whereas the average release area concentration of SAR was calculated to be 4.48. Since the average background concentration for

SAR is higher than the average release area concentration for SAR, SAR should not be considered a contaminant of concern at the Site.

Since groundwater was not encountered at the Site within 14-ft of the ground surface, a desktop review of Colorado's Division of Water Resources (DWR) Well Permit Research Mapper was performed to determine the depth to water below ground surface (BGS) in permitted water wells within a 0.5-mile radius of the spill location. Refer to Figure 4 for a visual representation of the results of this inquiry. One permitted water well was identified within the 0.5-mile radius, and according to the permit records, the static groundwater level in the well is 75 ft bgs. Since the static groundwater level is 75 ft bgs in the region of the Site, and since organic compounds in soil and metals exceedances above ECMC Table 915-1 GSSLs or established background levels were limited to depths shallower than 6.5 ft bgs, there is no evidence to suggest that organic compounds or metals will migrate vertically to reach the groundwater table at the Site. As such, Noble proposes to utilize ECMC Table 915-1 Residential Soil Screening Levels (RSSLs). Applying ECMC Table 915-1 RSSLs to the Site eliminates the naphthalene, 1-M, and 2-M, as well as the detected metals as contaminants of concern, with the exception of arsenic. While concentrations of arsenic are still above ECMC Table 915-1 RSSLs, the average arsenic concentrations in the soil boring samples are within the established background concentrations at the Site.

## Conclusions

Hydrocarbon impacts observed during facility decommissioning and the initial site assessment have been successfully delineated vertically and laterally. Hydrocarbon compounds were not detected above ECMC Table 915-1 RSSLs in any decommissioning or site assessment soil samples. Since there is no evidence to suggest a pathway for contaminant migration to the groundwater table, Noble proposes to utilize ECMC Table 915-1 Residential Soil Screening Levels (RSSLs) when evaluating the decommissioning and site assessment soil sampling results.

Since all organic compounds, inorganic compounds, and metals in soil are either below ECMC Table 915-1 RSSLs or established background levels, and since the pH exceedances observed are within natural variability in the region, Noble is requesting a No Further Action (NFA) designation for the Site from the ECMC.

## Remarks

The discussion and conclusions contained in this report represent the professional opinions of Tasman, 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, Inc.



Jake Whritenour, Program Manager

## Attachments:

Table 1 – Soil Analytical Data

Figure 1 – Site Location Map

Figure 2 – Decommissioning & Soil Analytical Results Map (03/03/2022)

Figure 3 – Site Assessment Soil Analytical Results Map (03/28/2022, 02/27/2023 & 02/28/2023)

Figure 4 – Water Well Investigation Location Map

Attachment A – Laboratory Soil Analytical Data Reports

Attachment B – Boring Logs

## **TABLES**

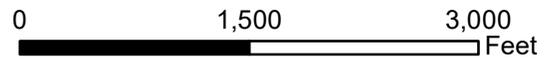
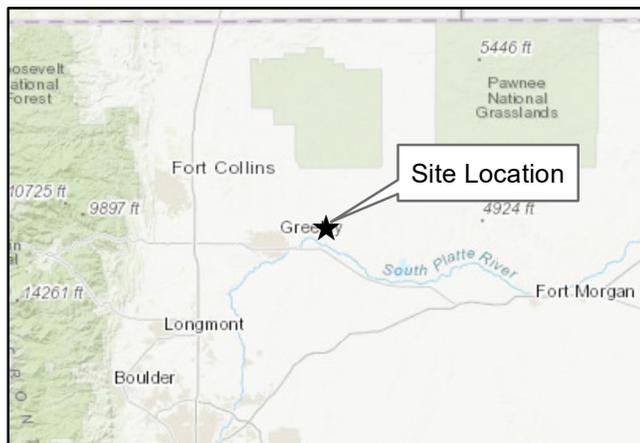
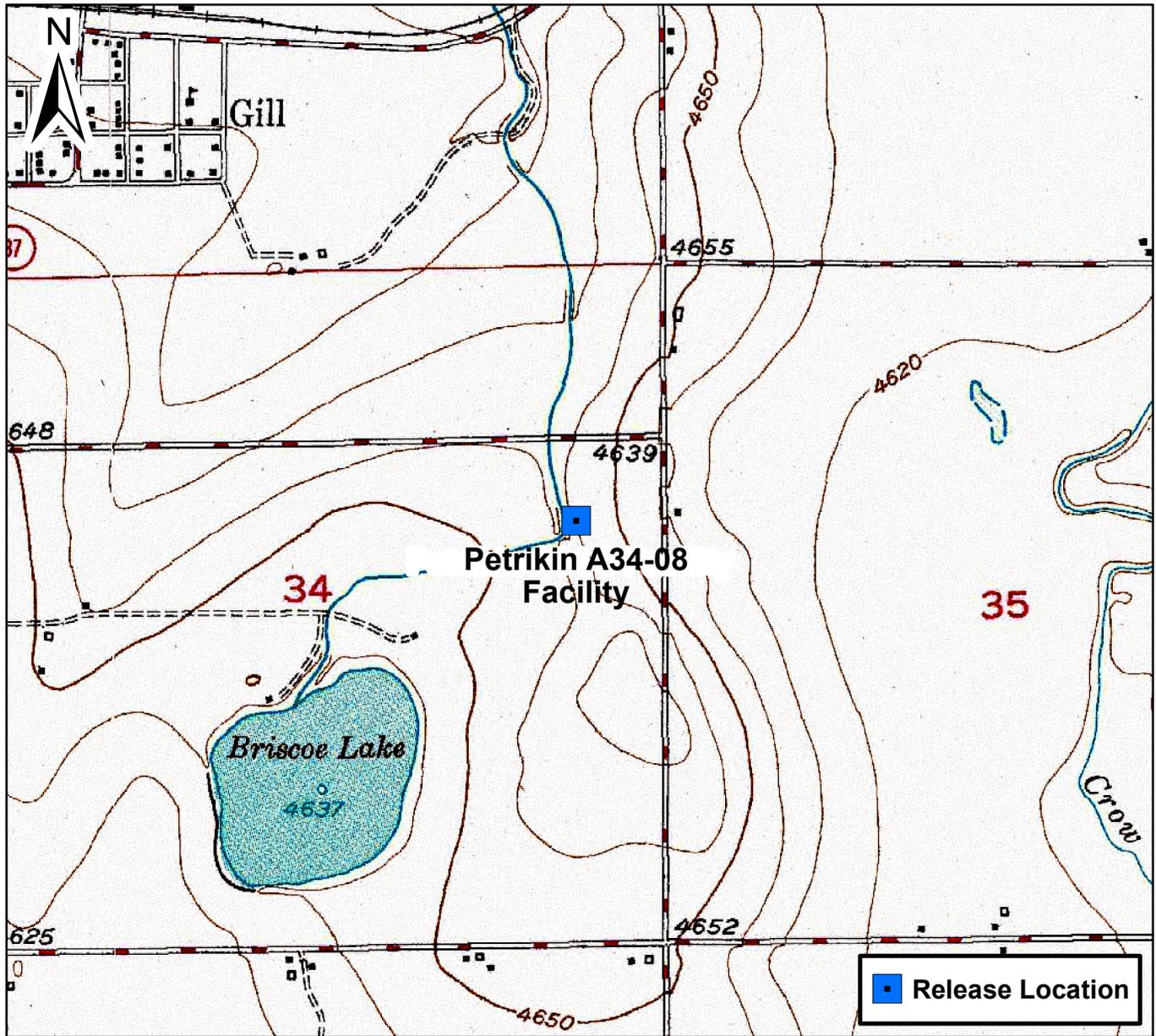
TABLE 1  
SOIL ANALYTICAL DATA  
NOBLE ENERGY, INC. - PETRIKIN A34-08 FACILITY

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
SEP01-DL01@3'	03/03/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	310	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0182	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
AST01@0.5'	03/03/22	<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
SS01@2.5'	03/03/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	0.0094	<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
SS02@2.5'	03/03/22	<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
SS03@2.5'	03/03/22	<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
SS04@2.5'	03/03/22	<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
FS01@5'	03/03/22	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	0.95	320	<50	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.0155	<0.00500	<0.00500	0.0251	<0.00500	<0.00500	0.0983	0.0514
<sup>4</sup> FS01@6.5'	03/28/22	<0.00200	<0.00200	<0.00200	<0.00200	0.0389	0.0315	0.02	2.58	337	148	0.0425	0.0043	0.00365	<0.00335	<0.00335	<0.00335	0.0169	<0.00335	<0.00335	0.0977	<0.00335	0.00996	0.162	0.26
<sup>4</sup> FS01@12'	03/28/22	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067
<sup>4</sup> FS02@6.5'	03/28/22	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067
<sup>4</sup> FS03@6.5'	03/28/22	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067
<sup>4</sup> FS04@6.5'	03/28/22	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067
<sup>4</sup> FS05@6.5'	03/28/22	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00067	<0.200	<25.0	<100	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067	<0.00067
BH01@12'	02/27/23	<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@12'	02/27/23	<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@9'	02/27/23	<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@12'	02/27/23	<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@9'	02/27/23	<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@12'	02/27/23	<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@10-12'	02/28/23	<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
BH06@10-12'	02/28/23	<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

Soil Sample ID	Date	pH	SAR	EC (mmhos/cm)	Boron (mg/L)
Residential SSL <sup>2</sup>		6 - 8.3	<6	<4mmhos/cm	2
SEP01-DL01@3'	03/03/22	8.11	4.61	0.976	0.436
AST01@0.5'	03/03/22	8.78	0.498	0.130	0.0328
SS01@2.5'	03/03/22	7.99	1.78	0.323	0.578
SS02@2.5'	03/03/22	8.03	0.315	0.284	0.0497
SS03@2.5'	03/03/22	8.18	0.995	0.236	0.108
SS04@2.5'	03/03/22	8.08	1.22	0.429	0.431
FS01@5'	03/03/22	8.37	1.58	0.372	0.127
<sup>4</sup> FS01@6.5'	03/28/22	8.32	1.19	1.01	1.68
<sup>4</sup> FS01@12'	03/28/22	7.72	17.5	1.16	0.925
<sup>4</sup> FS02@6.5'	03/28/22	7.62	12.0	1.74	1.04
<sup>4</sup> FS03@6.5'	03/28/22	7.86	3.03	1.12	0.812
<sup>4</sup> FS04@6.5'	03/28/22	8.30	3.06	0.743	0.612
<sup>4</sup> FS05@6.5'	03/28/22	7.90	15.0	0.603	1.14
<sup>4</sup> BG01@6.5'	03/28/22	7.79	5.56	NA	NA
BH01@12'	02/27/23	7.48	2.61	1.16	0.443
BH02@12'	02/27/23	7.57	2.73	0.648	0.495
BH03@9'	02/27/23	8.00	7.00	0.622	0.590
BH03@12'	02/27/23	7.51	3.26	0.570	0.824
BH04@9'	02/27/23	8.06	6.31	0.628	0.646
BH04@12'	02/27/23	7.57	4.14	0.889	0.920
BG02@6.5'	02/27/23	NA	3.47	NA	NA
BG02@12'	02/27/23	NA	4.74	NA	NA
BG03@6.5'	02/27/23	NA	4.96	NA	NA
BG03@12'	02/27/23	NA	4.33	NA	NA
BG04@6.5'	02/27/23	NA	4.55	NA	NA
BG04@12'	02/27/23	NA	10.3	NA	NA
BG05@6.5'	02/27/23	NA	5.17	NA	NA
BG05@12'	02/27/23	NA	3.30	NA	NA
BG06@6.5'	02/27/23	NA	5.34	NA	NA
BG06@12'	02/27/23	NA	7.17	NA	NA
BH05@10-12'	02/28/23	7.70	2.48	0.337	0.744
BH06@10-12'	02/28/23	7.46	1.68	0.881	0.680

Soil Sample ID	Date	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
Residential SSL <sup>2</sup>		0.68	15,000	71	0.3	3,100	400	1,500	390	390	23,000
Protection of Groundwater SSL <sup>2,3</sup>		0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
FS01@5'	03/03/22	5.33	99.3	<0.231	<0.30	7.99	7.07	9.09	0.950	0.0316	41.9
<sup>4</sup> FS01@6.5'	03/28/22	5.7	49.6	<0.25	<0.5	8.31	9.98	11.5	0.568	0.0233	52.9
<sup>4</sup> FS01@12'	03/28/22	5.97	23.3	<0.25	<0.514	9.73	11.3	12.8	0.596	0.0303	65.3
<sup>4</sup> BG01@6.5'	03/28/22	4.82	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH01@12'	02/27/23	5.55	19.7	<0.238	<						

## **FIGURES**



### Figure 1

Site Location Map  
 Petrikin A34-08 Facility  
 NESE S34 T6N R64W  
 Weld County, Colorado





**MH01@0.5'**  
(03/03/2022)  
PID = 0.1 ppm

**SS01@2.5'**  
(03/03/2022)  
PID = 0.5 ppm  
Naphthalene = **0.0094** mg/kg

**FS01@5'**  
(03/03/2022)  
PID = 27.2 ppm  
1-M = **0.0983** mg/kg  
2-M = **0.0514** mg/kg  
Arsenic = **5.33** mg/kg  
Barium = **99.3** mg/kg  
Selenium = **0.950** mg/kg  
pH = **8.37**

**SS02@2.5'**  
(03/03/2022)  
PID = 1.2 ppm

**SEP01-DL01@3'**  
(03/03/2022)  
PID = 2.6 ppm

**SS04@2.5'**  
(03/03/2022)  
PID = 0.2 ppm

**AST01@0.5'**  
(03/03/2022)  
PID = 0.4 ppm  
pH = **8.78**

**SS03@2.5'**  
(03/03/2022)  
PID = 1.0 ppm

DATE:	06/01/2023
DESIGNED BY:	JW
DRAWN BY:	JB

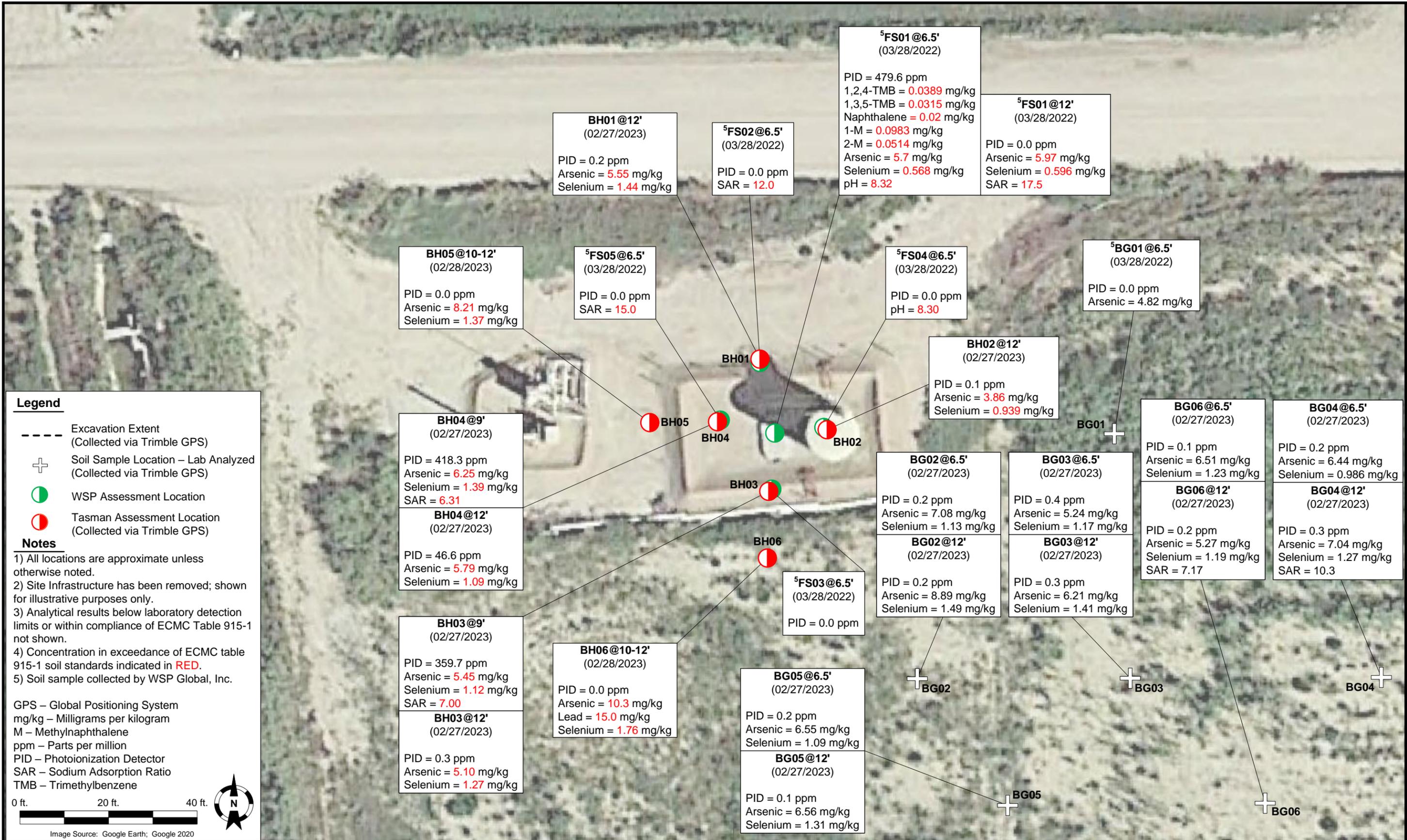


Tasman, Inc.  
6855 W 119<sup>th</sup> Avenue  
Broomfield, CO 80020

**Noble Energy, Inc. – DJ Basin  
 Petrikin A34-08 Facility**  
 SENE, Section 34, Township 6 North, Range 64 West  
 Weld County, Colorado

Decommissioning &  
Soil Analytical Results Map  
(03/03/2022)

FIGURE  
2



DATE: 06/01/2023

DESIGNED BY: JW

DRAWN BY: JB

**TASMAN**  
 Tasman, Inc.  
 6855 W 119<sup>th</sup> Avenue  
 Broomfield, CO 80020

**Noble Energy, Inc. – DJ Basin**  
**Petrikon A34-08 Facility**  
 SENE, Section 34, Township 6 North, Range 64 West  
 Weld County, Colorado

Site Assessment  
 Soil Analytical Results Map  
 (03/28/2022, 02/27/2023  
 & 02/28/2023)

FIGURE  
 3



DATE:	August 2023
DESIGNED BY:	JW
DRAWN BY:	JC



**Tasman, Inc.**  
6855 W. 119th Avenue  
Broomfield, Colorado 80020

**Noble Energy, Inc. – DJ Basin**  
**Petrikin A34-08**  
SENE, Section 34, Township 6 North, Range 64 West  
Weld County, Colorado

WATER WELL INVESTIGATION  
LOCATION MAP

Figure  
4

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

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 24, 2022

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Petrikin A34-08 (Fac)

Work Order #2203066

Enclosed are the results of analyses for samples received by Summit Scientific on 03/03/22 16:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, stylized initial "M".

Muri Premer For Paul Shrewsbury  
President



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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN

Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SEP01-DL01@3'	2203066-01	Soil	03/03/22 13:50	03/03/22 16:15
AST01@0.5'	2203066-02	Soil	03/03/22 13:55	03/03/22 16:15
SS01@2.5'	2203066-03	Soil	03/03/22 14:10	03/03/22 16:15
SS02@2.5'	2203066-04	Soil	03/03/22 14:15	03/03/22 16:15
SS03@2.5'	2203066-05	Soil	03/03/22 14:20	03/03/22 16:15
SS04@2.5'	2203066-06	Soil	03/03/22 14:25	03/03/22 16:15
FS01@5'	2203066-07	Soil	03/03/22 14:30	03/03/22 16:15

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

S<sub>2</sub>

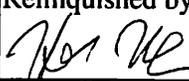
7203066

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

Page 1 of 1

Client: Noble / Tasman Geosciences Project Manager: Jake Whritenour, Invoice:  
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: Ettrick A34-08 (FAC)  
Sampler Name: Hunter Merlo Project Number: UWRWE-A1753-ABV

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	VOC - 915	TPH - 915	PAH - 915	pH, EC, SAR	Boron - HWS		
1	SEP01-DLO@3'	3/3/22	1350	2			X			X				X	X	X	X	X		
2	AST01@0.5'		1355																	
3	SS01@2.5'		1410																	HOLD
4	SS02@2.5'		1415																	
5	SS03@2.5'		1420																	HOLD
6	SS04@2.5'		1425																	HOLD
7	FS01@5'		1430																	
8																				
9																				
10																				

Relinquished by: 	Date/Time: 3/3/22 1615	Received by: Tasman's Lock Box	Date/Time: 3/3/22 1615	<b>Turn Around Time (Check)</b> <input type="checkbox"/> Same Day 72 hours <input type="checkbox"/> 24 hours <input checked="" type="checkbox"/> Standard <input type="checkbox"/> 48 hours <b>Sample Integrity:</b> Temperature Upon Receipt: <u>S.2</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Notes:</b>
Relinquished by: Tasman's Lock Box	Date/Time:	Received by: 	Date/Time: 3-3-22 1615		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2203066

Client: Noble-Tasman Client Project ID: Petrikon A34-08(FAC)

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

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

Temp (°C) 5.2

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.	-			on ICE
Were all samples received intact <sup>(1)</sup> ?	-			
Was adequate sample volume provided <sup>(1)</sup> ?	-			
If custody seals are present, are they intact <sup>(1)</sup> ?	-			
Are samples with holding times due within 48 hours sample due within 48 hours present?		-		
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	-			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	-			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	-			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			-	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, etc.			-	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			-	
If dissolved metals are requested, were samples field filtered?			-	
Additional Comments (if any):				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

[Signature]  
Custodian Printed Name or Initials

3:322  
Date/Time



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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SEP01-DL01@3'**  
**2203066-01 (Soil)**

Summit Scientific

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

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	BFC0100	03/07/22	03/08/22	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: **03/03/22 13:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		95.4 %	70-130		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	70-130		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.0 %	70-130		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	<b>310</b>	50	mg/kg	1	BFC0101	03/07/22	03/08/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		120 %	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 - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SEP01-DL01@3'**  
**2203066-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFC0092	03/05/22	03/06/22	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	"	"	"	"	"	"	
<b>Chrysene</b>	<b>0.0182</b>	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: **03/03/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		49.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		48.2 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.436</b>	0.0100	mg/L	1	BFC0211	03/11/22	03/13/22	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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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 - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SEP01-DL01@3'**  
**2203066-01 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	138	0.0573	mg/L dry	1	BFC0137	03/08/22	03/12/22	EPA 6020B	
Magnesium	58.1	0.0573	"	"	"	"	"	"	
Sodium	256	0.0573	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.61	0.00100	units	1	BFC0236	03/13/22	03/13/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.2		%	1	BFC0147	03/09/22	03/09/22	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.976	0.0100	mmhos/cm	1	BFC0073	03/04/22	03/04/22	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **03/03/22 13:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.11		pH Units	1	BFC0072	03/04/22	03/04/22	EPA 9045D	

Summit Scientific

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

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**AST01@0.5'**  
**2203066-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFC0100	03/07/22	03/08/22	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: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.8 %	70-130		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	70-130		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.6 %	70-130		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFC0101	03/07/22	03/08/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	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 - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**AST01@0.5'**  
**2203066-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFC0092	03/05/22	03/06/22	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: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		55.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		55.6 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.0328</b>	0.0100	mg/L	1	BFC0211	03/11/22	03/13/22	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

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 - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**AST01@0.5'**  
**2203066-02 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	10.1	0.0515	mg/L dry	1	BFC0137	03/08/22	03/12/22	EPA 6020B	
Magnesium	4.82	0.0515	"	"	"	"	"	"	
Sodium	7.68	0.0515	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.498	0.00100	units	1	BFC0236	03/13/22	03/13/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	97.1		%	1	BFC0147	03/09/22	03/09/22	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.130	0.0100	mmhos/cm	1	BFC0073	03/04/22	03/04/22	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **03/03/22 13:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.78		pH Units	1	BFC0072	03/04/22	03/04/22	EPA 9045D	

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 - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS01@2.5'**  
**2203066-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BFC0327	03/16/22	03/16/22	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		"	"	"	"	"	"	
<b>Naphthalene</b>	<b>0.0094</b>	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		98.7 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.4 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BFC0328	03/16/22	03/17/22	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		85.9 %		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 - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS01@2.5'**  
**2203066-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFC0323	03/16/22	03/17/22	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: **03/03/22 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		54.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		51.4 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.578</b>	0.0100	mg/L	1	BFC0308	03/15/22	03/19/22	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS01@2.5'**  
**2203066-03 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	15.8	0.0580	mg/L dry	1	BFC0357	03/17/22	03/22/22	EPA 6020B	
Magnesium	4.13	0.0580	"	"	"	"	"	"	
Sodium	30.7	0.0580	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.78	0.00100	units	1	BFC0512	03/23/22	03/23/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.2		%	1	BFC0364	03/17/22	03/18/22	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.323	0.0100	mmhos/cm	1	BFC0390	03/18/22	03/18/22	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.99		pH Units	1	BFC0389	03/18/22	03/18/22	EPA 9045D	

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

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS02@2.5'**  
**2203066-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFC0100	03/07/22	03/08/22	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: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.1 %	70-130		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	70-130		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.4 %	70-130		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFC0101	03/07/22	03/08/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/03/22 14:15**

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

**PAH by EPA Method 8270D SIM**

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS02@2.5'**  
**2203066-04 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFC0092	03/05/22	03/06/22	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: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		48.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		54.3 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.0497</b>	0.0100	mg/L	1	BFC0211	03/11/22	03/13/22	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS02@2.5'**  
**2203066-04 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	23.8	0.0545	mg/L dry	1	BFC0137	03/08/22	03/12/22	EPA 6020B	
Magnesium	3.53	0.0545	"	"	"	"	"	"	
Sodium	6.23	0.0545	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.315	0.00100	units	1	BFC0236	03/13/22	03/13/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	91.7		%	1	BFC0147	03/09/22	03/09/22	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.284	0.0100	mmhos/cm	1	BFC0073	03/04/22	03/04/22	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.03		pH Units	1	BFC0072	03/04/22	03/04/22	EPA 9045D	

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

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS03@2.5'**  
**2203066-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFC0327	03/16/22	03/16/22	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: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.6 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.6 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFC0328	03/16/22	03/17/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		86.1 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS03@2.5'**  
**2203066-05 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFC0323	03/16/22	03/17/22	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: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		61.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		65.1 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.108</b>	0.0100	mg/L	1	BFC0308	03/15/22	03/19/22	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS03@2.5'**  
**2203066-05 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	17.9	0.0571	mg/L dry	1	BFC0357	03/17/22	03/22/22	EPA 6020B	
Magnesium	3.71	0.0571	"	"	"	"	"	"	
Sodium	17.7	0.0571	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.995	0.00100	units	1	BFC0512	03/23/22	03/23/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.5		%	1	BFC0295	03/15/22	03/16/22	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.236	0.0100	mmhos/cm	1	BFC0390	03/18/22	03/18/22	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.18		pH Units	1	BFC0389	03/18/22	03/18/22	EPA 9045D	

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

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS04@2.5'**  
**2203066-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFC0327	03/16/22	03/16/22	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: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.8 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		99.3 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.3 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFC0328	03/16/22	03/17/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		86.2 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS04@2.5'**  
**2203066-06 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFC0323	03/16/22	03/17/22	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: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		71.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		70.8 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.431</b>	0.0100	mg/L	1	BFC0308	03/15/22	03/19/22	EPA 6020B	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**SS04@2.5'**  
**2203066-06 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	28.2	0.0585	mg/L dry	1	BFC0357	03/17/22	03/22/22	EPA 6020B	
Magnesium	9.13	0.0585	"	"	"	"	"	"	
Sodium	29.1	0.0585	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.22	0.00100	units	1	BFC0512	03/23/22	03/23/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.5		%	1	BFC0295	03/15/22	03/16/22	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.429	0.0100	mmhos/cm	1	BFC0390	03/18/22	03/18/22	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.08		pH Units	1	BFC0389	03/18/22	03/18/22	EPA 9045D	

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Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**FS01@5'**  
**2203066-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFC0100	03/07/22	03/08/22	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	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>0.95</b>	<b>0.50</b>	"	"	"	"	"	"	

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.9 %	70-130		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	70-130		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.3 %	70-130		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>320</b>	50	mg/kg	1	BFC0101	03/07/22	03/08/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**FS01@5'**  
**2203066-07 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFC0092	03/05/22	03/06/22	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	"	"	"	"	"	"	
<b>Chrysene</b>	<b>0.0155</b>	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
<b>Fluorene</b>	<b>0.0251</b>	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
<b>1-Methylnaphthalene</b>	<b>0.0983</b>	0.00500	"	"	"	"	"	"	
<b>2-Methylnaphthalene</b>	<b>0.0514</b>	0.00500	"	"	"	"	"	"	

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		57.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		64.7 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.127</b>	0.0100	mg/L	1	BFC0211	03/11/22	03/13/22	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
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Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**FS01@5'**  
**2203066-07 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	5.33	0.231	mg/kg dry	1	BFC0331	03/17/22	03/22/22	EPA 6020B	
Barium	99.3	0.463	"	"	"	"	"	"	
Cadmium	ND	0.231	"	"	"	"	"	"	
Copper	7.99	0.463	"	"	"	"	"	"	
Lead	7.07	0.231	"	"	"	"	"	"	
Nickel	9.09	0.463	"	"	"	"	"	"	
Selenium	0.950	0.301	"	"	"	"	"	"	
Silver	0.0316	0.0231	"	"	"	"	"	"	
Zinc	41.9	0.463	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFC0348	03/17/22	03/17/22	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	36.9	0.0579	mg/L dry	1	BFC0137	03/08/22	03/12/22	EPA 6020B	
Magnesium	8.44	0.0579	"	"	"	"	"	"	
Sodium	40.9	0.0579	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.58	0.00100	units	1	BFC0236	03/13/22	03/13/22	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**FS01@5'**  
**2203066-07 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	86.4	%	1	BFC0147	03/09/22	03/09/22	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.372	0.0100	mmhos/cm	1	BFC0073	03/04/22	03/04/22	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **03/03/22 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.37		pH Units	1	BFC0072	03/04/22	03/04/22	EPA 9045D	

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Project: Noble - Petrikin A34-08 (Fac)

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Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

### 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 BFC0100 - EPA 5030 Soil MS

##### Blank (BFC0100-BLK1)

Prepared: 03/07/22 Analyzed: 03/08/22

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0379		"	0.0400		94.8	70-130			
Surrogate: Toluene-d8	0.0402		"	0.0400		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0400		94.6	70-130			

##### LCS (BFC0100-BS1)

Prepared: 03/07/22 Analyzed: 03/08/22

Benzene	0.0590	0.0020	mg/kg	0.0750		78.7	70-130			
Toluene	0.0636	0.0050	"	0.0750		84.8	70-130			
Ethylbenzene	0.0639	0.0050	"	0.0750		85.2	70-130			
m,p-Xylene	0.136	0.010	"	0.150		90.6	70-130			
o-Xylene	0.0663	0.0050	"	0.0750		88.4	70-130			
1,2,4-Trimethylbenzene	0.0705	0.0050	"	0.0750		94.0	70-130			
1,3,5-Trimethylbenzene	0.0692	0.0050	"	0.0750		92.2	70-130			
Naphthalene	0.0594	0.0038	"	0.0750		79.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0388		"	0.0400		97.0	70-130			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.0407		"	0.0400		102	70-130			

##### Matrix Spike (BFC0100-MS1)

Source: 2203052-02

Prepared: 03/07/22 Analyzed: 03/08/22

Benzene	0.0593	0.0020	mg/kg	0.0750	ND	79.1	70-130			
Toluene	0.0640	0.0050	"	0.0750	ND	85.3	70-130			
Ethylbenzene	0.0642	0.0050	"	0.0750	ND	85.6	70-130			
m,p-Xylene	0.138	0.010	"	0.150	ND	91.7	70-130			
o-Xylene	0.0668	0.0050	"	0.0750	ND	89.1	70-130			
1,2,4-Trimethylbenzene	0.0710	0.0050	"	0.0750	ND	94.6	70-130			
1,3,5-Trimethylbenzene	0.0687	0.0050	"	0.0750	ND	91.6	70-130			
Naphthalene	0.0716	0.0038	"	0.0750	ND	95.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0393		"	0.0400		98.2	70-130			
Surrogate: Toluene-d8	0.0406		"	0.0400		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	70-130			

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Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**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 BFC0100 - EPA 5030 Soil MS**

Matrix Spike Dup (BFC0100-MSD1)	Source: 2203052-02			Prepared: 03/07/22 Analyzed: 03/08/22						
Benzene	0.0603	0.0020	mg/kg	0.0750	ND	80.4	70-130	1.66	30	
Toluene	0.0648	0.0050	"	0.0750	ND	86.4	70-130	1.26	30	
Ethylbenzene	0.0652	0.0050	"	0.0750	ND	86.9	70-130	1.53	30	
m,p-Xylene	0.138	0.010	"	0.150	ND	91.8	70-130	0.0654	30	
o-Xylene	0.0668	0.0050	"	0.0750	ND	89.0	70-130	0.0898	30	
1,2,4-Trimethylbenzene	0.0711	0.0050	"	0.0750	ND	94.8	70-130	0.211	30	
1,3,5-Trimethylbenzene	0.0688	0.0050	"	0.0750	ND	91.8	70-130	0.175	30	
Naphthalene	0.0762	0.0038	"	0.0750	ND	102	70-130	6.29	30	
Surrogate: 1,2-Dichloroethane-d4	0.0410		"	0.0400		103	70-130			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	70-130			

**Batch BFC0327 - EPA 5030 Soil MS**

Blank (BFC0327-BLK1)	Prepared & Analyzed: 03/16/22									
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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0391		"	0.0400		97.6	50-150			
Surrogate: Toluene-d8	0.0413		"	0.0400		103	50-150			
Surrogate: 4-Bromofluorobenzene	0.0378		"	0.0400		94.6	50-150			

Summit Scientific

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Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**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 BFC0327 - EPA 5030 Soil MS**

**LCS (BFC0327-BS1)**

Prepared & Analyzed: 03/16/22

Benzene	0.0599	0.0020	mg/kg	0.0750		79.9	70-130			
Toluene	0.0638	0.0050	"	0.0750		85.1	70-130			
Ethylbenzene	0.0660	0.0050	"	0.0750		88.0	70-130			
m,p-Xylene	0.140	0.010	"	0.150		93.4	70-130			
o-Xylene	0.0674	0.0050	"	0.0750		89.9	70-130			
1,2,4-Trimethylbenzene	0.0704	0.0050	"	0.0750		93.8	70-130			
1,3,5-Trimethylbenzene	0.0695	0.0050	"	0.0750		92.7	70-130			
Naphthalene	0.0632	0.0038	"	0.0750		84.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0381		"	0.0400		95.2	50-150			
Surrogate: Toluene-d8	0.0403		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0398		"	0.0400		99.5	50-150			

**Matrix Spike (BFC0327-MS1)**

Source: 2203066-03

Prepared & Analyzed: 03/16/22

Benzene	0.0617	0.0020	mg/kg	0.0750	ND	82.3	70-130			
Toluene	0.0654	0.0050	"	0.0750	ND	87.2	70-130			
Ethylbenzene	0.0658	0.0050	"	0.0750	ND	87.7	70-130			
m,p-Xylene	0.141	0.010	"	0.150	ND	93.9	70-130			
o-Xylene	0.0687	0.0050	"	0.0750	ND	91.6	70-130			
1,2,4-Trimethylbenzene	0.0734	0.0050	"	0.0750	ND	97.9	70-130			
1,3,5-Trimethylbenzene	0.0715	0.0050	"	0.0750	ND	95.3	70-130			
Naphthalene	0.0716	0.0038	"	0.0750	0.00939	82.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0384		"	0.0400		96.1	50-150			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	50-150			
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400		102	50-150			

**Matrix Spike Dup (BFC0327-MSD1)**

Source: 2203066-03

Prepared & Analyzed: 03/16/22

Benzene	0.0601	0.0020	mg/kg	0.0750	ND	80.2	70-130	2.61	30	
Toluene	0.0648	0.0050	"	0.0750	ND	86.4	70-130	0.968	30	
Ethylbenzene	0.0677	0.0050	"	0.0750	ND	90.3	70-130	2.97	30	
m,p-Xylene	0.144	0.010	"	0.150	ND	95.8	70-130	2.00	30	
o-Xylene	0.0690	0.0050	"	0.0750	ND	92.0	70-130	0.436	30	
1,2,4-Trimethylbenzene	0.0742	0.0050	"	0.0750	ND	99.0	70-130	1.06	30	
1,3,5-Trimethylbenzene	0.0731	0.0050	"	0.0750	ND	97.5	70-130	2.28	30	
Naphthalene	0.0635	0.0038	"	0.0750	0.00939	72.2	70-130	11.9	30	
Surrogate: 1,2-Dichloroethane-d4	0.0361		"	0.0400		90.2	50-150			
Surrogate: Toluene-d8	0.0402		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.4	50-150			

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

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**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 BFC0101 - EPA 3550A**

**Blank (BFC0101-BLK1)**

Prepared: 03/07/22 Analyzed: 03/08/22

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

**LCS (BFC0101-BS1)**

Prepared: 03/07/22 Analyzed: 03/08/22

C10-C28 (DRO)	501	50	mg/kg	500	100	70-130				
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**Matrix Spike (BFC0101-MS1)**

Source: 2203052-02

Prepared: 03/07/22 Analyzed: 03/08/22

C10-C28 (DRO)	614	50	mg/kg	500	33.8	116	70-130			
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**Matrix Spike Dup (BFC0101-MSD1)**

Source: 2203052-02

Prepared: 03/07/22 Analyzed: 03/08/22

C10-C28 (DRO)	589	50	mg/kg	500	33.8	111	70-130	4.20	20	
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**Batch BFC0328 - EPA 3550A**

**Blank (BFC0328-BLK1)**

Prepared: 03/16/22 Analyzed: 03/17/22

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

**LCS (BFC0328-BS1)**

Prepared: 03/16/22 Analyzed: 03/17/22

C10-C28 (DRO)	443	50	mg/kg	500	88.6	70-130				
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**Matrix Spike (BFC0328-MS1)**

Source: 2203066-03

Prepared: 03/16/22 Analyzed: 03/17/22

C10-C28 (DRO)	429	50	mg/kg	500	27.7	80.2	70-130			
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**Matrix Spike Dup (BFC0328-MSD1)**

Source: 2203066-03

Prepared: 03/16/22 Analyzed: 03/17/22

C10-C28 (DRO)	470	50	mg/kg	500	27.7	88.5	70-130	9.22	20	
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**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 BFC0092 - EPA 5030 Soil MS**

**Blank (BFC0092-BLK1)**

Prepared: 03/05/22 Analyzed: 03/06/22

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>0.0173</i>		<i>"</i>	<i>0.0333</i>		<i>51.8</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0194</i>		<i>"</i>	<i>0.0333</i>		<i>58.1</i>	<i>40-150</i>			

**LCS (BFC0092-BS1)**

Prepared: 03/05/22 Analyzed: 03/06/22

Acenaphthene	0.0222	0.00500	mg/kg	0.0333	66.7	31-137
Anthracene	0.0253	0.00500	"	0.0333	75.9	30-120
Benzo (a) anthracene	0.0228	0.00500	"	0.0333	68.3	30-120
Benzo (a) pyrene	0.0204	0.00500	"	0.0333	61.3	30-120
Benzo (b) fluoranthene	0.0187	0.00500	"	0.0333	56.2	30-120
Benzo (k) fluoranthene	0.0208	0.00500	"	0.0333	62.5	30-120
Chrysene	0.0227	0.00500	"	0.0333	68.2	30-120
Dibenz (a,h) anthracene	0.0246	0.00500	"	0.0333	73.8	30-120
Fluoranthene	0.0267	0.00500	"	0.0333	80.2	30-120
Fluorene	0.0196	0.00500	"	0.0333	58.9	30-120
Indeno (1,2,3-cd) pyrene	0.0277	0.00500	"	0.0333	83.0	30-120
Pyrene	0.0224	0.00500	"	0.0333	67.1	35-142
1-Methylnaphthalene	0.0195	0.00500	"	0.0333	58.5	35-142
2-Methylnaphthalene	0.0196	0.00500	"	0.0333	58.9	35-142
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0203</i>		<i>"</i>	<i>0.0333</i>	<i>60.8</i>	<i>40-150</i>
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0247</i>		<i>"</i>	<i>0.0333</i>	<i>74.1</i>	<i>40-150</i>

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**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 BFC0092 - EPA 5030 Soil MS**

<b>Matrix Spike (BFC0092-MS1)</b>	<b>Source: 2203041-01</b>			<b>Prepared: 03/05/22 Analyzed: 03/06/22</b>						
Acenaphthene	0.0187	0.00500	mg/kg	0.0333	ND	56.2	31-137			
Anthracene	0.0211	0.00500	"	0.0333	ND	63.4	30-120			
Benzo (a) anthracene	0.0191	0.00500	"	0.0333	ND	57.3	30-120			
Benzo (a) pyrene	0.0163	0.00500	"	0.0333	ND	49.0	30-120			
Benzo (b) fluoranthene	0.0164	0.00500	"	0.0333	ND	49.2	30-120			
Benzo (k) fluoranthene	0.0184	0.00500	"	0.0333	ND	55.3	30-120			
Chrysene	0.0196	0.00500	"	0.0333	ND	58.7	30-120			
Dibenz (a,h) anthracene	0.0210	0.00500	"	0.0333	ND	62.9	30-120			
Fluoranthene	0.0231	0.00500	"	0.0333	ND	69.2	30-120			
Fluorene	0.0232	0.00500	"	0.0333	ND	69.7	30-120			
Indeno (1,2,3-cd) pyrene	0.0237	0.00500	"	0.0333	ND	71.2	30-120			
Pyrene	0.0205	0.00500	"	0.0333	ND	61.4	35-142			
1-Methylnaphthalene	0.0157	0.00500	"	0.0333	ND	47.2	15-130			
2-Methylnaphthalene	0.0152	0.00500	"	0.0333	ND	45.7	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0185</i>		<i>"</i>	<i>0.0333</i>		<i>55.4</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0218</i>		<i>"</i>	<i>0.0333</i>		<i>65.4</i>	<i>40-150</i>			

<b>Matrix Spike Dup (BFC0092-MSD1)</b>	<b>Source: 2203041-01</b>			<b>Prepared: 03/05/22 Analyzed: 03/06/22</b>						
Acenaphthene	0.0224	0.00500	mg/kg	0.0333	ND	67.3	31-137	18.0	30	
Anthracene	0.0227	0.00500	"	0.0333	ND	68.0	30-120	6.99	30	
Benzo (a) anthracene	0.0210	0.00500	"	0.0333	ND	63.0	30-120	9.42	30	
Benzo (a) pyrene	0.0183	0.00500	"	0.0333	ND	54.9	30-120	11.2	30	
Benzo (b) fluoranthene	0.0185	0.00500	"	0.0333	ND	55.5	30-120	12.0	30	
Benzo (k) fluoranthene	0.0215	0.00500	"	0.0333	ND	64.4	30-120	15.1	30	
Chrysene	0.0216	0.00500	"	0.0333	ND	64.7	30-120	9.81	30	
Dibenz (a,h) anthracene	0.0229	0.00500	"	0.0333	ND	68.8	30-120	8.97	30	
Fluoranthene	0.0248	0.00500	"	0.0333	ND	74.3	30-120	7.08	30	
Fluorene	0.0236	0.00500	"	0.0333	ND	70.7	30-120	1.30	30	
Indeno (1,2,3-cd) pyrene	0.0247	0.00500	"	0.0333	ND	74.2	30-120	4.11	30	
Pyrene	0.0218	0.00500	"	0.0333	ND	65.4	35-142	6.17	30	
1-Methylnaphthalene	0.0203	0.00500	"	0.0333	ND	60.9	15-130	25.3	50	
2-Methylnaphthalene	0.0203	0.00500	"	0.0333	ND	61.0	15-130	28.8	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0201</i>		<i>"</i>	<i>0.0333</i>		<i>60.2</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0239</i>		<i>"</i>	<i>0.0333</i>		<i>71.6</i>	<i>40-150</i>			

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

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**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 BFC0323 - EPA 5030 Soil MS**

**Blank (BFC0323-BLK1)**

Prepared: 03/16/22 Analyzed: 03/17/22

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	0.0220		"	0.0333		65.9	40-150			
Surrogate: Fluoranthene-d10	0.0219		"	0.0333		65.7	40-150			

**LCS (BFC0323-BS1)**

Prepared: 03/16/22 Analyzed: 03/17/22

Acenaphthene	0.0185	0.00500	mg/kg	0.0333		55.4	31-137			
Anthracene	0.0191	0.00500	"	0.0333		57.3	30-120			
Benzo (a) anthracene	0.0173	0.00500	"	0.0333		51.8	30-120			
Benzo (a) pyrene	0.0166	0.00500	"	0.0333		49.8	30-120			
Benzo (b) fluoranthene	0.0154	0.00500	"	0.0333		46.2	30-120			
Benzo (k) fluoranthene	0.0189	0.00500	"	0.0333		56.8	30-120			
Chrysene	0.0199	0.00500	"	0.0333		59.8	30-120			
Dibenz (a,h) anthracene	0.0204	0.00500	"	0.0333		61.2	30-120			
Fluoranthene	0.0214	0.00500	"	0.0333		64.3	30-120			
Fluorene	0.0194	0.00500	"	0.0333		58.2	30-120			
Indeno (1,2,3-cd) pyrene	0.0233	0.00500	"	0.0333		69.9	30-120			
Pyrene	0.0200	0.00500	"	0.0333		59.9	35-142			
1-Methylnaphthalene	0.0156	0.00500	"	0.0333		46.7	35-142			
2-Methylnaphthalene	0.0179	0.00500	"	0.0333		53.8	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0192		"	0.0333		57.7	40-150			
Surrogate: Fluoranthene-d10	0.0233		"	0.0333		69.8	40-150			

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**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 BFC0323 - EPA 5030 Soil MS**

<b>Matrix Spike (BFC0323-MS1)</b>	<b>Source: 2203066-03</b>			<b>Prepared: 03/16/22 Analyzed: 03/19/22</b>						
Acenaphthene	0.0176	0.00500	mg/kg	0.0333	ND	52.8	31-137			
Anthracene	0.0191	0.00500	"	0.0333	ND	57.2	30-120			
Benzo (a) anthracene	0.0188	0.00500	"	0.0333	ND	56.5	30-120			
Benzo (a) pyrene	0.0221	0.00500	"	0.0333	ND	66.3	30-120			
Benzo (b) fluoranthene	0.0179	0.00500	"	0.0333	ND	53.6	30-120			
Benzo (k) fluoranthene	0.0200	0.00500	"	0.0333	ND	59.9	30-120			
Chrysene	0.0217	0.00500	"	0.0333	ND	65.1	30-120			
Dibenz (a,h) anthracene	0.0291	0.00500	"	0.0333	ND	87.4	30-120			
Fluoranthene	0.0208	0.00500	"	0.0333	ND	62.3	30-120			
Fluorene	0.0175	0.00500	"	0.0333	ND	52.6	30-120			
Indeno (1,2,3-cd) pyrene	0.0368	0.00500	"	0.0333	ND	110	30-120			
Pyrene	0.0217	0.00500	"	0.0333	ND	65.1	35-142			
1-Methylnaphthalene	0.0172	0.00500	"	0.0333	ND	51.6	15-130			
2-Methylnaphthalene	0.0171	0.00500	"	0.0333	ND	51.3	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0157</i>		<i>"</i>	<i>0.0333</i>		<i>47.0</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0207</i>		<i>"</i>	<i>0.0333</i>		<i>62.0</i>	<i>40-150</i>			

<b>Matrix Spike Dup (BFC0323-MSD1)</b>	<b>Source: 2203066-03</b>			<b>Prepared: 03/16/22 Analyzed: 03/19/22</b>						
Acenaphthene	0.0133	0.00500	mg/kg	0.0333	ND	39.9	31-137	27.9	30	
Anthracene	0.0137	0.00500	"	0.0333	ND	41.1	30-120	32.7	30	QM-07
Benzo (a) anthracene	0.0150	0.00500	"	0.0333	ND	45.0	30-120	22.8	30	
Benzo (a) pyrene	0.0169	0.00500	"	0.0333	ND	50.8	30-120	26.5	30	
Benzo (b) fluoranthene	0.0143	0.00500	"	0.0333	ND	42.9	30-120	22.2	30	
Benzo (k) fluoranthene	0.0159	0.00500	"	0.0333	ND	47.7	30-120	22.6	30	
Chrysene	0.0166	0.00500	"	0.0333	ND	49.8	30-120	26.7	30	
Dibenz (a,h) anthracene	0.0208	0.00500	"	0.0333	ND	62.5	30-120	33.2	30	QM-07
Fluoranthene	0.0145	0.00500	"	0.0333	ND	43.5	30-120	35.6	30	QM-07
Fluorene	0.0120	0.00500	"	0.0333	ND	36.0	30-120	37.3	30	QM-07
Indeno (1,2,3-cd) pyrene	0.0307	0.00500	"	0.0333	ND	92.1	30-120	18.1	30	
Pyrene	0.0166	0.00500	"	0.0333	ND	49.8	35-142	26.6	30	
1-Methylnaphthalene	0.0133	0.00500	"	0.0333	ND	39.9	15-130	25.6	50	
2-Methylnaphthalene	0.0139	0.00500	"	0.0333	ND	41.8	15-130	20.3	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0144</i>		<i>"</i>	<i>0.0333</i>		<i>43.2</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0159</i>		<i>"</i>	<i>0.0333</i>		<i>47.8</i>	<i>40-150</i>			

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BFC0211 - EPA 3050B**

<b>Blank (BFC0211-BLK1)</b>				Prepared: 03/11/22 Analyzed: 03/13/22						
Boron	ND	0.0100	mg/L							
<b>LCS (BFC0211-BS1)</b>				Prepared: 03/11/22 Analyzed: 03/13/22						
Boron	4.74	0.0100	mg/L	5.00		94.7	80-120			
<b>Duplicate (BFC0211-DUP1)</b>				<b>Source: 2203066-01</b>		Prepared: 03/11/22 Analyzed: 03/13/22				
Boron	0.424	0.0100	mg/L		0.436			2.69	20	
<b>Matrix Spike (BFC0211-MS1)</b>				<b>Source: 2203066-01</b>		Prepared: 03/11/22 Analyzed: 03/13/22				
Boron	4.99	0.0100	mg/L	5.00	0.436	91.1	75-125			
<b>Matrix Spike Dup (BFC0211-MSD1)</b>				<b>Source: 2203066-01</b>		Prepared: 03/11/22 Analyzed: 03/13/22				
Boron	5.36	0.0100	mg/L	5.00	0.436	98.4	75-125	7.06	25	

**Batch BFC0308 - EPA 3050B**

<b>Blank (BFC0308-BLK1)</b>				Prepared: 03/15/22 Analyzed: 03/19/22						
Boron	ND	0.0100	mg/L							
<b>LCS (BFC0308-BS1)</b>				Prepared: 03/15/22 Analyzed: 03/19/22						
Boron	4.11	0.0100	mg/L	5.00		82.2	80-120			
<b>Duplicate (BFC0308-DUP1)</b>				<b>Source: 2202175-01</b>		Prepared: 03/15/22 Analyzed: 03/19/22				
Boron	0.171	0.0100	mg/L		0.175			2.42	20	
<b>Matrix Spike (BFC0308-MS1)</b>				<b>Source: 2202175-01</b>		Prepared: 03/15/22 Analyzed: 03/19/22				
Boron	4.31	0.0100	mg/L	5.00	0.175	82.7	75-125			

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 - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BFC0308 - EPA 3050B**

**Matrix Spike Dup (BFC0308-MSD1)**

**Source: 2202175-01**

Prepared: 03/15/22 Analyzed: 03/19/22

Boron	4.40	0.0100	mg/L	5.00	0.175	84.5	75-125	2.03	25	
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Summit Scientific



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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BFC0331 - EPA 3050B**

**Blank (BFC0331-BLK1)**

Prepared: 03/17/22 Analyzed: 03/22/22

Arsenic	ND	0.200	mg/kg wet						
Barium	ND	0.400	"						
Cadmium	ND	0.200	"						
Copper	ND	0.400	"						
Lead	ND	0.200	"						
Nickel	ND	0.400	"						
Selenium	ND	0.260	"						
Silver	ND	0.0200	"						
Zinc	ND	0.400	"						

**LCS (BFC0331-BS1)**

Prepared: 03/17/22 Analyzed: 03/22/22

Arsenic	38.0	0.200	mg/kg wet	40.0	95.1	80-120
Barium	33.9	0.400	"	40.0	84.7	80-120
Cadmium	1.64	0.200	"	2.00	82.1	80-120
Copper	35.2	0.400	"	40.0	87.9	80-120
Lead	16.1	0.200	"	20.0	80.3	80-120
Nickel	34.8	0.400	"	40.0	87.0	80-120
Selenium	3.62	0.260	"	4.00	90.6	80-120
Silver	1.60	0.0200	"	2.00	80.1	80-120
Zinc	39.6	0.400	"	40.0	99.0	80-120

**Duplicate (BFC0331-DUP1)**

Source: 2203021-01

Prepared: 03/17/22 Analyzed: 03/22/22

Arsenic	3.48	0.234	mg/kg dry	3.43	1.43	20
Barium	75.5	0.469	"	74.4	1.50	20
Cadmium	0.103	0.234	"	0.102	0.936	20
Copper	7.13	0.469	"	6.94	2.61	20
Lead	5.74	0.234	"	5.69	0.827	20
Nickel	7.37	0.469	"	7.14	3.15	20
Selenium	0.864	0.305	"	0.829	4.18	20
Silver	0.0348	0.0234	"	0.0343	1.44	20
Zinc	28.9	0.469	"	28.6	1.16	20

Summit Scientific

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BFC0331 - EPA 3050B**

<b>Matrix Spike (BFC0331-MS1)</b>	<b>Source: 2203021-01</b>			<b>Prepared: 03/17/22 Analyzed: 03/22/22</b>								
Arsenic	51.7	0.234	mg/kg dry	46.9	3.43	103	75-125					
Barium	107	0.469	"	46.9	74.4	70.2	75-125					QR-03
Cadmium	2.14	0.234	"	2.34	0.102	87.1	75-125					
Copper	49.3	0.469	"	46.9	6.94	90.3	75-125					
Lead	24.2	0.234	"	23.4	5.69	78.7	75-125					
Nickel	49.8	0.469	"	46.9	7.14	91.1	75-125					
Selenium	4.80	0.305	"	4.69	0.829	84.6	75-125					
Silver	1.98	0.0234	"	2.34	0.0343	82.8	75-125					
Zinc	76.7	0.469	"	46.9	28.6	103	75-125					

<b>Matrix Spike Dup (BFC0331-MSD1)</b>	<b>Source: 2203021-01</b>			<b>Prepared: 03/17/22 Analyzed: 03/22/22</b>								
Arsenic	52.1	0.234	mg/kg dry	46.9	3.43	104	75-125	0.651	25			
Barium	109	0.469	"	46.9	74.4	74.8	75-125	1.96	25			QR-03
Cadmium	2.19	0.234	"	2.34	0.102	89.1	75-125	2.11	25			
Copper	49.8	0.469	"	46.9	6.94	91.3	75-125	0.959	25			
Lead	24.1	0.234	"	23.4	5.69	78.4	75-125	0.320	25			
Nickel	51.0	0.469	"	46.9	7.14	93.6	75-125	2.33	25			
Selenium	4.82	0.305	"	4.69	0.829	85.2	75-125	0.504	25			
Silver	2.02	0.0234	"	2.34	0.0343	84.7	75-125	2.26	25			
Zinc	77.3	0.469	"	46.9	28.6	104	75-125	0.804	25			

Summit Scientific

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

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

**Batch BFC0348 - 3060A Mod**

**Blank (BFC0348-BLK1)**

Prepared & Analyzed: 03/17/22

Chromium, Hexavalent      ND      0.30 mg/kg wet

**LCS (BFC0348-BS1)**

Prepared & Analyzed: 03/17/22

Chromium, Hexavalent      29.6      0.30 mg/kg wet      25.0      118      80-120

**Duplicate (BFC0348-DUP1)**

**Source: 2203034-16**

Prepared & Analyzed: 03/17/22

Chromium, Hexavalent      ND      0.30 mg/kg dry      ND      20

**Matrix Spike (BFC0348-MS1)**

**Source: 2203034-16**

Prepared & Analyzed: 03/17/22

Chromium, Hexavalent      35.7      0.30 mg/kg dry      32.2      ND      111      75-125

**Matrix Spike Dup (BFC0348-MSD1)**

**Source: 2203034-16**

Prepared & Analyzed: 03/17/22

Chromium, Hexavalent      37.8      0.30 mg/kg dry      32.2      ND      117      75-125      5.78      20

Summit Scientific

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BFC0137 - General Preparation**

**Blank (BFC0137-BLK1)**

Prepared: 03/08/22 Analyzed: 03/12/22

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

**LCS (BFC0137-BS1)**

Prepared: 03/08/22 Analyzed: 03/12/22

Calcium	5.66	0.0500	mg/L wet	5.00	113	70-130				
Magnesium	5.11	0.0500	"	5.00	102	70-130				
Sodium	5.02	0.0500	"	5.00	100	70-130				

**Batch BFC0357 - General Preparation**

**Blank (BFC0357-BLK1)**

Prepared: 03/17/22 Analyzed: 03/22/22

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

**LCS (BFC0357-BS1)**

Prepared: 03/17/22 Analyzed: 03/22/22

Calcium	6.01	0.0500	mg/L wet	5.00	120	70-130				
Magnesium	5.56	0.0500	"	5.00	111	70-130				
Sodium	5.56	0.0500	"	5.00	111	70-130				

Summit Scientific

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch BFC0147 - General Preparation**

<b>Duplicate (BFC0147-DUP1)</b>		<b>Source: 2203064-01</b>			<b>Prepared &amp; Analyzed: 03/09/22</b>						
% Solids	89.8		%		89.8				0.0543	20	

**Batch BFC0295 - General Preparation**

<b>Duplicate (BFC0295-DUP1)</b>		<b>Source: 2203054-01</b>			<b>Prepared: 03/15/22 Analyzed: 03/16/22</b>						
% Solids	87.5		%		86.5				1.13	20	

**Batch BFC0364 - General Preparation**

<b>Duplicate (BFC0364-DUP1)</b>		<b>Source: 2203066-03</b>			<b>Prepared: 03/17/22 Analyzed: 03/18/22</b>						
% Solids	87.5		%		86.2				1.61	20	

Summit Scientific

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

Project: Noble - Petrikin A34-08 (Fac)  
Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BFC0073 - General Preparation**

**Blank (BFC0073-BLK1)**

Prepared & Analyzed: 03/04/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BFC0073-BS1)**

Prepared & Analyzed: 03/04/22

Specific Conductance (EC) 0.144 0.0100 mmhos/cm 0.150 96.1 95-105

**Duplicate (BFC0073-DUP1)**

Source: 2203054-01

Prepared & Analyzed: 03/04/22

Specific Conductance (EC) 0.429 0.0100 mmhos/cm 0.430 0.0931 20

**Batch BFC0390 - General Preparation**

**Blank (BFC0390-BLK1)**

Prepared & Analyzed: 03/18/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BFC0390-BS1)**

Prepared & Analyzed: 03/18/22

Specific Conductance (EC) 0.150 0.0100 mmhos/cm 0.150 100 95-105

**Duplicate (BFC0390-DUP1)**

Source: 2203066-03

Prepared & Analyzed: 03/18/22

Specific Conductance (EC) 0.316 0.0100 mmhos/cm 0.323 2.35 20

Summit Scientific

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

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

**Batch BFC0072 - General Preparation**

**LCS (BFC0072-BS1)**

Prepared & Analyzed: 03/04/22

pH 9.19 pH Units 9.18 100 95-105

**Duplicate (BFC0072-DUP1)**

Source: 2203054-01

Prepared & Analyzed: 03/04/22

pH 8.74 pH Units 8.73 0.114 20

**Batch BFC0389 - General Preparation**

**LCS (BFC0389-BS1)**

Prepared & Analyzed: 03/18/22

pH 9.14 pH Units 9.18 99.6 95-105

**Duplicate (BFC0389-DUP1)**

Source: 2203066-03

Prepared & Analyzed: 03/18/22

pH 8.18 pH Units 7.99 2.35 20

Summit Scientific

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

Project: Noble - Petrikin A34-08 (Fac)

Project Number: UWRWE-A1753-ABN  
Project Manager: Jacob Whritenour

**Reported:**  
03/24/22 11:48

### Notes and Definitions

- QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
- 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



April 19, 2022

WSP USA

Kelly Malone

4600 W. 60th Ave.

Arvada CO 80003

Project Name - Noble - Petrikin A34-08

Project Number - [none]

Attached are your analytical results for Noble - Petrikin A34-08 received by Origins Laboratory, Inc. March 28, 2022. This project is associated with Origins project number Y203733-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FS01@6.5ft	Y203733-01	Soil	March 28, 2022 10:30	03/28/2022 17:30
FS01@12ft	Y203733-02	Soil	March 28, 2022 10:45	03/28/2022 17:30
FS03@6.5ft	Y203733-03	Soil	March 28, 2022 13:30	03/28/2022 17:30
FS04@6.5ft	Y203733-04	Soil	March 28, 2022 14:10	03/28/2022 17:30
FS05@6.5ft	Y203733-05	Soil	March 28, 2022 13:30	03/28/2022 17:30
FS02@6.5ft	Y203733-06	Soil	March 28, 2022 12:58	03/28/2022 17:30
BG01@6.5ft	Y203733-07	Soil	March 28, 2022 14:30	03/28/2022 17:30

Chain of Custody Modification Request

On 4/12/2022, Drew Bullinger from WSP USA contacted Jordan Bynon via email regarding Y203733 requesting that pH, SAR, and Arsenic be added to BG01@6.5ft.

Requested modifications to the chain of custody were made by Jordan Bynon on 4/12/2022.

Origins Laboratory, Inc.



*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.*

WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08



705733

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page of

Client: Nobel Energy  
 Address: \_\_\_\_\_  
 Telephone Number: \_\_\_\_\_  
 Email Address: kelly.malone@wsp.com

Project Manager: \_\_\_\_\_  
 Project Name: PETRIKIN A34-08  
 Project Number: \_\_\_\_\_  
 Samples Collected By: K Malone

Fax: 303.265.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions	
				Unpreserved	HCl	HNO <sub>3</sub>	Other	Groundwater	Soil	Air/Surface			Other
F501 @ 6.5 FT	3/28/22	1030	2	X				X					1
F501 @ 12 FT	3/28/22	1045	2	X				X					2
F503 @ 6.5 FT	3/28/22	1330	2	X				X					3
F504 @ 6.5 FT	3/28/22	1400	2	X				X					4
F505 @ 6.5 FT	3/28/22	1330	2	X				X					5
F508 @ 6.5 FT	3/28/22	1258	2	X				X					6
B601 @ 6.5 FT	3/28/22	1430	2	X				X					7
													8
													9
													10

Relinquished By: <u>Kelly Malone</u>	Date: <u>3/28/22</u>	Time: <u>1730</u>	Received By: <u>CAF</u>	Date: <u>3/28/22</u>	Time: <u>1700</u>
Relinquished By: _____	Date: _____	Time: _____	Received By: _____	Date: _____	Time: _____

Temp Received: 9.3 Date Results Needed

Origins Laboratory, Inc.

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.

WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

Origins Laboratory

F-012207-01-R1  
 Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: Y203783

Client: WSP  
 Client Project ID: Petrikin A34-08

Checklist Completed by: JG

Shipped Via: HD  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: N/A

Date/time completed: 3/29/22

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_

Cooler Number/Temperature: 1 17.3 °C \_\_\_\_\_ °C \_\_\_\_\_ °C \_\_\_\_\_ °C (Describe)

Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		<u>Some Dax</u>
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH < 2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any): <u>F562 &amp; F563 confirmed per Kellys email on 3/29</u>				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) [Signature]

Date/Time Reviewed 3/30/22

Origins Laboratory, Inc.

[Signature]

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.

WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS01@6.5ft**  
**3/28/2022 10:30:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-01 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	1.68		0.101	mg/L	1	B2C3008	03/30/2022	03/31/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	337		25.0	mg/kg	1	B2C2901	03/29/2022	04/08/2022	
Residual Range Organics (C28-C40)	148		100	"	"	"	"	"	

Surrogate: o-Terphenyl	92.8 %		50-150			"	"	"	
------------------------	--------	--	--------	--	--	---	---	---	--

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	0.0389		0.00200	mg/kg	1	B2C3027	03/30/2022	04/03/2022	
1,3,5-Trimethylbenzene	0.0315		0.00200	"	"	"	"	"	
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	2.58		0.200	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	107 %		70-130			"	"	"	
Surrogate: Toluene-d8	92.2 %		70-130			"	"	"	

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

FS01@6.5ft

3/28/2022 10:30:00AM

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
 Y203733-01 (Soil)

**GBTEX+TMBs by 8260D**

Surrogate: 4-Bromofluorobenzene 109 % 70-130 B2C30 27 03/30/2022 04/03/2022

**Metals by Saturated Paste by EPA 6010**

Calcium	1.59	0.499	meq/L	10	[CALC]	03/30/2022	04/01/2022
Magnesium	ND	0.823	"	"	"	"	"
Sodium	1.25	0.435	"	"	"	"	"

**PAH by 8270D SIM**

1-Methylnaphthalene	0.162	0.00182	0.00335	mg/Kg	5	L608836	04/05/2022	04/05/2022
2-Methylnaphthalene	0.26	0.00323	0.00335	"	"	"	"	"
Acenaphthene	0.0425	0.00152	0.00335	"	"	"	"	"
Anthracene	0.0043	0.00167	0.00335	"	"	"	"	"
Benzo(a)anthracene	0.00365	0.00247	0.00335	"	"	"	"	"
Benzo(a)pyrene	ND	0.00234	0.00335	"	"	"	"	"
Benzo(b)fluoranthene	ND	0.00293	0.00335	"	"	"	"	"
Benzo(k)fluoranthene	ND	0.00219	0.00335	"	"	"	"	"
Chrysene	0.0169	0.00312	0.00335	"	"	"	"	"
Dibenz(a,h)anthracene	ND	0.00307	0.00335	"	"	"	"	"
Fluoranthene	ND	0.00197	0.00335	"	"	"	"	"
Fluorene	0.0977	0.00143	0.00335	"	"	"	"	"
Indeno(1,2,3-cd)pyrene	ND	0.00314	0.00335	"	"	"	"	"

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS01@6.5ft**  
**3/28/2022 10:30:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y203733-01 (Soil)**

**PAH by 8270D SIM**

Naphthalene	0.02	0.00242	0.00335	mg/Kg	5	L608836	04/05/2022	04/05/2022	
Pyrene	0.00996	0.00322	0.00335	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	58.8 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	77 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	65.2 %		29-110			"	"	"	

**pH in Soil by 9045D**

pH	8.32			pH Units	1	B2C3010	03/31/2022	04/01/2022	
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**SAR by 20B Saturated Paste**

SAR	1.19			SAR	1	B2C3006	03/30/2022	04/01/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	1.01		0.00500	mmhos/cm	1	B2C3012	03/31/2022	04/01/2022	
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**Total Metals by 6020B**

Arsenic	5.7	0.0855	0.25	mg/Kg	5	L608240	04/01/2022	04/04/2022	
Barium	49.6	0.042	0.25	"	"	"	"	"	
Cadmium	0.053	0.0259	0.25	"	"	"	"	"	J

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS01@6.5ft**

**3/28/2022 10:30:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y203733-01 (Soil)**

**Total Metals by 6020B**

Copper	8.31	0.0806	0.25	mg/Kg	5	L608240	04/01/2022	04/04/2022	
Lead	9.98	0.031	0.25	"	"	"	"	"	
Nickel	11.5	0.0633	0.25	"	"	"	"	"	
Selenium	0.568	0.103	0.25	"	"	"	"	"	
Silver	0.0233	0.0067	0.25	"	"	"	"	"	J
Zinc	52.9	0.534	2.5	"	"	"	"	"	

**Total Metals by 7196A**

Chromium, Hexavalent	ND	0.244	0.5	mg/Kg	1	L609115	03/28/2022	04/06/2022	
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Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS01@12ft**

**3/28/2022 10:45:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-02 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.925		0.0984	mg/L	1	B2C3008	03/30/2022	03/31/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		25.0	mg/kg	1	B2C2901	03/29/2022	04/08/2022	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: o-Terphenyl	81.2 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2C3027	03/30/2022	04/03/2022	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	108 %		70-130			"	"	"	
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Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS01@12ft**

**3/28/2022 10:45:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-02 (Soil)**

**GBTEX+TMBs by 8260D**

Surrogate: Toluene-d8	91.8 %		70-130			B2C30 27	03/30/2022	04/03/2022	
Surrogate: 4-Bromofluorobenzene	97.5 %		70-130			"	"	"	

**Metals by Saturated Paste by EPA 6010**

Calcium	ND		0.499	meq/L	10	[CALC]	03/30/2022	04/01/2022	
Magnesium	ND		0.823	"	"	"	"	"	
Sodium	<b>10.8</b>		0.435	"	"	"	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	ND	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"	

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS01@12ft**

**3/28/2022 10:45:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y203733-02 (Soil)**

**PAH by 8270D SIM**

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"	
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"	
Pyrene	ND	0.000643	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	58 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	76.1 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	67.4 %		29-110			"	"	"	

**pH in Soil by 9045D**

pH	7.72			pH Units	1	B2C3010	03/31/2022	04/01/2022	
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**SAR by 20B Saturated Paste**

SAR	17.5			SAR	1	B2C3006	03/30/2022	04/01/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	1.16		0.00500	mmhos/cm	1	B2C3012	03/31/2022	04/01/2022	
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**Total Metals by 6020B**

Arsenic	5.97	0.0855	0.25	mg/Kg	5	L608240	04/01/2022	04/04/2022	
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Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS01@12ft**

**3/28/2022 10:45:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y203733-02 (Soil)**

**Total Metals by 6020B**

Barium	23.3	0.042	0.25	mg/Kg	5	L608240	04/01/2022	04/04/2022	
Cadmium	0.0649	0.0259	0.25	"	"	"	"	"	J
Copper	9.73	0.0806	0.25	"	"	"	"	"	
Lead	11.3	0.031	0.25	"	"	"	"	"	
Nickel	12.8	0.0633	0.25	"	"	"	"	"	
Selenium	0.596	0.103	0.25	"	"	"	"	"	
Silver	0.0303	0.0067	0.25	"	"	"	"	"	J
Zinc	65.3	0.534	2.5	"	"	"	"	"	

**Total Metals by 7196A**

Chromium, Hexavalent	ND	0.25	0.514	mg/Kg	1	L609115	03/28/2022	04/06/2022	
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Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS03@6.5ft**  
**3/28/2022 1:30:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-03 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.812		0.0990	mg/L	1	B2C3008	03/30/2022	03/31/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		25.0	mg/kg	1	B2C2901	03/29/2022	04/08/2022	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: o-Terphenyl	81.6 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2C3027	03/30/2022	04/03/2022	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %		70-130			"	"	"	
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Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS03@6.5ft**  
**3/28/2022 1:30:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-03 (Soil)**

**GBTEX+TMBs by 8260D**

Surrogate: Toluene-d8	92.1 %		70-130			B2C30 27	03/30/2022	04/03/2022	
Surrogate: 4-Bromofluorobenzene	97.3 %		70-130			"	"	"	

**Metals by Saturated Paste by EPA 6010**

Calcium	3.33		0.499	meq/L	10	[CALC]	03/30/2022	04/01/2022	
Magnesium	3.45		0.823	"	"	"	"	"	
Sodium	5.58		0.435	"	"	"	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	ND	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"	

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS03@6.5ft**  
**3/28/2022 1:30:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y203733-03 (Soil)**

**PAH by 8270D SIM**

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"	
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"	
Pyrene	ND	0.000643	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	51.2 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	67.4 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	59.8 %		29-110			"	"	"	

**pH in Soil by 9045D**

pH	7.86			pH Units	1	B2C3010	03/31/2022	04/01/2022	
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**SAR by 20B Saturated Paste**

SAR	3.03			SAR	1	B2C3006	03/30/2022	04/01/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	1.12	0.00500		mmhos/cm	1	B2C3012	03/31/2022	04/01/2022	
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Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS04@6.5ft**  
**3/28/2022 2:10:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-04 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.612		0.0987	mg/L	1	B2C3008	03/30/2022	03/31/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		25.0	mg/kg	1	B2C2901	03/29/2022	04/05/2022	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: o-Terphenyl	119 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2C3027	03/30/2022	04/03/2022	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	107 %		70-130			"	"	"	
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Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS04@6.5ft**  
**3/28/2022 2:10:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-04 (Soil)**

**GBTEX+TMBs by 8260D**

Surrogate: Toluene-d8	93.4 %		70-130			B2C30 27	03/30/2022	04/03/2022	
Surrogate: 4-Bromofluorobenzene	95.3 %		70-130			"	"	"	

**Metals by Saturated Paste by EPA 6010**

Calcium	<b>3.20</b>		0.499	meq/L	10	[CALC]	03/30/2022	04/01/2022	
Magnesium	<b>3.33</b>		0.823	"	"	"	"	"	
Sodium	<b>5.54</b>		0.435	"	"	"	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	ND	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"	

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Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS04@6.5ft**  
**3/28/2022 2:10:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y203733-04 (Soil)**

**PAH by 8270D SIM**

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"	
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"	
Pyrene	ND	0.000643	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	58.4 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	72.5 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	67.9 %		29-110			"	"	"	

**pH in Soil by 9045D**

pH	8.30			pH Units	1	B2C3010	03/31/2022	04/01/2022	
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**SAR by 20B Saturated Paste**

SAR	3.06			SAR	1	B2C3006	03/30/2022	04/01/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.743		0.00500	mmhos/cm	1	B2C3012	03/31/2022	04/01/2022	
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Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS05@6.5ft**  
**3/28/2022 1:30:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-05 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	1.14		0.0986	mg/L	1	B2C3008	03/30/2022	03/31/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		25.0	mg/kg	1	B2C2901	03/29/2022	04/05/2022	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: o-Terphenyl	119 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2C3027	03/30/2022	04/03/2022	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %		70-130			"	"	"	
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 Project: Noble - Petrikin A34-08

**FS05@6.5ft**  
**3/28/2022 1:30:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-05 (Soil)**

**GBTEX+TMBs by 8260D**

Surrogate: Toluene-d8	92.3 %		70-130			B2C30 27	03/30/2022	04/03/2022	
Surrogate: 4-Bromofluorobenzene	96.0 %		70-130			"	"	"	

**Metals by Saturated Paste by EPA 6010**

Calcium	ND		0.499	meq/L	10	[CALC]	03/30/2022	04/01/2022	
Magnesium	ND		0.823	"	"	"	"	"	
Sodium	<b>8.03</b>		0.435	"	"	"	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	ND	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"	

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 Project: Noble - Petrikin A34-08

**FS05@6.5ft**  
**3/28/2022 1:30:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y203733-05 (Soil)**

**PAH by 8270D SIM**

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"	
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"	
Pyrene	ND	0.000643	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	54.5 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	70.3 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	62.4 %		29-110			"	"	"	

**pH in Soil by 9045D**

pH	7.90			pH Units	1	B2C3010	03/31/2022	04/01/2022	
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**SAR by 20B Saturated Paste**

SAR	15.0			SAR	1	B2C3006	03/30/2022	04/01/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.603		0.00500	mmhos/cm	1	B2C3012	03/31/2022	04/01/2022	
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 Project: Noble - Petrikin A34-08

**FS02@6.5ft**

**3/28/2022 12:58:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-06 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	1.04		0.100	mg/L	1	B2C3008	03/30/2022	03/31/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		25.0	mg/kg	1	B2C2901	03/29/2022	04/05/2022	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: o-Terphenyl	115 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2C3027	03/30/2022	04/03/2022	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	106 %		70-130			"	"	"	
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Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS02@6.5ft**

**3/28/2022 12:58:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-06 (Soil)**

**GBTEX+TMBs by 8260D**

Surrogate: Toluene-d8	93.4 %		70-130			B2C30 27	03/30/2022	04/03/2022	
Surrogate: 4-Bromofluorobenzene	96.8 %		70-130			"	"	"	

**Metals by Saturated Paste by EPA 6010**

Calcium	ND		0.499	meq/L	10	[CALC]	03/30/2022	04/01/2022	
Magnesium	ND		0.823	"	"	"	"	"	
Sodium	6.17		0.435	"	"	"	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.000364	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
2-Methylnaphthalene	ND	0.000645	0.00067	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	ND	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	ND	0.000394	0.00067	"	"	"	"	"	

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 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**FS02@6.5ft**

**3/28/2022 12:58:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, Inc.**  
**Y203733-06 (Soil)**

**PAH by 8270D SIM**

Fluorene	ND	0.000286	0.00067	mg/Kg	1	L608836	04/05/2022	04/05/2022	
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"	
Naphthalene	ND	0.000484	0.00067	"	"	"	"	"	
Pyrene	ND	0.000643	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	49.4 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	63.2 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	57.1 %		29-110			"	"	"	

**pH in Soil by 9045D**

pH	7.62			pH Units	1	B2C3010	03/31/2022	04/01/2022	
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**SAR by 20B Saturated Paste**

SAR	12.0			SAR	1	B2C3006	03/30/2022	04/01/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	1.74		0.00500	mmhos/cm	1	B2C3012	03/31/2022	04/01/2022	
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Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**BG01@6.5ft**  
**3/28/2022 2:30:00PM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203733-07 (Soil)**

**Metals by Saturated Paste by EPA 6010**

Calcium	11.5		0.499	meq/L	10	[CALC]	04/13/2022	04/14/2022	
Magnesium	15.0		0.823	"	"	"	"	"	
Sodium	20.2		0.435	"	"	"	"	"	

**pH in Soil by 9045D**

pH	7.79			pH Units	1	B2D1325	04/13/2022	04/14/2022	
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**SAR by 20B Saturated Paste**

SAR	5.56			SAR	1	B2D1316	04/13/2022	04/14/2022	
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**Total Metals by 6020B**

Arsenic	4.82	0.0855	0.25	mg/Kg	5	L610848	04/14/2022	04/18/2022	
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Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2C2901 - EPA 3550B</b>										
<b>Blank (B2C2901-BLK1)</b>										
					Prepared: 03/29/2022 Analyzed: 04/07/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	24		"	24.9		94.8	50-150			

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Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2C2901 - EPA 3550B</b>										
<b>LCS (B2C2901-BS1)</b>										
					Prepared: 03/29/2022 Analyzed: 04/08/2022					
Diesel (C10-C28)	786	50.0	mg/kg	1000		78.6	70-130			
Residual Range Organics (C28-C40)	870	200	"	1000		87.0	70-130			
Surrogate: o-Terphenyl	42		"	49.8		84.6	50-150			

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Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2C2901 - EPA 3550B**

<b>Matrix Spike (B2C2901-MS1)</b>	<b>Source: Y203691-01</b>			Prepared: 03/29/2022 Analyzed: 04/08/2022						
Diesel (C10-C28)	1590	50.0	mg/kg	1000	503	109	70-130			
Residual Range Organics (C28-C40)	874	200	"	1000	ND	87.4	70-130			
Surrogate: o-Terphenyl	49		"	49.8		99.2	50-150			

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 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2C2901 - EPA 3550B</b>										
<b>Matrix Spike Dup (B2C2901-MSD1)</b>					<b>Source: Y203691-01</b>					Prepared: 03/29/2022 Analyzed: 04/08/2022
Diesel (C10-C28)	1830	50.0	mg/kg	1000	503	133	70-130	13.9	35	QM-07
Residual Range Organics (C28-C40)	959	200	"	1000	ND	95.9	70-130	9.33	35	
Surrogate: o-Terphenyl	54		"	49.8		108	50-150			

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 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2C3027 - EPA 5030 (soil)**

**Blank (B2C3027-BLK1)**

Prepared: 03/30/2022 Analyzed: 04/03/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.0100	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		99.0	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.3	70-130			

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Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2C3027 - EPA 5030 (soil)

**LCS (B2C3027-BS1)**

Prepared: 03/30/2022 Analyzed: 04/03/2022

1,2,4-Trimethylbenzene	0.110	0.00200	mg/kg	0.100		110	70-130			
1,3,5-Trimethylbenzene	0.110	0.00200	"	0.100		110	70-130			
Benzene	0.106	0.00200	"	0.100		106	70-130			
Ethylbenzene	0.103	0.00200	"	0.100		103	70-130			
Naphthalene	0.102	0.0100	"	0.100		102	70-130			
Toluene	0.101	0.00200	"	0.100		101	70-130			
o-Xylene	0.102	0.00200	"	0.100		102	70-130			
m,p-Xylene	0.204	0.00400	"	0.200		102	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.3	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		95.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.5	70-130			

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2C3027 - EPA 5030 (soil)

Matrix Spike (B2C3027-MS1)	Source: Y203722-01			Prepared: 03/30/2022 Analyzed: 04/03/2022						
1,2,4-Trimethylbenzene	0.0682	0.00200	mg/kg	0.100	ND	68.2	70-130			QM-07
1,3,5-Trimethylbenzene	0.0681	0.00200	"	0.100	ND	68.1	70-130			QM-07
Benzene	0.0683	0.00200	"	0.100	ND	68.3	70-130			QM-07
Ethylbenzene	0.0645	0.00200	"	0.100	ND	64.5	70-130			QM-07
Naphthalene	0.0675	0.0100	"	0.100	0.00230	65.2	70-130			QM-07
Toluene	0.0650	0.00200	"	0.100	ND	65.0	70-130			QM-07
o-Xylene	0.0646	0.00200	"	0.100	ND	64.6	70-130			QM-07
m,p-Xylene	0.125	0.00400	"	0.200	ND	62.4	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		101	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		95.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		95.8	70-130			

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2C3027 - EPA 5030 (soil)

Matrix Spike Dup (B2C3027-MSD1)	Source: Y203722-01			Prepared: 03/30/2022 Analyzed: 04/03/2022						
1,2,4-Trimethylbenzene	0.101	0.00200	mg/kg	0.100	ND	101	70-130	39.1	20	QM-07
1,3,5-Trimethylbenzene	0.101	0.00200	"	0.100	ND	101	70-130	38.9	20	QM-07
Benzene	0.0963	0.00200	"	0.100	ND	96.3	70-130	34.0	20	QM-07
Ethylbenzene	0.0941	0.00200	"	0.100	ND	94.1	70-130	37.3	20	QM-07
Naphthalene	0.0988	0.0100	"	0.100	0.00230	96.5	70-130	37.6	20	QM-07
Toluene	0.0924	0.00200	"	0.100	ND	92.4	70-130	34.8	20	QM-07
o-Xylene	0.0943	0.00200	"	0.100	ND	94.3	70-130	37.4	20	QM-07
m,p-Xylene	0.185	0.00400	"	0.200	ND	92.6	70-130	38.9	20	QM-07
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		100	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.8	70-130			

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Total Metals by 6020B - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L610848 - 3050B</b>										
<b>MSD (L 92116-MSD-L610848)</b>			<b>Source: 92116</b>			Prepared: 04/14/2022 Analyzed: 04/18/2022				
Arsenic	9.99	0.0855	mg/Kg	2.44	2.15	321	75-125	96.8	80	*
<b>MS (L 92116-MS-L610848)</b>			<b>Source: 92116</b>			Prepared: 04/14/2022 Analyzed: 04/18/2022				
Arsenic	3.47	0.0855	mg/Kg	2.31	2.15	57	75-125			*
<b>LCS (LCS-L610848)</b>						Prepared: 04/14/2022 Analyzed: 04/18/2022				
Arsenic	2.57	0.0855	mg/Kg	2.5		103	80-120			
<b>LRB (LRB-L610848)</b>						Prepared: 04/14/2022 Analyzed: 04/18/2022				
Arsenic	ND	0.25	mg/Kg							

Origins Laboratory, Inc.



*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.*

WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L608836 - 3550B**

<b>MSD (L 97326-MSD-L608836)</b>		<b>Source: 97326</b>			Prepared: 04/05/2022 Analyzed: 04/05/2022					
Benzo(k)fluoranthene	0.0958	0.000437	mg/Kg	0.166	97326	57.7	30-130	11.9	30	
Pyrene	0.112	0.000643	"	0.166	97326	67.4	30-130	5.2	30	
Naphthalene	0.0971	0.000484	"	0.166	97326	58.4	30-130	6.8	30	
Indeno(1,2,3-cd)pyrene	0.101	0.000627	"	0.166	97326	60.8	30-130	8.5	30	
Fluorene	0.108	0.000286	"	0.166	97326	65	30-130	8	30	
Fluoranthene	0.112	0.000394	"	0.166	97326	67.4	30-130	6	30	
1-Methylnaphthalene	0.0979	0.000364	"	0.166	97326	58.9	30-130	5	30	
Chrysene	0.104	0.000624	"	0.166	97326	62.6	30-130	8.2	30	
Benzo(b)fluoranthene	0.0945	0.000585	"	0.166	97326	56.9	30-130	4.3	30	
Benzo(a)pyrene	0.102	0.000468	"	0.166	97326	61.4	30-130	7.5	30	
Benzo(a)anthracene	0.111	0.000493	"	0.166	97326	66.8	30-130	7.7	30	
Anthracene	0.106	0.000334	"	0.166	97326	63.8	30-130	8.1	30	
Acenaphthene	0.0992	0.000304	"	0.166	97326	59.7	30-130	9.4	30	
2-Methylnaphthalene	0.0982	0.000645	"	0.166	97326	59.1	30-130	5.7	30	
Dibenz(a,h)anthracene	0.101	0.000614	"	0.166	97326	60.8	30-130	9.4	30	
Surrogate: Nitrobenzene-d5	63.4		"	0.331	190	63.4	29-110			
Surrogate: 4-Terphenyl-d14	73.7		"	0.331	249	73.7	33-122			
Surrogate: 2-Fluorobiphenyl	57		"	0.331	183	57	33-115			

<b>MS (L 97326-MS-L608836)</b>		<b>Source: 97326</b>			Prepared: 04/05/2022 Analyzed: 04/05/2022					
1-Methylnaphthalene	0.103	0.000364	mg/Kg	0.164	97326	62.8	30-130			
Acenaphthene	0.109	0.000304	"	0.164	97326	66.4	30-130			
Indeno(1,2,3-cd)pyrene	0.11	0.000627	"	0.164	97326	67	30-130			
Anthracene	0.115	0.000334	"	0.164	97326	70.1	30-130			
2-Methylnaphthalene	0.104	0.000645	"	0.164	97326	63.4	30-130			
Pyrene	0.118	0.000643	"	0.164	97326	71.9	30-130			
Naphthalene	0.104	0.000484	"	0.164	97326	63.4	30-130			

Origins Laboratory, Inc.



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.

WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L608836 - 3550B**

MS (L 97326-MS-L608836)	Source: 97326			Prepared: 04/05/2022 Analyzed: 04/05/2022						
Fluorene	0.117	0.000286	mg/Kg	0.164	97326	71.3	30-130			
Fluoranthene	0.119	0.000394	"	0.164	97326	72.5	30-130			
Dibenz(a,h)anthracene	0.111	0.000614	"	0.164	97326	67.6	30-130			
Chrysene	0.113	0.000624	"	0.164	97326	68.9	30-130			
Benzo(k)fluoranthene	0.108	0.000437	"	0.164	97326	65.8	30-130			
Benzo(b)fluoranthene	0.0987	0.000585	"	0.164	97326	60.1	30-130			
Benzo(a)pyrene	0.11	0.000468	"	0.164	97326	67	30-130			
Benzo(a)anthracene	0.12	0.000493	"	0.164	97326	73.1	30-130			
Surrogate: 4-Terphenyl-d14	75.9		"	0.328	249	75.9	33-122			
Surrogate: 2-Fluorobiphenyl	58.8		"	0.328	183	58.8	33-115			
Surrogate: Nitrobenzene-d5	68.2		"	0.328	190	68.2	29-110			

LCS (LCS-L608836)	Prepared: 04/05/2022 Analyzed: 04/05/2022									
Benzo(b)fluoranthene	0.0988	0.000585	mg/Kg	0.167		59.1	30-130			
Acenaphthene	0.114	0.000304	"	0.167		68.2	30-130			
Anthracene	0.123	0.000334	"	0.167		73.6	30-130			
Benzo(a)anthracene	0.128	0.000493	"	0.167		76.6	30-130			
Benzo(a)pyrene	0.116	0.000468	"	0.167		69.4	30-130			
Benzo(k)fluoranthene	0.113	0.000437	"	0.167		67.6	30-130			
Chrysene	0.121	0.000624	"	0.167		72.4	30-130			
Dibenz(a,h)anthracene	0.11	0.000614	"	0.167		65.8	30-130			
Fluoranthene	0.128	0.000394	"	0.167		76.6	30-130			
Fluorene	0.124	0.000286	"	0.167		74.2	30-130			
Naphthalene	0.111	0.000484	"	0.167		66.4	30-130			
1-Methylnaphthalene	0.11	0.000364	"	0.167		65.8	30-130			
Pyrene	0.128	0.000643	"	0.167		76.6	30-130			
Indeno(1,2,3-cd)pyrene	0.107	0.000627	"	0.167		64	30-130			

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L608836 - 3550B**

**LCS (LCS-L608836)**

Prepared: 04/05/2022 Analyzed: 04/05/2022

2-Methylnaphthalene	0.111	0.000645	mg/Kg	0.167		66.4	30-130			
Surrogate: Nitrobenzene-d5	75.6		"	0.333		75.6	29-110			
Surrogate: 4-Terphenyl-d14	85.8		"	0.333		85.8	33-122			
Surrogate: 2-Fluorobiphenyl	67.8		"	0.333		67.8	33-115			

**LRB (LRB-L608836)**

Prepared: 04/05/2022 Analyzed: 04/05/2022

Benzo(a)anthracene	ND	0.00067	mg/Kg				-			
1-Methylnaphthalene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Pyrene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Naphthalene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
Surrogate: 2-Fluorobiphenyl	60.6		"	0.333		60.6	33-115			
Surrogate: 4-Terphenyl-d14	79.5		"	0.333		79.5	33-122			
Surrogate: Nitrobenzene-d5	66.6		"	0.333		66.6	29-110			

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Total Metals by 6020B - Quality Control**  
**Waypoint Analytical, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L608240 - 3050B**

<b>MSD (L 97393-MSD-L608240)</b>		<b>Source: 97393</b>			<b>Prepared: 04/01/2022 Analyzed: 04/04/2022</b>					
Nickel	5.31	0.0633	mg/Kg	2.48	1.61	149	75-125	0.7	80	*
Barium	41.6	0.042	"	4.96	21.3	409	75-125	3.7	80	*
Cadmium	0.572	0.0259	"	0.496	0.0318	109	75-125	11	80	
Copper	6.17	0.0806	"	2.48	1.75	178	75-125	12.5	80	*
Lead	9	0.031	"	2.48	3.48	223	75-125	4.8	80	*
Silver	0.534	0.0067	"	0.496	0.0203	104	75-125	1.8	80	
Zinc	41.1	0.534	"	24.8	8.65	131	75-125	4.9	80	*
Arsenic	4.21	0.0855	"	2.48	1.06	127	75-125	8.9	80	*
Selenium	5.18	0.103	"	4.96	0.2	100	75-125	0.9	80	

<b>MS (L 97393-MS-L608240)</b>		<b>Source: 97393</b>			<b>Prepared: 04/01/2022 Analyzed: 04/04/2022</b>					
Barium	43.2	0.042	mg/Kg	4.78	21.3	458	75-125			*
Silver	0.524	0.0067	"	0.478	0.0203	105	75-125			
Zinc	39.1	0.534	"	23.9	8.65	127	75-125			*
Nickel	5.27	0.0633	"	2.39	1.61	153	75-125			*
Lead	8.57	0.031	"	2.39	3.48	213	75-125			*
Copper	5.44	0.0806	"	2.39	1.75	154	75-125			*
Cadmium	0.512	0.0259	"	0.478	0.0318	100	75-125			
Arsenic	3.85	0.0855	"	2.39	1.06	117	75-125			
Selenium	5.23	0.103	"	4.78	0.2	105	75-125			

<b>LCS (LCS-L608240)</b>		<b>Prepared: 04/01/2022 Analyzed: 04/04/2022</b>								
Zinc	24.5	0.534	mg/Kg	25		98	80-120			
Arsenic	2.67	0.0855	"	2.5		107	80-120			
Barium	4.91	0.042	"	5		98	80-120			
Cadmium	0.483	0.0259	"	0.5		97	80-120			
Copper	2.44	0.0806	"	2.5		98	80-120			

Origins Laboratory, Inc.



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WSP USA  
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 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Total Metals by 6020B - Quality Control**  
**Waypoint Analytical, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L608240 - 3050B**

**LCS (LCS-L608240)**

Prepared: 04/01/2022 Analyzed: 04/04/2022

Lead	2.45	0.031	mg/Kg	2.5		98	80-120			
Nickel	2.47	0.0633	"	2.5		99	80-120			
Silver	0.496	0.0067	"	0.5		99	80-120			
Selenium	5.42	0.103	"	5		108	80-120			

**LRB (LRB-L608240)**

Prepared: 04/01/2022 Analyzed: 04/04/2022

Copper	ND	0.25	mg/Kg				-			
Zinc	ND	2.5	"				-			
Arsenic	ND	0.25	"				-			
Barium	ND	0.25	"				-			
Cadmium	ND	0.25	"				-			
Silver	ND	0.25	"				-			
Selenium	ND	0.25	"				-			
Nickel	ND	0.25	"				-			
Lead	ND	0.25	"				-			

Origins Laboratory, Inc.



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WSP USA  
 4600 W. 60th Ave.  
 Arvada CO 80003

Kelly Malone  
 Project Number: [none]  
 Project: Noble - Petrikin A34-08

**Total Metals by 7196A - Quality Control**  
**Waypoint Analytical, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L609115 -</b>										
<b>DUP (L 97237-DUP)</b>			<b>Source: 97237</b>			Prepared: Analyzed: 04/06/2022				
Chromium, Hexavalent	ND	0.244	mg/Kg		97237		-	0	20	
<b>MS (L 97237-MS)</b>			<b>Source: 97237</b>			Prepared: Analyzed: 04/06/2022				
Chromium, Hexavalent	6.44	0.253	mg/Kg	8.33	97237	77	75-125			
<b>LCS (LCS)</b>						Prepared: Analyzed: 04/06/2022				
Chromium, Hexavalent	7.13	0.244	mg/Kg	8		89	75-125			
<b>LRB (LRB)</b>						Prepared: Analyzed: 04/06/2022				
Chromium, Hexavalent	ND	0.5	mg/Kg				-			

Origins Laboratory, Inc.



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WSP USA  
4600 W. 60th Ave.  
Arvada CO 80003

Kelly Malone  
Project Number: [none]  
Project: Noble - Petrikin A34-08

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**Notes and Definitions**

U Sample is Non-Detect.

QR-DUP RPD exceeds QC acceptance criteria, this indicates source sample is not homogenous.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

J Estimated Value. Analyte below reported quantitation limit.

\* QC Failure

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Origins Laboratory, Inc.



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# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

May 18, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfield, CO 80020

RE: Noble - Petrikin A34-08

Work Order #2302487

Enclosed are the results of analyses for samples received by Summit Scientific on 02/27/23 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', written in a cursive style.

Paul Shrewsbury

President



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

Project: Noble - Petrikin A34-08

Project Number: [none]  
 Project Manager: Jacob Whritenour

**Reported:**  
 05/18/23 12:30

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@12'	2302487-01	Soil	02/27/23 12:40	02/27/23 17:40
BH02@12'	2302487-02	Soil	02/27/23 14:01	02/27/23 17:40
BH03@9'	2302487-03	Soil	02/27/23 13:20	02/27/23 17:40
BH03@12'	2302487-04	Soil	02/27/23 13:29	02/27/23 17:40
BH04@9'	2302487-05	Soil	02/27/23 12:53	02/27/23 17:40
BH04@12'	2302487-06	Soil	02/27/23 12:05	02/27/23 17:40
BG02@6.5'	2302487-07	Soil	02/27/23 10:25	02/27/23 17:40
BG02@12'	2302487-08	Soil	02/27/23 10:34	02/27/23 17:40
BG03@6.5'	2302487-09	Soil	02/27/23 10:45	02/27/23 17:40
BG03@12'	2302487-10	Soil	02/27/23 10:54	02/27/23 17:40
BG04@6.5'	2302487-11	Soil	02/27/23 11:01	02/27/23 17:40
BG04@12'	2302487-12	Soil	02/27/23 11:10	02/27/23 17:40
BG05@6.5'	2302487-13	Soil	02/27/23 11:34	02/27/23 17:40
BG05@12'	2302487-14	Soil	02/27/23 11:44	02/27/23 17:40
BG06@6.5'	2302487-15	Soil	02/27/23 11:20	02/27/23 17:40
BG06@12'	2302487-16	Soil	02/27/23 11:30	02/27/23 17:40

Summit Scientific

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

Client: Noble / Tasman		Project Manager: Jake Whritenour		Send Invoice To:	
Address: 6855 W 119th Ave		E-Mail: jwhritenour@tasman-geo.com		Company: Noble	
City/State/Zip: Broomfield / CO / 80020		Project Name: <i>Reflexin A34-08</i>		Project Name/Location:	
Phone: 303-487-1228		Project Number:		PO/Billing Codes:	
Sampler Name: <i>S. Anderson</i>				Contact: Jacob Evans	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested							Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	PAH's	
1	BH01e 12'	2/27/23	1240	3			X			X			X	X	X	X	X	X	
2	BH02e 12'		1401	3															
3	BH03e 9'		1320	3															
4	BH03e 12'		1729	3															
5	BH04e 9'		1253	3															
6	BH04e 12'		1985	3															
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			

Relinquished by: <i>[Signature]</i>	Date/Time: 2/27/23 1657	Received by: Tasman Lockbox	Date/Time: 2/27/23 1657	TAT Business Days	Field DO	Notes:
Relinquished by: Tasman Lockbox	Date/Time: 2/27/23 1740	Received by: <i>[Signature]</i>	Date/Time: 2/27/23 1740	Same Day	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
Relinquished by:	Date/Time:	Received by:	Date/Time:	2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
Temperature Upon Receipt: 78	Corrected Temperature: <i>[Signature]</i>	IR gun #: 1	HNO3 lot #:	Standard	Field Turb.	

Client: Noble / Tasman		Project Manager: Jake Whritenour		Send Invoice To:	
Address: 6855 W 119th Ave		E-Mail: jwhritenour@tasman-geo.com		Company: Noble	
City/State/Zip: Broomfield / CO / 80020		Project Name: <i>Petefikin A34-08</i>		Project Name/Location:	
Phone: 303-487-1228		Project Number:		AFE#:	
Sampler Name: <i>S. Anderson</i>		Project Number:		PO/Billing Codes:	
				Contact: Jacob Evans	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS		pH, EC, SAR *
1	B602 e 6.5'	2/27/23	1025	1			X			X						X	X	
2	B602 e 12'		1034															
3	B603 e 6.5'		1045															
4	B603 e 12'		1054															
5	B604 e 6.5'		1101															
6	B604 e 12'		1110															
7	B605 e 6.5'		1134															
8	B605 e 12'		1144															
9	B606 e 6.5'		1120															
10	B606 e 12'	↓	1130	↓												↓	↓	
11																		
12																		
13																		
14																		
15																		

Relinquished by: <i>[Signature]</i>	Date/Time: 2/27/23 1657	Received by: Tasman Lockbox	Date/Time: 2/27/23 1657	TAT Business Days	Field DO	Notes: * = Metals = Arsenic only * = SAR only
Relinquished by: Tasman Lockbox	Date/Time: 2/27/23 1740	Received by: <i>[Signature]</i>	Date/Time: 2/27/23 1740	Same Day <input checked="" type="checkbox"/>	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
Relinquished by:	Date/Time:	Received by:	Date/Time:	2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
Temperature Upon Receipt: 8.2	Corrected Temperature: <i>[Signature]</i>	IR gun #: 1	HNO3 lot #:	Standard <input checked="" type="checkbox"/>	Field Turb.	

S<sub>2</sub>

2/2  
Sample Receipt Checklist

S2 Work Order# 2302487

Client: Noble/Tasman Client Project ID: Petroleum A34-08

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? <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
If custody seals are present, are they intact? <sup>(1)</sup>	<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 <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input 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.				

AS

Custodian Printed Name

2/27/23

Date/Time



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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH01@12'**  
**2302487-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGB0837	02/27/23	02/27/23	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: **02/27/23 12:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0381	95.3 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0369	92.2 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0403	101 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGB0838	02/27/23	02/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	8.73	69.9 %		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 - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH01@12'**  
**2302487-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGB0840	02/28/23	03/02/23	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: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0226	67.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0186	55.7 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.443</b>	0.0100	mg/L	1	BGB0833	02/27/23	03/01/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH01@12'**  
**2302487-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	5.55	0.238	mg/kg dry	1	BGB0863	02/28/23	03/01/23	EPA 6020B	
Barium	19.7	0.476	"	"	"	"	"	"	
Cadmium	ND	0.238	"	"	"	"	"	"	
Copper	10.9	0.476	"	"	"	"	"	"	
Lead	10.4	0.238	"	"	"	"	"	"	
Nickel	12.8	0.476	"	"	"	"	"	"	
Selenium	1.44	0.260	"	"	"	"	"	"	
Silver	0.0304	0.0238	"	"	"	"	"	"	
Zinc	62.7	0.476	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGB0872	02/28/23	02/28/23	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	66.6	0.0596	mg/L dry	1	BGB0827	02/27/23	03/01/23	EPA 6020B	
Magnesium	41.2	0.0596	"	"	"	"	"	"	
Sodium	110	0.0596	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.61	0.00100	units	1	BGC0033	03/01/23	03/01/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH01@12'**  
**2302487-01 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

<b>% Solids</b>	<b>83.9</b>	%	1	BGB0868	02/28/23	03/01/23	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>1.16</b>	0.0100	mmhos/cm	1	BGB0864	02/28/23	02/28/23	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **02/27/23 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>7.48</b>		pH Units	1	BGB0866	02/28/23	02/28/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH02@12'**  
**2302487-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BGB0837	02/27/23	02/27/23	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: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0371	92.7 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0394	98.4 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0389	97.2 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BGB0838	02/27/23	02/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	9.41	75.3 %	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 - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH02@12'**  
**2302487-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGB0840	02/28/23	03/02/23	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: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0215	64.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0203	61.0 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.495</b>	0.0100	mg/L	1	BGB0833	02/27/23	03/01/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH02@12'**  
**2302487-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	3.86	0.241	mg/kg dry	1	BGB0863	02/28/23	03/01/23	EPA 6020B	
Barium	12.1	0.481	"	"	"	"	"	"	
Cadmium	ND	0.241	"	"	"	"	"	"	
Copper	7.43	0.481	"	"	"	"	"	"	
Lead	7.35	0.241	"	"	"	"	"	"	
Nickel	9.65	0.481	"	"	"	"	"	"	
Selenium	0.939	0.260	"	"	"	"	"	"	
Silver	0.0256	0.0241	"	"	"	"	"	"	
Zinc	43.6	0.481	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGB0872	02/28/23	02/28/23	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	33.7	0.0602	mg/L dry	1	BGB0827	02/27/23	03/01/23	EPA 6020B	
Magnesium	18.7	0.0602	"	"	"	"	"	"	
Sodium	79.6	0.0602	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.73	0.00100	units	1	BGC0033	03/01/23	03/01/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH02@12'**  
**2302487-02 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

<b>% Solids</b>	<b>83.1</b>	%	1	BGB0868	02/28/23	03/01/23	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.648</b>	0.0100	mmhos/cm	1	BGB0864	02/28/23	02/28/23	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **02/27/23 14:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>7.57</b>		pH Units	1	BGB0866	02/28/23	02/28/23	EPA 9045D	

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH03@9'**  
**2302487-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	BGB0837	02/27/23	02/27/23	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: **02/27/23 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4	0.0348	87.1 %	50-150	"	"	"	"	"	
Surrogate: Toluene-d8	0.0375	93.8 %	50-150	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0404	101 %	50-150	"	"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	BGB0838	02/27/23	02/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl	9.04	72.3 %	30-150	"	"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH03@9'**  
**2302487-03 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGB0840	02/28/23	03/02/23	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: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0212	63.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0199	59.6 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.590</b>	0.0100	mg/L	1	BGB0833	02/27/23	03/01/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH03@9'**  
**2302487-03 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	5.45	0.235	mg/kg dry	1	BGB0863	02/28/23	03/01/23	EPA 6020B	
Barium	39.8	0.471	"	"	"	"	"	"	
Cadmium	ND	0.235	"	"	"	"	"	"	
Copper	9.69	0.471	"	"	"	"	"	"	
Lead	9.20	0.235	"	"	"	"	"	"	
Nickel	11.1	0.471	"	"	"	"	"	"	
Selenium	1.12	0.260	"	"	"	"	"	"	
Silver	0.0253	0.0235	"	"	"	"	"	"	
Zinc	56.9	0.471	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGB0872	02/28/23	02/28/23	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	11.4	0.0589	mg/L dry	1	BGB0827	02/27/23	03/01/23	EPA 6020B	
Magnesium	8.22	0.0589	"	"	"	"	"	"	
Sodium	127	0.0589	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	7.00	0.00100	units	1	BGC0033	03/01/23	03/01/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH03@9'**  
**2302487-03 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

<b>% Solids</b>	<b>84.9</b>	%	1	BGB0868	02/28/23	03/01/23	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.622</b>	0.0100	mmhos/cm	1	BGB0864	02/28/23	02/28/23	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **02/27/23 13:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>8.00</b>		pH Units	1	BGB0866	02/28/23	02/28/23	EPA 9045D	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH03@12'**  
**2302487-04 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BGB0837	02/27/23	02/27/23	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: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0341	85.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0381	95.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0401	100 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BGB0838	02/27/23	02/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	10.7	85.2 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH03@12'**  
**2302487-04 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGB0840	02/28/23	03/02/23	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: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0165	49.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0224	67.1 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.824</b>	0.0100	mg/L	1	BGB0833	02/27/23	03/01/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH03@12'**  
**2302487-04 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	5.10	0.238	mg/kg dry	1	BGB0863	02/28/23	03/01/23	EPA 6020B	
Barium	19.2	0.475	"	"	"	"	"	"	
Cadmium	ND	0.238	"	"	"	"	"	"	
Copper	10.6	0.475	"	"	"	"	"	"	
Lead	9.12	0.238	"	"	"	"	"	"	
Nickel	12.1	0.475	"	"	"	"	"	"	
Selenium	1.27	0.260	"	"	"	"	"	"	
Silver	0.0284	0.0238	"	"	"	"	"	"	
Zinc	57.2	0.475	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGB0872	02/28/23	02/28/23	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	20.0	0.0594	mg/L dry	1	BGB0827	02/27/23	03/01/23	EPA 6020B	
Magnesium	13.8	0.0594	"	"	"	"	"	"	
Sodium	77.4	0.0594	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	3.26	0.00100	units	1	BGC0033	03/01/23	03/01/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH03@12'**  
**2302487-04 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	84.2	%	1	BGB0868	02/28/23	03/01/23	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.570	0.0100	mmhos/cm	1	BGB0864	02/28/23	02/28/23	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **02/27/23 13:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.51		pH Units	1	BGB0866	02/28/23	02/28/23	EPA 9045D	

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH04@9'**  
**2302487-05 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BGB0837	02/27/23	02/27/23	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: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0342	85.4 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0380	95.1 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0405	101 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BGB0838	02/27/23	02/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	8.51	68.0 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH04@9'**  
**2302487-05 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGB0840	02/28/23	03/02/23	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: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0184	55.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0257	77.0 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.646</b>	0.0100	mg/L	1	BGB0833	02/27/23	03/01/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH04@9'**  
**2302487-05 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	6.25	0.238	mg/kg dry	1	BGB0863	02/28/23	03/01/23	EPA 6020B	
Barium	24.4	0.476	"	"	"	"	"	"	
Cadmium	ND	0.238	"	"	"	"	"	"	
Copper	12.6	0.476	"	"	"	"	"	"	
Lead	12.1	0.238	"	"	"	"	"	"	
Nickel	13.8	0.476	"	"	"	"	"	"	
Selenium	1.39	0.260	"	"	"	"	"	"	
Silver	0.0347	0.0238	"	"	"	"	"	"	
Zinc	64.6	0.476	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGB0872	02/28/23	02/28/23	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	14.1	0.0595	mg/L dry	1	BGB0827	02/27/23	03/01/23	EPA 6020B	
Magnesium	8.35	0.0595	"	"	"	"	"	"	
Sodium	121	0.0595	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.31	0.00100	units	1	BGC0033	03/01/23	03/01/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH04@9'**  
**2302487-05 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

<b>% Solids</b>	<b>84.1</b>	%	1	BGB0868	02/28/23	03/01/23	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.628</b>	0.0100	mmhos/cm	1	BGB0864	02/28/23	02/28/23	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **02/27/23 12:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>pH</b>	<b>8.06</b>		pH Units	1	BGB0866	02/28/23	02/28/23	EPA 9045D	

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH04@12'**  
**2302487-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BGB0837	02/27/23	02/27/23	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: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0346	86.4 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0377	94.4 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0388	97.0 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BGB0838	02/27/23	02/27/23	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	11.3	90.6 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH04@12'**  
**2302487-06 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BGB0840	02/28/23	03/02/23	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: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0191	57.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0262	78.7 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.920</b>	0.0100	mg/L	1	BGB0833	02/27/23	03/01/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH04@12'**  
**2302487-06 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	5.79	0.241	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
Barium	20.6	0.483	"	"	"	"	"	"	
Cadmium	ND	0.241	"	"	"	"	"	"	
Copper	10.6	0.483	"	"	"	"	"	"	
Lead	9.32	0.241	"	"	"	"	"	"	
Nickel	11.2	0.483	"	"	"	"	"	"	
Selenium	1.09	0.260	"	"	"	"	"	"	
Silver	0.0315	0.0241	"	"	"	"	"	"	
Zinc	56.7	0.483	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BGB0872	02/28/23	02/28/23	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	32.4	0.0603	mg/L dry	1	BGB0827	02/27/23	03/01/23	EPA 6020B	
Magnesium	21.0	0.0603	"	"	"	"	"	"	
Sodium	123	0.0603	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	4.14	0.00100	units	1	BGC0033	03/01/23	03/01/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BH04@12'**  
**2302487-06 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

% Solids	82.9	%	1	BGB0868	02/28/23	03/01/23	Calculation
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**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	<b>0.889</b>	0.0100	mmhos/cm	1	BGB0864	02/28/23	02/28/23	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **02/27/23 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	<b>7.57</b>		pH Units	1	BGB0866	02/28/23	02/28/23	EPA 9045D	

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG02@6.5'**  
**2302487-07 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	7.08	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
Barium	17.4	0.400	"	"	"	"	"	"	
Lead	8.40	0.200	"	"	"	"	"	"	
Selenium	1.13	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	510	0.0582	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
Magnesium	232	0.0582	"	"	"	"	"	"	
Sodium	376	0.0582	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	3.47	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 10:25**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	85.9		%	1	BGB0868	02/28/23	03/01/23	Calculation	

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG02@12'**  
**2302487-08 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 10:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	8.89	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
Barium	47.7	0.400	"	"	"	"	"	"	
Lead	12.6	0.200	"	"	"	"	"	"	
Selenium	1.49	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 10:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	30.9	0.0596	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
Magnesium	28.5	0.0596	"	"	"	"	"	"	
Sodium	152	0.0596	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 10:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	4.74	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 10:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	83.9		%	1	BGB0868	02/28/23	03/01/23	Calculation	

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG03@6.5'**  
**2302487-09 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 10:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	5.24	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
Barium	20.8	0.400	"	"	"	"	"	"	
Lead	9.58	0.200	"	"	"	"	"	"	
Selenium	1.17	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 10:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	52.2	0.0580	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
Magnesium	75.0	0.0580	"	"	"	"	"	"	
Sodium	239	0.0580	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 10:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	4.96	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 10:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	86.2		%	1	BGB0868	02/28/23	03/01/23	Calculation	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG03@12'**  
**2302487-10 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 10:54**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Arsenic</b>	<b>6.21</b>	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
<b>Barium</b>	<b>19.6</b>	0.400	"	"	"	"	"	"	
<b>Lead</b>	<b>11.2</b>	0.200	"	"	"	"	"	"	
<b>Selenium</b>	<b>1.41</b>	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 10:54**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Calcium</b>	<b>73.1</b>	0.0595	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
<b>Magnesium</b>	<b>53.8</b>	0.0595	"	"	"	"	"	"	
<b>Sodium</b>	<b>200</b>	0.0595	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 10:54**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Sodium Adsorption Ratio</b>	<b>4.33</b>	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 10:54**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>% Solids</b>	<b>84.0</b>		%	1	BGB0868	02/28/23	03/01/23	Calculation	

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG04@6.5'**  
**2302487-11 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 11:01**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	6.44	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
Barium	15.6	0.400	"	"	"	"	"	"	
Lead	9.21	0.200	"	"	"	"	"	"	
Selenium	0.986	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 11:01**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	520	0.0586	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
Magnesium	428	0.0586	"	"	"	"	"	"	
Sodium	579	0.0586	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 11:01**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	4.55	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 11:01**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	85.3		%	1	BGB0868	02/28/23	03/01/23	Calculation	

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG04@12'**  
**2302487-12 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 11:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	7.04	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
Barium	17.4	0.400	"	"	"	"	"	"	
Lead	10.3	0.200	"	"	"	"	"	"	
Selenium	1.27	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 11:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	89.0	0.0601	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
Magnesium	81.5	0.0601	"	"	"	"	"	"	
Sodium	558	0.0601	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 11:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	10.3	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 11:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	83.2		%	1	BGB0868	02/28/23	03/01/23	Calculation	

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG05@6.5'**  
**2302487-13 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 11:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	6.55	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
Barium	22.8	0.400	"	"	"	"	"	"	
Lead	9.34	0.200	"	"	"	"	"	"	
Selenium	1.09	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 11:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	63.7	0.0596	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
Magnesium	46.9	0.0596	"	"	"	"	"	"	
Sodium	223	0.0596	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 11:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	5.17	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 11:34**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	83.8		%	1	BGB0868	02/28/23	03/01/23	Calculation	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG05@12'**  
**2302487-14 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 11:44**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	6.56	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
Barium	18.8	0.400	"	"	"	"	"	"	
Lead	9.65	0.200	"	"	"	"	"	"	
Selenium	1.31	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 11:44**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	52.3	0.0602	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
Magnesium	45.4	0.0602	"	"	"	"	"	"	
Sodium	135	0.0602	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 11:44**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	3.30	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 11:44**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	83.1		%	1	BGB0868	02/28/23	03/01/23	Calculation	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG06@6.5'**  
**2302487-15 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 11:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Arsenic</b>	<b>6.51</b>	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
<b>Barium</b>	<b>19.9</b>	0.400	"	"	"	"	"	"	
<b>Lead</b>	<b>8.85</b>	0.200	"	"	"	"	"	"	
<b>Selenium</b>	<b>1.23</b>	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 11:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Calcium</b>	<b>205</b>	0.0596	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
<b>Magnesium</b>	<b>234</b>	0.0596	"	"	"	"	"	"	
<b>Sodium</b>	<b>471</b>	0.0596	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 11:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>Sodium Adsorption Ratio</b>	<b>5.34</b>	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 11:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
<b>% Solids</b>	<b>83.9</b>		%	1	BGB0868	02/28/23	03/01/23	Calculation	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**BG06@12'**  
**2302487-16 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Date Sampled: **02/27/23 11:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	5.27	0.200	mg/kg dry	1	BGB0863	02/28/23	03/02/23	EPA 6020B	
Barium	17.9	0.400	"	"	"	"	"	"	
Lead	9.11	0.200	"	"	"	"	"	"	
Selenium	1.19	0.260	"	"	"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/27/23 11:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	83.1	0.0594	mg/L dry	1	BGC0071	03/02/23	03/06/23	EPA 6020B	
Magnesium	99.1	0.0594	"	"	"	"	"	"	
Sodium	409	0.0594	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/27/23 11:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	7.17	0.00100	units	1	BGC0185	03/07/23	03/07/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/27/23 11:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	84.2		%	1	BGB0868	02/28/23	03/01/23	Calculation	

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

### 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 BGB0837 - EPA 5030 Soil MS

##### Blank (BGB0837-BLK1)

Prepared & Analyzed: 02/27/23

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>	0.0327		"	0.0400		81.7	50-150			
<i>Surrogate: Toluene-d8</i>	0.0366		"	0.0400		91.6	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0365		"	0.0400		91.4	50-150			

##### LCS (BGB0837-BS1)

Prepared & Analyzed: 02/27/23

Benzene	0.0879	0.0020	mg/kg	0.100		87.9	70-130			
Toluene	0.0823	0.0050	"	0.100		82.3	70-130			
Ethylbenzene	0.0993	0.0050	"	0.100		99.3	70-130			
m,p-Xylene	0.200	0.010	"	0.200		99.9	70-130			
o-Xylene	0.0926	0.0050	"	0.100		92.6	70-130			
1,2,4-Trimethylbenzene	0.0928	0.0050	"	0.100		92.8	70-130			
1,3,5-Trimethylbenzene	0.0976	0.0050	"	0.100		97.6	70-130			
Naphthalene	0.0874	0.0038	"	0.100		87.4	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0283		"	0.0400		70.7	50-150			
<i>Surrogate: Toluene-d8</i>	0.0371		"	0.0400		92.8	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0365		"	0.0400		91.4	50-150			

##### Matrix Spike (BGB0837-MS1)

Source: 2302487-01

Prepared & Analyzed: 02/27/23

Benzene	0.0969	0.0020	mg/kg	0.100	ND	96.9	70-130			
Toluene	0.0928	0.0050	"	0.100	ND	92.8	70-130			
Ethylbenzene	0.109	0.0050	"	0.100	ND	109	70-130			
m,p-Xylene	0.217	0.010	"	0.200	ND	108	70-130			
o-Xylene	0.102	0.0050	"	0.100	ND	102	70-130			
1,2,4-Trimethylbenzene	0.104	0.0050	"	0.100	ND	104	70-130			
1,3,5-Trimethylbenzene	0.106	0.0050	"	0.100	ND	106	70-130			
Naphthalene	0.103	0.0038	"	0.100	ND	103	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0272		"	0.0400		67.9	50-150			
<i>Surrogate: Toluene-d8</i>	0.0369		"	0.0400		92.2	50-150			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0381		"	0.0400		95.2	50-150			

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**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 BGB0837 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BGB0837-MSD1)</b>	<b>Source: 2302487-01</b>			<b>Prepared &amp; Analyzed: 02/27/23</b>						
Benzene	0.0943	0.0020	mg/kg	0.100	ND	94.3	70-130	2.76	30	
Toluene	0.0928	0.0050	"	0.100	ND	92.8	70-130	0.0970	30	
Ethylbenzene	0.106	0.0050	"	0.100	ND	106	70-130	2.54	30	
m,p-Xylene	0.213	0.010	"	0.200	ND	107	70-130	1.65	30	
o-Xylene	0.102	0.0050	"	0.100	ND	102	70-130	0.118	30	
1,2,4-Trimethylbenzene	0.101	0.0050	"	0.100	ND	101	70-130	3.17	30	
1,3,5-Trimethylbenzene	0.104	0.0050	"	0.100	ND	104	70-130	1.74	30	
Naphthalene	0.105	0.0038	"	0.100	ND	105	70-130	2.08	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0287</i>		<i>"</i>	<i>0.0400</i>		<i>71.7</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0371</i>		<i>"</i>	<i>0.0400</i>		<i>92.8</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0371</i>		<i>"</i>	<i>0.0400</i>		<i>92.8</i>	<i>50-150</i>			

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**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 BGB0838 - EPA 3550A**

**Blank (BGB0838-BLK1)**

Prepared & Analyzed: 02/27/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	11.3		"	12.5	90.7	30-150					

**LCS (BGB0838-BS1)**

Prepared & Analyzed: 02/27/23

C10-C28 (DRO)	533	50	mg/kg	500	107	70-130					
Surrogate: <i>o</i> -Terphenyl	11.1		"	12.5	88.7	30-150					

**Matrix Spike (BGB0838-MS1)**

Source: 2302487-01

Prepared & Analyzed: 02/27/23

C10-C28 (DRO)	469	50	mg/kg	500	9.96	91.7	70-130				
Surrogate: <i>o</i> -Terphenyl	9.69		"	12.5	77.5	30-150					

**Matrix Spike Dup (BGB0838-MSD1)**

Source: 2302487-01

Prepared & Analyzed: 02/27/23

C10-C28 (DRO)	537	50	mg/kg	500	9.96	105	70-130	13.6	20		
Surrogate: <i>o</i> -Terphenyl	11.5		"	12.5	92.4	30-150					

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**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 BGB0840 - EPA 5030 Soil MS**

**Blank (BGB0840-BLK1)**

Prepared: 02/28/23 Analyzed: 03/01/23

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	0.0294		"	0.0333		88.2	40-150			
Surrogate: Fluoranthene-d10	0.0282		"	0.0333		84.6	40-150			

**LCS (BGB0840-BS1)**

Prepared: 02/28/23 Analyzed: 03/02/23

Acenaphthene	0.0359	0.00500	mg/kg	0.0333		108	31-137			
Anthracene	0.0336	0.00500	"	0.0333		101	30-120			
Benzo (a) anthracene	0.0238	0.00500	"	0.0333		71.4	30-120			
Benzo (a) pyrene	0.0338	0.00500	"	0.0333		101	30-120			
Benzo (b) fluoranthene	0.0294	0.00500	"	0.0333		88.1	30-120			
Benzo (k) fluoranthene	0.0338	0.00500	"	0.0333		101	30-120			
Chrysene	0.0336	0.00500	"	0.0333		101	30-120			
Dibenz (a,h) anthracene	0.0330	0.00500	"	0.0333		98.9	30-120			
Fluoranthene	0.0365	0.00500	"	0.0333		109	30-120			
Fluorene	0.0291	0.00500	"	0.0333		87.3	30-120			
Indeno (1,2,3-cd) pyrene	0.0327	0.00500	"	0.0333		98.0	30-120			
Pyrene	0.0359	0.00500	"	0.0333		108	35-142			
1-Methylnaphthalene	0.0288	0.00500	"	0.0333		86.3	35-142			
2-Methylnaphthalene	0.0275	0.00500	"	0.0333		82.6	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0300		"	0.0333		89.9	40-150			
Surrogate: Fluoranthene-d10	0.0361		"	0.0333		108	40-150			

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**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 BGB0840 - EPA 5030 Soil MS**

**Matrix Spike (BGB0840-MS1)**

Source: 2302478-01

Prepared: 02/28/23 Analyzed: 03/02/23

Acenaphthene	0.0221	0.00500	mg/kg	0.0333	ND	66.4	31-137			
Anthracene	0.0209	0.00500	"	0.0333	ND	62.7	30-120			
Benzo (a) anthracene	0.0197	0.00500	"	0.0333	ND	59.0	30-120			
Benzo (a) pyrene	0.0225	0.00500	"	0.0333	ND	67.4	30-120			
Benzo (b) fluoranthene	0.0180	0.00500	"	0.0333	ND	54.0	30-120			
Benzo (k) fluoranthene	0.0215	0.00500	"	0.0333	ND	64.6	30-120			
Chrysene	0.0222	0.00500	"	0.0333	ND	66.6	30-120			
Dibenz (a,h) anthracene	0.0215	0.00500	"	0.0333	ND	64.6	30-120			
Fluoranthene	0.0266	0.00500	"	0.0333	ND	79.8	30-120			
Fluorene	0.0217	0.00500	"	0.0333	ND	65.2	30-120			
Indeno (1,2,3-cd) pyrene	0.0207	0.00500	"	0.0333	ND	62.1	30-120			
Pyrene	0.0260	0.00500	"	0.0333	ND	78.0	35-142			
1-Methylnaphthalene	0.0204	0.00500	"	0.0333	ND	61.3	15-130			
2-Methylnaphthalene	0.0233	0.00500	"	0.0333	ND	69.8	15-130			
Surrogate: 2-Methylnaphthalene-d10	0.0215		"	0.0333		64.5	40-150			
Surrogate: Fluoranthene-d10	0.0267		"	0.0333		80.0	40-150			

**Matrix Spike Dup (BGB0840-MSD1)**

Source: 2302478-01

Prepared: 02/28/23 Analyzed: 03/02/23

Acenaphthene	0.0226	0.00500	mg/kg	0.0333	ND	67.7	31-137	1.89	30	
Anthracene	0.0212	0.00500	"	0.0333	ND	63.6	30-120	1.39	30	
Benzo (a) anthracene	0.0207	0.00500	"	0.0333	ND	62.1	30-120	5.11	30	
Benzo (a) pyrene	0.0223	0.00500	"	0.0333	ND	66.9	30-120	0.715	30	
Benzo (b) fluoranthene	0.0178	0.00500	"	0.0333	ND	53.3	30-120	1.34	30	
Benzo (k) fluoranthene	0.0201	0.00500	"	0.0333	ND	60.2	30-120	6.98	30	
Chrysene	0.0225	0.00500	"	0.0333	ND	67.6	30-120	1.44	30	
Dibenz (a,h) anthracene	0.0219	0.00500	"	0.0333	ND	65.6	30-120	1.56	30	
Fluoranthene	0.0253	0.00500	"	0.0333	ND	76.0	30-120	4.93	30	
Fluorene	0.0226	0.00500	"	0.0333	ND	67.9	30-120	4.02	30	
Indeno (1,2,3-cd) pyrene	0.0216	0.00500	"	0.0333	ND	64.7	30-120	4.03	30	
Pyrene	0.0240	0.00500	"	0.0333	ND	72.0	35-142	7.96	30	
1-Methylnaphthalene	0.0221	0.00500	"	0.0333	ND	66.3	15-130	7.81	50	
2-Methylnaphthalene	0.0213	0.00500	"	0.0333	ND	64.0	15-130	8.67	50	
Surrogate: 2-Methylnaphthalene-d10	0.0229		"	0.0333		68.7	40-150			
Surrogate: Fluoranthene-d10	0.0255		"	0.0333		76.5	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 - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BGB0833 - EPA 3050B**

**Blank (BGB0833-BLK1)**

Prepared: 02/27/23 Analyzed: 03/01/23

Boron ND 0.0100 mg/L

**LCS (BGB0833-BS1)**

Prepared: 02/27/23 Analyzed: 03/01/23

Boron 5.31 0.0100 mg/L 5.00 106 80-120

**Duplicate (BGB0833-DUP1)**

Source: 2302339-01

Prepared: 02/27/23 Analyzed: 03/01/23

Boron 0.128 0.0100 mg/L 0.136 5.79 20

**Matrix Spike (BGB0833-MS1)**

Source: 2302339-01

Prepared: 02/27/23 Analyzed: 03/01/23

Boron 5.47 0.0100 mg/L 5.00 0.136 107 75-125

**Matrix Spike Dup (BGB0833-MSD1)**

Source: 2302339-01

Prepared: 02/27/23 Analyzed: 03/01/23

Boron 5.46 0.0100 mg/L 5.00 0.136 106 75-125 0.257 25

Summit Scientific

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



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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BGB0863 - EPA 3050B**

**Blank (BGB0863-BLK1)**

Prepared: 02/28/23 Analyzed: 03/01/23

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.200	"							
Copper	ND	0.400	"							
Lead	ND	0.200	"							
Nickel	ND	0.400	"							
Selenium	ND	0.260	"							
Silver	ND	0.0200	"							
Zinc	ND	0.400	"							

**LCS (BGB0863-BS1)**

Prepared: 02/28/23 Analyzed: 03/01/23

Arsenic	38.9	0.200	mg/kg wet	40.0	97.3	80-120
Barium	36.0	0.400	"	40.0	90.0	80-120
Cadmium	1.91	0.200	"	2.00	95.7	80-120
Copper	37.0	0.400	"	40.0	92.6	80-120
Lead	16.4	0.200	"	20.0	81.8	80-120
Nickel	37.6	0.400	"	40.0	94.1	80-120
Selenium	4.20	0.260	"	4.00	105	80-120
Silver	1.88	0.0200	"	2.00	93.8	80-120
Zinc	39.3	0.400	"	40.0	98.3	80-120

**Duplicate (BGB0863-DUP1)**

Source: 2302339-01

Prepared: 02/28/23 Analyzed: 03/01/23

Arsenic	1.68	0.218	mg/kg dry	1.88	11.4	20
Barium	128	0.436	"	145	12.6	20
Cadmium	0.153	0.218	"	0.164	7.15	20
Copper	4.60	0.436	"	5.19	11.9	20
Lead	4.14	0.218	"	5.03	19.4	20
Nickel	3.90	0.436	"	4.26	8.91	20
Selenium	0.750	0.260	"	0.796	5.92	20
Silver	0.0186	0.0218	"	0.0221	17.3	20
Zinc	17.2	0.436	"	19.0	9.56	20

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BGB0863 - EPA 3050B**

**Matrix Spike (BGB0863-MS1)**

Source: 2302339-01

Prepared: 02/28/23 Analyzed: 03/01/23

Arsenic	37.4	0.218	mg/kg dry	43.6	1.88	81.3	75-125				
Barium	146	0.436	"	43.6	145	1.45	75-125				QM-05
Cadmium	2.14	0.218	"	2.18	0.164	90.6	75-125				
Copper	33.5	0.436	"	43.6	5.19	64.9	75-125				QM-05
Lead	17.3	0.218	"	21.8	5.03	56.5	75-125				QM-05
Nickel	38.0	0.436	"	43.6	4.26	77.3	75-125				
Selenium	3.51	0.260	"	4.36	0.796	62.2	75-125				QM-05
Silver	1.99	0.0218	"	2.18	0.0221	90.3	75-125				
Zinc	46.6	0.436	"	43.6	19.0	63.4	75-125				QM-05

**Matrix Spike Dup (BGB0863-MSD1)**

Source: 2302339-01

Prepared: 02/28/23 Analyzed: 03/01/23

Arsenic	36.8	0.218	mg/kg dry	43.6	1.88	80.0	75-125	1.50	25		
Barium	144	0.436	"	43.6	145	NR	75-125	1.35	25		QM-05
Cadmium	2.15	0.218	"	2.18	0.164	90.8	75-125	0.172	25		
Copper	33.2	0.436	"	43.6	5.19	64.2	75-125	0.942	25		QM-05
Lead	17.3	0.218	"	21.8	5.03	56.3	75-125	0.252	25		QM-05
Nickel	37.9	0.436	"	43.6	4.26	77.0	75-125	0.431	25		
Selenium	3.31	0.260	"	4.36	0.796	57.6	75-125	5.83	25		QM-05
Silver	2.01	0.0218	"	2.18	0.0221	91.1	75-125	0.864	25		
Zinc	45.4	0.436	"	43.6	19.0	60.5	75-125	2.70	25		QM-05

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

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

**Batch BGB0872 - 3060A Mod**

**Blank (BGB0872-BLK1)**

Prepared & Analyzed: 02/28/23

Chromium, Hexavalent      ND      0.30    mg/kg wet

**LCS (BGB0872-BS1)**

Prepared & Analyzed: 02/28/23

Chromium, Hexavalent      26.7      0.30    mg/kg wet      25.0      107      80-120

**Duplicate (BGB0872-DUP1)**

**Source: 2302485-01**

Prepared & Analyzed: 02/28/23

Chromium, Hexavalent      ND      0.30    mg/kg dry      ND      20

**Matrix Spike (BGB0872-MS1)**

**Source: 2302485-01**

Prepared & Analyzed: 02/28/23

Chromium, Hexavalent      29.0      0.30    mg/kg dry      26.9      ND      108      75-125

**Matrix Spike Dup (BGB0872-MSD1)**

**Source: 2302485-01**

Prepared & Analyzed: 02/28/23

Chromium, Hexavalent      29.0      0.30    mg/kg dry      26.9      ND      108      75-125      0.186      20

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**

**Summit Scientific**

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

**Batch BGB0827 - General Preparation**

**Blank (BGB0827-BLK1)**

Prepared: 02/27/23 Analyzed: 03/01/23

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

**LCS (BGB0827-BS1)**

Prepared: 02/27/23 Analyzed: 03/01/23

Calcium	5.37	0.0500	mg/L wet	5.00	107	70-130
Magnesium	5.99	0.0500	"	5.00	120	70-130
Sodium	6.03	0.0500	"	5.00	121	70-130

**Batch BGC0071 - General Preparation**

**Blank (BGC0071-BLK1)**

Prepared: 03/02/23 Analyzed: 03/06/23

Calcium	ND	0.0500	mg/L wet			
Magnesium	ND	0.0500	"			
Sodium	ND	0.0500	"			

**LCS (BGC0071-BS1)**

Prepared: 03/02/23 Analyzed: 03/06/23

Calcium	5.19	0.0500	mg/L wet	5.00	104	70-130
Magnesium	5.31	0.0500	"	5.00	106	70-130
Sodium	5.32	0.0500	"	5.00	106	70-130

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
 Project Manager: Jacob Whritenour

**Reported:**  
 05/18/23 12:30

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

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

**Batch BGB0868 - General Preparation**

Duplicate (BGB0868-DUP1)	Source: 2302339-01	Prepared: 02/28/23	Analyzed: 03/01/23
% Solids	91.8	%	91.7
			0.110
			20

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

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

**Batch BGB0864 - General Preparation**

**Blank (BGB0864-BLK1)**

Prepared & Analyzed: 02/28/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BGB0864-BS1)**

Prepared & Analyzed: 02/28/23

Specific Conductance (EC) 0.145 0.0100 mmhos/cm 0.150 96.8 95-105

**Duplicate (BGB0864-DUP1)**

Source: 2302295-01

Prepared & Analyzed: 02/28/23

Specific Conductance (EC) 0.228 0.0100 mmhos/cm 0.236 3.62 20

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

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

**Batch BGB0866 - General Preparation**

**LCS (BGB0866-BS1)**

Prepared & Analyzed: 02/28/23

pH 9.02 pH Units 95-105

**Duplicate (BGB0866-DUP1)**

Source: 2302295-01

Prepared & Analyzed: 02/28/23

pH 7.69 pH Units 7.63 0.783 20

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
05/18/23 12:30

### Notes and Definitions

- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
- 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 80401

303.277.9310

March 08, 2023

Jacob Whritenour

Tasman Geosciences

6855 W. 119th Ave.

Broomfeld, CO 80020

RE: Noble - Petrikin A34-08

Work Order # 2303033

Enclosed are the results of analyses for samples received by Summit Scientific on 02/28/23 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 - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH05@10-12'	2303033-01	Soil	02/28/23 10:37	02/28/23 16:00
BH06@10-12'	2303033-02	Soil	02/28/23 11:24	02/28/23 16:00

Summit Scientific

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

# SUMMIT SCIENTIFIC

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

Lab ID	Page 1 of 1
2303033	

Client: <u>Noble / Tasman</u>		Send Data To: Project Manager: <u>JAKE WRITENOUR</u>		Send Invoice To: Company:	
Address: <u>6855 W 119th Ave</u>		E-Mail: <u>jwritenour@tasmangeo.com</u>		Project Name/Location:	
City/State/Zip: <u>Broomfield, CO 80020</u>		Project Name: <u>Petrikin A34-08</u>		AFE#:	
Phone: <u>248 410 9812</u>		Project Number: <u>-</u>		PO/Billing Codes:	
Sampler Name: <u>SARAH QUATROCHI</u>				Contact:	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix		Analysis Requested						Special Instructions		
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	VOC-915	TPH-915	PAH-915	Benzen		EC, SAR, pH	Metals-915
1	BH05 @ 10-12'	2/28/23	1037	2			X			X			X	X	X	X	X	X	
2	BH06 @ 10-12'	2/28/23	1124	2			X			X			X	X	X	X	X	X	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			

Relinquished by: <u>[Signature]</u>	Date/Time: <u>2/28/23</u>	Received by: <u>[Signature]</u>	Date/Time: <u>2/28/23 1000</u>	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by:	Date/Time:	Received by:	Date/Time:	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	Field Turb.	
Temperature Upon Receipt: <u>9.2</u>	Corrected Temperature: <u>9</u>	IR gun #: <u>1</u>	HNO3 lot #:			

S<sub>2</sub>

Sample Receipt Checklist

S2 Work Order# 2303033

Client: Noble Gasman Client Project ID: Petrikim A34-08

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? <sup>(1)</sup> <b>NOTE:</b> 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? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No Answer
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? <sup>(1)</sup>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? <sup>(1)</sup>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input 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.

AS  
Custodian Printed Name

2/28/23 1600  
Date/Time



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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**BH05@10-12'**  
**2303033-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0044	03/02/23	03/04/23	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: **02/28/23 10:37**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		106 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		98.2 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0046	03/02/23	03/03/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		41.7 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**BH05@10-12'**  
**2303033-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500		mg/kg	1	BGC0003	03/01/23	03/03/23	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: **02/28/23 10:37**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		64.8 %		40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		73.2 %		40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.744</b>	0.0100		mg/L	1	BGC0078	03/03/23	03/03/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**BH05@10-12'**  
**2303033-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	8.21	0.238	0.201	mg/kg dry	1	BGC0091	03/03/23	03/03/23	EPA 6020B	
Barium	24.1	0.476	0.376	"	"	"	"	"	"	
Cadmium	0.0883	0.238	0.00857	"	"	"	"	"	"	
Copper	13.2	0.476	0.0249	"	"	"	"	"	"	
Lead	12.5	0.238	0.0654	"	"	"	"	"	"	
Nickel	14.7	0.476	0.0726	"	"	"	"	"	"	
Selenium	1.37	0.260	0.175	"	"	"	"	"	"	
Silver	0.0516	0.0238	0.00318	"	"	"	"	"	"	
Zinc	68.3	0.476	0.317	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0059	03/02/23	03/02/23	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	12.1	0.0595		mg/L dry	1	BGC0121	03/05/23	03/07/23	EPA 6020B	
Magnesium	5.62	0.0595		"	"	"	"	"	"	
Sodium	41.7	0.0595		"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.48	0.00100		units	1	BGC0218	03/08/23	03/08/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**BH05@10-12'**  
**2303033-01 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	<b>84.0</b>			%	1	BGC0026	03/01/23	03/01/23	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	<b>0.337</b>	0.0100		mmhos/cm	1	BGC0135	03/06/23	03/06/23	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **02/28/23 10:37**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	<b>7.70</b>			pH Units	1	BGC0134	03/06/23	03/06/23	EPA 9045D	

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**BH06@10-12'**  
**2303033-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Benzene	ND	0.0020		mg/kg	1	BGC0044	03/02/23	03/04/23	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: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 1,2-Dichloroethane-d4		103 %		50-150		"	"	"	"	
Surrogate: Toluene-d8		98.9 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
C10-C28 (DRO)	ND	50		mg/kg	1	BGC0046	03/02/23	03/03/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: o-Terphenyl		37.1 %		30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**BH06@10-12'**  
**2303033-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Acenaphthene	ND	0.00500		mg/kg	1	BGC0003	03/01/23	03/03/23	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: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Surrogate: 2-Methylnaphthalene-d10		61.8 %		40-150		"	"	"	"	"
Surrogate: Fluoranthene-d10		58.6 %		40-150		"	"	"	"	"

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
<b>Boron</b>	<b>0.680</b>	0.0100		mg/L	1	BGC0078	03/03/23	03/03/23	EPA 6020B	

**Total Metals by EPA 6020B**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**BH06@10-12'**  
**2303033-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B**

Analyte	Result	Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	10.3	0.238	0.201	mg/kg dry	1	BGC0091	03/03/23	03/03/23	EPA 6020B	
Barium	20.3	0.477	0.377	"	"	"	"	"	"	
Cadmium	0.104	0.238	0.00858	"	"	"	"	"	"	
Copper	13.6	0.477	0.0249	"	"	"	"	"	"	
Lead	15.0	0.238	0.0655	"	"	"	"	"	"	
Nickel	16.3	0.477	0.0727	"	"	"	"	"	"	
Selenium	1.76	0.260	0.175	"	"	"	"	"	"	
Silver	0.0502	0.0238	0.00318	"	"	"	"	"	"	
Zinc	76.8	0.477	0.317	"	"	"	"	"	"	

**Hexavalent Chromium by EPA Method 7196**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30		mg/kg dry	1	BGC0059	03/02/23	03/02/23	EPA 7196A	

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	49.7	0.0596		mg/L dry	1	BGC0121	03/05/23	03/07/23	EPA 6020B	
Magnesium	28.8	0.0596		"	"	"	"	"	"	
Sodium	60.0	0.0596		"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting Limit	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.68	0.00100		units	1	BGC0218	03/08/23	03/08/23	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**BH06@10-12'**  
**2303033-02 (Soil)**

**Summit Scientific**

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
% Solids	83.9			%	1	BGC0026	03/01/23	03/01/23	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
Specific Conductance (EC)	0.881	0.0100		mmhos/cm	1	BGC0135	03/06/23	03/06/23	EPA 120.1	

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction**

Date Sampled: **02/28/23 11:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	MDL							
pH	7.46			pH Units	1	BGC0134	03/06/23	03/06/23	EPA 9045D	

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6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

Reported:  
03/08/23 13:14

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

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

#### Batch BGC0044 - EPA 5030 Soil MS

##### Blank (BGC0044-BLK1)

Prepared: 03/02/23 Analyzed: 03/04/23

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	0.0451		"	0.0400		113	50-150				
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	50-150				
Surrogate: 4-Bromofluorobenzene	0.0422		"	0.0400		105	50-150				

##### LCS (BGC0044-BS1)

Prepared: 03/02/23 Analyzed: 03/04/23

Benzene	0.139	0.0020	mg/kg	0.150		92.5	70-130				
Toluene	0.136	0.0050	"	0.150		90.7	70-130				
Ethylbenzene	0.136	0.0050	"	0.150		90.9	70-130				
m,p-Xylene	0.268	0.010	"	0.300		89.3	70-130				
o-Xylene	0.138	0.0050	"	0.150		91.8	70-130				
1,2,4-Trimethylbenzene	0.129	0.0050	"	0.150		85.7	70-130				
1,3,5-Trimethylbenzene	0.129	0.0050	"	0.150		86.0	70-130				
Naphthalene	0.152	0.0038	"	0.150		101	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0472		"	0.0400		118	50-150				
Surrogate: Toluene-d8	0.0404		"	0.0400		101	50-150				
Surrogate: 4-Bromofluorobenzene	0.0413		"	0.0400		103	50-150				

##### Matrix Spike (BGC0044-MS1)

Source: 2303005-01

Prepared: 03/02/23 Analyzed: 03/04/23

Benzene	0.127	0.0020	mg/kg	0.150	ND	84.9	70-130				
Toluene	0.128	0.0050	"	0.150	ND	85.3	70-130				
Ethylbenzene	0.125	0.0050	"	0.150	ND	83.4	70-130				
m,p-Xylene	0.237	0.010	"	0.300	ND	79.1	70-130				
o-Xylene	0.122	0.0050	"	0.150	ND	81.4	70-130				
1,2,4-Trimethylbenzene	0.106	0.0050	"	0.150	ND	71.0	70-130				
1,3,5-Trimethylbenzene	0.114	0.0050	"	0.150	ND	76.1	70-130				
Naphthalene	0.117	0.0038	"	0.150	ND	78.2	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0490		"	0.0400		122	50-150				
Surrogate: Toluene-d8	0.0405		"	0.0400		101	50-150				
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		102	50-150				

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**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 BGC0044 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (BGC0044-MSD1)</b>	<b>Source: 2303005-01</b>			Prepared: 03/02/23 Analyzed: 03/04/23						
Benzene	0.132	0.0020	mg/kg	0.150	ND	87.9	70-130	3.52	30	
Toluene	0.132	0.0050	"	0.150	ND	87.7	70-130	2.77	30	
Ethylbenzene	0.125	0.0050	"	0.150	ND	83.2	70-130	0.168	30	
m,p-Xylene	0.238	0.010	"	0.300	ND	79.4	70-130	0.442	30	
o-Xylene	0.123	0.0050	"	0.150	ND	82.1	70-130	0.758	30	
1,2,4-Trimethylbenzene	0.105	0.0050	"	0.150	ND	70.3	70-130	0.934	30	
1,3,5-Trimethylbenzene	0.112	0.0050	"	0.150	ND	74.9	70-130	1.59	30	
Naphthalene	0.116	0.0038	"	0.150	ND	77.5	70-130	0.848	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0475</i>		<i>"</i>	<i>0.0400</i>		<i>119</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0417</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>50-150</i>			

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**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 BGC0046 - EPA 3550A**

**Blank (BGC0046-BLK1)**

Prepared & Analyzed: 03/02/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	10.3		"	12.5		82.1		30-150			

**LCS (BGC0046-BS1)**

Prepared & Analyzed: 03/02/23

C10-C28 (DRO)	454	50	mg/kg	500		90.7		70-130			
Surrogate: <i>o</i> -Terphenyl	9.20		"	12.5		73.6		30-150			

**Matrix Spike (BGC0046-MS1)**

Source: 2303028-01

Prepared & Analyzed: 03/02/23

C10-C28 (DRO)	492	50	mg/kg	500	16.9	94.9		70-130			
Surrogate: <i>o</i> -Terphenyl	5.10		"	12.5		40.8		30-150			

**Matrix Spike Dup (BGC0046-MSD1)**

Source: 2303028-01

Prepared & Analyzed: 03/02/23

C10-C28 (DRO)	459	50	mg/kg	500	16.9	88.5		70-130	6.80	20	
Surrogate: <i>o</i> -Terphenyl	5.77		"	12.5		46.1		30-150			

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**PAH by EPA Method 8270D SIM - Quality Control**  
**Summit Scientific**

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

**Batch BGC0003 - EPA 5030 Soil MS**

**Blank (BGC0003-BLK1)**

Prepared: 03/01/23 Analyzed: 03/02/23

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>0.0370</i>		<i>"</i>	<i>0.0333</i>		<i>111</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0366</i>		<i>"</i>	<i>0.0333</i>		<i>110</i>		<i>40-150</i>		

**LCS (BGC0003-BS1)**

Prepared: 03/01/23 Analyzed: 03/02/23

Acenaphthene	0.0366	0.00500	mg/kg	0.0333		110		31-137		
Anthracene	0.0368	0.00500	"	0.0333		110		30-120		
Benzo (a) anthracene	0.0355	0.00500	"	0.0333		107		30-120		
Benzo (a) pyrene	0.0362	0.00500	"	0.0333		109		30-120		
Benzo (b) fluoranthene	0.0356	0.00500	"	0.0333		107		30-120		
Benzo (k) fluoranthene	0.0371	0.00500	"	0.0333		111		30-120		
Chrysene	0.0360	0.00500	"	0.0333		108		30-120		
Dibenz (a,h) anthracene	0.0384	0.00500	"	0.0333		115		30-120		
Fluoranthene	0.0346	0.00500	"	0.0333		104		30-120		
Fluorene	0.0368	0.00500	"	0.0333		110		30-120		
Indeno (1,2,3-cd) pyrene	0.0353	0.00500	"	0.0333		106		30-120		
Pyrene	0.0297	0.00500	"	0.0333		89.0		35-142		
1-Methylnaphthalene	0.0377	0.00500	"	0.0333		113		35-142		
2-Methylnaphthalene	0.0350	0.00500	"	0.0333		105		35-142		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0389</i>		<i>"</i>	<i>0.0333</i>		<i>117</i>		<i>40-150</i>		
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0392</i>		<i>"</i>	<i>0.0333</i>		<i>118</i>		<i>40-150</i>		

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

Reported:  
03/08/23 13:14

**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 BGC0003 - EPA 5030 Soil MS**

<b>Matrix Spike (BGC0003-MS1)</b>	<b>Source: 2302514-01</b>			<b>Prepared: 03/01/23 Analyzed: 03/02/23</b>								
Acenaphthene	0.0387	0.00500	mg/kg	0.0333	ND	116	31-137					
Anthracene	0.0303	0.00500	"	0.0333	ND	90.8	30-120					
Benzo (a) anthracene	0.0298	0.00500	"	0.0333	ND	89.4	30-120					
Benzo (a) pyrene	0.0289	0.00500	"	0.0333	ND	86.8	30-120					
Benzo (b) fluoranthene	0.0280	0.00500	"	0.0333	ND	83.9	30-120					
Benzo (k) fluoranthene	0.0302	0.00500	"	0.0333	ND	90.7	30-120					
Chrysene	0.0327	0.00500	"	0.0333	0.00498	83.1	30-120					
Dibenz (a,h) anthracene	0.0292	0.00500	"	0.0333	ND	87.5	30-120					
Fluoranthene	0.0335	0.00500	"	0.0333	ND	101	30-120					
Fluorene	0.0439	0.00500	"	0.0333	0.0277	48.7	30-120					
Indeno (1,2,3-cd) pyrene	0.0287	0.00500	"	0.0333	ND	86.0	30-120					
Pyrene	0.0238	0.00500	"	0.0333	ND	71.4	35-142					
1-Methylnaphthalene	0.170	0.00500	"	0.0333	0.171	NR	15-130					QM-06
2-Methylnaphthalene	0.228	0.00500	"	0.0333	0.264	NR	15-130					QM-06
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0279</i>		<i>"</i>	<i>0.0333</i>		<i>83.6</i>	<i>40-150</i>					
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0339</i>		<i>"</i>	<i>0.0333</i>		<i>102</i>	<i>40-150</i>					

<b>Matrix Spike Dup (BGC0003-MSD1)</b>	<b>Source: 2302514-01</b>			<b>Prepared: 03/01/23 Analyzed: 03/02/23</b>								
Acenaphthene	0.0361	0.00500	mg/kg	0.0333	ND	108	31-137	7.14	30			
Anthracene	0.0288	0.00500	"	0.0333	ND	86.3	30-120	5.11	30			
Benzo (a) anthracene	0.0279	0.00500	"	0.0333	ND	83.7	30-120	6.52	30			
Benzo (a) pyrene	0.0263	0.00500	"	0.0333	ND	79.0	30-120	9.41	30			
Benzo (b) fluoranthene	0.0258	0.00500	"	0.0333	ND	77.3	30-120	8.18	30			
Benzo (k) fluoranthene	0.0273	0.00500	"	0.0333	ND	81.9	30-120	10.2	30			
Chrysene	0.0326	0.00500	"	0.0333	0.00498	82.9	30-120	0.265	30			
Dibenz (a,h) anthracene	0.0272	0.00500	"	0.0333	ND	81.5	30-120	7.09	30			
Fluoranthene	0.0321	0.00500	"	0.0333	ND	96.3	30-120	4.43	30			
Fluorene	0.0530	0.00500	"	0.0333	0.0277	76.0	30-120	18.7	30			
Indeno (1,2,3-cd) pyrene	0.0279	0.00500	"	0.0333	ND	83.6	30-120	2.86	30			
Pyrene	0.0214	0.00500	"	0.0333	ND	64.1	35-142	10.7	30			
1-Methylnaphthalene	0.297	0.00500	"	0.0333	0.171	380	15-130	54.6	50			QM-06
2-Methylnaphthalene	0.410	0.00500	"	0.0333	0.264	439	15-130	57.2	50			QM-06
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0277</i>		<i>"</i>	<i>0.0333</i>		<i>83.2</i>	<i>40-150</i>					
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0335</i>		<i>"</i>	<i>0.0333</i>		<i>100</i>	<i>40-150</i>					

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BGC0078 - EPA 3050B**

**Blank (BGC0078-BLK1)**

Prepared & Analyzed: 03/03/23

Boron ND 0.0100 mg/L

**LCS (BGC0078-BS1)**

Prepared & Analyzed: 03/03/23

Boron 5.29 0.0100 mg/L 5.00 106 80-120

**Duplicate (BGC0078-DUP1)**

Source: 2303004-01

Prepared & Analyzed: 03/03/23

Boron 3.35 0.0100 mg/L 3.07 8.58 20

**Matrix Spike (BGC0078-MS1)**

Source: 2303004-01

Prepared & Analyzed: 03/03/23

Boron 8.26 0.0100 mg/L 5.00 3.07 104 75-125

**Matrix Spike Dup (BGC0078-MSD1)**

Source: 2303004-01

Prepared & Analyzed: 03/03/23

Boron 8.52 0.0100 mg/L 5.00 3.07 109 75-125 3.10 25

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BGC0091 - EPA 3050B**

**Blank (BGC0091-BLK1)**

Prepared & Analyzed: 03/03/23

Arsenic	ND	0.200	mg/kg wet						
Barium	ND	0.400	"						
Cadmium	ND	0.200	"						
Copper	ND	0.400	"						
Lead	ND	0.200	"						
Nickel	ND	0.400	"						
Selenium	ND	0.260	"						
Silver	ND	0.0200	"						
Zinc	ND	0.400	"						

**LCS (BGC0091-BS1)**

Prepared & Analyzed: 03/03/23

Arsenic	40.4	0.200	mg/kg wet	40.0	101	80-120
Barium	38.4	0.400	"	40.0	96.0	80-120
Cadmium	1.97	0.200	"	2.00	98.3	80-120
Copper	38.8	0.400	"	40.0	96.9	80-120
Lead	16.2	0.200	"	20.0	80.9	80-120
Nickel	39.0	0.400	"	40.0	97.4	80-120
Selenium	4.21	0.260	"	4.00	105	80-120
Silver	1.98	0.0200	"	2.00	98.9	80-120
Zinc	40.4	0.400	"	40.0	101	80-120

**Duplicate (BGC0091-DUP1)**

Source: 2303015-11

Prepared & Analyzed: 03/03/23

Arsenic	5.70	0.244	mg/kg dry	6.69	15.9	20	
Barium	18.4	0.488	"	29.3	45.7	20	RPD-1
Cadmium	0.0378	0.244	"	0.0471	21.9	20	RPD-1
Copper	10.9	0.488	"	13.7	22.9	20	RPD-1
Lead	10.8	0.244	"	11.4	6.17	20	
Nickel	10.9	0.488	"	13.4	20.4	20	RPD-1
Selenium	0.772	0.260	"	0.784	1.51	20	
Silver	0.0177	0.0244	"	0.0203	14.0	20	
Zinc	49.7	0.488	"	60.3	19.2	20	

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**Total Metals by EPA 6020B - Quality Control**  
**Summit Scientific**

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

**Batch BGC0091 - EPA 3050B**

**Matrix Spike (BGC0091-MS1)**

Source: 2303015-11

Prepared & Analyzed: 03/03/23

Arsenic	53.0	0.244	mg/kg dry	48.8	6.69	94.8	75-125				
Barium	94.2	0.488	"	48.8	29.3	133	75-125				QM-05
Cadmium	2.37	0.244	"	2.44	0.0471	95.3	75-125				
Copper	61.0	0.488	"	48.8	13.7	96.8	75-125				
Lead	33.8	0.244	"	24.4	11.4	91.4	75-125				
Nickel	60.1	0.488	"	48.8	13.4	95.7	75-125				
Selenium	5.40	0.260	"	4.88	0.784	94.5	75-125				
Silver	2.34	0.0244	"	2.44	0.0203	95.0	75-125				
Zinc	116	0.488	"	48.8	60.3	115	75-125				

**Matrix Spike Dup (BGC0091-MSD1)**

Source: 2303015-11

Prepared & Analyzed: 03/03/23

Arsenic	54.4	0.244	mg/kg dry	48.8	6.69	97.8	75-125	2.70	25		
Barium	96.8	0.488	"	48.8	29.3	138	75-125	2.78	25		QM-05
Cadmium	2.43	0.244	"	2.44	0.0471	97.7	75-125	2.47	25		
Copper	62.3	0.488	"	48.8	13.7	99.6	75-125	2.21	25		
Lead	35.7	0.244	"	24.4	11.4	99.4	75-125	5.57	25		
Nickel	61.4	0.488	"	48.8	13.4	98.3	75-125	2.10	25		
Selenium	5.55	0.260	"	4.88	0.784	97.6	75-125	2.77	25		
Silver	2.44	0.0244	"	2.44	0.0203	98.9	75-125	3.97	25		
Zinc	118	0.488	"	48.8	60.3	119	75-125	1.61	25		

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**Hexavalent Chromium by EPA Method 7196 - Quality Control**  
**Summit Scientific**

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

**Batch BGC0059 - 3060A Mod**

**Blank (BGC0059-BLK1)**

Prepared & Analyzed: 03/02/23

Chromium, Hexavalent      ND      0.30    mg/kg wet

**LCS (BGC0059-BS1)**

Prepared & Analyzed: 03/02/23

Chromium, Hexavalent      25.2      0.30    mg/kg wet      25.0      101      80-120

**Duplicate (BGC0059-DUP1)**

**Source: 2303015-21**

Prepared & Analyzed: 03/02/23

Chromium, Hexavalent      ND      0.30    mg/kg dry      ND      20

**Matrix Spike (BGC0059-MS1)**

**Source: 2303015-21**

Prepared & Analyzed: 03/02/23

Chromium, Hexavalent      28.4      0.30    mg/kg dry      27.8      ND      102      75-125

**Matrix Spike Dup (BGC0059-MSD1)**

**Source: 2303015-21**

Prepared & Analyzed: 03/02/23

Chromium, Hexavalent      28.6      0.30    mg/kg dry      27.8      ND      103      75-125      0.585      20

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BGC0121 - General Preparation**

**Blank (BGC0121-BLK1)**

Prepared: 03/05/23 Analyzed: 03/07/23

Calcium	ND	0.0500	mg/L wet						
Magnesium	ND	0.0500	"						
Sodium	ND	0.0500	"						

**LCS (BGC0121-BS1)**

Prepared: 03/05/23 Analyzed: 03/07/23

Calcium	4.00	0.0500	mg/L wet	5.00	80.0	70-130
Magnesium	4.11	0.0500	"	5.00	82.1	70-130
Sodium	4.25	0.0500	"	5.00	85.1	70-130

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
 Project Manager: Jacob Whritenour

**Reported:**  
 03/08/23 13:14

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**

**Summit Scientific**

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

**Batch BGC0026 - General Preparation**

**Duplicate (BGC0026-DUP1)**

**Source: 2301216-30**

Prepared & Analyzed: 03/01/23

% Solids	89.2	%	89.0	0.218	20
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Tasman Geosciences  
6855 W. 119th Ave.  
Broomfield CO, 80020

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BGC0135 - General Preparation**

**Blank (BGC0135-BLK1)**

Prepared & Analyzed: 03/06/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BGC0135-BS1)**

Prepared & Analyzed: 03/06/23

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 101 95-105

**Duplicate (BGC0135-DUP1)**

**Source: 2303033-01**

Prepared & Analyzed: 03/06/23

Specific Conductance (EC) 0.338 0.0100 mmhos/cm 0.337 0.207 20

Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

**Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

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

**Batch BGC0134 - General Preparation**

**LCS (BGC0134-BS1)**

Prepared & Analyzed: 03/06/23

pH	9.05	pH Units	9.18	98.6	95-105
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**Duplicate (BGC0134-DUP1)**

Source: 2303033-01

Prepared & Analyzed: 03/06/23

pH	7.67	pH Units	7.70	0.390	20
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Summit Scientific

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

Project: Noble - Petrikin A34-08

Project Number: [none]  
Project Manager: Jacob Whritenour

**Reported:**  
03/08/23 13:14

### Notes and Definitions

- RPD-1 The RPD failure for the sample duplicate analysis is most likely due to a non-homogeneous sample matrix.
- QM-06 Due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values.
- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
- 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**

Well Location Sketch:



**WSP, USA**  
4600 W. 60th Avenue

**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: <b>FS01</b>	Project: <b>Petrikin</b>				
Date: <b>3/28/22</b>	Project Number:				
Logged By: <b>Kelly Malone</b>	Drilled By: <b>Site Services</b>				
Elevation: <b>NA</b>	Detector:	Drilling Method: <b>Direct Push, geoprobe</b>	Sampling Method: <b>Continuous (geosleve)</b>		
Gravel Pack:	Seal:	Grout:			
Casing Type: <b>PVC</b>	Diameter:	Length:	Hole Diameter:	Depth to Liquid:	
Screen Type: <b>PVC</b>	Slot:	Diameter:	Length:	Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
			NO	FS01@6.5ft, 1030	2		2.7	SC	(SC) clayey SAND, some small gravel, trace large gravel; light brown (54R 516); loose, NC, dry, no odor (2.2)	
					4		4.0	CL	SAA except compact, moist (2.7)	
83.8			yes		6		1.8	SC	(CL) sandy CLAY, fine to medium; light brown; firm, cohesive, w< PL, no odor (4.0)	
479.6			NO	FS01@12ft, 1045	8		3.1	CLS@	(SC) clayey SAND, some small gravel; light brown; NC, loose, moist, no odor (5.0)	
1023					10		4.0	CL	(CL) CLAY, trace fine sand; greenish-black (56Y 2/1), strong chemical-like odor; cohesive, stiff, moist (6.0)	
390					12		4		SAA except some very fine sand; light olive brown (54R 516) with light olive gray mottling (54 S/2); stiff. (7.5)	
228					14				SAA, except very stiff (8.8)	
361					16				(CLS) CLAYSTONE, weathered, alternating clay and	
0.0					18					

NOTES:

Well Location Sketch:



**WSP, USA**  
**4600 W. 60th Avenue**

**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: <b>FS01</b>	Project: <b>Petrikin</b>				
Date: <b>3/28/22</b>	Project Number:				
Logged By: <b>Kelly Malone</b>	Drilled By: <b>Site Services</b>				
Elevation: <b>NA</b>	Detector:	Drilling Method: <b>Direct Push, geoprobe</b>	Sampling Method: <b>Continuous (geosleve)</b>		
Gravel Pack:	Seal:	Grout: <b>-</b>			
Casing Type: <b>PVC</b>	Diameter:	Length:	Hole Diameter:	Depth to Liquid: <b>-</b>	
Screen Type: <b>PVC</b>	Slot:	Diameter:	Length:	Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
					2				very fine sand laminations; dark yellowish brown (104R 4/2) with some brownish gray (54R 4/1) and iron mottling; cohesive, very stiff, w<PL	
					4					
					6				(10.8) (CL) CLAY, some very fine sand, laminations, poorly graded; moderate yellowish brown (104R 5/4) to very pale orange (104R 8/2); no odor; cohesive, very stiff, w<PL	
					8					
					10					
					12				END of Boring @ 14.0 ft BGS	
					14					
					16				* 1 in. PVC installed. 10ft screen to 4.0ft BGS. Sand to 2.0ft BGS, bentonite from 2.0 ft to surface. Stickup at 2.6ft.	
					18					

NOTES:

Well Location Sketch:



**WSP, USA**  
4600 W. 60th Avenue

**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: <b>FS02</b>	Project: <b>Petrikim</b>				
Date: <b>3/28/22</b>	Project Number:				
Logged By: <b>Kelly Malone</b>	Drilled By: <b>Site Services</b>				
Elevation: <b>NA</b>	Detector:	Drilling Method: <b>Direct Push, geoprobe</b>	Sampling Method: <b>Continuous (geosleve)</b>		
Gravel Pack:	Seal:	Grout:			
Casing Type: <b>PVC</b>	Diameter:	Length:	Hole Diameter:	Depth to Liquid:	
Screen Type: <b>PVC</b>	Slot:	Diameter:	Length:	Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
		0.0	20	FS02 @ 6.5, 1258	2		4/4	SW	(SW) SAND, fine to medium, trace PL fines; dark yellowish brown (1042 4/2); non-cohesive, dry, loose	
		0.0			4			CL	(CL) clayey SAND, very f to f; dark yellowish brown; NC, compact, moist	
		0.0			6		2.5/2.9	SW	(SW) SAND, coarse, lense	
					8				(3.1) - (CL) CLAY, medium PL fines, trace fine sand; light olive brown with light brown mottling; cohesive, stiff, w<PL	
					10				(4.3) - (sw) SAND, coarse, lense	
					12					
					14					
					16				END of BORING @ 6.5ft BOS	
					18				*hole filled w/ bentonite	

NOTES:

Well Location Sketch:



**WSP, USA**  
**4600 W. 60th Avenue**

**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: <b>FS03</b>	Project: <b>Petrikin</b>				
Date: <b>3/28/22</b>	Project Number:				
Logged By: <b>Kelly Malone</b>	Drilled By: <b>Site Services</b>				
Elevation: <b>NA</b>	Detector:	Drilling Method: <b>Direct Push, geoprobe</b>	Sampling Method: <b>Continuous (geosleve)</b>		
Gravel Pack:	Seal:	Grout:			
Casing Type: <b>PVC</b>	Diameter:	Length:	Hole Diameter:	Depth to Liquid:	
Screen Type: <b>PVC</b>	Slot:	Diameter:	Length:	Total Depth:	Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
		0.0	NO		0			CL	(CL) CLAY, med PL fines, trace fine sand; light olive brown (54R 5/6); cohesive, soft, w ~ PL	
		0.0			2			SC	(SC) clayey SAND, very fine to medium; moderate yellowish brown (104R 5/4), non-cohesive, compact, dry. GS decreases w depth	
		0.0			4		5/5		(1.0) - SAA except moist	
		0.0			6		15/14		(2.4) - SAA except light brown and pale orange (104R 8/2) mottling; no stain/odor	
					8				(3.9) -	
					10					
					12					
					14				END of BORING @ 6.5ft	
					16				* filled with bentonite	
					18					

NOTES:

Well Location Sketch:



**WSP, USA**  
4600 W. 60th Avenue

**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: <b>FS04</b>	Project: <b>PetrikIn</b>
Date: <b>3/28/22</b>	Project Number:
Logged By: <b>Kelly Malone</b>	Drilled By: <b>Site Services</b>

Elevation: <b>NA</b>	Detector:	Drilling Method: <b>Direct Push, geoprobe</b>	Sampling Method: <b>Continuous (geosleve)</b>
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Gravel Pack:	Seal:	Grout:
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Casing Type: <b>PVC</b>	Diameter:	Length:	Hole Diameter:	Depth to Liquid:
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Screen Type: <b>PVC</b>	Slot:	Diameter:	Length:	Total Depth:	Depth to Water:
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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
		0.0			2		5	SW CL SW SC	(sw) SAND, coarse, trace fine gravel; moderate yellowish brown (104R 5/4); non-cohesive, loose, dry.	
		0.0			4		5		(0.3)- (CL) CLAY, trace fine sand; moderate yellowish brown; cohesive, soft, w> PL	
		0.0			6		1.5		(0.8)- SA 0.0- 0.3 ft	
					8		1.5		(1.3)- (SC) clayey SAND, fine to medium; moderate yellowish brown; NC, loose to compact, dry	
					10				(1.8)- SAA except light brown mottling	
					12				at 3.5, 2m. gravel lense	
					14				END of BORING @	
					16				6.5ft BGS	
					18				*hole filled w/ bentonite	

Well Location Sketch:



**WSP, USA**  
4600 W. 60th Avenue

**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: <b>F805</b>	Project: <b>Petrikin</b>
Date: <b>3/28/22</b>	Project Number:
Logged By: <b>Kelly Malone</b>	Drilled By: <b>Site Services</b>
Elevation: <b>NA</b>	Detector:
Drilling Method: <b>Direct Push, geoprobe</b>	Sampling Method: <b>Continuous (geosleve)</b>
Gravel Pack:	Seal:
Casing Type: <b>PVC</b>	Diameter: Length: Hole Diameter: Depth to Liquid: <b>-</b>
Screen Type: <b>PVC</b>	Slot: Diameter: Length: Total Depth: Depth to Water:

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
					0					
	0.0				2			CL	(CL) sandy CLAY, fine to medium; moderate yellowish brown (104R 5/4); cohesive, firm, w~ PL	
	0.0				4			SC	(SC) clayey SAND, fine to coarse, well graded, trace medium subrounded gravels; moderate yellowish brown; NC, compact, moist	
	0.0				6			CL	(CL) CLAY, medium PL fines, moderate yellowish brown; cohesive, firm, w~ PL	
	0.0				8			SA	SA 0.8 - 1.3 ft	
					10					
					12					
					14					
					16					
					18					

F805 @ 6.5 ft, 1330

END of BORING  
@ 6.5ft BGS  
\* hole filled w/ bentonite

Well Location Sketch:



WSP, USA  
4600 W. 60th Avenue

**BORING LOG/MONITORING WELL COMPLETION DIAGRAM**

Boring/Well Number: <b>B661@6.5'</b>	Project: <b>Petrikim</b>
Date: <b>3/28/22</b>	Project Number:
Logged By: <b>K Malone</b>	Drilled By: <b>[Signature]</b>

Elevation:	Detector:	Drilling Method: <b>direct push, geo-P</b>	Sampling Method: <b>continuous (geosluve)</b>
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Gravel Pack: <b>Silica Sand</b>	Seal: <b>Bentonite</b>	Grout: <b>-</b>
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Casing Type: <b>PVC</b>	Diameter: <b>1"</b>	Length:	Hole Diameter: <b>2in</b>	Depth to Liquid: <b>-</b>
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Screen Type: <b>PVC</b>	Slot: <b>0.01</b>	Diameter: <b>1"</b>	Length:	Total Depth: <b>6.5 ft</b>	Depth to Water:
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Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion Diagram
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					0					
					2				*entire boring not logged. background sampling point. No well set. hole abandoned w/ bentonite.	
					4					
		0.0		2	6	X	100%	SC	clayey SAND, fine grained, trace evaporites and interbedded organics; moderate yellowish brown, compact to dense, dry to moist, NC.	
					8					
					10					
					12					
					14					
					16					
					18					

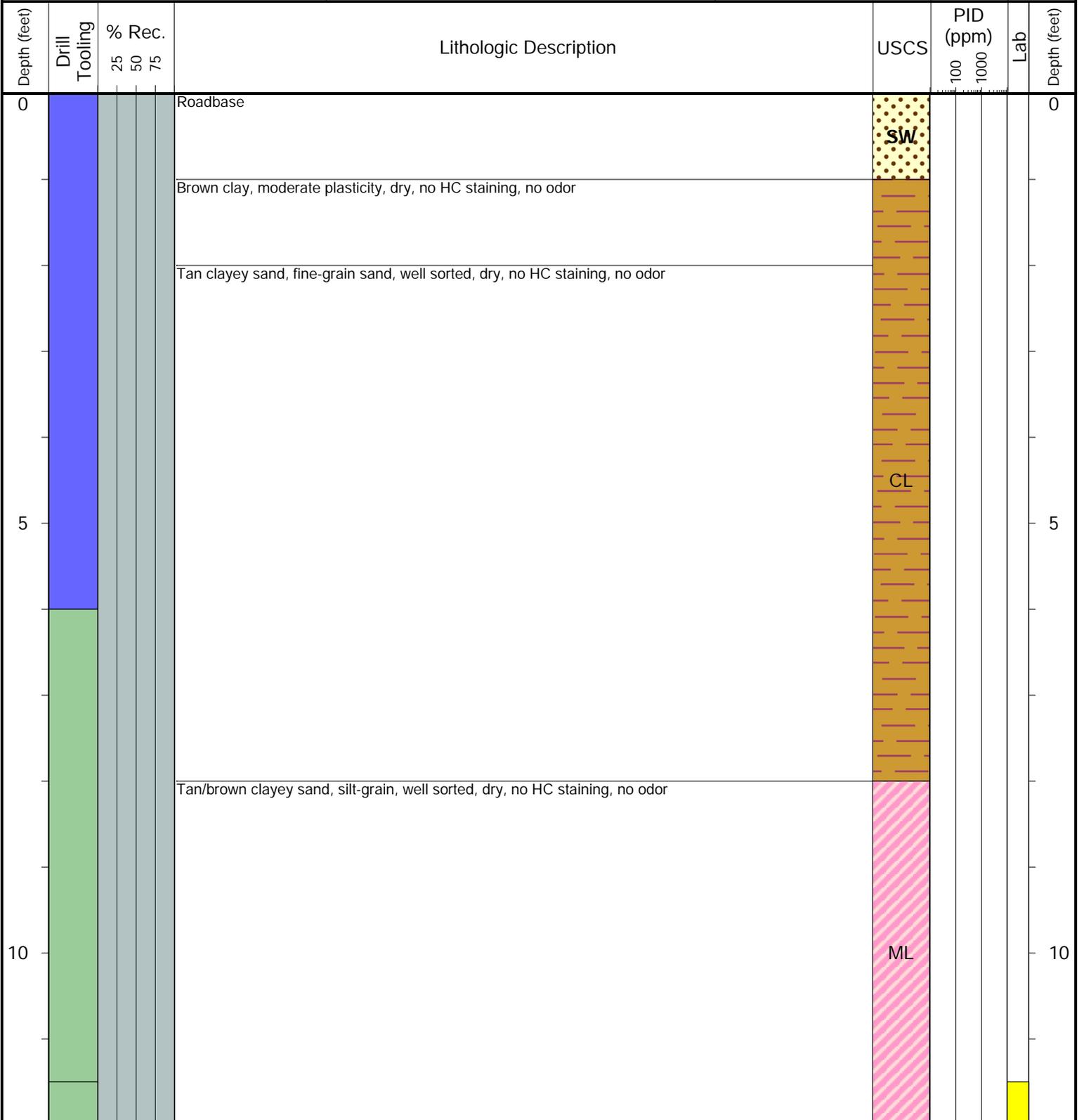
NOTES:



6855 W. 119th Ave.  
Broomfield, CO 80020

CLIENT: Noble  
 LOGGED BY: Sam Anderson  
 PROJECT MANAGER: Jake Whritenour  
 DRILLING CONTRACTOR: Tasman  
 DRILLING EQUIPMENT: Hand Auger/AMS PowerProbe  
 DRILL BIT SIZE (INCHES): 2.375"  
 DATE STARTED - COMPLETED: 2/27/23-2/27/23  
 TOTAL WELL DEPTH (FT. BGS): 12  
 DEPTH WATER ENCOUNTERED (FT. BGS): NM

**Petrikin A34-08 Facility**  
**BORING ID: BH01**  
 LOCATION: Weld County, Colorado  
 LATITUDE (WGS 84): 40.4462559708  
 LONGITUDE (WGS 84): -104.529474732  
 GROUND ELEVATION (FT. AMSL): NM  
 ABANDONMENT METHOD: Bentonite



**Drilling / Sample Method:**

- Macro-Core
- Expendable Well Tip
- Perforated Injection Tool
- Hand Auger

**Laboratory Sample Types:**

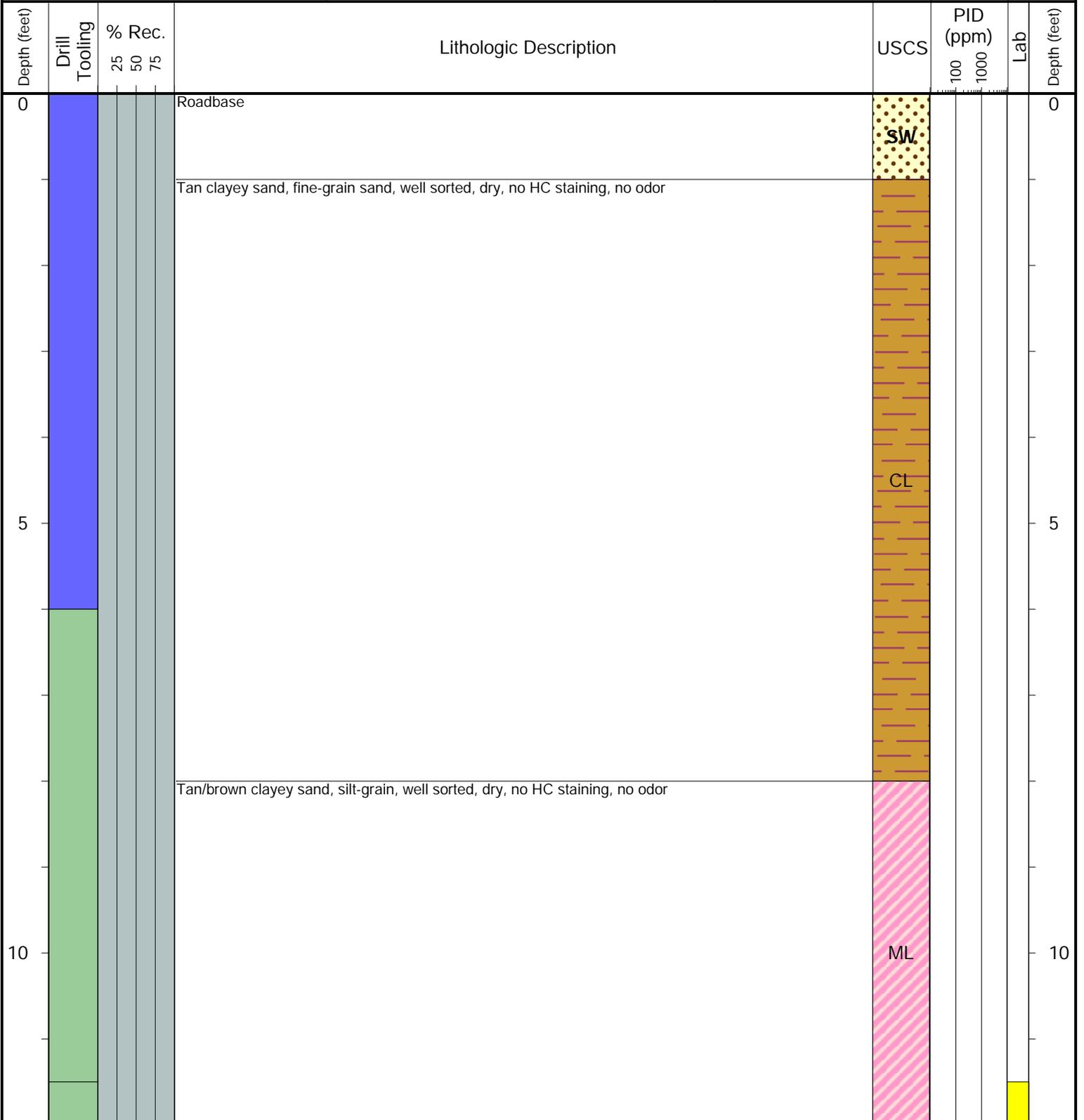
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6855 W. 119th Ave.  
Broomfield, CO 80020

CLIENT: Noble  
 LOGGED BY: Sam Anderson  
 PROJECT MANAGER: Jake Whritenour  
 DRILLING CONTRACTOR: Tasman  
 DRILLING EQUIPMENT: Hand Auger/AMS PowerProbe  
 DRILL BIT SIZE (INCHES): 2.375"  
 DATE STARTED - COMPLETED: 2/27/23-2/27/23  
 TOTAL WELL DEPTH (FT. BGS): 12  
 DEPTH WATER ENCOUNTERED (FT. BGS): NM

**Petrikin A34-08 Facility**  
**BORING ID: BH02**  
 LOCATION: Weld County, Colorado  
 LATITUDE (WGS 84): 40.4462124147  
 LONGITUDE (WGS 84): -104.529420373  
 GROUND ELEVATION (FT. AMSL): NM  
 ABANDONMENT METHOD: Bentonite



**Drilling / Sample Method:**

- Macro-Core
- Perforated Injection Tool
- Expendable Well Tip
- Hand Auger

**Laboratory Sample Types:**

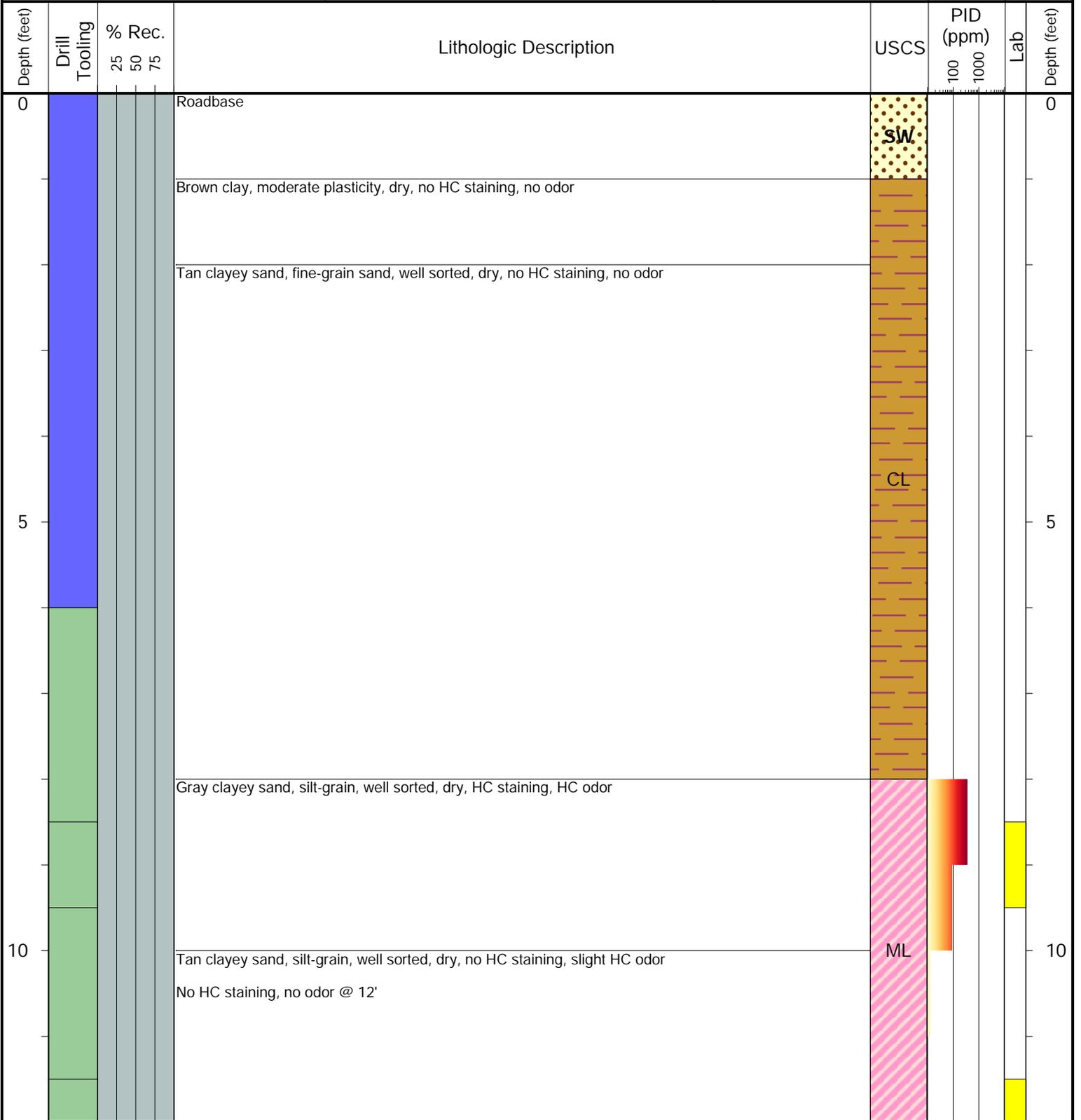
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6855 W. 119th Ave.  
Broomfield, CO 80020

CLIENT: Noble  
 LOGGED BY: Sam Anderson  
 PROJECT MANAGER: Jake Whritenour  
 DRILLING CONTRACTOR: Tasman  
 DRILLING EQUIPMENT: Hand Auger/AMS PowerProbe  
 DRILL BIT SIZE (INCHES): 2.375"  
 DATE STARTED - COMPLETED: 2/27/23-2/27/23  
 TOTAL WELL DEPTH (FT. BGS): 12  
 DEPTH WATER ENCOUNTERED (FT. BGS): NM

**Petrikin A34-08 Facility**  
**BORING ID: BH03**  
 LOCATION: Weld County, Colorado  
 LATITUDE (WGS 84): 40.4461751788  
 LONGITUDE (WGS 84): -104.529468587  
 GROUND ELEVATION (FT. AMSL): NM  
 ABANDONMENT METHOD: Bentonite



**Drilling / Sample Method:**

- Macro-Core
- Perforated Injection Tool
- Expendable Well Tip
- Hand Auger

**Laboratory Sample Types:**

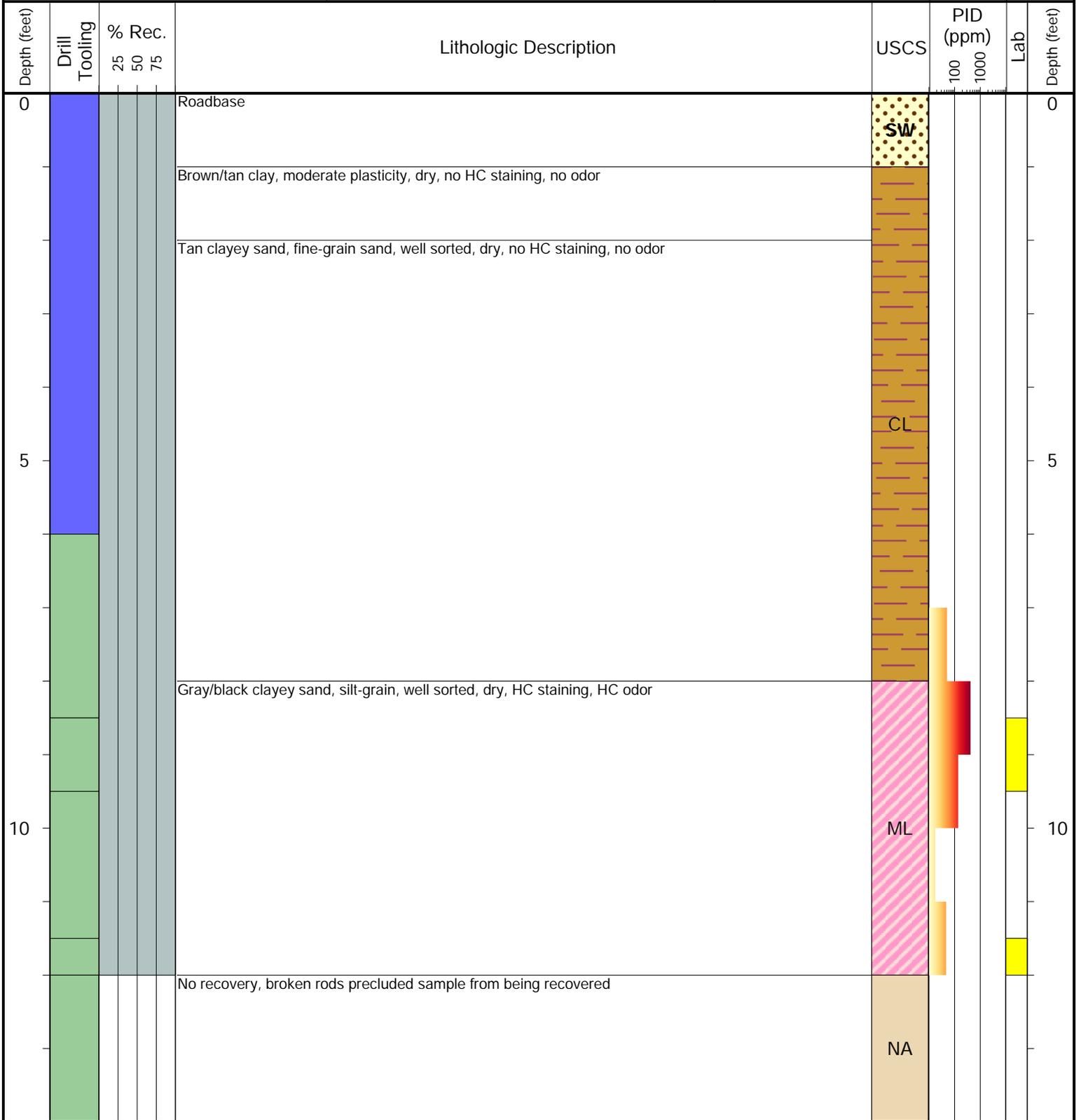
- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab



6855 W. 119th Ave.  
Broomfield, CO 80020

CLIENT: Noble  
 LOGGED BY: Sam Anderson  
 PROJECT MANAGER: Jake Whritenour  
 DRILLING CONTRACTOR: Tasman  
 DRILLING EQUIPMENT: Hand Auger/AMS PowerProbe  
 DRILL BIT SIZE (INCHES): 2.375"  
 DATE STARTED - COMPLETED: 2/27/23-2/27/23  
 TOTAL WELL DEPTH (FT. BGS): 14  
 DEPTH WATER ENCOUNTERED (FT. BGS): NM

**Petrikin A34-08 Facility**  
**BORING ID: BH04**  
 LOCATION: Weld County, Colorado  
 LATITUDE (WGS 84): 40.4462176365  
 LONGITUDE (WGS 84): -104.529508602  
 GROUND ELEVATION (FT. AMSL): NM  
 ABANDONMENT METHOD: Bentonite



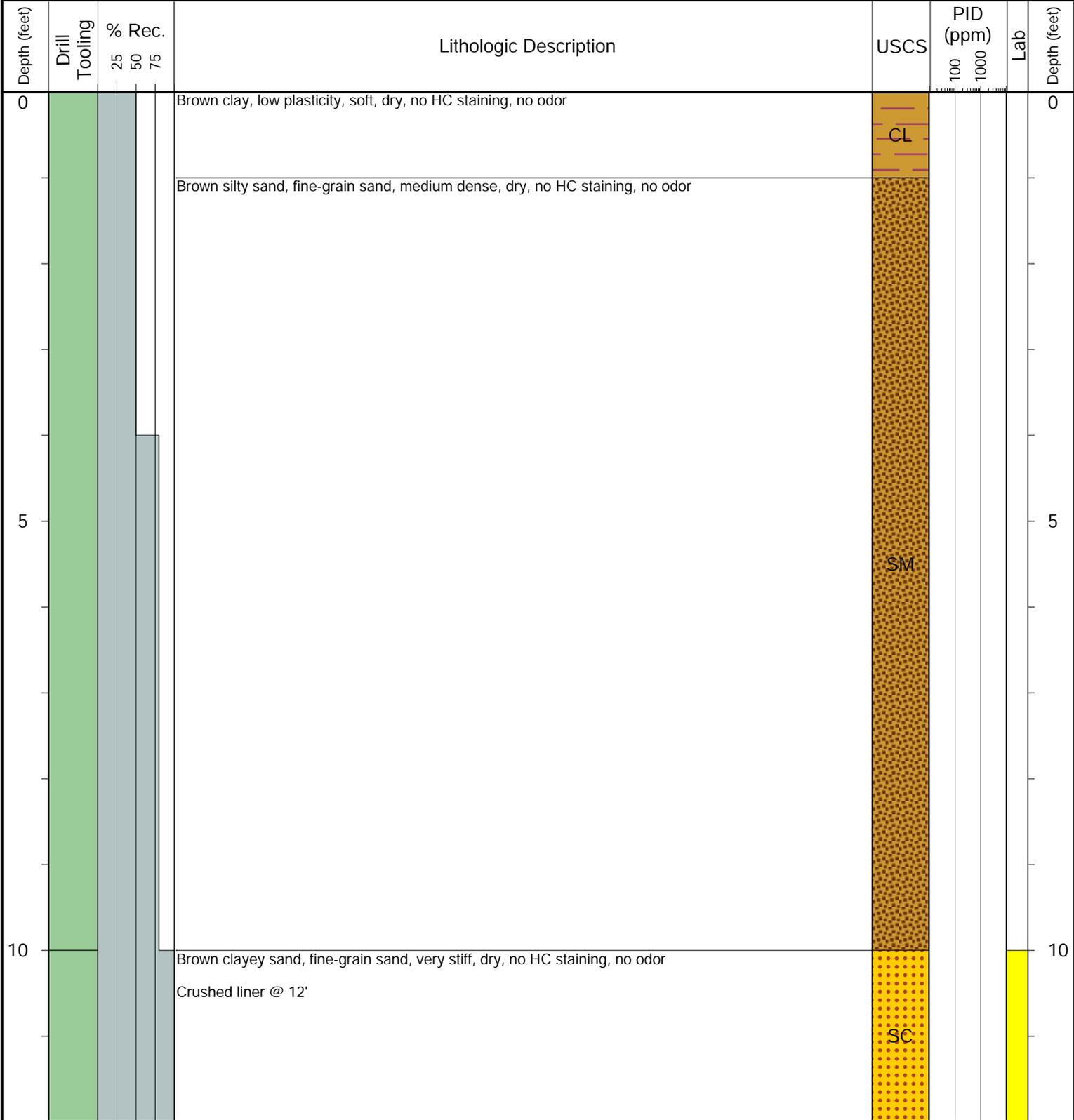
**Drilling / Sample Method:**

- Macro-Core
- Perforated Injection Tool
- Geotechnical Lab
- Geotechnical & Analytical Chemistry Lab
- Expendable Well Tip
- Hand Auger
- Analytical Chemistry Lab



6855 W. 119th Ave.  
Broomfield, CO 80020

CLIENT: Noble	Petrikin A34-08 Facility
LOGGED BY: Sarah Quattrochi	
PROJECT MANAGER: Jake Whritenour	BORING ID: BH05
DRILLING CONTRACTOR: Tasman	
DRILLING EQUIPMENT: AMS PowerProbe	LOCATION: Weld County, Colorado
DRILL BIT SIZE (INCHES): 2.375"	LATITUDE (WGS 84): 40.446217449
DATE STARTED - COMPLETED: 2/28/23-2/28/23	LONGITUDE (WGS 84): -104.529563481
TOTAL WELL DEPTH (FT. BGS): 12	GROUND ELEVATION (FT. AMSL): NM
DEPTH WATER ENCOUNTERED (FT. BGS): NM	ABANDONMENT METHOD: Bentonite



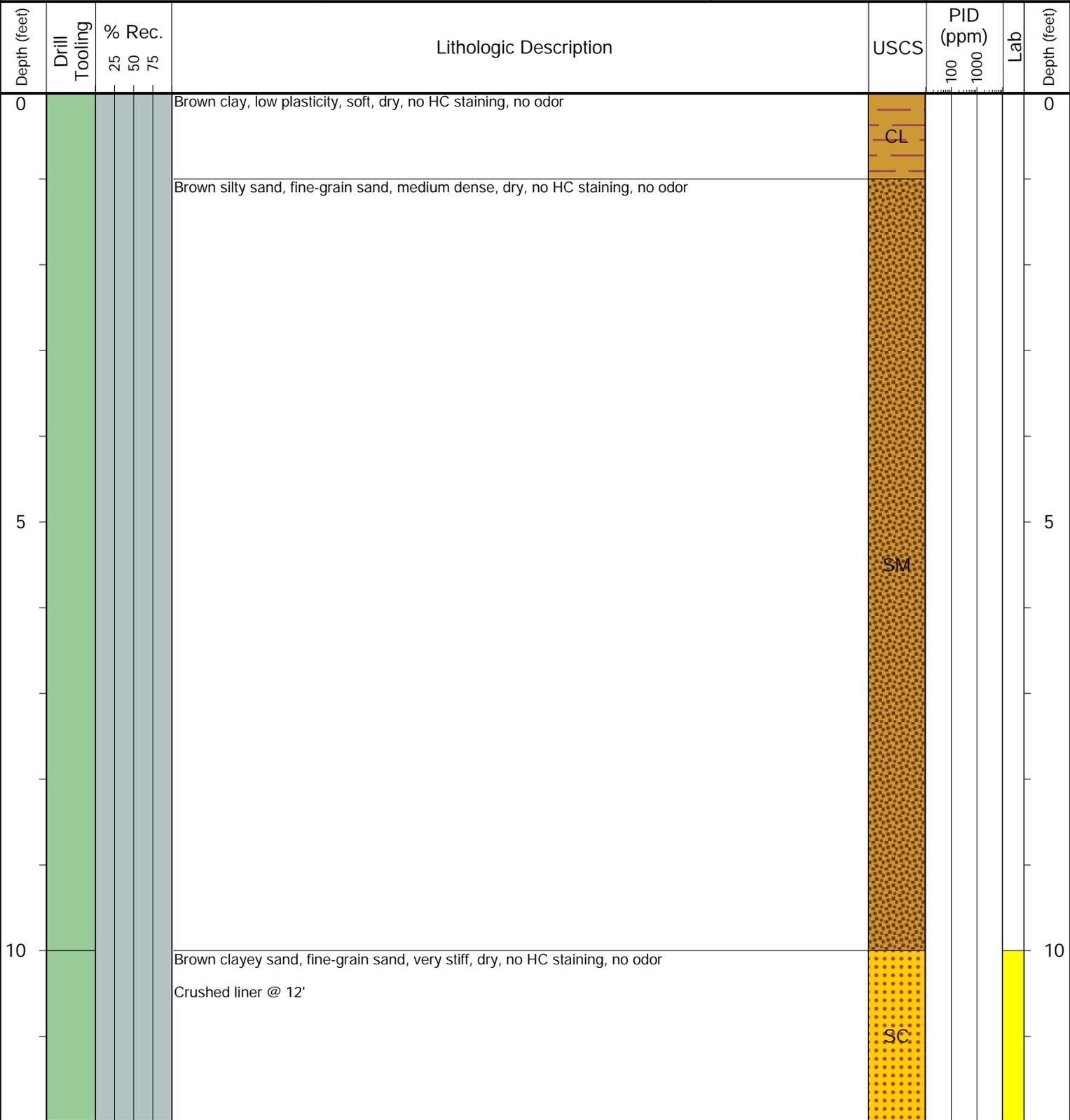
**Drilling / Sample Method:**

- Macro-Core
- Perforated Injection Tool
- Geotechnical Lab
- Geotechnical & Analytical Chemistry Lab
- Expendable Well Tip
- Hand Auger
- Analytical Chemistry Lab



6855 W. 119th Ave.  
Broomfield, CO 80020

CLIENT: Noble	Petrikin A34-08 Facility
LOGGED BY: Sarah Quattrochi	
PROJECT MANAGER: Jake Whritenour	BORING ID: BH06
DRILLING CONTRACTOR: Tasman	
DRILLING EQUIPMENT: AMS PowerProbe	LOCATION: Weld County, Colorado
DRILL BIT SIZE (INCHES): 2.375"	LATITUDE (WGS 84): 40.4461332075
DATE STARTED - COMPLETED: 2/28/23-2/28/23	LONGITUDE (WGS 84): -104.52946897
TOTAL WELL DEPTH (FT. BGS): 12	GROUND ELEVATION (FT. AMSL): NM
DEPTH WATER ENCOUNTERED (FT. BGS): NM	ABANDONMENT METHOD: Bentonite



**Drilling / Sample Method:**

- Macro-Core
- Expendable Well Tip
- Perforated Injection Tool
- Hand Auger

**Laboratory Sample Types:**

- Geotechnical Lab
- Analytical Chemistry Lab
- Geotechnical & Analytical Chemistry Lab