

FREMONT ENVIRONMENTAL INC.

August 5, 2022

Mr. Daniel Peterson
Noble Energy Inc.
2115 117th Ave.
Greeley, CO 80634

Subject: **Site Investigation Report**
Howard A27-7 (Flowline)
API # 05-123-22303
SWNE Sec. 27, T6N, R64W
Weld County, Colorado
Fremont Project No. C022-035
Facility # 273046, Remediation #20372

Dear Mr. Peterson:

Enclosed please find a copy of the above referenced Site Investigation Report for the Howard A27-7 flowline in Weld County, Colorado. The enclosed report describes site investigation and sampling efforts to assess soil and groundwater quality at the site.

Please contact me at (303) 956-8714 if you require any additional information.

Fremont appreciates the opportunity to provide this service.

Sincerely,
FREMONT ENVIRONMENTAL INC.



Paul V. Henahan, P.E.
Senior Consultant

Enclosure

SITE INVESTIGATION REPORT
NOBLE ENERGY INC.
HOWARD A27-7 (FLOWLINE)
WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-035
FACILITY # 273046, REMEDIATION # 20372

Prepared by:

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1759 Redwing Lane
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August 5, 2022

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SITE INVESTIGATION REPORT
NOBLE ENERGY INC.
HOWARD A27-7 (FLOWLINE)
WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-035
FACILITY # 273046, REMEDIATION # 20372

1.0 INTRODUCTION

The purpose of this document is to present information collected to delineate the extent of petroleum-impacted soil and groundwater at the Howard A 27-7 (Howard) flowline location in Weld County, Colorado. Impacted soil was identified along the Howard flowline at both the wellhead and separator connections during facility closure activities. A total of ten soil borings were advanced at the separator and wellhead locations, during the single-day site investigation completed on May 27, 2022, to delineate the magnitude and extent of subsurface soil and groundwater impacts.

2.0 BACKGROUND INFORMATION

2.1 Site Location

The Howard A27-7 flowline is located approximately one mile northeast of Gill, Colorado in Weld County as shown on Figure 1. The site is located in a rural and agricultural area approximately 0.16 miles southwest of the intersection of County Road 66 and County Road 57. The location is further described as the SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 27, Township 6N, Range 64W.

2.2 Site History

The site consists of the Howard A-66N64W facility which services the Howard A 27-7 oil well. The Howard A 27-7 well was drilled in 2004 to a depth of approximately 7,103 feet.

Historical releases were discovered along the Howard flowline at both the wellhead and separator connections during decommissioning activities in April 2022. A site investigation to determine the extent of soil and groundwater impacts was undertaken on May 27, 2022. Groundwater was not encountered at that time.

3.0 SITE INVESTIGATION ACTIVITIES

3.1 Soil Borings/Monitoring Wells

A total of 10 soil borings were advanced utilizing a Geoprobe rig during the single-day site investigation conducted at the former Howard flowline location on May 27, 2022. One of the 10 borings was completed as a 1-inch diameter, temporary PVC stick-up monitoring well, which has not produced water since its installation. These borings were used to delineate the extent of soil impacts at the site. The locations of the soil borings are illustrated on the attached figures.

Generally, the subsurface consists of fine sand that extends to a maximum depth of approximately 14 feet at the former wellhead location and four feet at the separator location. The sand is underlain by a sandy clay or clay extending to a depth of at least 28 feet at the former wellhead location and 15 feet at the separator location. The maximum depth of the borings was 28 feet. Refusal was encountered in borings advanced adjacent to the separator between 12 feet to 15 feet. Geologic cross sections illustrating the soil lithology are presented on Figures 5 and 6.

The 1-inch diameter monitoring well was constructed with a 10-foot section of well screen placed at a total depth of approximately 28 feet and completed at the ground surface as a temporary PVC stick-up well. The well remains dry after several gauging attempts over the months following the site investigation. Soil samples from each of the borings were evaluated in the field using a photoionization detector (PID). Logs of the borings and monitoring well are presented in Appendix A.

Soil samples were collected from each of the borings and sent to Summit Scientific, Inc. in Golden, Colorado for the analyses of for benzene, toluene, ethylbenzene and total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene (TMB), Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) by EPA method 8260B, TPH – Diesel Range Organics (TPH-DRO), Extended Range Organics (TPH-ORO) by EPA method 8015, Polycyclic Aromatic Hydrocarbons (PAH) Acenaphthene, Anthracene, Benzo (a) anthracene, Benzo (a) pyrene, Benzo (b) fluoranthene, Chrysene, Dibenz (a,h) anthracene, Fluoranthene, Fluorene, Indeno (1,2,3-cd) pyrene, Pyrene, 1-Methylnaphthalene, 2-Methylnaphthalene by EPA method 8270D.

Soils exceeded the COGCC Table 915-1 protection of groundwater soil screening levels (PGSSLs) for arsenic and selenium in all 10 borings, two borings exceeded the PGSSL for barium, 'SB-2 5Ft' exceeded the PGSSL for lead, 'SB-4 5Ft' exceeded the PGSSLs for cadmium and nickel, and 'SB-2 4Ft' through 'SB-5 4Ft' exceeded the COGCC Table 915-1 pH standard. Organic impacts were not observed in any of the 10 borings. The soil chemistry is presented on Figures 7 and 8 and summarized in Tables 1 through 4. The laboratory's report is provided in Appendix B.

4.0 DISCUSSION

A single-day site investigation was conducted at the Howard A 27-7 location on May 27, 2022 resulting from a historical release discovered along the Howard flowline at both the wellhead and separator connections during site decommissioning activities. Ten soil boings were advanced, and one was completed as a temporary monitoring well, which remains dry, on site to delineate the magnitude and extent of soil and groundwater impacts.

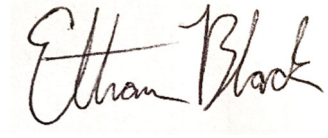
Soil impacts above the COGCC Table 915-1 protection of groundwater soil screening levels for various metals were observed in all 10 soil borings and pH exceedances were observed in four borings. The soil data are illustrated and summarized in the attached tables and figures. Impacted soils at previously outlined locations along the former Howard flowline will be removed via excavation. The excavation extent will be based on the location and depths of residual impacts observed prior to, and during the site investigation.

Initial impacts were observed at a maximum depth of five feet at both the separator and wellhead where at least eight feet of clay underlies each location. Furthermore, groundwater was not encountered during the site investigation and is measured between 225 feet and 260 feet in domestic wells with a 200-foot and 400-foot radius of the wellhead and separator; respectively, making a pathway for these impacts to contact groundwater unlikely. Therefore, Noble will request closure under the COGCC Table 915-1 Residential Soil Screening levels following the excavation of soils in the previously mentioned areas encompassing the residual soil impacts.

5.0 REMARKS

The discussion and conclusions contained in this report represent our professional opinions. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by **FREMONT ENVIRONMENTAL INC.**



8/5/22

Date_____

Ethan D. Black, P.G.

Geologist

Reviewed by:



8/5/22

Date_____

Paul V. Henehan, P.E.

Senior Consultant

TABLES

TABLE 1
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
HOWARD A27-7, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-035

Sample	Date Sampled	Depth (ft)	Location	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Xylenes (mg/kg)	1,2,4-Trimethyl-Benzene (mg/kg)	1,3,5-Trimethyl-Benzene (mg/kg)	Naphthalene (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
7FL01@2.0'	4/14/2022	2.0'	Floor	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	0.030	<0.50	330	<50
7FL05@3.0'	4/14/2022	3.0'	Floor	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
7FL06@5.0'	4/14/2022	5.0'	Floor	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SB-1 5ft	5/27/2022	5	Cen. Sep. Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SB-2 5ft	5/27/2022	5	E Sep. Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SB-3 5ft	5/27/2022	5	N Sep. Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SB-4 5ft	5/27/2022	5	S Sep. Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SB-5 5ft	5/27/2022	5	W Sep. Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
MW-1 5 Ft	5/27/2022	5	Cen. Wellhead Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SB-2 4 Ft	5/27/2022	4	E Wellhead Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SB-3 4 Ft	5/27/2022	4	W Wellhead Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SB-4 4 Ft	5/27/2022	4	N Wellhead Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
SB-5 4 Ft	5/27/2022	4	S Wellhead Boring	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
COGCC Table 915-1 Limits (Residential SSL)				1.2	490	5.8	58	30	27	2	500	500	500
COGCC Table 915-1 Limits (Protection of Groundwater SSL)				0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	500	500

Bold faced values exceed the COGCC Table 915-1 concentrations

Blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

* Summation of GRO+DRO+ORO must be less than 500 mg/kg

TABLE 2
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
HOWARD A27-7, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-035

Sample	Date Sampled	Depth (ft)	Location	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benzo (a) anthracene (mg/kg)	Benzo (a) pyrene (mg/kg)	Benzo (b) fluoranthene (mg/kg)	Benzo (k) fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenz (a,h) anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno (1,2,3-cd) pyrene (mg/kg)	Pyrene (mg/kg)	1-Methyl - naphthalene (mg/kg)	2-Methyl- naphthalene (mg/kg)
7FL01 @2.0'	4/14/2022	2	Floor	1.030	1.420	2.810	1.690	2.590	0.943	2.600	0.2900	5.590	1.510	1.180	4.8600	0.1460	0.3080
7FL05 @3.0'	4/14/2022	3	Floor	0.0718	0.150	0.272	0.1500	0.429	0.0737	0.277	0.0277	0.984	<0.00500	<0.00500	0.0682	0.0128	0.0119
7FL06 @5.0'	4/14/2022	5	Floor	<0.00500	<0.00500	<0.00500	0.0112	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SB-1 5ft	5/27/2022	5	Cen. Sep. Boring	<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
SB-2 5ft	5/27/2022	5	E Sep. Boring	<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
SB-3 5ft	5/27/2022	5	N Sep. Boring	<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
SB-4 5ft	5/27/2022	5	S Sep. Boring	<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
SB-5 5ft	5/27/2022	5	W Sep. Boring	<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
MW-1 5 Ft	5/27/2022	5	Cen.Wellhead Boring	<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
SB-2 4 Ft	5/27/2022	4	E Wellhead Boring	<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
SB-3 4 Ft	5/27/2022	4	W Wellhead Boring	<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
SB-4 4 Ft	5/27/2022	4	N Wellhead Boring	<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
SB-5 4 Ft	5/27/2022	4	S Wellhead Boring	<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
COGCC Table 915-1 Limits (Residential SSL)				360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
COGCC Table 915-1 Limits (Protection of Groundwater SSL)				0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019

Bold faced values exceed the COGCC Table 915-1 concentrations
Blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

TABLE 3
SUMMARY OF INORGANIC SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
HOWARD A27-7, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-035

SAMPLE LOCATION	DATE SAMPLED	DEPTH ft	EC mmhos/cm	pH pH units	SAR units	BORON mg/L
7FL01@2.0'	4/14/2022	2	0.614	8.12	0.296	0.361
7FL05@3.0'	4/14/2022	3	3.280	7.77	0.869	0.533
7FL06@5.0'	4/14/2022	5	3.130	7.61	2.380	0.586
SB-1 5ft	5/27/2022	5	3.74	7.81	2.73	0.415
SB-2 5ft	5/27/2022	5	3.67	7.21	6.45	1.34
SB-3 5ft	5/27/2022	5	3.66	7.62	2.33	0.0287
SB-4 5ft	5/27/2022	5	3.49	7.36	1.64	0.0213
SB-5 5ft	5/27/2022	5	3.54	7.73	1.61	0.733
MW-1 5 Ft	5/27/2022	5	1.300	8.19	1.640	0.2240
SB-2 4 Ft	5/27/2022	4	0.481	8.44	0.252	0.0119
SB-3 4 Ft	5/27/2022	4	0.659	8.35	0.809	0.7520
SB-4 4 Ft	5/27/2022	4	0.324	8.54	0.083	0.0760
SB-5 4 Ft	5/27/2022	4	0.800	8.37	0.383	0.0874
Table 915-1 Limits			<4	6-8.3	<6	2

Bold face values exceed the COGCC Limits

TABLE 4
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
HOWARD A27-7, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-035

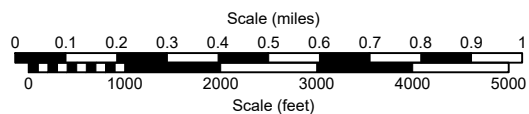
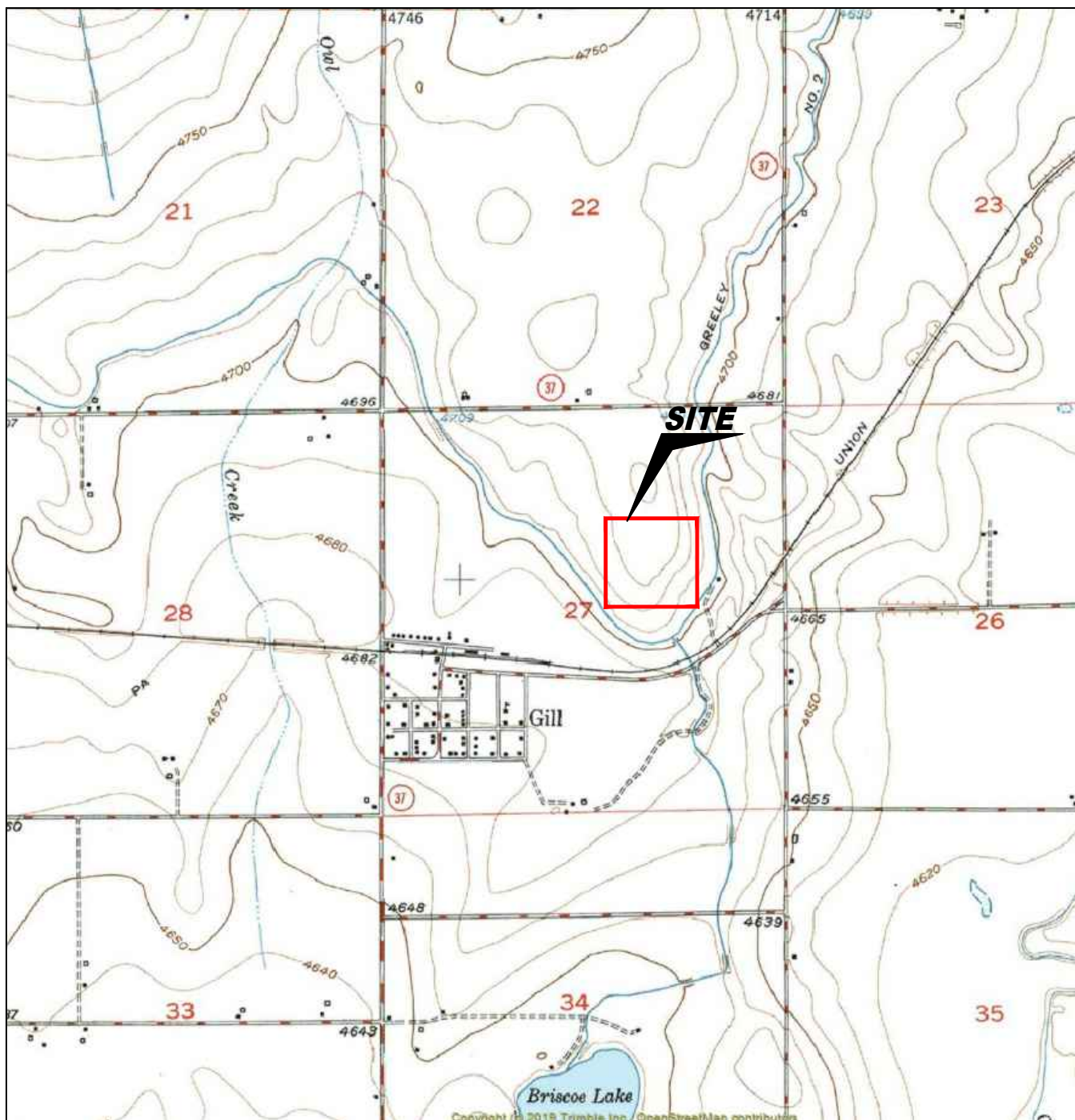
Sample	Date Sampled	Depth (ft)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)	Chromium (mg/kg)
SB-1 5ft	5/27/2022	5	0.904	10.2	<0.250	13.8	6.05	1.68	0.913	0.0738	12.2	<0.30
SB-2 5ft	5/27/2022	5	12.5	25.5	<0.254	17.8	34.8	11.7	2.50	0.0796	99.4	<0.30
SB-3 5ft	5/27/2022	5	9.54	13.5	0.330	16.9	11.4	20.5	1.43	0.0433	104	<0.30
SB-4 5ft	5/27/2022	5	9.64	14.0	0.587	20.9	10.6	34.9	2.14	0.0527	138	<0.30
SB-5 5ft	5/27/2022	5	8.10	18.6	0.251	13.4	11.7	19.2	0.925	0.0410	71.7	<0.30
MW-1 5 Ft	5/27/2022	5	3.71	15.2	<0.209	3.57	9.78	6.50	0.481	<0.0209	30.6	<0.30
SB-2 4 Ft	5/27/2022	4	8.22	447	0.253	8.53	7.37	15.8	0.783	0.0256	35.5	<0.30
SB-3 4 Ft	5/27/2022	4	7.70	26.7	<0.211	8.29	7.59	10.4	0.688	<0.0211	53.2	<0.30
SB-4 4 Ft	5/27/2022	4	5.24	64.0	<0.209	5.32	4.67	7.62	0.513	<0.0209	25.3	<0.30
SB-5 4 Ft	5/27/2022	4	3.86	262	<0.21	4.26	4.34	6.74	0.521	<0.021	22.7	<0.30
COGCC Table 915-1 Limits (Residential SSL)			0.68	15000	71	3100	400	1500	390	390	23000	0.3
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	46	14	26	0.26	0.8	370	0.00067

Bold faced values exceed the COGCC Table 915-1 concentrations

Blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

NA- Not analyzed

FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

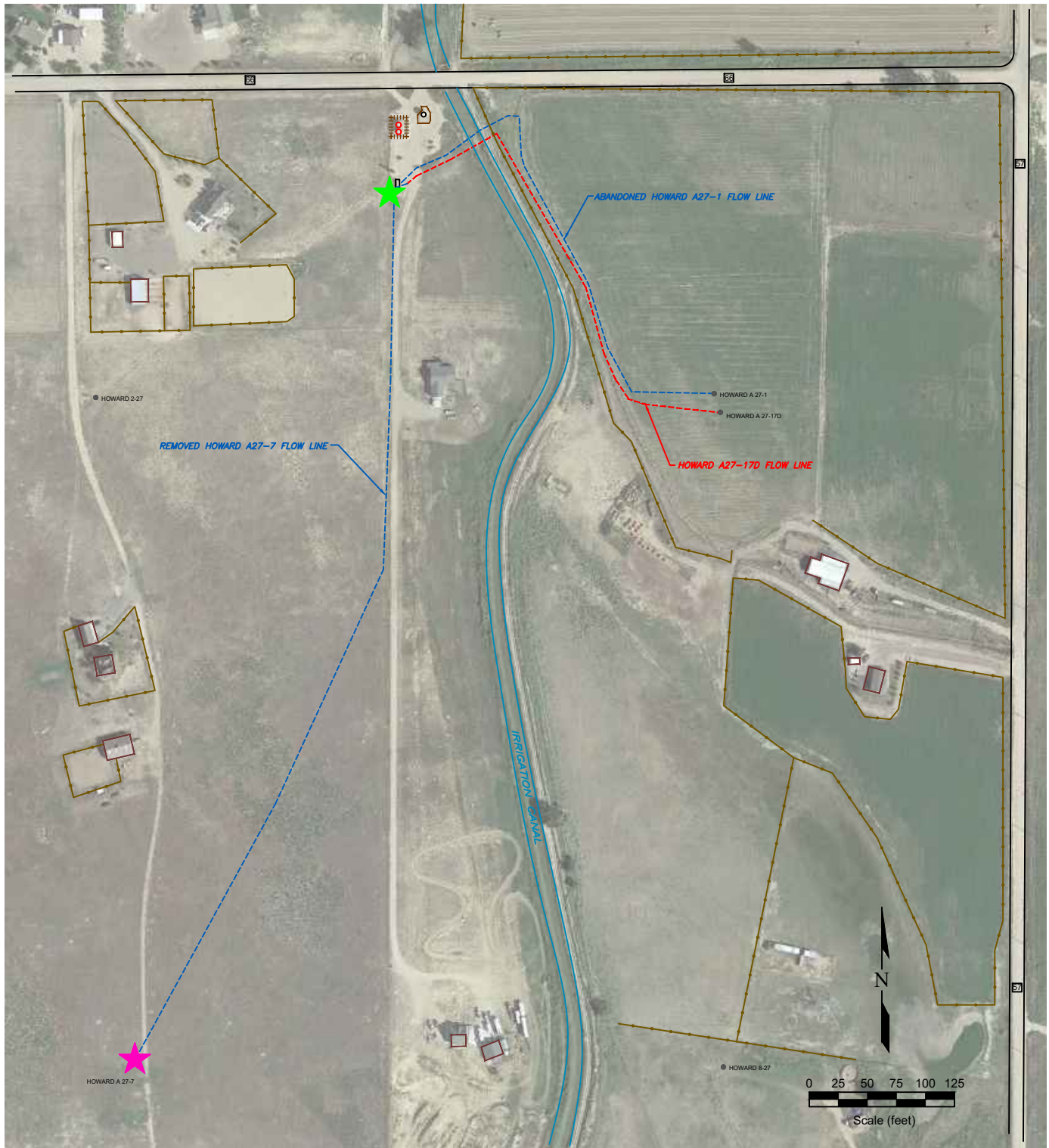
Figure 1
SITE LOCATION MAP

Noble Energy, Inc. ~ Howard A27-7
SWNE Sec. 27, T6N, R64W, 6th PM
Weld County, Colorado

40.463920°, -104.531620° Separator; 40.45884°, -104.53344° Wellhead

Project # C022-035	API # 05-123-22303	Facility # 273046
Date 08/02/22	Remediation # 20372	Filename 22035T






LEGEND

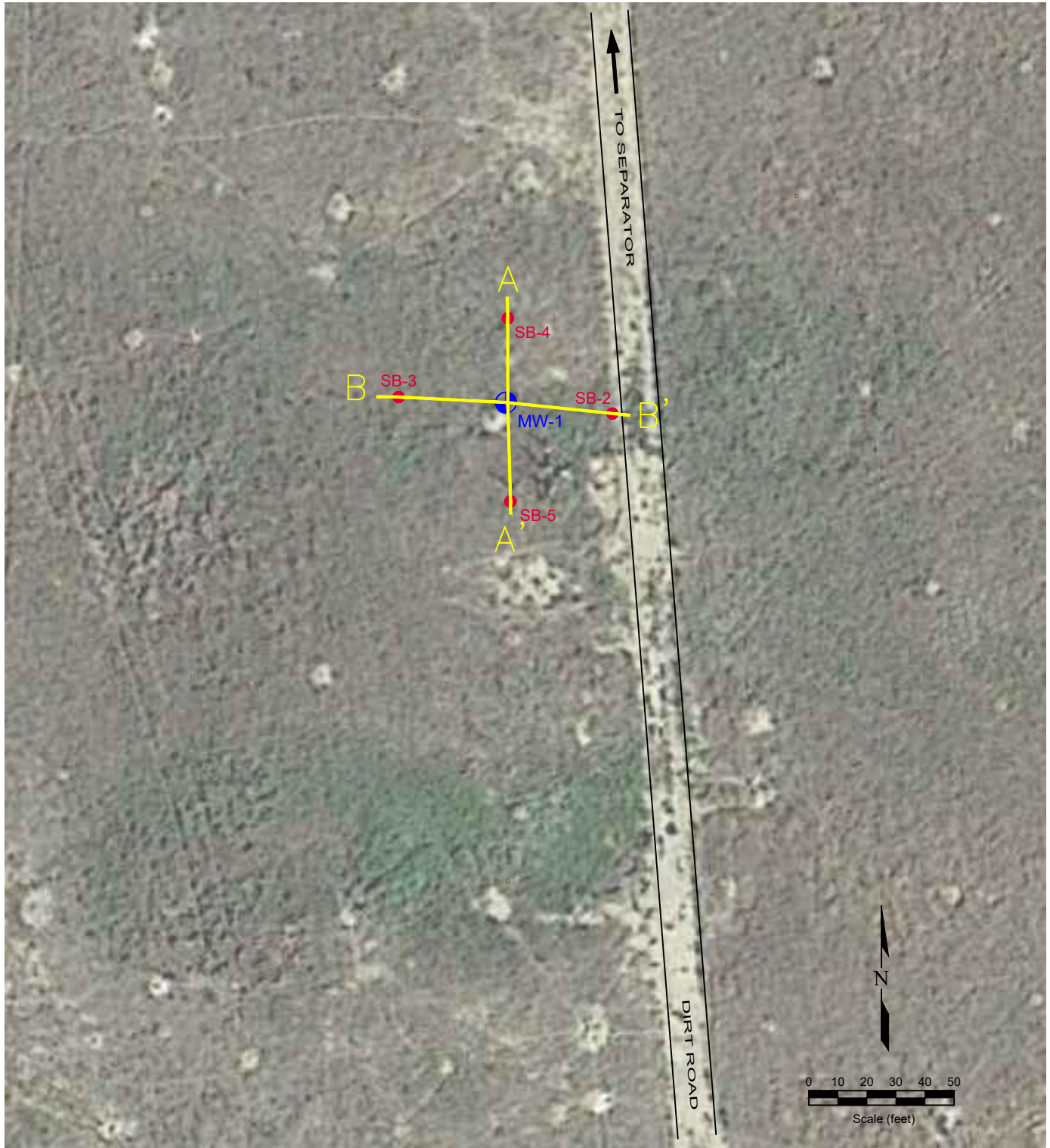
- WELL HEAD LOCATION
- ABOVE GROUND STORAGE TANK
- ★ WELLHEAD SITE LOCATION
- ★ SEPARATOR SITE LOCATION
- BUILDING
- FORMER BUILDING
- FORMER FACILITY
- FLOW LINE
- CONTAINMENT BERM
- CONTAINMENT WALL
- FENCE LINE

Figure 2
SITE MAP

Noble Energy, Inc.~ Howard A27-7
SWNE Sec. 27, T6N, R64W, 6th PM
Weld County, Colorado

40.463920°, -104.531620° Separator; 40.45884°, -104.53344° Wellhead

Project No. C022-035	API # 05-123-22303	Facility # 273046	
Date 08/02/22	Remediation # 20372	Filename 22035Q	



LEGEND

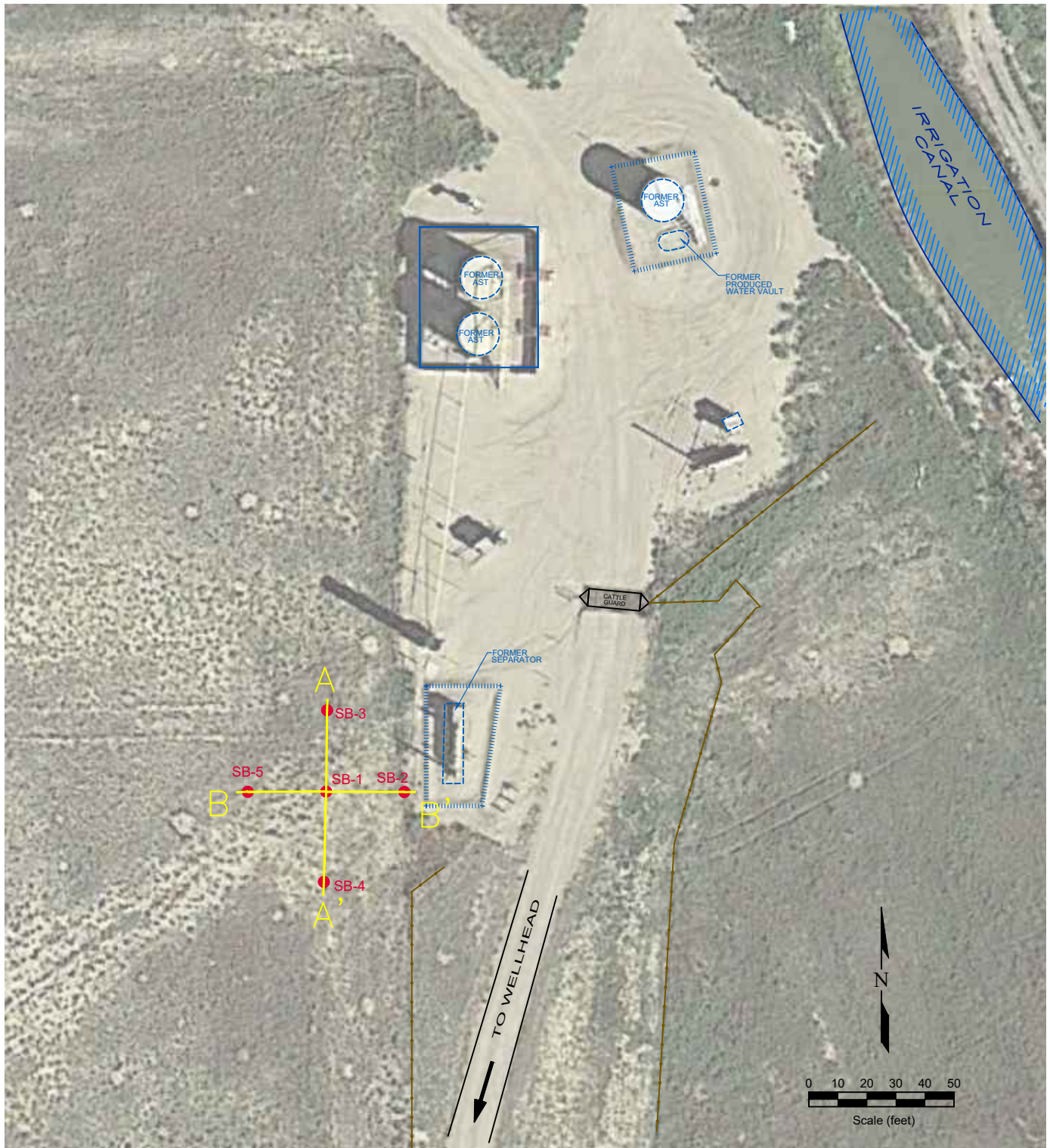
- SOIL BORING
- MONITORING WELL
- B — B' CROSS SECTION CUT LINE

Figure 3
CROSS SECTION MAP

Noble Energy, Inc.~ Howard A27-7 (Wellhead)
 SWNE Sec. 27, T6N, R64W, 6th PM
 Weld County, Colorado
 40.45884°, -104.53344°

Project No. C022-035	API # 05-123-22303	Facility # 273046
Date 08/03/22	Remediation # 20372	Filename 22035Q





LEGEND

- SOIL BORING ○ ABOVE GROUND STORAGE TANK
- B—B' CROSS SECTION CUT LINE
- FORMER FACILITY
- CONTAINMENT BERM
- CONTAINMENT WALL
- FENCE LINE


Figure 4
CROSS SECTION MAP

Noble Energy, Inc.~ Howard A27-7 (Separator)

SWNE Sec. 27, T6N, R64W, 6th PM

Weld County, Colorado

40.463920°, -104.53163

Project No. C022-035	API # 05-123-22303	Facility # 273046	
Date 08/03/22	Remediation # 20372	Filename 22035Q	

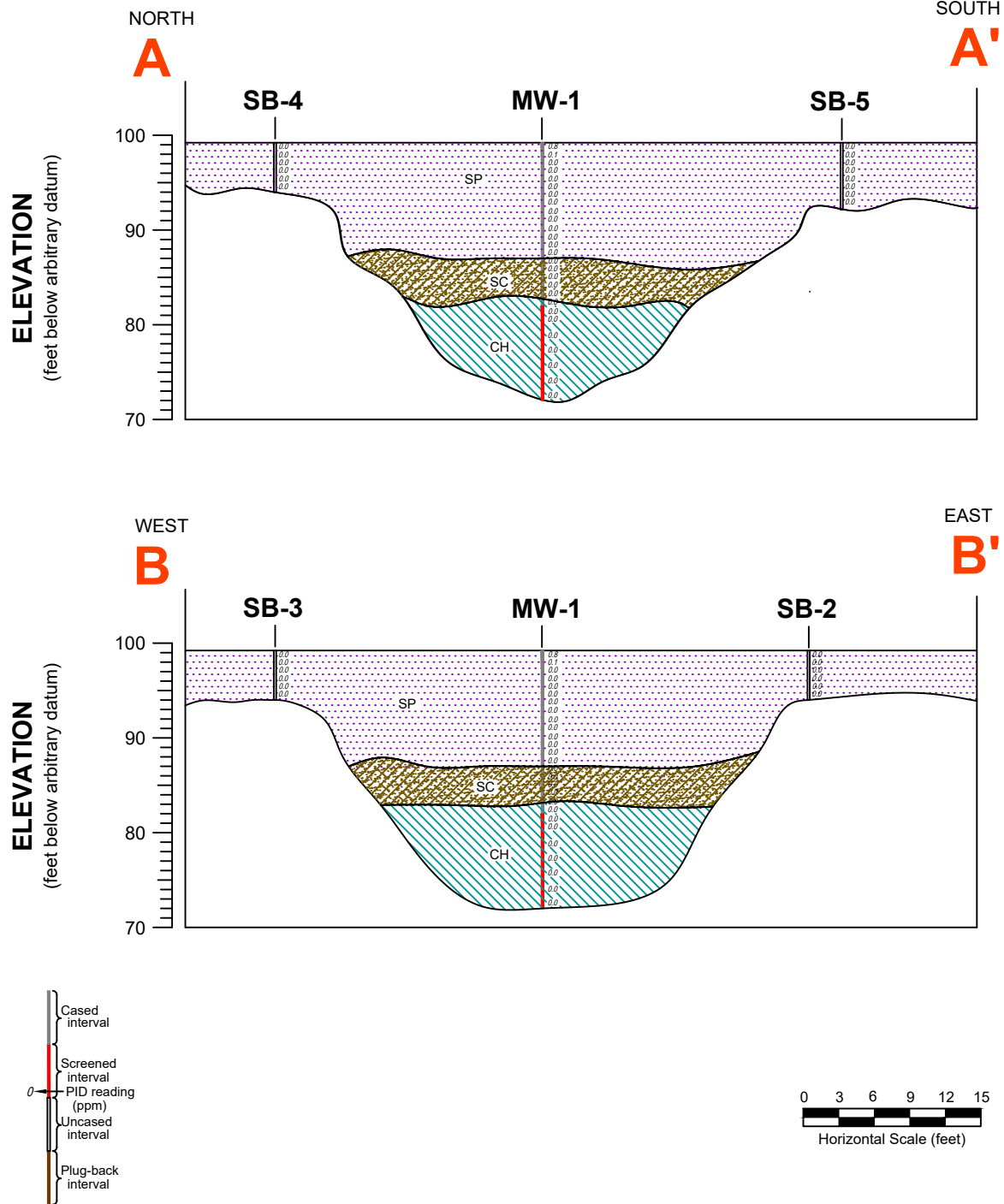


Figure 5
CROSS SECTIONS A-A' and B-B'

Noble Energy, Inc.~ Howard A27-7 (Wellhead)
SWNE Sec. 27, T6N, R64W, 6th PM
Weld County, Colorado
40.45884°, -104.53344°

Project No. C022-035	API # 05-123-22303	Location # 273046
Date 08/02/22	Remediation # 20372	Filename 22035XWH



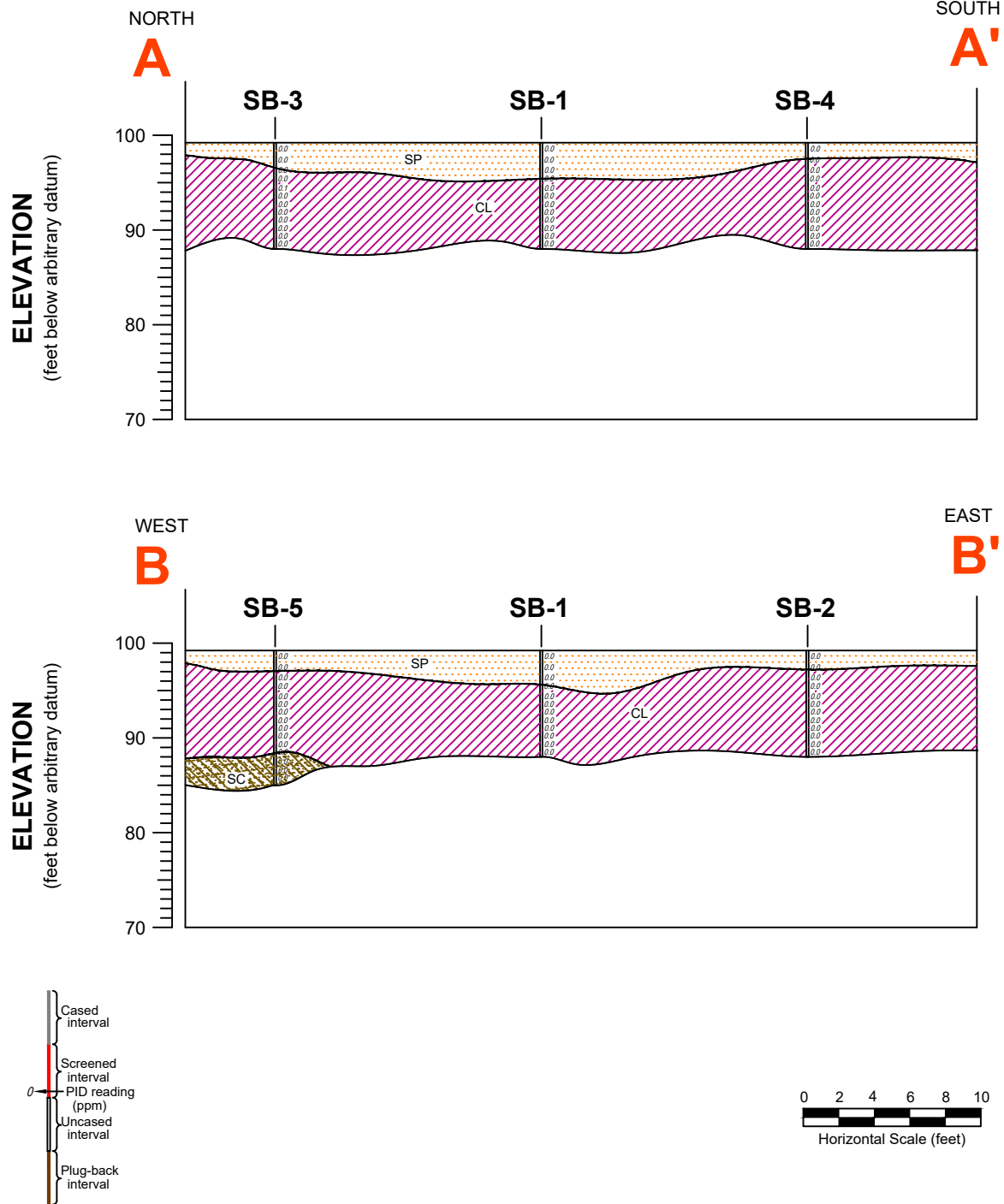
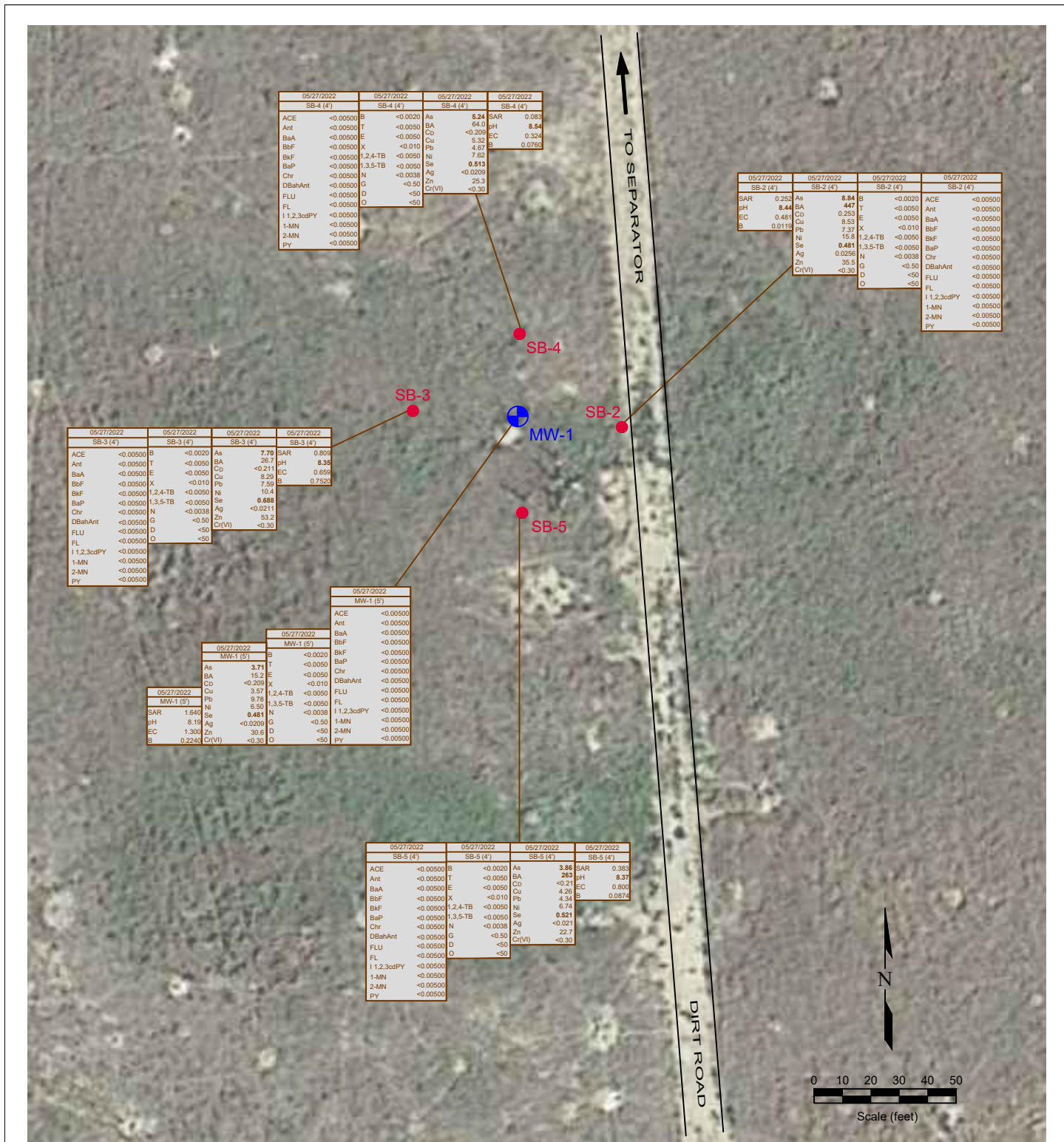


Figure 6
CROSS SECTIONS A'A' and B'B'

Noble Energy, Inc.~ Howard A27-7 (Separator)
SWNE Sec. 27, T6N, R64W, 6th PM
Weld County, Colorado
40.463920°, -104.531620°

Project No. C022-035	API # 05-123-22303	Location # 273046
Date 08/02/22	Remediation # 20372	Filename 22035XWH



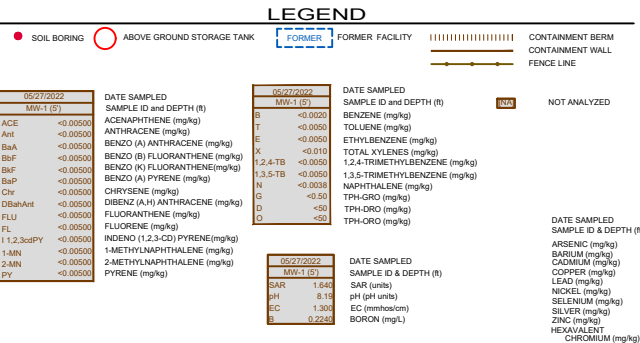


LEGEND			
●	SOIL BORING		
⊕	MONITORING WELL		
05/27/2022	DATE SAMPLED	05/27/2022	DATE SAMPLED
MW-1 (5')	SAMPLE ID and DEPTH (ft)	MW-1 (5')	SAMPLE ID and DEPTH (ft)
ACE	<0.00500	ACE	<0.00500
Ant	<0.00500	Ant	<0.00500
BaA	<0.00500	BaA	<0.00500
BbF	<0.00500	BbF	<0.00500
BaP	<0.00500	BaP	<0.00500
Chr	<0.00500	Chr	<0.00500
DBahAnt	<0.00500	DBahAnt	<0.00500
FLU	<0.00500	FLU	<0.00500
FL	<0.00500	FL	<0.00500
I 1,2,3cdPY	<0.00500	I 1,2,3cdPY	<0.00500
1-MN	<0.00500	1-MN	<0.00500
2-MN	<0.00500	2-MN	<0.00500
PY	<0.00500	PY	<0.00500
05/27/2022	DATE SAMPLED	05/27/2022	DATE SAMPLED
MW-1 (5')	SAMPLE ID and DEPTH (ft)	MW-1 (5')	SAMPLE ID and DEPTH (ft)
ACE	<0.00500	ACE	<0.00500
Ant	<0.00500	Ant	<0.00500
BaA	<0.00500	BaA	<0.00500
BbF	<0.00500	BbF	<0.00500
BaP	<0.00500	BaP	<0.00500
Chr	<0.00500	Chr	<0.00500
DBahAnt	<0.00500	DBahAnt	<0.00500
FLU	<0.00500	FLU	<0.00500
FL	<0.00500	FL	<0.00500
I 1,2,3cdPY	<0.00500	I 1,2,3cdPY	<0.00500
1-MN	<0.00500	1-MN	<0.00500
2-MN	<0.00500	2-MN	<0.00500
PY	<0.00500	PY	<0.00500
05/27/2022	DATE SAMPLED	05/27/2022	DATE SAMPLED
MW-1 (5')	SAMPLE ID and DEPTH (ft)	MW-1 (5')	SAMPLE ID and DEPTH (ft)
ACE	<0.00500	ACE	<0.00500
Ant	<0.00500	Ant	<0.00500
BaA	<0.00500	BaA	<0.00500
BbF	<0.00500	BbF	<0.00500
BaP	<0.00500	BaP	<0.00500
Chr	<0.00500	Chr	<0.00500
DBahAnt	<0.00500	DBahAnt	<0.00500
FLU	<0.00500	FLU	<0.00500
FL	<0.00500	FL	<0.00500
I 1,2,3cdPY	<0.00500	I 1,2,3cdPY	<0.00500
1-MN	<0.00500	1-MN	<0.00500
2-MN	<0.00500	2-MN	<0.00500
PY	<0.00500	PY	<0.00500


Figure 7
SOIL CHEMISTRY MAP
May 27, 2022

Noble Energy, Inc.~ Howard A27-7 (Wellhead)
SWNE Sec. 27, T6N, R64W, 6th PM
Weld County, Colorado
40.45884°, -104.53344°

Project No. C022-035	API # 05-123-22303	Facility # 273046	
Date 08/03/22	Remediation # 20372	Filename 22035Q	



40.463920°, -104.53163

Project No. C022-035	API # 05-123-22303	Facility # 273046	
Date 08/03/22	Remediation # 20372	Filename 22035Q	

APPENDIX A

BORING LOGS





BORING/WELL CONSTRUCTION LOG

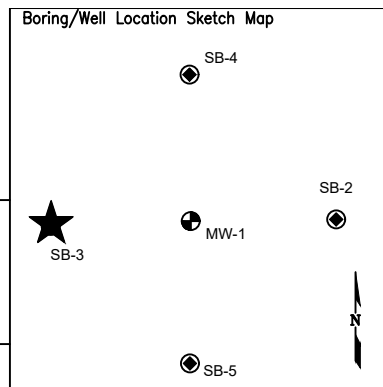
Page 2 of 2

Boring/Well No. MW-1	Location Noble Energy Howard A27-7 SWNE Sec 27, T6N, R64W, 6th PM Weld County, Colorado
Project No./Name C022-035 Noble Howard A27-7	

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
	#10-20 Silica Sand	1" Screen	CH	Clay: dark brown, plastic, moist, continued				0.0
25				- 8" sandy clay lens				0.0
				- oxidized clay				0.0
				- decreasing plasticity				0.0
				TD 28'				
30								
35								
40								
45								








Boring/Well No. SB-3		Total Depth 6'		Location Noble Energy, Inc. Howard A27-7 SWNE Sec 27, T6N, R64W, 6th PM Weld County, Colorado				 SB-3 	
Project No./Name C022-035 Noble Howard A27-7				Approved By				 MW-1  SB-5	
Drilling Contractor/Driller DrillPro/Terrence A, Glen and Hayward									
Geologist/Office Ethan Black/Fremont Environmental, Inc.				Size/Type of Bit 2.5" direct push		Sampling Method direct push		Start/Finish Date 05/27/2022	
Drilling Equipment/Method Geoprobe		Well Installed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Casing Mtrl./Dia.		Screen: Type		Mtrl.	
Elevation of: (ft. above datum)		Ground Surface		Top of Well Casing		Top of Screen		Bottom of Screen	
								Ground Water Surface/Date Measured	






DEPTH (feet)	WELL CONSTRUCTION				LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
					GRAPHIC LOG	VISUAL DESCRIPTION				
5					<div>SP</div>	Sand: tan, fine, dry to slightly moist				0.0
						0.0				
						0.0				
						0.0				
						0.0				
						0.0				
					- fractured SS				0.0	
					TD 6'	Hit Refusal at 6.0'				0.0
10										
15										
20										

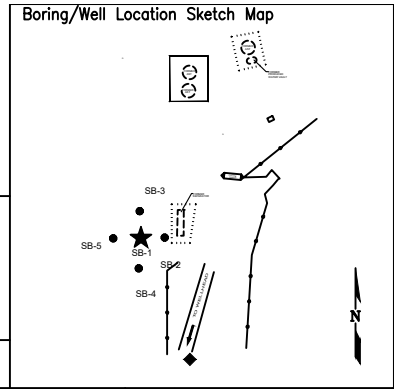
DEPTH (feet)	WELL CONSTRUCTION			LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)	
				GRAPHIC LOG	VISUAL DESCRIPTION					
5				SP	Sand: tan and beige, dry, fine				0.0	
										0.0
										0.0
										0.0
										0.0
										0.0
10										
15										
20										



Boring/Well No. SB-5		Total Depth 8'		Location Noble Energy, Inc. Howard A27-7 SWNE Sec 27, T6N, R64W, 6th PM Weld County, Colorado				 SB-3  MW-1 	
Project No./Name C022-035 Noble Howard A27-7				 SB-5 					
Drilling Contractor/Driller DrillPro/Terrence A, Glen and Hayward									
Geologist/Office Ethan Black/Fremont Environmental, Inc.				Approved By					
Drilling Equipment/Method Geoprobe				Size/Type of Bit 2.5" direct push		Sampling Method direct push		Start/Finish Date 06/14/2022	
Well Installed?		Casing Mtrl./Dia.		Screen:		Type		Mtrl.	
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		-		-		-		-	
Elevation of:		Ground Surface		Top of Well Casing		Top of Screen		Bottom of Screen	
(ft. above datum)								Ground Water Surface/Date Measured	

DEPTH (feet)	WELL CONSTRUCTION				LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
					GRAPHIC LOG	VISUAL DESCRIPTION				
5						Sand: tan and beige, dry, fine				0.0
										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
10						TD 8'				0.0
										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
15										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
20										0.0
										0.0
										0.0
										0.0

BORING/WELL CONSTRUCTION LOG



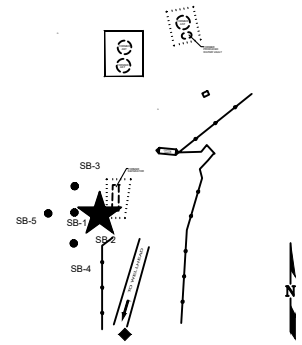
Page 1 of 1

Boring/Well No. SB-1		Total Depth 12'	Location Noble Energy, Inc. Howard A27-7 SWNE Sec 27, T6N, R64W, 6th PM Weld County, Colorado		
Project No./Name C022-035 Noble Howard A27-7			Approved By		
Drilling Contractor/Driller DrillPro/Terrence, Hayward					
Geologist/Office Ethan Black/Fremont Environmental, Inc.					
Drilling Equipment/Method Geoprobe		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 05/03/2022	
Well Installed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Casing Mtrl./Dia. .	Screen: Type . Mtrl. . Length 10' Dia. 2" Slot Size .		
Elevation of: (ft. above datum)		Ground Surface .	Top of Well Casing .	Top of Screen .	Bottom of Screen .
		Ground Water Surface/Date Measured .			

DEPTH (feet)	WELL CONSTRUCTION				LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
					GRAPHIC LOG	VISUAL DESCRIPTION				
					SP	Sand: tan, fine, dry				0.0
										0.0
										0.0
										0.0
5					CL	Clay: tan and dark gray, non-plastic, slightly moist, mineralized, some fine sand				0.0
										0.0
										0.0
										0.0
						- mottled				0.0
										0.0
10						- color change to dark brown				0.0
										0.0
										0.0
										0.0
15										0.0
										0.0
										0.0
										0.0
										0.0
20						TD 12' Hit Refusal at 12.0'				0.0

BORING/WELL CONSTRUCTION LOG

Boring/Well Location Sketch Map



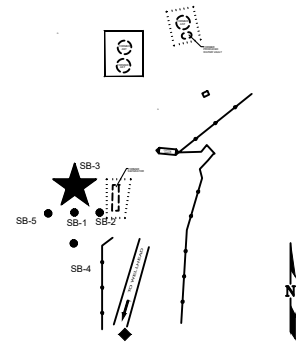
Page 1 of 1

Boring/Well No. SB-2		Total Depth 12'	Location Noble Energy, Inc. Howard A27-7 SWNE Sec 27, T6N, R64W, 6th PM Weld County, Colorado			
Project No./Name C022-035 Noble Howard A27-7			Approved By			
Drilling Contractor/Driller DrillPro/Terrence A, Glen and Hayward						
Geologist/Office Ethan Black/Fremont Environmental, Inc.			Start/Finish Date 5/27/2022			
Drilling Equipment/Method Geoprobe			Size/Type of Bit 2.5" direct push		Sampling Method direct push	
Well Installed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Casing Mtrl./Dia.	Screen: Type	Mtrl.	Length	Dia.
Elevation of: (ft. above datum)		Ground Surface	Top of Well Casing	Top of Screen	Bottom of Screen	Ground Water Surface/Date Measured

DEPTH (feet)	WELL CONSTRUCTION				LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
					GRAPHIC LOG	VISUAL DESCRIPTION				
					SP	Sand: tan and beige, dry, fine				0.0
						Clay: tan, orange and brown, slightly plastic to non-plastic, slightly moist, oxidized, mineralized, some fine sand				0.0
					CL					0.0
5										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
10						- oxidized silt and black silty clay and black clay with beige silt laminate				0.0
										0.0
										0.0
										0.0
										0.0
15										0.0
										0.0
										0.0
										0.0
										0.0
20						TD 12' Hit Refusal at 12.0'				0.0

BORING/WELL CONSTRUCTION LOG

Boring/Well Location Sketch Map



Page 1 of 1

Boring/Well No. SB-3		Total Depth 12'	Location Noble Energy, Inc. Howard A27-7 SWNE Sec 27, T6N, R64W, 6th PM Weld County, Colorado			
Project No./Name C022-035 Noble Howard A27-7			Approved By			
Drilling Contractor/Driller DrillPro/Terrence A, Glen and Hayward						
Geologist/Office Ethan Black/Fremont Environmental, Inc.						
Drilling Equipment/Method Geoprobe			Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 05/27/2022	
Well Installed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Casing Mtrl./Dia.	Screen: Type	Mtrl.	Length	Dia.
Elevation of: (ft. above datum)		Ground Surface	Top of Well Casing	Top of Screen	Bottom of Screen	Ground Water Surface/Date Measured

DEPTH (feet)	WELL CONSTRUCTION				LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
					GRAPHIC LOG	VISUAL DESCRIPTION				
					SP	Sand: tan and beige, dry, fine				0.0
										0.0
						Clay: tan, orange and brown, slightly plastic to non-plastic, slightly moist, oxidized, mineralized, some fine sand				0.0
										0.0
5					CL					0.1
										0.0
										0.0
										0.0
										0.0
										0.0
										0.0
10						- decreasing sand				0.0
										0.0
										0.0
										0.0
15										0.0
										0.0
										0.0
										0.0
										0.0
20						TD 12' Hit Refusal at 12.0'				0.0

APPENDIX B

LABORATORY DOCUMENTATION

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 17, 2022

Paul Henchan

Fremont Environmental

PO Box 1289

Wellington, CO 80549

RE: Noble - Howard A27-07 (Wellhead)

Work Order #2206045

Enclosed are the results of analyses for samples received by Summit Scientific on 06/02/22 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury
President



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1 5ft	2206045-01	Soil	05/27/22 00:00	06/02/22 16:00
SB-2 4ft	2206045-02	Soil	05/27/22 00:00	06/02/22 16:00
SB-3 4ft	2206045-03	Soil	05/27/22 00:00	06/02/22 16:00
SB-4 4ft	2206045-04	Soil	05/27/22 00:00	06/02/22 16:00
SB-5 4ft	2206045-05	Soil	05/27/22 00:00	06/02/22 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

S₂

2206045

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

Client: Fremont Env

Project Manager: Honehan

Page 1 of 1

Address:

E-Mail: ethanb, paulh, jeffg

City/State/Zip:

Bill To: Dan and Erica

Phone:

Project Name: Noble - Howard A 27-7 (wellhead)

Sampler Name: EB

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	NIETEX	TPH	TMRS	Metals	SAR/EC/pH	Boron	PAHS		
1	MW-1 5 FT	5/22/22		3			X			X				X	X	X	X	X	X		
2	SB-2 4 FT	I		I			I			I				I	I	I	I	I	I		
3	SB-3 4 FT	I		I			I			I				I	I	I	I	I	I		
4	SB-4 4 FT	I		I			I			I				I	I	I	I	I	I		
5	SB-5 4 FT	I		I			I			I				I	I	I	I	I	I		
6																					
7																					
8																					
9																					
10																					

Relinquished by: <u>Ethan Black</u>	Date/Time: <u>5/22/22</u>	Received by: <u>[Signature]</u>	Date/Time: <u>6/22/22 1600</u>	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input type="checkbox"/>	72 hours <input type="checkbox"/>
				24 hours <input type="checkbox"/>	Standard <input checked="" type="checkbox"/>
				48 hours <input type="checkbox"/>	
Temperature Upon Receipt: <u>5.0</u>	Corrected Temperature <u>5.0</u>	HNO ₃ lot #	Sample Integrity:		
IR gun correction: <u>0</u>	IR gun #: <u>1</u>		Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No		

S₂

Sample Receipt Checklist

S2 Work Order# 2206045

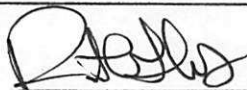
Client: Fremont Client Project ID: Noble-Howard A 27-7 (wellhead)

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

	-			
--	---	--	--	--

Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 5.0 Thermometer # 1

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

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


Custodian Printed Name

6222

Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

MW-1 5ft
2206045-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFF0081	06/03/22	06/03/22	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: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0456	114 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0362	90.4 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0365	91.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0083	06/03/22	06/03/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	13.1	104 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

MW-1 5ft
2206045-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/13/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0176	52.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0156	46.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.224	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

MW-1 5ft
2206045-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.71	0.209	mg/kg dry	1	BFF0392	06/14/22	06/16/22	EPA 6020B
Barium	15.2	0.417	"	"	"	"	"	"
Cadmium	ND	0.209	"	"	"	"	"	"
Copper	3.57	0.417	"	"	"	"	"	"
Lead	9.78	0.209	"	"	"	"	"	"
Nickel	6.50	0.417	"	"	"	"	"	"
Selenium	0.481	0.271	"	"	"	"	"	"
Silver	ND	0.0209	"	"	"	"	"	"
Zinc	30.6	0.417	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0318	06/12/22	06/12/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	525	0.0522	mg/L dry	1	BFF0296	06/10/22	06/11/22	EPA 6020B	
Magnesium	99.0	0.0522	"	"	"	"	"	"	
Sodium	156	0.0522	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.64	0.00100	units	1	BFF0316	06/12/22	06/12/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

MW-1 5ft
2206045-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.8		%	1	BFF0223	06/08/22	06/09/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.30	0.0100	mmhos/cm	1	BFF0298	06/10/22	06/10/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.19		pH Units	1	BFF0297	06/10/22	06/10/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

SB-2 4ft
2206045-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFF0081	06/03/22	06/03/22	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: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0454	114 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0369	92.3 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0378	94.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0083	06/03/22	06/03/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	13.7	110 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

SB-2 4ft
2206045-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/13/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0197	59.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0182	54.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0119	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

SB-2 4ft
2206045-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	8.22	0.213	mg/kg dry	1	BFF0392	06/14/22	06/16/22	EPA 6020B
Barium	447	0.426	"	"	"	"	"	"
Cadmium	0.253	0.213	"	"	"	"	"	"
Copper	8.53	0.426	"	"	"	"	"	"
Lead	7.37	0.213	"	"	"	"	"	"
Nickel	15.8	0.426	"	"	"	"	"	"
Selenium	0.783	0.277	"	"	"	"	"	"
Silver	0.0256	0.0213	"	"	"	"	"	"
Zinc	35.5	0.426	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0318	06/12/22	06/12/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1400	0.0533	mg/L dry	1	BFF0296	06/10/22	06/11/22	EPA 6020B	
Magnesium	91.3	0.0533	"	"	"	"	"	"	
Sodium	36.1	0.0533	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.252	0.00100	units	1	BFF0316	06/12/22	06/12/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

SB-2 4ft
2206045-02 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	93.9	%	1	BFF0223	06/08/22	06/09/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.481	0.0100	mmhos/cm	1	BFF0298	06/10/22	06/10/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.44		pH Units	1	BFF0297	06/10/22	06/10/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

SB-3 4ft
2206045-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFF0081	06/03/22	06/03/22	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: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0415	104 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0364	91.0 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0370	92.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0083	06/03/22	06/03/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	13.7	109 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

SB-3 4ft
2206045-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/13/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0193	57.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0184	55.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.752	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

SB-3 4ft
2206045-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	7.70	0.211	mg/kg dry	1	BFF0392	06/14/22	06/16/22	EPA 6020B
Barium	26.7	0.423	"	"	"	"	"	"
Cadmium	ND	0.211	"	"	"	"	"	"
Copper	8.29	0.423	"	"	"	"	"	"
Lead	7.59	0.211	"	"	"	"	"	"
Nickel	10.4	0.423	"	"	"	"	"	"
Selenium	0.688	0.275	"	"	"	"	"	"
Silver	ND	0.0211	"	"	"	"	"	"
Zinc	53.2	0.423	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0318	06/12/22	06/12/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	2050	0.0528	mg/L dry	1	BFF0296	06/10/22	06/11/22	EPA 6020B	
Magnesium	174	0.0528	"	"	"	"	"	"	
Sodium	142	0.0528	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.809	0.00100	units	1	BFF0316	06/12/22	06/12/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

SB-3 4ft
2206045-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.7		%	1	BFF0223	06/08/22	06/09/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.659	0.0100	mmhos/cm	1	BFF0298	06/10/22	06/10/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.35		pH Units	1	BFF0297	06/10/22	06/10/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

SB-4 4ft
2206045-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFF0081	06/03/22	06/03/22	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: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0464	116 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0370	92.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0368	92.1 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0083	06/03/22	06/03/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	13.7	110 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

SB-4 4ft
2206045-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/13/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0212	63.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0221	66.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0760	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

SB-4 4ft
2206045-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	5.24	0.209	mg/kg dry	1	BFF0392	06/14/22	06/16/22	EPA 6020B
Barium	64.0	0.418	"	"	"	"	"	"
Cadmium	ND	0.209	"	"	"	"	"	"
Copper	5.32	0.418	"	"	"	"	"	"
Lead	4.67	0.209	"	"	"	"	"	"
Nickel	7.62	0.418	"	"	"	"	"	"
Selenium	0.513	0.272	"	"	"	"	"	"
Silver	ND	0.0209	"	"	"	"	"	"
Zinc	25.3	0.418	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0318	06/12/22	06/12/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	2690	0.0522	mg/L dry	1	BFF0296	06/10/22	06/11/22	EPA 6020B	
Magnesium	121	0.0522	"	"	"	"	"	"	
Sodium	16.2	0.0522	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0830	0.00100	units	1	BFF0316	06/12/22	06/12/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henahan

Reported:
06/17/22 11:41

SB-4 4ft
2206045-04 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.7		%	1	BFF0223	06/08/22	06/09/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.324	0.0100	mmhos/cm	1	BFF0298	06/10/22	06/10/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.54		pH Units	1	BFF0297	06/10/22	06/10/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

SB-5 4ft
2206045-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFF0081	06/03/22	06/03/22	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: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0442	110 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0363	90.7 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0367	91.8 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0083	06/03/22	06/03/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	13.9	111 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

SB-5 4ft
2206045-05 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/13/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0206	61.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0193	57.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0874	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

SB-5 4ft
2206045-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	3.86	0.210	mg/kg dry	1	BFF0392	06/14/22	06/16/22	EPA 6020B
Barium	262	0.420	"	"	"	"	"	"
Cadmium	ND	0.210	"	"	"	"	"	"
Copper	4.26	0.420	"	"	"	"	"	"
Lead	4.34	0.210	"	"	"	"	"	"
Nickel	6.74	0.420	"	"	"	"	"	"
Selenium	0.521	0.273	"	"	"	"	"	"
Silver	ND	0.0210	"	"	"	"	"	"
Zinc	22.7	0.420	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0318	06/12/22	06/12/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	4730	0.0525	mg/L dry	1	BFF0296	06/10/22	06/12/22	EPA 6020B	
Magnesium	167	0.0525	"	"	"	"	"	"	
Sodium	98.5	0.0525	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.383	0.00100	units	1	BFF0316	06/12/22	06/12/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

SB-5 4ft
2206045-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	95.2		%	1	BFF0223	06/08/22	06/09/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.800	0.0100	mmhos/cm	1	BFF0298	06/10/22	06/10/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.37		pH Units	1	BFF0297	06/10/22	06/10/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFF0081 - EPA 5030 Soil MS

Blank (BFF0081-BLK1)

Prepared & Analyzed: 06/03/22

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	0.0439		"	0.0400		110	50-150			
Surrogate: Toluene-d8	0.0365		"	0.0400		91.3	50-150			
Surrogate: 4-Bromofluorobenzene	0.0371		"	0.0400		92.7	50-150			

LCS (BFF0081-BS1)

Prepared & Analyzed: 06/03/22

Benzene	0.141	0.0020	mg/kg	0.125		112	70-130			
Toluene	0.0950	0.0050	"	0.125		76.0	70-130			
Ethylbenzene	0.157	0.0050	"	0.125		125	70-130			
m,p-Xylene	0.278	0.010	"	0.250		111	70-130			
o-Xylene	0.134	0.0050	"	0.125		107	70-130			
1,2,4-Trimethylbenzene	0.154	0.0050	"	0.125		123	70-130			
1,3,5-Trimethylbenzene	0.155	0.0050	"	0.125		124	70-130			
Naphthalene	0.143	0.0038	"	0.125		114	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0400		110	50-150			
Surrogate: Toluene-d8	0.0376		"	0.0400		94.1	50-150			
Surrogate: 4-Bromofluorobenzene	0.0365		"	0.0400		91.2	50-150			

Matrix Spike (BFF0081-MS1)

Source: 2206012-01

Prepared & Analyzed: 06/03/22

Benzene	0.139	0.0020	mg/kg	0.125	ND	111	70-130			
Toluene	0.0944	0.0050	"	0.125	ND	75.5	70-130			
Ethylbenzene	0.152	0.0050	"	0.125	ND	122	70-130			
m,p-Xylene	0.270	0.010	"	0.250	ND	108	70-130			
o-Xylene	0.132	0.0050	"	0.125	ND	106	70-130			
1,2,4-Trimethylbenzene	0.154	0.0050	"	0.125	ND	123	70-130			
1,3,5-Trimethylbenzene	0.154	0.0050	"	0.125	ND	123	70-130			
Naphthalene	0.152	0.0038	"	0.125	ND	122	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0454		"	0.0400		113	50-150			
Surrogate: Toluene-d8	0.0374		"	0.0400		93.6	50-150			
Surrogate: 4-Bromofluorobenzene	0.0376		"	0.0400		94.0	50-150			

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFF0081 - EPA 5030 Soil MS

Matrix Spike Dup (BFF0081-MSD1)		Source: 2206012-01			Prepared & Analyzed: 06/03/22					
Benzene	0.137	0.0020	mg/kg	0.125	ND	110	70-130	1.39	30	
Toluene	0.0943	0.0050	"	0.125	ND	75.4	70-130	0.0954	30	
Ethylbenzene	0.156	0.0050	"	0.125	ND	124	70-130	2.16	30	
m,p-Xylene	0.278	0.010	"	0.250	ND	111	70-130	3.14	30	
o-Xylene	0.133	0.0050	"	0.125	ND	106	70-130	0.634	30	
1,2,4-Trimethylbenzene	0.158	0.0050	"	0.125	ND	126	70-130	2.39	30	
1,3,5-Trimethylbenzene	0.160	0.0050	"	0.125	ND	128	70-130	3.69	30	
Naphthalene	0.159	0.0038	"	0.125	ND	128	70-130	4.56	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0392		"	0.0400		97.9	50-150			
Surrogate: Toluene-d8	0.0375		"	0.0400		93.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0372		"	0.0400		93.0	50-150			

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFF0083 - EPA 3550A

Blank (BFF0083-BLK1)

Prepared & Analyzed: 06/03/22

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

LCS (BFF0083-BS1)

Prepared & Analyzed: 06/03/22

C10-C28 (DRO)	560	50	mg/kg	500	112	70-130
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Matrix Spike (BFF0083-MS1)

Source: 2206012-01

Prepared & Analyzed: 06/03/22

C10-C28 (DRO)	537	50	mg/kg	500	29.0	102	70-130
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Matrix Spike Dup (BFF0083-MSD1)

Source: 2206012-01

Prepared & Analyzed: 06/03/22

C10-C28 (DRO)	539	50	mg/kg	500	29.0	102	70-130	0.319	20
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Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

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 BFF0235 - EPA 5030 Soil MS

Blank (BFF0235-BLK1)

Prepared: 06/09/22 Analyzed: 06/12/22

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	0.0325		"	0.0333		97.5	40-150			
Surrogate: Fluoranthene-d10	0.0298		"	0.0333		89.5	40-150			

LCS (BFF0235-BS1)

Prepared: 06/09/22 Analyzed: 06/12/22

Acenaphthene	0.0306	0.00500	mg/kg	0.0333	91.9	31-137
Anthracene	0.0324	0.00500	"	0.0333	97.2	30-120
Benzo (a) anthracene	0.0281	0.00500	"	0.0333	84.2	30-120
Benzo (a) pyrene	0.0302	0.00500	"	0.0333	90.6	30-120
Benzo (b) fluoranthene	0.0310	0.00500	"	0.0333	93.1	30-120
Benzo (k) fluoranthene	0.0353	0.00500	"	0.0333	106	30-120
Chrysene	0.0307	0.00500	"	0.0333	92.1	30-120
Dibenz (a,h) anthracene	0.0272	0.00500	"	0.0333	81.5	30-120
Fluoranthene	0.0312	0.00500	"	0.0333	93.7	30-120
Fluorene	0.0297	0.00500	"	0.0333	89.1	30-120
Indeno (1,2,3-cd) pyrene	0.0170	0.00500	"	0.0333	51.1	30-120
Pyrene	0.0292	0.00500	"	0.0333	87.7	35-142
1-Methylnaphthalene	0.0232	0.00500	"	0.0333	69.6	35-142
2-Methylnaphthalene	0.0354	0.00500	"	0.0333	106	35-142
Surrogate: 2-Methylnaphthalene-d10	0.0310		"	0.0333	92.9	40-150
Surrogate: Fluoranthene-d10	0.0299		"	0.0333	89.6	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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFF0235 - EPA 5030 Soil MS

Matrix Spike (BFF0235-MS1)

Source: 2206044-01

Prepared: 06/09/22 Analyzed: 06/12/22

Acenaphthene	0.0178	0.00500	mg/kg	0.0333	ND	53.5	31-137		
Anthracene	0.0167	0.00500	"	0.0333	ND	50.2	30-120		
Benzo (a) anthracene	0.0149	0.00500	"	0.0333	ND	44.8	30-120		
Benzo (a) pyrene	0.0145	0.00500	"	0.0333	ND	43.5	30-120		
Benzo (b) fluoranthene	0.0150	0.00500	"	0.0333	ND	45.0	30-120		
Benzo (k) fluoranthene	0.0172	0.00500	"	0.0333	ND	51.6	30-120		
Chrysene	0.0160	0.00500	"	0.0333	ND	48.1	30-120		
Dibenz (a,h) anthracene	0.0165	0.00500	"	0.0333	ND	49.5	30-120		
Fluoranthene	0.0172	0.00500	"	0.0333	ND	51.6	30-120		
Fluorene	0.0187	0.00500	"	0.0333	ND	56.1	30-120		
Indeno (1,2,3-cd) pyrene	0.0148	0.00500	"	0.0333	ND	44.3	30-120		
Pyrene	0.0178	0.00500	"	0.0333	ND	53.6	35-142		
1-Methylnaphthalene	0.0182	0.00500	"	0.0333	ND	54.5	15-130		
2-Methylnaphthalene	0.0190	0.00500	"	0.0333	ND	57.0	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0182		"	0.0333		54.5	40-150		
Surrogate: Fluoranthene-d10	0.0177		"	0.0333		53.1	40-150		

Matrix Spike Dup (BFF0235-MSD1)

Source: 2206044-01

Prepared: 06/09/22 Analyzed: 06/12/22

Acenaphthene	0.0188	0.00500	mg/kg	0.0333	ND	56.5	31-137	5.33	30
Anthracene	0.0190	0.00500	"	0.0333	ND	56.9	30-120	12.5	30
Benzo (a) anthracene	0.0172	0.00500	"	0.0333	ND	51.6	30-120	14.2	30
Benzo (a) pyrene	0.0171	0.00500	"	0.0333	ND	51.2	30-120	16.3	30
Benzo (b) fluoranthene	0.0172	0.00500	"	0.0333	ND	51.6	30-120	13.7	30
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.6	30-120	11.1	30
Chrysene	0.0183	0.00500	"	0.0333	ND	54.8	30-120	13.0	30
Dibenz (a,h) anthracene	0.0144	0.00500	"	0.0333	ND	43.3	30-120	13.3	30
Fluoranthene	0.0187	0.00500	"	0.0333	ND	56.0	30-120	8.13	30
Fluorene	0.0186	0.00500	"	0.0333	ND	55.7	30-120	0.708	30
Indeno (1,2,3-cd) pyrene	0.0136	0.00500	"	0.0333	ND	40.9	30-120	8.05	30
Pyrene	0.0192	0.00500	"	0.0333	ND	57.6	35-142	7.32	30
1-Methylnaphthalene	0.0192	0.00500	"	0.0333	ND	57.6	15-130	5.68	50
2-Methylnaphthalene	0.0217	0.00500	"	0.0333	ND	65.1	15-130	13.1	50
Surrogate: 2-Methylnaphthalene-d10	0.0199		"	0.0333		59.7	40-150		
Surrogate: Fluoranthene-d10	0.0188		"	0.0333		56.5	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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

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

Summit Scientific

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

Batch BFF0222 - EPA 3050B

Blank (BFF0222-BLK1)

Prepared: 06/08/22 Analyzed: 06/13/22

Boron ND 0.0100 mg/L

LCS (BFF0222-BS1)

Prepared: 06/08/22 Analyzed: 06/13/22

Boron 5.85 0.0100 mg/L 5.00 117 80-120

Duplicate (BFF0222-DUP1)

Source: 2206044-01

Prepared: 06/08/22 Analyzed: 06/13/22

Boron 0.415 0.0100 mg/L 0.415 0.0875 20

Matrix Spike (BFF0222-MS1)

Source: 2206044-01

Prepared: 06/08/22 Analyzed: 06/13/22

Boron 6.04 0.0100 mg/L 5.00 0.415 112 75-125

Matrix Spike Dup (BFF0222-MSD1)

Source: 2206044-01

Prepared: 06/08/22 Analyzed: 06/13/22

Boron 6.09 0.0100 mg/L 5.00 0.415 114 75-125 0.928 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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFF0392 - EPA 3050B

Blank (BFF0392-BLK1)

Prepared: 06/14/22 Analyzed: 06/16/22

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 (BFF0392-BS1)

Prepared: 06/14/22 Analyzed: 06/16/22

Arsenic	43.8	0.200	mg/kg wet	40.0	109	80-120
Barium	40.2	0.400	"	40.0	100	80-120
Cadmium	1.97	0.200	"	2.00	98.4	80-120
Copper	43.5	0.400	"	40.0	109	80-120
Lead	18.7	0.200	"	20.0	93.7	80-120
Nickel	42.0	0.400	"	40.0	105	80-120
Selenium	3.77	0.260	"	4.00	94.2	80-120
Silver	1.94	0.0200	"	2.00	97.1	80-120
Zinc	44.4	0.400	"	40.0	111	80-120

Duplicate (BFF0392-DUP1)

Source: 2206017-01

Prepared: 06/14/22 Analyzed: 06/16/22

Arsenic	3.64	0.232	mg/kg dry	3.38	7.41	20	QM-02
Barium	239	0.464	"	64.2	115	20	
Cadmium	0.294	0.232	"	0.256	13.6	20	
Copper	13.3	0.464	"	12.5	6.59	20	
Lead	9.53	0.232	"	8.93	6.50	20	
Nickel	15.0	0.464	"	14.0	6.99	20	
Selenium	0.813	0.301	"	0.840	3.26	20	
Silver	0.0531	0.0232	"	0.0489	8.36	20	
Zinc	50.5	0.464	"	46.6	8.02	20	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFF0392 - EPA 3050B

Matrix Spike (BFF0392-MS1)

Source: 2206017-01

Prepared: 06/14/22 Analyzed: 06/16/22

Arsenic	46.2	0.232	mg/kg dry	46.4	3.38	92.4	75-125			
Barium	91.5	0.464	"	46.4	64.2	58.9	75-125			QM-02
Cadmium	2.27	0.232	"	2.32	0.256	87.0	75-125			
Copper	56.6	0.464	"	46.4	12.5	95.3	75-125			
Lead	27.4	0.232	"	23.2	8.93	79.7	75-125			
Nickel	57.5	0.464	"	46.4	14.0	93.7	75-125			
Selenium	3.84	0.301	"	4.64	0.840	64.6	75-125			QM-05
Silver	1.96	0.0232	"	2.32	0.0489	82.4	75-125			
Zinc	93.5	0.464	"	46.4	46.6	101	75-125			

Matrix Spike Dup (BFF0392-MSD1)

Source: 2206017-01

Prepared: 06/14/22 Analyzed: 06/16/22

Arsenic	46.4	0.232	mg/kg dry	46.4	3.38	92.7	75-125	0.353	25	
Barium	138	0.464	"	46.4	64.2	160	75-125	40.7	25	QM-02
Cadmium	2.28	0.232	"	2.32	0.256	87.4	75-125	0.352	25	
Copper	57.1	0.464	"	46.4	12.5	96.3	75-125	0.834	25	
Lead	26.4	0.232	"	23.2	8.93	75.2	75-125	3.90	25	
Nickel	58.2	0.464	"	46.4	14.0	95.3	75-125	1.26	25	
Selenium	4.11	0.301	"	4.64	0.840	70.5	75-125	6.88	25	QM-05
Silver	1.97	0.0232	"	2.32	0.0489	82.8	75-125	0.491	25	
Zinc	95.2	0.464	"	46.4	46.6	105	75-125	1.78	25	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/17/22 11:41

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BFF0318 - 3060A Mod

Blank (BFF0318-BLK1)

Prepared & Analyzed: 06/12/22

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BFF0318-BS1)

Prepared & Analyzed: 06/12/22

Chromium, Hexavalent 29.2 0.30 mg/kg wet 25.0 117 80-120

Duplicate (BFF0318-DUP1)

Source: 2206017-01

Prepared & Analyzed: 06/12/22

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BFF0318-MS1)

Source: 2206017-01

Prepared & Analyzed: 06/12/22

Chromium, Hexavalent 35.8 0.30 mg/kg dry 29.0 ND 123 75-125

Matrix Spike Dup (BFF0318-MSD1)

Source: 2206017-01

Prepared & Analyzed: 06/12/22

Chromium, Hexavalent 35.1 0.30 mg/kg dry 29.0 ND 121 75-125 1.96 20

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

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

Summit Scientific

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

Batch BFF0296 - General Preparation

Blank (BFF0296-BLK1)

Prepared: 06/10/22 Analyzed: 06/11/22

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

LCS (BFF0296-BS1)

Prepared: 06/10/22 Analyzed: 06/11/22

Calcium	579	0.0500	mg/L wet	500	116	70-130
Magnesium	504	0.0500	"	500	101	70-130
Sodium	481	0.0500	"	500	96.2	70-130

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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

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

Batch BFF0223 - General Preparation

Duplicate (BFF0223-DUP1)

Source: 2206044-01

Prepared: 06/08/22 Analyzed: 06/09/22

% Solids	80.0	%	80.0	0.00	20
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Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

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

Summit Scientific

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

Batch BFF0298 - General Preparation

Blank (BFF0298-BLK1)

Prepared & Analyzed: 06/10/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFF0298-BS1)

Prepared & Analyzed: 06/10/22

Specific Conductance (EC) 0.158 0.0100 mmhos/cm 0.150 105 95-105

Duplicate (BFF0298-DUP1)

Source: 2206045-01

Prepared & Analyzed: 06/10/22

Specific Conductance (EC) 1.29 0.0100 mmhos/cm 1.30 0.848 20

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

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

Summit Scientific

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

Batch BFF0297 - General Preparation

LCS (BFF0297-BS1)

Prepared & Analyzed: 06/10/22

pH	9.01	pH Units	9.18	98.1	95-105
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Duplicate (BFF0297-DUP1)

Source: 2206045-01

Prepared & Analyzed: 06/10/22

pH	8.22	pH Units	8.19	0.366	20
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Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Wellhead)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/17/22 11:41

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.
QM-02	The RPD and/or percent recovery for this QC sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 16, 2022

Paul Henchan
Fremont Environmental
PO Box 1289
Wellington, CO 80549

RE: Noble - Howard A27-07 (Sep)

Work Order #2206044

Enclosed are the results of analyses for samples received by Summit Scientific on 06/02/22 16:00. 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', with a stylized, cursive script.

Paul Shrewsbury
President



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-1 5ft	2206044-01	Soil	05/27/22 00:00	06/02/22 16:00
SB-2 5ft	2206044-02	Soil	05/27/22 00:00	06/02/22 16:00
SB-3 5ft	2206044-03	Soil	05/27/22 00:00	06/02/22 16:00
SB-4 5ft	2206044-04	Soil	05/27/22 00:00	06/02/22 16:00
SB-5 5ft	2206044-05	Soil	05/27/22 00:00	06/02/22 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

S₂

2206044

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Client: Fremont

Project Manager: Honehan

Page 1 of 1

Address:

E-Mail: ethanh, paulh, jeffg

City/State/Zip:

Bill To: Noble - Erica and Dan

Phone:

Project Name: Noble - Howard A 27-7 (Sep)

Sampler Name: EB

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	NITEX	TPH	TMBS	Metals	SAR/EC/pH	Boron	PAHS		
1	SB-1 SET	5/27/22		3			X			X				X	X	X	X	X	X	X	
2	SB-2 SET	I		I			I			I				I	I	I	I	I	I	I	
3	SB-3 SET	I		I			I			I				I	I	I	I	I	I	I	
4	SB-4 SET	I		I			I			I				I	I	I	I	I	I	I	
5	SB-5 SET	I		I			I			I				I	I	I	I	I	I	I	
6																					
7																					
8																					
9																					
10																					

Relinquished by: <u>ethanh</u>	Date/Time: <u>5/27/22</u>	Received by: <u>[Signature]</u>	Date/Time: <u>6/2/22 1600</u>	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input type="checkbox"/>	
				24 hours <input type="checkbox"/>	
				48 hours <input type="checkbox"/>	72 hours <input type="checkbox"/>
Temperature Upon Receipt: <u>5.0</u>	Corrected Temperature <u>5.0</u>	HNO ₃ lot #	Sample Integrity:	Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	
IR gun correction: <u>0</u>	IR gun #: <u>1</u>				

S2 Work Order# 2206044

Client: Fremont Client Project ID: Noble-Howard A 27-7 (sep)

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

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

Temp ($^{\circ}\text{C}$)	5.0
-----------------------------	-----

Thermometer #	1
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	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature $< 6^{\circ}\text{C}$ ⁽¹⁾ ? 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 ⁽¹⁾ ?	—			
Was adequate sample volume provided ⁽¹⁾ ?	—			
If custody seals are present, are they intact ⁽¹⁾ ?	—			
Are samples due within 48 hours present?		—		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe^{2+}), Hexavalent Chromium (Cr^{6+} , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			—	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	—			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	—			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	—			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	—			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			—	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the comments column – HCl, H_2SO_4 , NaOH, HNO_3 , etc.			—	
If samples are acid preserved for metals, is the $\text{pH} \leq 2$ ⁽¹⁾ ? Record the pH in Comments.			—	
If dissolved metals are requested, were samples field filtered?			—	
<u>Additional Comments (if any):</u>				

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

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

[Handwritten signature]

Custodian Printed Name

6222

Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/16/22 14:56

SB-1 5ft
2206044-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFF0082	06/03/22	06/04/22	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: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4	0.0364	90.9 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0369	92.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0367	91.7 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0084	06/03/22	06/04/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl	14.2	114 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-1 5ft
2206044-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/12/22	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: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0245	73.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0234	70.1 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.415	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-1 5ft
2206044-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	0.904	0.250	mg/kg dry	1	BFF0391	06/14/22	06/16/22	EPA 6020B
Barium	10.2	0.500	"	"	"	"	"	"
Cadmium	ND	0.250	"	"	"	"	"	"
Copper	13.8	0.500	"	"	"	"	"	"
Lead	6.05	0.250	"	"	"	"	"	"
Nickel	1.68	0.500	"	"	"	"	"	"
Selenium	0.913	0.325	"	"	"	"	"	"
Silver	0.0738	0.0250	"	"	"	"	"	"
Zinc	12.2	0.500	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0312	06/11/22	06/11/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	4080	0.0625	mg/L dry	1	BFF0272	06/09/22	06/14/22	EPA 6020B	
Magnesium	746	0.0625	"	"	"	"	"	"	
Sodium	722	0.0625	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.73	0.00100	units	1	BFF0380	06/14/22	06/14/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-1 5ft
2206044-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	80.0	%	1	BFF0223	06/08/22	06/09/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.74	0.0100	mmhos/cm	1	BFF0274	06/09/22	06/13/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.81		pH Units	1	BFF0273	06/09/22	06/13/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/16/22 14:56

SB-2 5ft
2206044-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFF0082	06/03/22	06/04/22	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: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0366	91.5 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0364	91.0 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0364	91.0 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0084	06/03/22	06/04/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	15.1	121 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/16/22 14:56

SB-2 5ft
2206044-02 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/13/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0182	54.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0164	49.3 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	1.34	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-2 5ft
2206044-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	12.5	0.254	mg/kg dry	1	BFF0391	06/14/22	06/16/22	EPA 6020B
Barium	25.5	0.508	"	"	"	"	"	"
Cadmium	ND	0.254	"	"	"	"	"	"
Copper	17.8	0.508	"	"	"	"	"	"
Lead	34.8	0.254	"	"	"	"	"	"
Nickel	11.7	0.508	"	"	"	"	"	"
Selenium	2.50	0.330	"	"	"	"	"	"
Silver	0.0796	0.0254	"	"	"	"	"	"
Zinc	99.4	0.508	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0312	06/11/22	06/11/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	193	0.0635	mg/L dry	1	BFF0272	06/09/22	06/14/22	EPA 6020B	
Magnesium	124	0.0635	"	"	"	"	"	"	
Sodium	467	0.0635	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	6.45	0.00100	units	1	BFF0380	06/14/22	06/14/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/16/22 14:56

SB-2 5ft
2206044-02 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	78.7	%	1	BFF0223	06/08/22	06/09/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.67	0.0100	mmhos/cm	1	BFF0274	06/09/22	06/13/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.21		pH Units	1	BFF0273	06/09/22	06/13/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/16/22 14:56

SB-3 5ft
2206044-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFF0082	06/03/22	06/04/22	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: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0352	88.1 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0366	91.6 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0365	91.4 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0084	06/03/22	06/04/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	14.2	114 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-3 5ft
2206044-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/13/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0228	68.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0202	60.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0287	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-3 5ft
2206044-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	9.54	0.234	mg/kg dry	1	BFF0391	06/14/22	06/16/22	EPA 6020B
Barium	13.5	0.469	"	"	"	"	"	"
Cadmium	0.330	0.234	"	"	"	"	"	"
Copper	16.9	0.469	"	"	"	"	"	"
Lead	11.4	0.234	"	"	"	"	"	"
Nickel	20.5	0.469	"	"	"	"	"	"
Selenium	1.43	0.305	"	"	"	"	"	"
Silver	0.0433	0.0234	"	"	"	"	"	"
Zinc	104	0.469	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0312	06/11/22	06/11/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1980	0.0586	mg/L dry	1	BFF0272	06/09/22	06/14/22	EPA 6020B	
Magnesium	379	0.0586	"	"	"	"	"	"	
Sodium	432	0.0586	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.33	0.00100	units	1	BFF0380	06/14/22	06/14/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-3 5ft
2206044-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	85.3	%	1	BFF0223	06/08/22	06/09/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.66	0.0100	mmhos/cm	1	BFF0274	06/09/22	06/13/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.62		pH Units	1	BFF0273	06/09/22	06/13/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/16/22 14:56

SB-4 5ft
2206044-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFF0082	06/03/22	06/04/22	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: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0356	88.9 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0365	91.2 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0367	91.6 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0084	06/03/22	06/04/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	14.9	119 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-4 5ft
2206044-04 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/13/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0208	62.5 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0193	57.8 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0213	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-4 5ft
2206044-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	9.64	0.235	mg/kg dry	1	BFF0391	06/14/22	06/16/22	EPA 6020B	
Barium	14.0	0.470	"	"	"	"	"	"	
Cadmium	0.587	0.235	"	"	"	"	"	"	
Copper	20.9	0.470	"	"	"	"	"	"	
Lead	10.6	0.235	"	"	"	"	"	"	
Nickel	34.9	0.470	"	"	"	"	"	"	
Selenium	2.14	0.305	"	"	"	"	"	"	
Silver	0.0527	0.0235	"	"	"	"	"	"	
Zinc	138	0.470	"	"	"	"	"	"	

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0312	06/11/22	06/11/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	6190	0.0587	mg/L dry	1	BFF0272	06/09/22	06/14/22	EPA 6020B	
Magnesium	726	0.0587	"	"	"	"	"	"	
Sodium	511	0.0587	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.64	0.00100	units	1	BFF0380	06/14/22	06/14/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

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

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-4 5ft
2206044-04 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	85.2	%	1	BFF0223	06/08/22	06/09/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.49	0.0100	mmhos/cm	1	BFF0274	06/09/22	06/13/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.36		pH Units	1	BFF0273	06/09/22	06/13/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/16/22 14:56

SB-5 5ft
2206044-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFF0082	06/03/22	06/04/22	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: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	0.0361	90.2 %	50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0370	92.5 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0362	90.5 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFF0084	06/03/22	06/04/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl	16.6	133 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-5 5ft
2206044-05 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFF0235	06/09/22	06/13/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0227	68.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0217	65.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.733	0.0100	mg/L	1	BFF0222	06/08/22	06/13/22	EPA 6020B	

Total Metals by EPA 6020B

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-5 5ft
2206044-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Arsenic	8.10	0.229	mg/kg dry	1	BFF0391	06/14/22	06/16/22	EPA 6020B
Barium	18.6	0.458	"	"	"	"	"	"
Cadmium	0.251	0.229	"	"	"	"	"	"
Copper	13.4	0.458	"	"	"	"	"	"
Lead	11.7	0.229	"	"	"	"	"	"
Nickel	19.2	0.458	"	"	"	"	"	"
Selenium	0.925	0.298	"	"	"	"	"	"
Silver	0.0410	0.0229	"	"	"	"	"	"
Zinc	71.7	0.458	"	"	"	"	"	"

Hexavalent Chromium by EPA Method 7196

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.30	mg/kg dry	1	BFF0312	06/11/22	06/11/22	EPA 7196A	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	7670	0.0573	mg/L dry	1	BFF0272	06/09/22	06/14/22	EPA 6020B	
Magnesium	808	0.0573	"	"	"	"	"	"	
Sodium	555	0.0573	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.61	0.00100	units	1	BFF0380	06/14/22	06/14/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

SB-5 5ft
2206044-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

% Solids	87.3	%	1	BFF0223	06/08/22	06/09/22	Calculation
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Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.54	0.0100	mmhos/cm	1	BFF0274	06/09/22	06/13/22	EPA 120.1	

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

Date Sampled: **05/27/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.73		pH Units	1	BFF0273	06/09/22	06/13/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFF0082 - EPA 5030 Soil MS

Blank (BFF0082-BLK1)

Prepared: 06/03/22 Analyzed: 06/04/22

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	0.0363		"	0.0400		90.8	50-150			
Surrogate: Toluene-d8	0.0363		"	0.0400		90.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0364		"	0.0400		91.0	50-150			

LCS (BFF0082-BS1)

Prepared: 06/03/22 Analyzed: 06/04/22

Benzene	0.134	0.0020	mg/kg	0.125		107	70-130			
Toluene	0.0909	0.0050	"	0.125		72.7	70-130			
Ethylbenzene	0.149	0.0050	"	0.125		119	70-130			
m,p-Xylene	0.263	0.010	"	0.250		105	70-130			
o-Xylene	0.129	0.0050	"	0.125		103	70-130			
1,2,4-Trimethylbenzene	0.144	0.0050	"	0.125		116	70-130			
1,3,5-Trimethylbenzene	0.150	0.0050	"	0.125		120	70-130			
Naphthalene	0.134	0.0038	"	0.125		107	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0349		"	0.0400		87.2	50-150			
Surrogate: Toluene-d8	0.0374		"	0.0400		93.6	50-150			
Surrogate: 4-Bromofluorobenzene	0.0368		"	0.0400		92.0	50-150			

Matrix Spike (BFF0082-MS1)

Source: 2206035-01

Prepared: 06/03/22 Analyzed: 06/04/22

Benzene	0.133	0.0020	mg/kg	0.125	ND	107	70-130			
Toluene	0.0904	0.0050	"	0.125	ND	72.3	70-130			
Ethylbenzene	0.152	0.0050	"	0.125	ND	121	70-130			
m,p-Xylene	0.269	0.010	"	0.250	ND	108	70-130			
o-Xylene	0.132	0.0050	"	0.125	ND	106	70-130			
1,2,4-Trimethylbenzene	0.151	0.0050	"	0.125	ND	121	70-130			
1,3,5-Trimethylbenzene	0.155	0.0050	"	0.125	ND	124	70-130			
Naphthalene	0.148	0.0038	"	0.125	ND	118	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0352		"	0.0400		88.0	50-150			
Surrogate: Toluene-d8	0.0371		"	0.0400		92.8	50-150			
Surrogate: 4-Bromofluorobenzene	0.0365		"	0.0400		91.3	50-150			

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFF0082 - EPA 5030 Soil MS

Matrix Spike Dup (BFF0082-MSD1)

Source: 2206035-01

Prepared: 06/03/22 Analyzed: 06/04/22

Benzene	0.136	0.0020	mg/kg	0.125	ND	109	70-130	2.25	30	
Toluene	0.0938	0.0050	"	0.125	ND	75.1	70-130	3.78	30	
Ethylbenzene	0.159	0.0050	"	0.125	ND	127	70-130	4.75	30	
m,p-Xylene	0.281	0.010	"	0.250	ND	112	70-130	4.36	30	
o-Xylene	0.136	0.0050	"	0.125	ND	109	70-130	3.13	30	
1,2,4-Trimethylbenzene	0.155	0.0050	"	0.125	ND	124	70-130	2.42	30	
1,3,5-Trimethylbenzene	0.158	0.0050	"	0.125	ND	127	70-130	1.93	30	
Naphthalene	0.154	0.0038	"	0.125	ND	124	70-130	4.31	30	
Surrogate: 1,2-Dichloroethane-d4	0.0356		"	0.0400		89.0	50-150			
Surrogate: Toluene-d8	0.0374		"	0.0400		93.4	50-150			
Surrogate: 4-Bromofluorobenzene	0.0364		"	0.0400		91.0	50-150			

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFF0084 - EPA 3550A

Blank (BFF0084-BLK1)

Prepared & Analyzed: 06/03/22

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

LCS (BFF0084-BS1)

Prepared & Analyzed: 06/03/22

C10-C28 (DRO)	509	50	mg/kg	500	102	70-130
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Matrix Spike (BFF0084-MS1)

Source: 2206035-01

Prepared & Analyzed: 06/03/22

C10-C28 (DRO)	507	50	mg/kg	500	7.68	99.8	70-130
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Matrix Spike Dup (BFF0084-MSD1)

Source: 2206035-01

Prepared & Analyzed: 06/03/22

C10-C28 (DRO)	532	50	mg/kg	500	7.68	105	70-130	4.84	20
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Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFF0235 - EPA 5030 Soil MS

Blank (BFF0235-BLK1)

Prepared: 06/09/22 Analyzed: 06/12/22

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	0.0325		"	0.0333		97.5	40-150			
Surrogate: Fluoranthene-d10	0.0298		"	0.0333		89.5	40-150			

LCS (BFF0235-BS1)

Prepared: 06/09/22 Analyzed: 06/12/22

Acenaphthene	0.0306	0.00500	mg/kg	0.0333		91.9	31-137			
Anthracene	0.0324	0.00500	"	0.0333		97.2	30-120			
Benzo (a) anthracene	0.0281	0.00500	"	0.0333		84.2	30-120			
Benzo (a) pyrene	0.0302	0.00500	"	0.0333		90.6	30-120			
Benzo (b) fluoranthene	0.0310	0.00500	"	0.0333		93.1	30-120			
Benzo (k) fluoranthene	0.0353	0.00500	"	0.0333		106	30-120			
Chrysene	0.0307	0.00500	"	0.0333		92.1	30-120			
Dibenz (a,h) anthracene	0.0272	0.00500	"	0.0333		81.5	30-120			
Fluoranthene	0.0312	0.00500	"	0.0333		93.7	30-120			
Fluorene	0.0297	0.00500	"	0.0333		89.1	30-120			
Indeno (1,2,3-cd) pyrene	0.0170	0.00500	"	0.0333		51.1	30-120			
Pyrene	0.0292	0.00500	"	0.0333		87.7	35-142			
1-Methylnaphthalene	0.0232	0.00500	"	0.0333		69.6	35-142			
2-Methylnaphthalene	0.0354	0.00500	"	0.0333		106	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0310		"	0.0333		92.9	40-150			
Surrogate: Fluoranthene-d10	0.0299		"	0.0333		89.6	40-150			

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BFF0235 - EPA 5030 Soil MS

Matrix Spike (BFF0235-MS1)

Source: 2206044-01

Prepared: 06/09/22 Analyzed: 06/12/22

Acenaphthene	0.0178	0.00500	mg/kg	0.0333	ND	53.5	31-137		
Anthracene	0.0167	0.00500	"	0.0333	ND	50.2	30-120		
Benzo (a) anthracene	0.0149	0.00500	"	0.0333	ND	44.8	30-120		
Benzo (a) pyrene	0.0145	0.00500	"	0.0333	ND	43.5	30-120		
Benzo (b) fluoranthene	0.0150	0.00500	"	0.0333	ND	45.0	30-120		
Benzo (k) fluoranthene	0.0172	0.00500	"	0.0333	ND	51.6	30-120		
Chrysene	0.0160	0.00500	"	0.0333	ND	48.1	30-120		
Dibenz (a,h) anthracene	0.0165	0.00500	"	0.0333	ND	49.5	30-120		
Fluoranthene	0.0172	0.00500	"	0.0333	ND	51.6	30-120		
Fluorene	0.0187	0.00500	"	0.0333	ND	56.1	30-120		
Indeno (1,2,3-cd) pyrene	0.0148	0.00500	"	0.0333	ND	44.3	30-120		
Pyrene	0.0178	0.00500	"	0.0333	ND	53.6	35-142		
1-Methylnaphthalene	0.0182	0.00500	"	0.0333	ND	54.5	15-130		
2-Methylnaphthalene	0.0190	0.00500	"	0.0333	ND	57.0	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0182		"	0.0333		54.5	40-150		
Surrogate: Fluoranthene-d10	0.0177		"	0.0333		53.1	40-150		

Matrix Spike Dup (BFF0235-MSD1)

Source: 2206044-01

Prepared: 06/09/22 Analyzed: 06/12/22

Acenaphthene	0.0188	0.00500	mg/kg	0.0333	ND	56.5	31-137	5.33	30
Anthracene	0.0190	0.00500	"	0.0333	ND	56.9	30-120	12.5	30
Benzo (a) anthracene	0.0172	0.00500	"	0.0333	ND	51.6	30-120	14.2	30
Benzo (a) pyrene	0.0171	0.00500	"	0.0333	ND	51.2	30-120	16.3	30
Benzo (b) fluoranthene	0.0172	0.00500	"	0.0333	ND	51.6	30-120	13.7	30
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.6	30-120	11.1	30
Chrysene	0.0183	0.00500	"	0.0333	ND	54.8	30-120	13.0	30
Dibenz (a,h) anthracene	0.0144	0.00500	"	0.0333	ND	43.3	30-120	13.3	30
Fluoranthene	0.0187	0.00500	"	0.0333	ND	56.0	30-120	8.13	30
Fluorene	0.0186	0.00500	"	0.0333	ND	55.7	30-120	0.708	30
Indeno (1,2,3-cd) pyrene	0.0136	0.00500	"	0.0333	ND	40.9	30-120	8.05	30
Pyrene	0.0192	0.00500	"	0.0333	ND	57.6	35-142	7.32	30
1-Methylnaphthalene	0.0192	0.00500	"	0.0333	ND	57.6	15-130	5.68	50
2-Methylnaphthalene	0.0217	0.00500	"	0.0333	ND	65.1	15-130	13.1	50
Surrogate: 2-Methylnaphthalene-d10	0.0199		"	0.0333		59.7	40-150		
Surrogate: Fluoranthene-d10	0.0188		"	0.0333		56.5	40-150		

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

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

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

Batch BFF0222 - EPA 3050B

Blank (BFF0222-BLK1)

Prepared: 06/08/22 Analyzed: 06/13/22

Boron ND 0.0100 mg/L

LCS (BFF0222-BS1)

Prepared: 06/08/22 Analyzed: 06/13/22

Boron 5.85 0.0100 mg/L 5.00 117 80-120

Duplicate (BFF0222-DUP1)

Source: 2206044-01

Prepared: 06/08/22 Analyzed: 06/13/22

Boron 0.415 0.0100 mg/L 0.415 0.0875 20

Matrix Spike (BFF0222-MS1)

Source: 2206044-01

Prepared: 06/08/22 Analyzed: 06/13/22

Boron 6.04 0.0100 mg/L 5.00 0.415 112 75-125

Matrix Spike Dup (BFF0222-MSD1)

Source: 2206044-01

Prepared: 06/08/22 Analyzed: 06/13/22

Boron 6.09 0.0100 mg/L 5.00 0.415 114 75-125 0.928 25

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

Total Metals by EPA 6020B - Quality Control

Summit Scientific

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

Batch BFF0391 - EPA 3050B

Blank (BFF0391-BLK1)

Prepared: 06/14/22 Analyzed: 06/15/22

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 (BFF0391-BS1)

Prepared: 06/14/22 Analyzed: 06/15/22

Arsenic	47.3	0.200	mg/kg wet	40.0	118	80-120
Barium	47.9	0.400	"	40.0	120	80-120
Cadmium	2.33	0.200	"	2.00	116	80-120
Copper	48.0	0.400	"	40.0	120	80-120
Lead	22.7	0.200	"	20.0	113	80-120
Nickel	46.3	0.400	"	40.0	116	80-120
Selenium	4.60	0.260	"	4.00	115	80-120
Silver	2.27	0.0200	"	2.00	113	80-120
Zinc	45.3	0.400	"	40.0	113	80-120

Duplicate (BFF0391-DUP1)

Source: 2205470-01

Prepared: 06/14/22 Analyzed: 06/15/22

Arsenic	3.61	0.213	mg/kg dry	3.41	5.70	20
Barium	104	0.426	"	90.1	14.0	20
Cadmium	0.208	0.213	"	0.192	8.13	20
Copper	13.8	0.426	"	12.7	8.81	20
Lead	11.2	0.213	"	10.2	9.08	20
Nickel	15.5	0.426	"	13.1	17.3	20
Selenium	0.899	0.277	"	0.901	0.284	20
Silver	0.0570	0.0213	"	0.0498	13.5	20
Zinc	50.5	0.426	"	43.8	14.3	20

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

Total Metals by EPA 6020B - Quality Control
Summit Scientific

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

Batch BFF0391 - EPA 3050B

Matrix Spike (BFF0391-MS1)

Source: 2205470-01

Prepared: 06/14/22 Analyzed: 06/15/22

Arsenic	49.0	0.213	mg/kg dry	42.6	3.41	107	75-125			
Barium	149	0.426	"	42.6	90.1	137	75-125			QM-05
Cadmium	2.45	0.213	"	2.13	0.192	106	75-125			
Copper	59.9	0.426	"	42.6	12.7	111	75-125			
Lead	30.2	0.213	"	21.3	10.2	93.8	75-125			
Nickel	61.2	0.426	"	42.6	13.1	113	75-125			
Selenium	4.38	0.277	"	4.26	0.901	81.7	75-125			
Silver	2.16	0.0213	"	2.13	0.0498	99.3	75-125			
Zinc	99.7	0.426	"	42.6	43.8	131	75-125			QM-05

Matrix Spike Dup (BFF0391-MSD1)

Source: 2205470-01

Prepared: 06/14/22 Analyzed: 06/15/22

Arsenic	48.3	0.213	mg/kg dry	42.6	3.41	105	75-125	1.46	25	
Barium	145	0.426	"	42.6	90.1	129	75-125	2.41	25	QM-05
Cadmium	2.36	0.213	"	2.13	0.192	102	75-125	3.72	25	
Copper	59.6	0.426	"	42.6	12.7	110	75-125	0.469	25	
Lead	29.0	0.213	"	21.3	10.2	88.2	75-125	4.01	25	
Nickel	60.0	0.426	"	42.6	13.1	110	75-125	1.97	25	
Selenium	4.31	0.277	"	4.26	0.901	80.0	75-125	1.68	25	
Silver	2.09	0.0213	"	2.13	0.0498	96.0	75-125	3.25	25	
Zinc	98.4	0.426	"	42.6	43.8	128	75-125	1.34	25	QM-05

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henehan

Reported:
06/16/22 14:56

Hexavalent Chromium by EPA Method 7196 - Quality Control
Summit Scientific

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

Batch BFF0312 - 3060A Mod

Blank (BFF0312-BLK1)

Prepared & Analyzed: 06/11/22

Chromium, Hexavalent ND 0.30 mg/kg wet

LCS (BFF0312-BS1)

Prepared & Analyzed: 06/11/22

Chromium, Hexavalent 27.2 0.30 mg/kg wet 25.0 109 80-120

Duplicate (BFF0312-DUP1)

Source: 2206044-01

Prepared & Analyzed: 06/11/22

Chromium, Hexavalent ND 0.30 mg/kg dry ND 20

Matrix Spike (BFF0312-MS1)

Source: 2206044-01

Prepared & Analyzed: 06/11/22

Chromium, Hexavalent 38.6 0.30 mg/kg dry 31.3 ND 123 75-125

Matrix Spike Dup (BFF0312-MSD1)

Source: 2206044-01

Prepared & Analyzed: 06/11/22

Chromium, Hexavalent 36.1 0.30 mg/kg dry 31.3 ND 116 75-125 6.53 20

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

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

Summit Scientific

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

Batch BFF0272 - General Preparation

Blank (BFF0272-BLK1)

Prepared: 06/09/22 Analyzed: 06/14/22

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

LCS (BFF0272-BS1)

Prepared: 06/09/22 Analyzed: 06/14/22

Calcium	630	0.0500	mg/L wet	500	126	70-130
Magnesium	586	0.0500	"	500	117	70-130
Sodium	533	0.0500	"	500	107	70-130

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

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

Batch BFF0223 - General Preparation

Duplicate (BFF0223-DUP1)

Source: 2206044-01

Prepared: 06/08/22 Analyzed: 06/09/22

% Solids	80.0	%	80.0	0.00	20
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Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

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

Summit Scientific

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

Batch BFF0274 - General Preparation

Blank (BFF0274-BLK1)

Prepared: 06/09/22 Analyzed: 06/13/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFF0274-BS1)

Prepared: 06/09/22 Analyzed: 06/13/22

Specific Conductance (EC) 0.154 0.0100 mmhos/cm 0.150 103 95-105

Duplicate (BFF0274-DUP1)

Source: 2205119-01

Prepared: 06/09/22 Analyzed: 06/13/22

Specific Conductance (EC) 0.490 0.0100 mmhos/cm 0.515 4.99 20

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

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

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

Batch BFF0273 - General Preparation

LCS (BFF0273-BS1)

Prepared: 06/09/22 Analyzed: 06/13/22

pH	9.28	pH Units	9.18	101	95-105
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Duplicate (BFF0273-DUP1)

Source: 2205119-01

Prepared: 06/09/22 Analyzed: 06/13/22

pH	8.56	pH Units	8.57	0.117	20
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Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Howard A27-07 (Sep)

Project Number: [none]
Project Manager: Paul Henchan

Reported:
06/16/22 14:56

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