

# **FREMONT ENVIRONMENTAL INC.**

June 1, 2022

Mr. Daniel Peterson  
Noble Energy Inc.  
2115 117<sup>th</sup> Avenue  
Greeley, CO 80634

Subject:       **Facility Closure Data Submittal**  
Howard A27-7  
API # 05-123-22303  
SWNE Sec. 27, T6N, R64W  
Weld County, Colorado  
Fremont Project No. C022-035  
Facility # 273046, Remediation #20372

Dear Mr. Peterson:

As you requested, Fremont Environmental Inc. (Fremont) personnel conducted Facility Closure activities for the Noble Energy Inc. (Noble) Howard A27-7 flowline. Impacted soil was encountered adjacent to the former wellhead and 45 feet southwest of the separator tie-in during abandonment and removal activities. These soil impacts remain in place as documented in the attached Closure Report. Groundwater was not encountered during the facility abandonment activities.

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. Henchan, P.E.  
Senior Consultant

Attachments:

Facility Closure Checklist  
Tables  
Figures  
Photos  
Laboratory Reports

**1759 REDWING LANE, BROOMFIELD, CO 80020  
(303) 956-8714 (DIRECT)**

# Flowline Closure Checklist

## COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional Attachments:		Tank Battery Closure		Wellhead Closure		Pit Closure		Partially Buried Vault Closure
Site Name & COGCC Facility Number: Howard A27-7 Facility: 273046		Date: 04/14/2022					Remediation Project #: 20372	
Associated Wells: Howard A27-7 API: 05-123-22303		Age of Site: 2004					Number of Photos Attached: 6 Photos	
Starting point: (GPS coordinates and descriptions) 40.458861,-104.533411								
End point: (GPS coordinates and descriptions) 40.463956,-104.531466								
USCS Soil Type: Sandy Clay					Estimated Depth to Groundwater: N/A			
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)								
No impacts noted during flowline removal								
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)								
None observed								
<b>Flowlines</b>								
Flowline type	2" Steel							
Depth	Roughly 2-5ft							
Age	2004							
Length	1930ft							
Construction Material	Non ACM / 2" Steel							
Were flowlines pulled?	Yes, except 45'							
Visual Integrity of lines	No Damage							
Visual impacts if trenched	No Impacts							
PID Readings if trenched	High @ 0.7ppm							
Sample taken? Location/Sample ID#	7FL06@5.0' 7FL05@3.0' 7FL01@2.0'							
Photo Number(s)	Photo 1A-1F							
Other observations regarding on location flowlines: 45ft of flowline was abandoned-in-place from (7FL05@3.0') 40.463914,-104.531553 to (7FL06@5.0') 40.463956,-104.531466. Additionally a 90 degree joint may have been located 10ft north of the 7FL05@3.0' sample location. (This sample was submitted for lab analysis)								
<b>Summary</b>								
Was impacted soil identified? No Yes - less than 10 cubic yards Yes - more than 10 cubic yards								
Total number of samples field screened: 3 samples					Total number of samples collected: 6 samples			
Highest PID Reading: High @ 0.7ppm (7FL06@5.0')					Total number of samples submitted to lab for analysis: 3 Samples			
If more than 10 cubic yards of impacted soil were observed:								
Vertical extent: N/A					Estimated spill volume: N/A			
Lateral extent: N/A					Volume of soil removed: N/A			
Is additional investigation required? N/A								
Was groundwater encountered during the investigation? No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils								
Measured depth to groundwater: N/A					Was remedial groundwater removal conducted? Yes No			
Date Groundwater was encountered: N/A					Commencement date of removal: N/A			
Sheen on groundwater? Yes No					Volume of groundwater removed prior to sampling: N/A			
Free product observed? Yes No					Volume of groundwater removed post sampling: N/A			
Total number of samples collected: N/A					Total Volume of groundwater removed: N/A			
Total number of samples submitted to lab for analysis: N/A								

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	<b>0.030</b>	<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
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	2.0'	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	3.0'	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	5.0'	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
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'	0.614	8.12	0.296	0.361
7FL05@3.0'	4/14/2022	3.0'	3.280	7.77	0.869	0.533
7FL06@5.0'	4/14/2022	5.0'	3.130	7.61	2.380	0.586
Table 915-1 Limits			<4	6-8.3	<6	2

Bold face values exceed the COGCC Limits

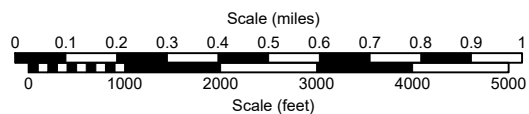
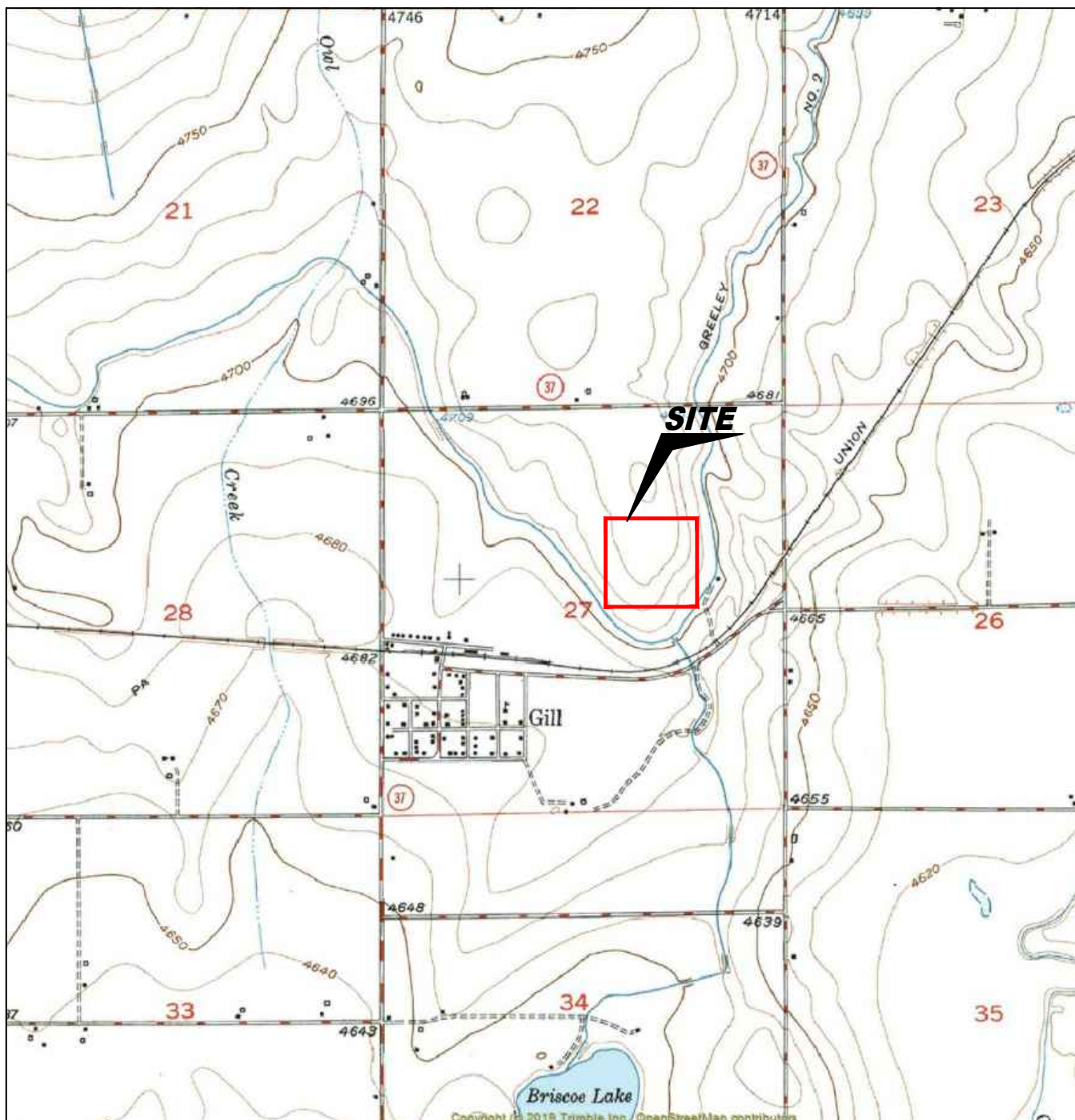
**TABLE 4**  
**SUMMARY OF POTHOLE FIELD OBSERVATIONS**  
**NOBLE ENERGY INC.**  
**HOWARD A27-7, WELD COUNTY, COLORADO**  
**FREMONT PROJECT C022-035**

Location	Latitude	Longitude	PID Reading	Field Observations
7FL01@2.0'	40.458861	-104.533861	0.4ppm	No Impacts Noted
7FL02@4.0'	40.460332	-104.532489	0.0ppm	No Impacts Noted
7FL03@3.0'	40.461705	-104.531630	0.0ppm	No Impacts Noted
7FL04@3.0'	40.462797	-104.531571	0.3ppm	No Impacts Noted
7FL05@3.0'	40.463914	-104.531553	0.2ppm	No Impacts Noted
7FL06@5.0'	40.463956	-104.531466	0.7ppm	No Impacts Noted

**TABLE 5**  
**SUMMARY OF FLOW LINE CONDITION**  
**NOBLE ENERGY INC.**  
**HOWARD A27-7, WELD COUNTY, COLORADO**  
**FREMONT PROJECT C022-035**

START	STOP	FOOTAGE	PIPE TYPE AND CONDITION
7FL01@2.0'	7FL02@4.0'	560'	2" Steel piping with a black non ACM coating (Flowline in good condition with no damages noted)
7FL02@4.0'	7FL03@3.0'	550'	2" Steel piping with a black non ACM coating (Flowline in good condition with no damages noted)
7FL03@3.0'	7FL04@3.0'	385'	2" Steel piping with a black non ACM coating (Flowline in good condition with no damages noted)
7FL04@3.0'	7FL05@3.0'	390'	2" Steel piping with a black non ACM coating (Flowline in good condition with no damages noted)
7FL05@3.0'	7FL06@5.0'	45'	2" Steel piping with a black non ACM coating (Flowline Abandoned-in-place)

1930'      Total linear footage of flowline



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

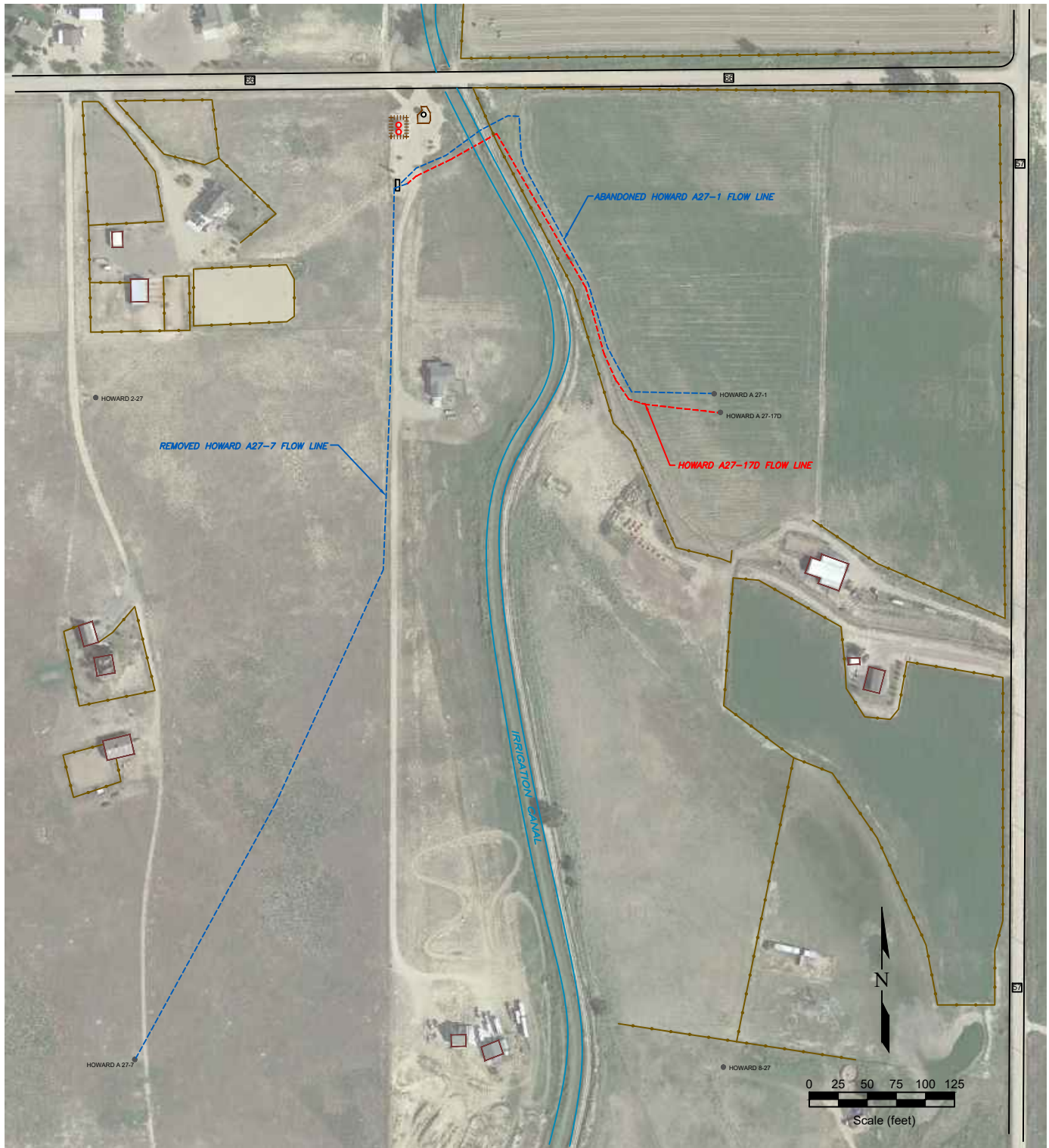
Figure 1  
**SITE LOCATION MAP**

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

Project # <b>C022-035</b>	API # <b>05-123-22303</b>	Facility # <b>273046</b>
Date <b>6/1/22</b>	Remediation # <b>20372</b>	Filename <b>22035T</b>







#### LEGEND

- WELL HEAD LOCATION
- ABOVE GROUND STORAGE TANK
- BUILDING BUILDING
- FORMER 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

Project No. <b>C022-035</b>	API # <b>05-123-22303</b>	Facility # <b>273046</b>
Date <b>6/1/22</b>	Remediation # <b>20372</b>	Filename <b>22035Q</b>



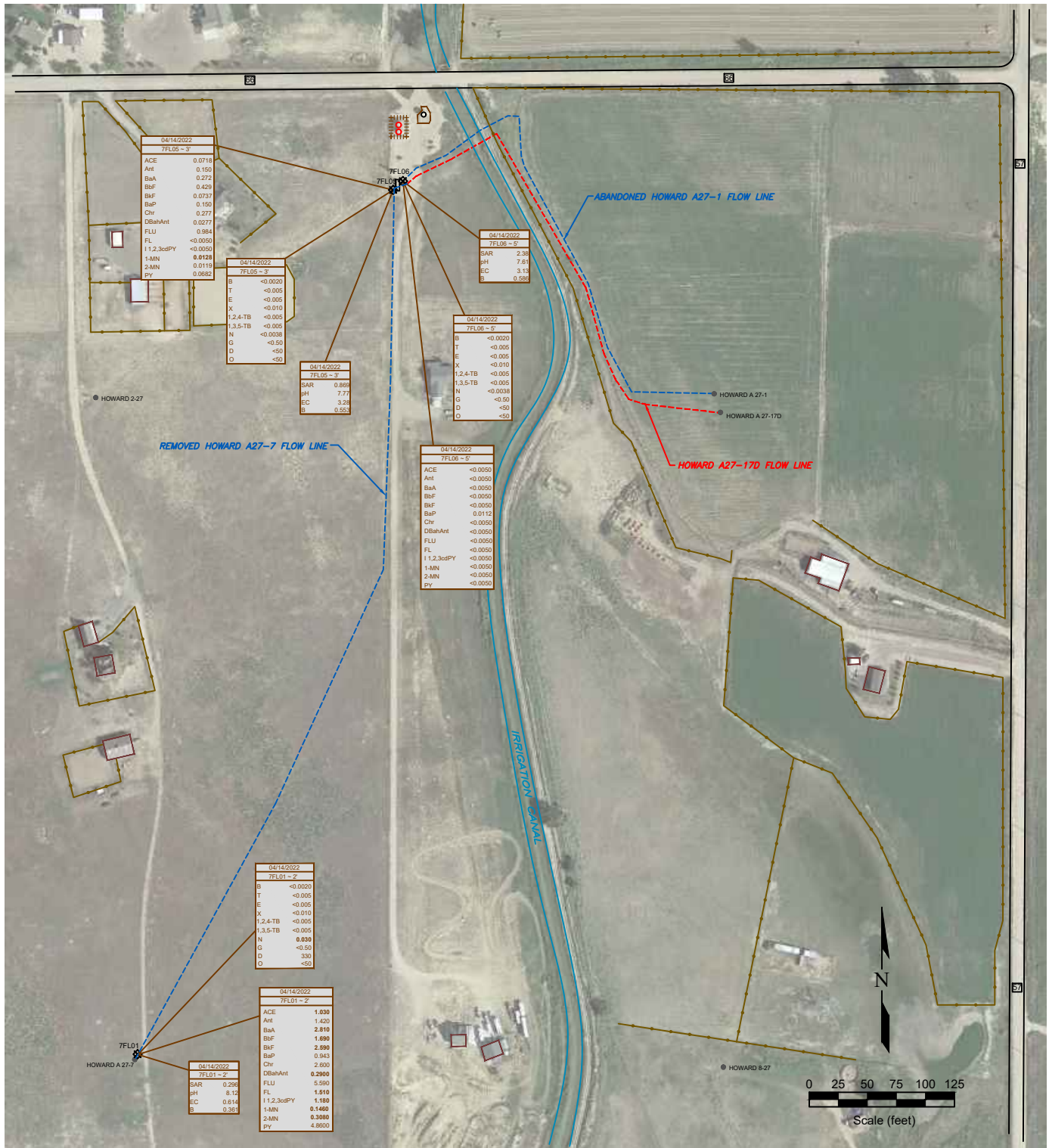


Figure 3  
SOIL CHEMISTRY MAP

April 14, 2022

Noble Energy, Inc.

Howard A27-7

SWNE Sec. 27, T6N, R64W, 6th PM  
Weld County, Colorado

Project No.  
C022-035

API #  
05-123-22303

Facility #  
273046

Date  
6/1/22

Remediation #  
20372

Filename  
22035Q







#1A – Howard A27-7 – Flowline Cut and Cap at Wellhead – [7FL01@2.0'](#) – Facing NE – Flowline in good condition with no damage or corrosion – Sample Submitted for Lab Analysis – PID 0.4ppm



#1B – Howard A27-7 – [7FL02@4.0'](#) – Facing NW – No Impacts Noted – PID 0.0ppm





#1C – Howard A27-7 – [7FL03@3.0'](#) – Facing N – No Impacts Noted – PID 0.0ppm



#1D – Howard A27-7 – [7FL04@3.0'](#) – Facing N – No Impacts Noted – PID 0.3ppm





#1E – Howard A27-7 – Flowline Cut and Cap – 45' Abandoned-in-Place Leading to Separator Tie-in - [7FL05@3.0'](#) – Facing NE – No Impacts Noted – Sample Submitted for Lab Analysis – PID 0.2ppm



#1F – Howard A27-7 – Flowline Cut and Cap at Separator Tie-in – [7FL06@5.0'](#) – Facing NW – No Impacts Noted – Sample Submitted for Lab Analysis – PID 0.7ppm

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

April 29, 2022

Paul Henchan

Fremont Environmental

PO Box 1289

Wellington, CO 80549

RE: Noble - Howard A27-07

Work Order #2204219

Enclosed are the results of analyses for samples received by Summit Scientific on 04/14/22 17:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Muri Premer For Paul Shrewsbury  
President



Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
7FL01@2.0'	2204219-01	Soil	04/14/22 00:00	04/14/22 17:20
7FL05@3.0'	2204219-02	Soil	04/14/22 00:00	04/14/22 17:20
7FL06@5.0'	2204219-03	Soil	04/14/22 00:00	04/14/22 17:20

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.*

# Summit Scientific

S<sub>2</sub>

2204219

4653 Table Mountain Drive ♦ Golden, Colorado 80403  
303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 1

Client: Fremont Environmental

Project Manager: Paul Henehan

Address: P.O Box 1289

E-Mail: paulh@fremontenv.com, ethanb@fremontenv.com

JCFg@Fremontenv.com

City/State/Zip: Wellington, CO 80549

Bill to: Jacob

Phone: 303-956-8714

Project Name: Howard A27-07

Sampler Name: JL

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested										Special Instructions
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	GBTEXN - 915	BTEX - 910	GRO	DRO/ORO	SAR	EC	pH	Boron	PAH - 915		
1	7FLO1C2.0'	04/14/22		3			X			X				X		X	X	X	X	X	X	X	
2	7FLO5E3.0'	↓		3			X			X				X		X	X	X	X	X	X	X	
3	7FLO6E5.0'	↓		3			X			X				X		X	X	X	X	X	X	X	
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Relinquished by: <u>[Signature]</u>	Date/Time: <u>04/14/22</u>	Received by: <u>[Signature]</u>	Date/Time: <u>4-14-22 17:20</u>	Turn Around Time (Check)	Notes:
				Same Day <input type="checkbox"/>	
				24 hours <input type="checkbox"/>	
				48 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	
				Temperature Upon Receipt: <u>7.4</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <u>(Yes)</u> No	



S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2204219

Client: Ecomart Client Project ID: Harvard A27-07

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 (°C) 7.4 Thermometer # 

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

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

Copeland  
Custodian Printed Name

4-14 17:40  
Date/Time



Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**7FL01@2.0'**  
**2204219-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFD0345	04/18/22	04/19/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
<b>Naphthalene</b>	<b>0.030</b>	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/14/22 00:00**

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

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>330</b>	50	mg/kg	1	BFD0346	04/18/22	04/19/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.3 %	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

Project Number: [none]  
Project Manager: Paul Henahan

**Reported:**  
04/29/22 11:16

**7FL01@2.0'**  
**2204219-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	1.03	0.0500	mg/kg	10	BFD0336	04/16/22	04/21/22	EPA 8270D SIM	
Anthracene	1.42	0.0500	"	"	"	"	"	"	
Benzo (a) anthracene	2.81	0.500	"	100	"	"	"	"	
Benzo (a) pyrene	1.69	0.0500	"	10	"	"	"	"	
Benzo (b) fluoranthene	2.59	0.500	"	100	"	"	"	"	
Benzo (k) fluoranthene	0.943	0.0500	"	10	"	"	"	"	
Chrysene	2.60	0.500	"	100	"	"	"	"	
Dibenz (a,h) anthracene	0.290	0.0500	"	10	"	"	"	"	
Fluoranthene	5.59	0.500	"	100	"	"	"	"	
Fluorene	1.51	0.0500	"	10	"	"	"	"	
Indeno (1,2,3-cd) pyrene	1.18	0.0500	"	"	"	"	"	"	
Pyrene	4.86	0.500	"	100	"	"	"	"	
1-Methylnaphthalene	0.146	0.0500	"	10	"	"	"	"	
2-Methylnaphthalene	0.308	0.0500	"	"	"	"	"	"	

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		74.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		129 %	40-150		"	"	"	"	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.361	0.0100	mg/L	1	BFD0380	04/19/22	04/23/22	EPA 6020B	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	32.0	0.0543	mg/L dry	1	BFD0456	04/21/22	04/25/22	EPA 6020B	

Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
04/29/22 11:16

**7FL01@2.0'**  
**2204219-01 (Soil)**

**Summit Scientific**

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

Magnesium	20.3	0.0543	mg/L dry	1	BFD0456	04/21/22	04/25/22	EPA 6020B
Sodium	8.71	0.0543	"	"	"	"	"	"

**Calculated Analysis**

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.296	0.00100	units	1	BFD0536	04/25/22	04/25/22	Calculation	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.2		%	1	BFD0428	04/20/22	04/20/22	Calculation	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.614	0.0100	mmhos/cm	1	BFD0487	04/22/22	04/22/22	EPA 120.1	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.12		pH Units	1	BFD0486	04/22/22	04/22/22	EPA 9045D	

Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
04/29/22 11:16

**7FL05@3.0'**  
**2204219-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFD0345	04/18/22	04/19/22	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: **04/14/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		106 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFD0346	04/18/22	04/19/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		96.8 %	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

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**7FL05@3.0'**  
**2204219-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.0718	0.00500	mg/kg	1	BFD0336	04/16/22	04/19/22	EPA 8270D SIM	
Anthracene	0.150	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.272	0.0500	"	10	"	"	"	"	
Benzo (a) pyrene	0.150	0.00500	"	1	"	"	"	"	
Benzo (b) fluoranthene	0.429	0.0500	"	10	"	"	"	"	
Benzo (k) fluoranthene	0.0737	0.00500	"	1	"	"	"	"	
Chrysene	0.277	0.0500	"	10	"	"	"	"	
Dibenz (a,h) anthracene	0.0277	0.00500	"	1	"	"	"	"	
Fluoranthene	0.984	0.0500	"	10	"	"	"	"	
Fluorene	ND	0.00500	"	1	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Pyrene	0.0682	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	0.0128	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	0.0119	0.00500	"	"	"	"	"	"	

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		65.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		50.5 %	40-150		"	"	"	"	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.553	0.0100	mg/L	1	BFD0380	04/19/22	04/23/22	EPA 6020B	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	200	0.0531	mg/L dry	1	BFD0456	04/21/22	04/25/22	EPA 6020B	

Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
04/29/22 11:16

**7FL05@3.0'**  
**2204219-02 (Soil)**

### Summit Scientific

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

Magnesium	98.9	0.0531	mg/L dry	1	BFD0456	04/21/22	04/25/22	EPA 6020B
Sodium	60.1	0.0531	"	"	"	"	"	"

#### Calculated Analysis

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.869	0.00100	units	1	BFD0536	04/25/22	04/25/22	Calculation	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	94.2		%	1	BFD0428	04/20/22	04/20/22	Calculation	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.28	0.0100	mmhos/cm	1	BFD0487	04/22/22	04/22/22	EPA 120.1	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.77		pH Units	1	BFD0486	04/22/22	04/22/22	EPA 9045D	

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PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**7FL06@5.0'**  
**2204219-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BFD0345	04/18/22	04/19/22	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: **04/14/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		112 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		101 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	50-150		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BFD0346	04/18/22	04/19/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		94.9 %	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

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**7FL06@5.0'**  
**2204219-03 (Soil)**

### Summit Scientific

#### PAH by EPA Method 8270D SIM

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFD0336	04/16/22	04/19/22	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
<b>Benzo (a) pyrene</b>	<b>0.0112</b>	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: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		82.0 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		55.6 %	40-150		"	"	"	"	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.586</b>	0.0100	mg/L	1	BFD0380	04/19/22	04/23/22	EPA 6020B	

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

Date Sampled: **04/14/22 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

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**7FL06@5.0'**  
**2204219-03 (Soil)**

### Summit Scientific

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

Calcium	168	0.0608	mg/L dry	1	BFD0456	04/21/22	04/25/22	EPA 6020B
Magnesium	111	0.0608	"	"	"	"	"	"
Sodium	162	0.0608	"	"	"	"	"	"

#### Calculated Analysis

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.38	0.00100	units	1	BFD0536	04/25/22	04/25/22	Calculation	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	82.3		%	1	BFD0428	04/20/22	04/20/22	Calculation	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.13	0.0100	mmhos/cm	1	BFD0487	04/22/22	04/22/22	EPA 120.1	

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

Date Sampled: **04/14/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.61		pH Units	1	BFD0486	04/22/22	04/22/22	EPA 9045D	

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

## 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 BFD0345 - EPA 5030 Soil MS

##### Blank (BFD0345-BLK1)

Prepared: 04/18/22 Analyzed: 04/19/22

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	0.0414		"	0.0400		104	50-150			
Surrogate: Toluene-d8	0.0400		"	0.0400		99.9	50-150			
Surrogate: 4-Bromofluorobenzene	0.0400		"	0.0400		99.9	50-150			

##### LCS (BFD0345-BS1)

Prepared: 04/18/22 Analyzed: 04/19/22

Benzene	0.0613	0.0020	mg/kg	0.0750		81.7	70-130			
Toluene	0.0697	0.0050	"	0.0750		92.9	70-130			
Ethylbenzene	0.0668	0.0050	"	0.0750		89.0	70-130			
m,p-Xylene	0.142	0.010	"	0.150		94.5	70-130			
o-Xylene	0.0680	0.0050	"	0.0750		90.7	70-130			
1,2,4-Trimethylbenzene	0.0718	0.0050	"	0.0750		95.7	70-130			
1,3,5-Trimethylbenzene	0.0683	0.0050	"	0.0750		91.0	70-130			
Naphthalene	0.0733	0.0038	"	0.0750		97.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0402		"	0.0400		100	50-150			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	50-150			
Surrogate: 4-Bromofluorobenzene	0.0405		"	0.0400		101	50-150			

##### Matrix Spike (BFD0345-MS1)

Source: 2204214-01

Prepared: 04/18/22 Analyzed: 04/19/22

Benzene	0.0621	0.0020	mg/kg	0.0750	ND	82.8	70-130			
Toluene	0.0700	0.0050	"	0.0750	ND	93.3	70-130			
Ethylbenzene	0.0653	0.0050	"	0.0750	ND	87.1	70-130			
m,p-Xylene	0.139	0.010	"	0.150	ND	92.3	70-130			
o-Xylene	0.0672	0.0050	"	0.0750	ND	89.6	70-130			
1,2,4-Trimethylbenzene	0.0702	0.0050	"	0.0750	ND	93.6	70-130			
1,3,5-Trimethylbenzene	0.0679	0.0050	"	0.0750	ND	90.5	70-130			
Naphthalene	0.0765	0.0038	"	0.0750	ND	102	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0413		"	0.0400		103	50-150			
Surrogate: Toluene-d8	0.0414		"	0.0400		104	50-150			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	50-150			

Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

## 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 BFD0345 - EPA 5030 Soil MS

Matrix Spike Dup (BFD0345-MSD1)	Source: 2204214-01			Prepared: 04/18/22 Analyzed: 04/19/22						
Benzene	0.0629	0.0020	mg/kg	0.0750	ND	83.8	70-130	1.20	30	
Toluene	0.0691	0.0050	"	0.0750	ND	92.1	70-130	1.34	30	
Ethylbenzene	0.0643	0.0050	"	0.0750	ND	85.7	70-130	1.57	30	
m,p-Xylene	0.136	0.010	"	0.150	ND	90.9	70-130	1.59	30	
o-Xylene	0.0668	0.0050	"	0.0750	ND	89.1	70-130	0.582	30	
1,2,4-Trimethylbenzene	0.0710	0.0050	"	0.0750	ND	94.6	70-130	1.15	30	
1,3,5-Trimethylbenzene	0.0671	0.0050	"	0.0750	ND	89.5	70-130	1.16	30	
Naphthalene	0.0769	0.0038	"	0.0750	ND	103	70-130	0.509	30	
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101	50-150			
Surrogate: Toluene-d8	0.0421		"	0.0400		105	50-150			
Surrogate: 4-Bromofluorobenzene	0.0417		"	0.0400		104	50-150			

Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**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 BFD0346 - EPA 3550A**

**Blank (BFD0346-BLK1)**

Prepared: 04/18/22 Analyzed: 04/19/22

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

**LCS (BFD0346-BS1)**

Prepared: 04/18/22 Analyzed: 04/19/22

C10-C28 (DRO)	524	50	mg/kg	500	105	70-130
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**Matrix Spike (BFD0346-MS1)**

Source: 2204214-01

Prepared: 04/18/22 Analyzed: 04/19/22

C10-C28 (DRO)	482	50	mg/kg	500	26.0	91.3	70-130
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**Matrix Spike Dup (BFD0346-MSD1)**

Source: 2204214-01

Prepared: 04/18/22 Analyzed: 04/19/22

C10-C28 (DRO)	493	50	mg/kg	500	26.0	93.3	70-130	2.10	20
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Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

## 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 BFD0336 - EPA 5030 Soil MS

##### Blank (BFD0336-BLK1)

Prepared: 04/16/22 Analyzed: 04/17/22

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0275		"	0.0333		82.5	40-150			
Surrogate: Fluoranthene-d10	0.0215		"	0.0333		64.5	40-150			

##### LCS (BFD0336-BS1)

Prepared: 04/16/22 Analyzed: 04/17/22

Acenaphthene	0.0256	0.00500	mg/kg	0.0333		76.7	31-137			
Anthracene	0.0316	0.00500	"	0.0333		94.8	30-120			
Benzo (a) anthracene	0.0258	0.00500	"	0.0333		77.4	30-120			
Benzo (a) pyrene	0.0285	0.00500	"	0.0333		85.4	30-120			
Benzo (b) fluoranthene	0.0280	0.00500	"	0.0333		83.9	30-120			
Benzo (k) fluoranthene	0.0361	0.00500	"	0.0333		108	30-120			
Chrysene	0.0354	0.00500	"	0.0333		106	30-120			
Dibenz (a,h) anthracene	0.0291	0.00500	"	0.0333		87.3	30-120			
Fluoranthene	0.0332	0.00500	"	0.0333		99.5	30-120			
Fluorene	0.0251	0.00500	"	0.0333		75.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0258	0.00500	"	0.0333		77.4	30-120			
Pyrene	0.0344	0.00500	"	0.0333		103	35-142			
1-Methylnaphthalene	0.0345	0.00500	"	0.0333		104	35-142			
2-Methylnaphthalene	0.0359	0.00500	"	0.0333		108	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0330		"	0.0333		98.9	40-150			
Surrogate: Fluoranthene-d10	0.0315		"	0.0333		94.6	40-150			

Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

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

### Summit Scientific

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

#### Batch BFD0336 - EPA 5030 Soil MS

##### Matrix Spike (BFD0336-MS1)

Source: 2204109-01

Prepared: 04/16/22 Analyzed: 04/17/22

Acenaphthene	0.0158	0.00500	mg/kg	0.0333	ND	47.4	31-137				
Anthracene	0.0220	0.00500	"	0.0333	ND	66.1	30-120				
Benzo (a) anthracene	0.0195	0.00500	"	0.0333	ND	58.6	30-120				
Benzo (a) pyrene	0.0210	0.00500	"	0.0333	ND	63.1	30-120				
Benzo (b) fluoranthene	0.0208	0.00500	"	0.0333	ND	62.5	30-120				
Benzo (k) fluoranthene	0.0250	0.00500	"	0.0333	ND	75.1	30-120				
Chrysene	0.0233	0.00500	"	0.0333	ND	70.0	30-120				
Dibenz (a,h) anthracene	0.0265	0.00500	"	0.0333	ND	79.5	30-120				
Fluoranthene	0.0228	0.00500	"	0.0333	ND	68.3	30-120				
Fluorene	0.0182	0.00500	"	0.0333	ND	54.7	30-120				
Indeno (1,2,3-cd) pyrene	0.0201	0.00500	"	0.0333	ND	60.3	30-120				
Pyrene	0.0234	0.00500	"	0.0333	ND	70.3	35-142				
1-Methylnaphthalene	0.0219	0.00500	"	0.0333	ND	65.8	15-130				
2-Methylnaphthalene	0.0218	0.00500	"	0.0333	ND	65.3	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0231		"	0.0333		69.2	40-150				
Surrogate: Fluoranthene-d10	0.0228		"	0.0333		68.5	40-150				

##### Matrix Spike Dup (BFD0336-MSD1)

Source: 2204109-01

Prepared: 04/16/22 Analyzed: 04/17/22

Acenaphthene	0.0144	0.00500	mg/kg	0.0333	ND	43.2	31-137	9.33	30		
Anthracene	0.0201	0.00500	"	0.0333	ND	60.2	30-120	9.32	30		
Benzo (a) anthracene	0.0187	0.00500	"	0.0333	ND	56.2	30-120	4.22	30		
Benzo (a) pyrene	0.0197	0.00500	"	0.0333	ND	59.2	30-120	6.38	30		
Benzo (b) fluoranthene	0.0195	0.00500	"	0.0333	ND	58.5	30-120	6.68	30		
Benzo (k) fluoranthene	0.0244	0.00500	"	0.0333	ND	73.1	30-120	2.73	30		
Chrysene	0.0231	0.00500	"	0.0333	ND	69.2	30-120	1.15	30		
Dibenz (a,h) anthracene	0.0263	0.00500	"	0.0333	ND	79.0	30-120	0.558	30		
Fluoranthene	0.0220	0.00500	"	0.0333	ND	66.1	30-120	3.30	30		
Fluorene	0.0163	0.00500	"	0.0333	ND	49.0	30-120	10.9	30		
Indeno (1,2,3-cd) pyrene	0.0189	0.00500	"	0.0333	ND	56.7	30-120	6.18	30		
Pyrene	0.0223	0.00500	"	0.0333	ND	66.8	35-142	5.16	30		
1-Methylnaphthalene	0.0191	0.00500	"	0.0333	ND	57.2	15-130	13.9	50		
2-Methylnaphthalene	0.0191	0.00500	"	0.0333	ND	57.2	15-130	13.2	50		
Surrogate: 2-Methylnaphthalene-d10	0.0215		"	0.0333		64.5	40-150				
Surrogate: Fluoranthene-d10	0.0215		"	0.0333		64.4	40-150				

Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**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 BFD0380 - EPA 3050B**

**Blank (BFD0380-BLK1)**

Prepared: 04/19/22 Analyzed: 04/23/22

Boron ND 0.0100 mg/L

**LCS (BFD0380-BS1)**

Prepared: 04/19/22 Analyzed: 04/23/22

Boron 4.74 0.0100 mg/L 5.00 94.9 80-120

**Duplicate (BFD0380-DUP1)**

Source: 2204197-11

Prepared: 04/19/22 Analyzed: 04/23/22

Boron 0.347 0.0100 mg/L 0.358 3.00 20

**Matrix Spike (BFD0380-MS1)**

Source: 2204197-11

Prepared: 04/19/22 Analyzed: 04/23/22

Boron 4.85 0.0100 mg/L 5.00 0.358 89.9 75-125

**Matrix Spike Dup (BFD0380-MSD1)**

Source: 2204197-11

Prepared: 04/19/22 Analyzed: 04/23/22

Boron 5.00 0.0100 mg/L 5.00 0.358 92.9 75-125 3.05 25

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Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**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 BFD0456 - General Preparation**

**Blank (BFD0456-BLK1)**

Prepared: 04/21/22 Analyzed: 04/25/22

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

**LCS (BFD0456-BS1)**

Prepared: 04/21/22 Analyzed: 04/25/22

Calcium	5.33	0.0500	mg/L wet	5.00	107	70-130
Magnesium	5.71	0.0500	"	5.00	114	70-130
Sodium	5.44	0.0500	"	5.00	109	70-130

Summit Scientific

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Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**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 BFD0428 - General Preparation**

**Duplicate (BFD0428-DUP1)**

**Source: 2204206-01**

**Prepared & Analyzed: 04/20/22**

% Solids	80.4	%		82.4		2.44	20
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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**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 BFD0487 - General Preparation**

**Blank (BFD0487-BLK1)**

Prepared & Analyzed: 04/22/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BFD0487-BS1)**

Prepared & Analyzed: 04/22/22

Specific Conductance (EC) 0.152 0.0100 mmhos/cm 0.150 102 95-105

**Duplicate (BFD0487-DUP1)**

**Source: 2204048-05**

Prepared & Analyzed: 04/22/22

Specific Conductance (EC) 0.917 0.0100 mmhos/cm 0.944 2.94 20

Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

**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 BFD0486 - General Preparation**

**LCS (BFD0486-BS1)**

Prepared & Analyzed: 04/22/22

pH	9.02	pH Units	9.18	98.3	95-105
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**Duplicate (BFD0486-DUP1)**

Source: 2204048-05

Prepared & Analyzed: 04/22/22

pH	6.85	pH Units	6.70	2.21	20
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Summit Scientific

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Fremont Environmental  
PO Box 1289  
Wellington CO, 80549

Project: Noble - Howard A27-07

Project Number: [none]  
Project Manager: Paul Henchan

**Reported:**  
04/29/22 11:16

### Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference