

FREMONT ENVIRONMENTAL INC.

January 27, 2023

Mr. Dan Peterson
Noble Energy Inc.
2115 117th Avenue
Greeley, CO 80634

Subject: **Flowline Closure Data Submittal**
Sandau 34-12F Flowline
API # 05-123-15521
NWSW Sec. 34, T4N, R66W
Weld County, Colorado
Fremont Project No. C022-152
Remediation #22548

Dear Mr. Peterson:

As requested, Fremont Environmental Inc. (Fremont) personnel conducted flowline abandonment activities at the Noble Energy Inc. (Noble) Sandau 34-12F flowline. Details of the flowline abandonment activities are documented in the attached Closure Report. Groundwater was not encountered during decommissioning activities.

Please contact me at (303) 956-8714 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,

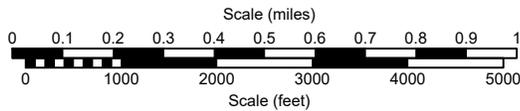
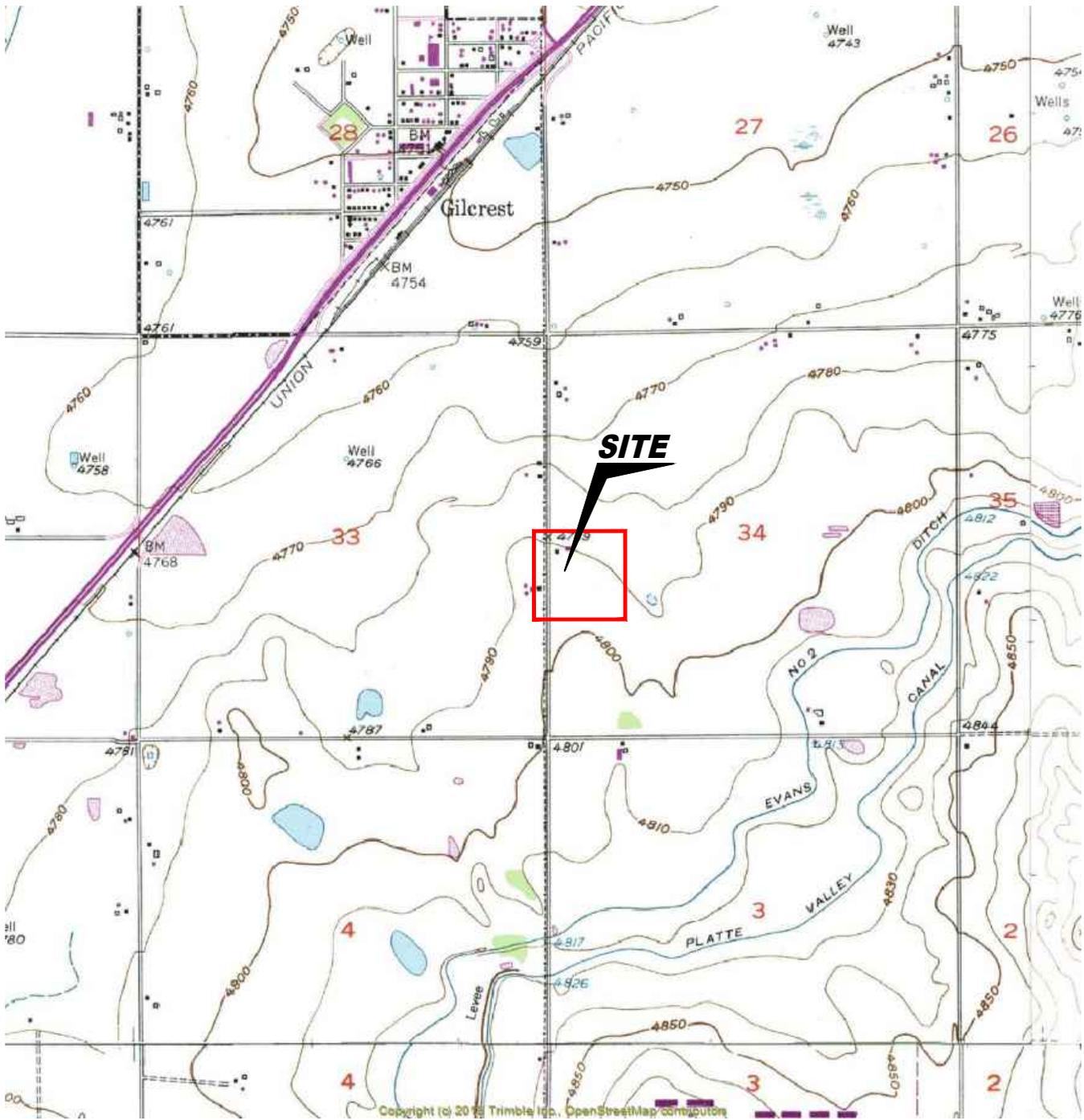
FREMONT ENVIRONMENTAL INC.



Chris Lattes
Geologist

Attachments:

- Figures
- Tables
- Flowline Closure Checklist
- Photos
- Laboratory Reports



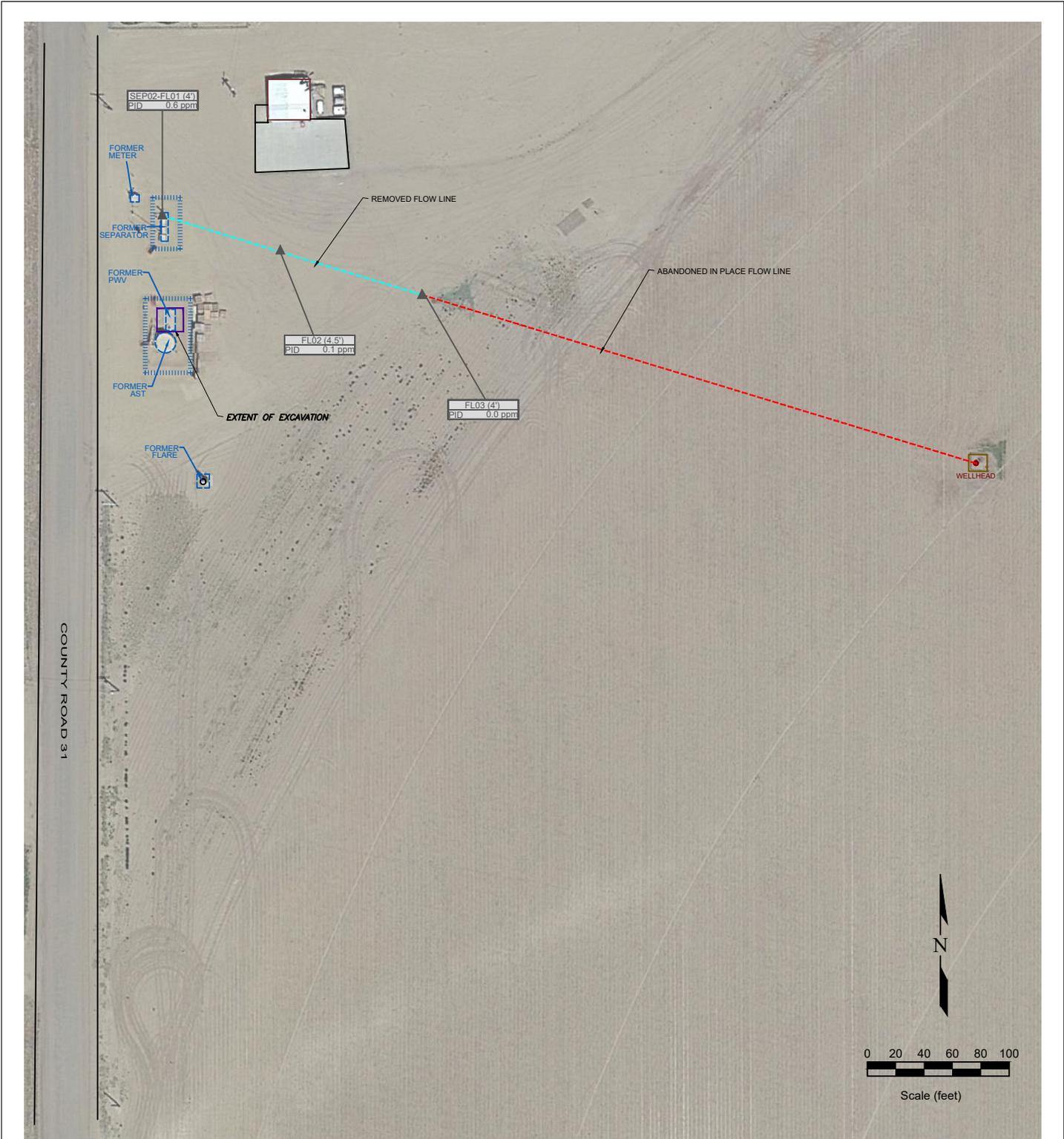
USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP

NOBLE ENERGY, INC. ~ SANDAU 34-12F
 NWSW Sec. 34, T4N, R66W, 6th PM
 Weld County, Colorado
 40.266780 °, -104.770970°

Project # C022-152	API # 05-123-15521	Facility #
Date 1/26/23	Remediation # 22548	Filename 22152T





LEGEND

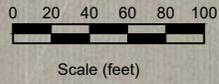
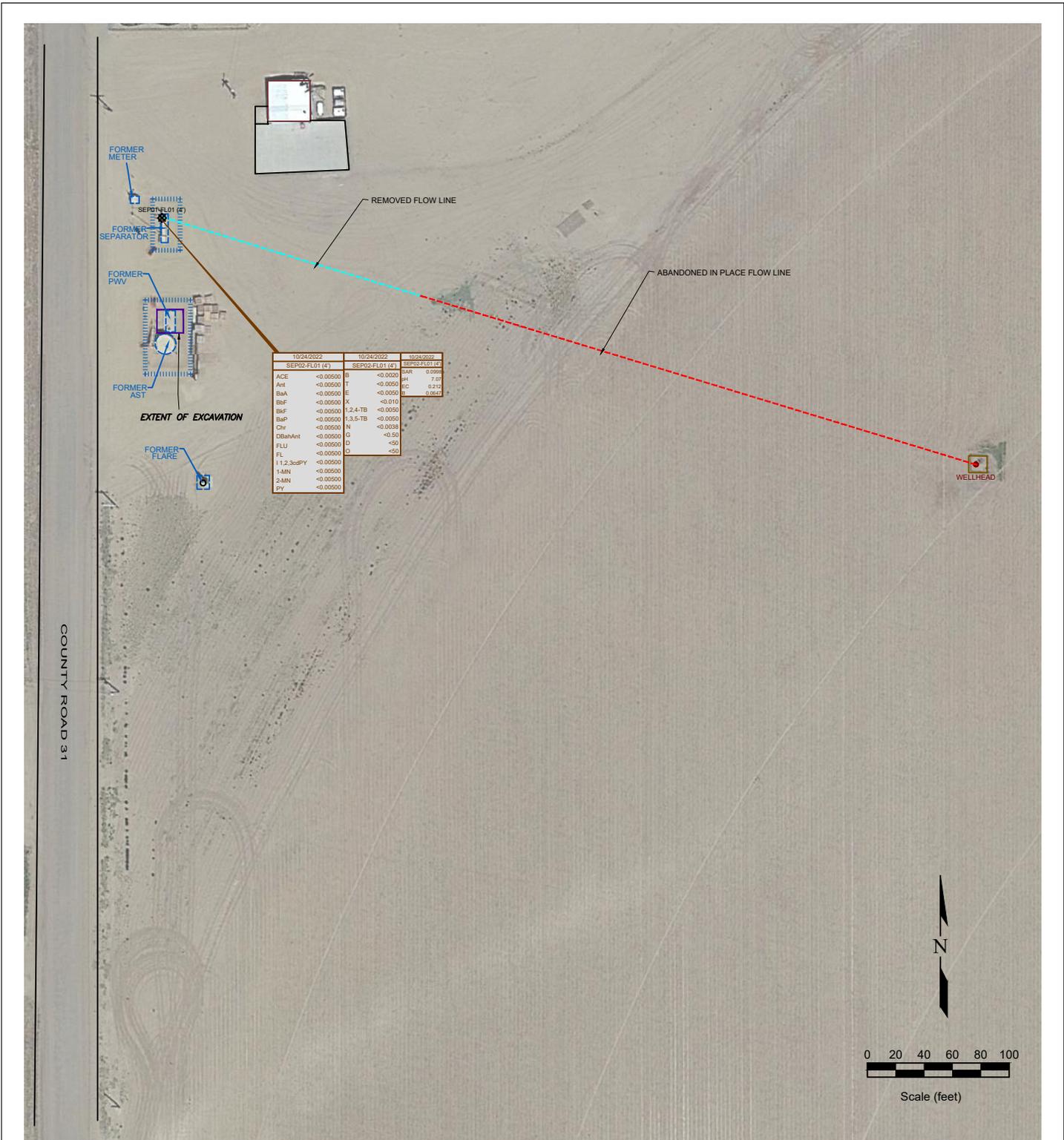
- WELL HEAD LOCATION
- ▲ PID READING LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY BUILDING
- FORMER FACILITY BUILDING
- CONTAINMENT BERM
- ABANDONED IN PLACE FLOW LINE
- REMOVED FLOW LINE
- FENCE LINE
- EXTENT OF EXCAVATION
- FL01 (4.5') PID 0.5 ppm
- FL02 (4.5') PID 0.1 ppm
- FL03 (4') PID 0.0 ppm
- PID READING LOCATION IDENTIFICATION PHOTO IONIZATION DETECTION (ppm)

**Figure 2
SITE MAP**

NOBLE ENERGY, INC. ~ SANDAU 34-12F
 NWSW Sec. 34, T4N, R66W, 6th PM
 Weld County, Colorado
 40.266780 °, -104.770970°

Project No. C022-152	API # 05-123-15521	Facility #
Date 1/27/23	Remediation # 22548	Filename 22152Q





LEGEND

- WELL HEAD LOCATION
- ⊗ SOIL SAMPLE LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY BUILDING
- FORMER FACILITY BUILDING
- CONTAINMENT BERM
- ABANDONED IN PLACE FLOW LINE
- REMOVED FLOW LINE
- FENCE LINE
- EXTENT OF EXCAVATION

10/24/2022	DATE SAMPLED	10/24/2022	DATE SAMPLED
SEP02-FL01 (4)	SAMPLE ID and DEPTH (ft)	SEP02-FL01 (4)	SAMPLE ID and DEPTH (ft)
ACE <0.00500	ACENAPHTHENE (mg/kg)	B <0.0020	BENZENE (mg/kg)
Ant <0.00500	ANTHRACENE (mg/kg)	T <0.0050	TOLUENE (mg/kg)
BaA <0.00500	BENZO (A) ANTHRACENE (mg/kg)	E <0.0050	ETHYLBENZENE (mg/kg)
BbF <0.00500	BENZO (B) FLUORANTHENE (mg/kg)	X <0.010	TOTAL XYLENES (mg/kg)
BaP <0.00500	BENZO (K) FLUORANTHENE(mg/kg)	1,2,4-TB <0.0050	1,2,4-TRIMETHYLBENZENE (mg/kg)
Chr <0.00500	BENZO (A) PYRENE (mg/kg)	1,3,5-TB <0.0050	1,3,5-TRIMETHYLBENZENE (mg/kg)
DBahAnt <0.00500	CHRYSENE (mg/kg)	N <0.0038	NAPHTHALENE (mg/kg)
FLU <0.00500	DIBENZ (A,H) ANTHRACENE (mg/kg)	G <0.50	TPH-GRO (mg/kg)
FL <0.00500	FLUORANTHENE (mg/kg)	D <0.50	TPH-DRO (mg/kg)
1,1,2,3cdPY <0.00500	FLUORENE (mg/kg)	O <0.50	TPH-CRO (mg/kg)
1-MN <0.00500	INDENO (1,2,3-CD) PYRENE(mg/kg)		
2-MN <0.00500	1-METHYLNAPHTHALENE (mg/kg)		
PY <0.00500	2-METHYLNAPHTHALENE (mg/kg)		
	PYRENE (mg/kg)		

**Figure 3
SOIL CHEMISTRY MAP**

NOBLE ENERGY, INC. ~ SANDAU 34-12F
 NWSW Sec. 34, T4N, R66W, 6th PM
 Weld County, Colorado
 40.266780 °, -104.770970°

Project No. C022-152	API # 05-123-15521	Facility #
Date 1/27/23	Remediation # 22548	Filename 22152Q



TABLE 1
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
SANDAU 34-12F, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-152

Sample ID	Sample Date	Depth (ft)	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)
COGCC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	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		
SEPO2-FL01@4'	10/24/2022	4'	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50

Bold faced values exceed the COGCC Table 915-1 concentrations

Red & 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.
SANDAU 34-12F, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-152

Sample ID	Sample Date	Depth (ft)	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)	Dibenzo (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)
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
SEP02-FL01@4'	10/24/2022	4'	<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

Bold faced values exceed the COGCC Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

TABLE 3
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE ENERGY INC.
SANDAU 34-12F, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-152

Sample ID	Sample Date	Depth (ft)	EC (mmhos/cm)	pH	SAR	Boron (mg/L)
COGCC Table 915-1 Soil Suitability Limits			<4	6 - 8.3	<6	2
SEP02-FL01@4'	10/24/2022	4'	0.212	7.07	0.0998	0.0647

Bold faced values exceed the COGCC Table 915-1 concentrations

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

TABLE 4
SUMMARY OF POTHOLE FIELD OBSERVATIONS
NOBLE ENERGY INC.
SANDAU 34-12F, WELD COUNTY, COLORADO
FREMONT PROJECT C022-152

Location	Latitude	Longitude	PID Reading	Field Observations
FL01@4'	40.267183	-104.772724	0.6	No suspected impacts (Separator)
FL02@4.5'	40.267054	-104.772166	0.1	No suspected impacts
FL03@4'	40.267125	-104.772469	0.0	No suspected impacts

TABLE 5
SUMMARY OF FLOW LINE CONDITION
NOBLE ENERGY INC.
SANDAU 34-12F, WELD COUNTY, COLORADO
FREMONT PROJECT C022-152

START	STOP	FOOTAGE	PIPE TYPE AND CONDITION
FL01@4'	FL03@4'	74	4" Sch 80 welded steel pipe, TGF coating, good condition (separator)
FL03@4'	FL02@4.5'	87	4" Sch 80 welded steel pipe, TGF coating, good condition
FL02@4.5'	Wellhead	341	2" Steel Pipe, good condition, AIP

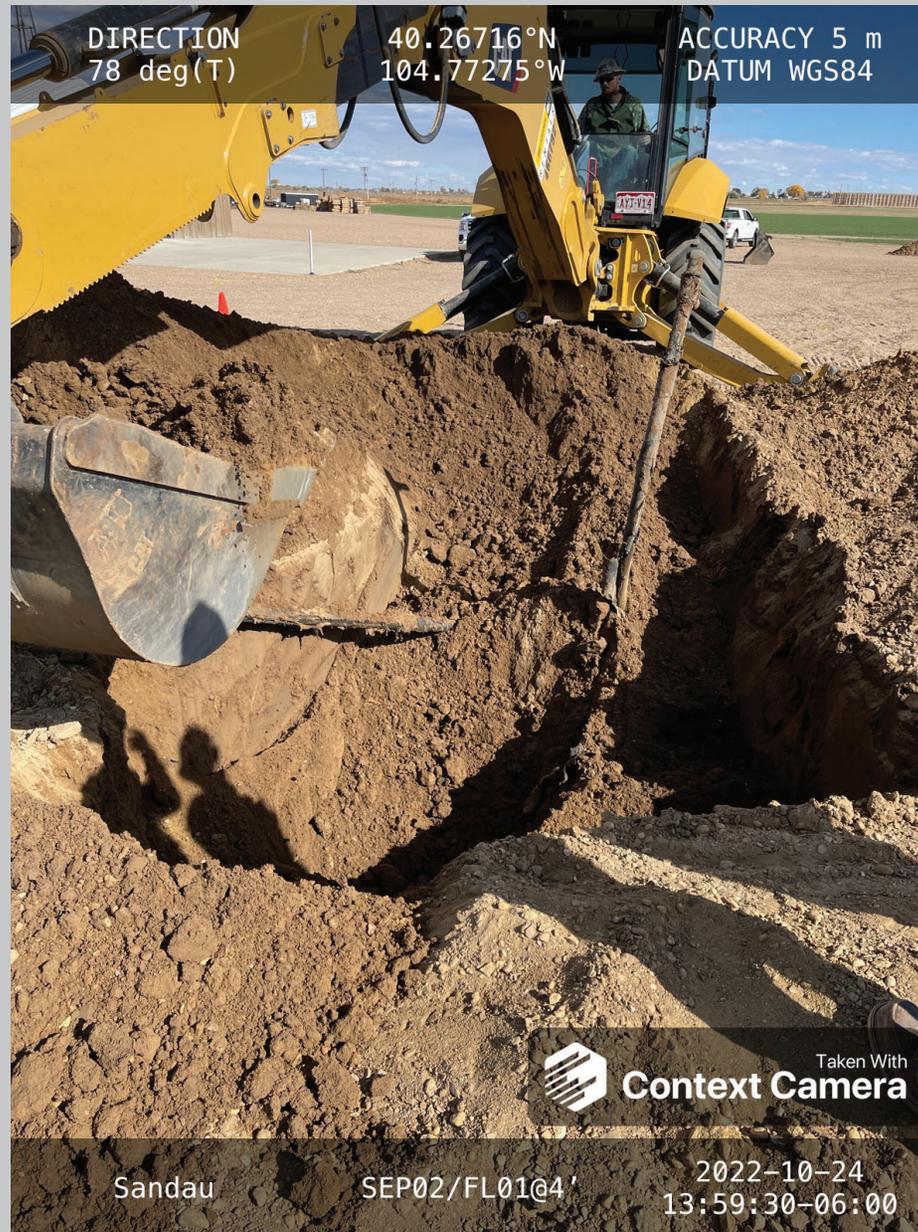
502 Total linear feet of flow line
 161 Removed
 341 AIP

Flowline Closure Checklist

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

<i>Additional Attachments:</i>		Tank Battery Closure		Wellhead Closure		Pit Closure		Partially Buried Vault Closure
<i>Site Name & COGCC Facility Number:</i> Sandau 34-12F		<i>Date:</i> 10/24-25/2022		<i>Remediation Project #:</i> 22548				
<i>Associated Wells:</i> 123-15521		<i>Age of Site:</i> Unknown		<i>Number of Photos Attached:</i> See attached				
<i>Starting point: (GPS coordinates and descriptions)</i> 40.267183, -104.772724								
<i>End point: (GPS coordinates and descriptions)</i> 40.266780, -104.770970								
<i>USCS Soil Type:</i> SW				<i>Estimated Depth to Groundwater:</i> 8 ft				
<i>Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)</i> No observed hydrocarbon impacted soil.								
<i>Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)</i> No observed salt crusted soil or impacted vegetation.								
Flowlines								
<i>Flowline type</i>	Wellhead Line							
<i>Depth</i>	4 to 4.5 ft							
<i>Age</i>	Unknown							
<i>Length</i>	502							
<i>Construction Material</i>	Steel							
<i>Were flowlines pulled?</i>	161 feet							
<i>Visual Integrity of lines</i>	Good condition							
<i>Visual impacts if trenched</i>	None observed							
<i>PID Readings if trenched</i>	0 to 0.6 ppm							
<i>Sample taken? Location/Sample ID#</i>	See attached							
<i>Photo Number(s)</i>	See attached							
<i>Other observations regarding on location flowlines:</i> 341 feet of flowline were AIP at landowners request.								
Summary								
<i>Was impacted soil identified?</i> No Yes - less than 10 cubic yards Yes - more than 10 cubic yards								
<i>Total number of samples field screened:</i> 3				<i>Total number of samples collected:</i> 3				
<i>Highest PID Reading:</i> 0.6 ppm				<i>Total number of samples submitted to lab for analysis:</i> 1				
<i>If more than 10 cubic yards of impacted soil were observed:</i> N/A								
<i>Vertical extent:</i>				<i>Estimated spill volume:</i>				
<i>Lateral extent:</i>				<i>Volume of soil removed:</i>				
<i>Is additional investigation required?</i>								
<i>Was groundwater encountered during the investigation?</i> No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils								
<i>Measured depth to groundwater:</i>				<i>Was remedial groundwater removal conducted?</i> Yes No				
<i>Date Groundwater was encountered:</i>				<i>Commencement date of removal:</i>				
<i>Sheen on groundwater?</i>		Yes	No	<i>Volume of groundwater removed prior to sampling:</i>				
<i>Free product observed?</i>		Yes	No	<i>Volume of groundwater removed post sampling:</i>				
<i>Total number of samples collected:</i>				<i>Total Volume of groundwater removed:</i>				
<i>Total number of samples submitted to lab for analysis:</i>								

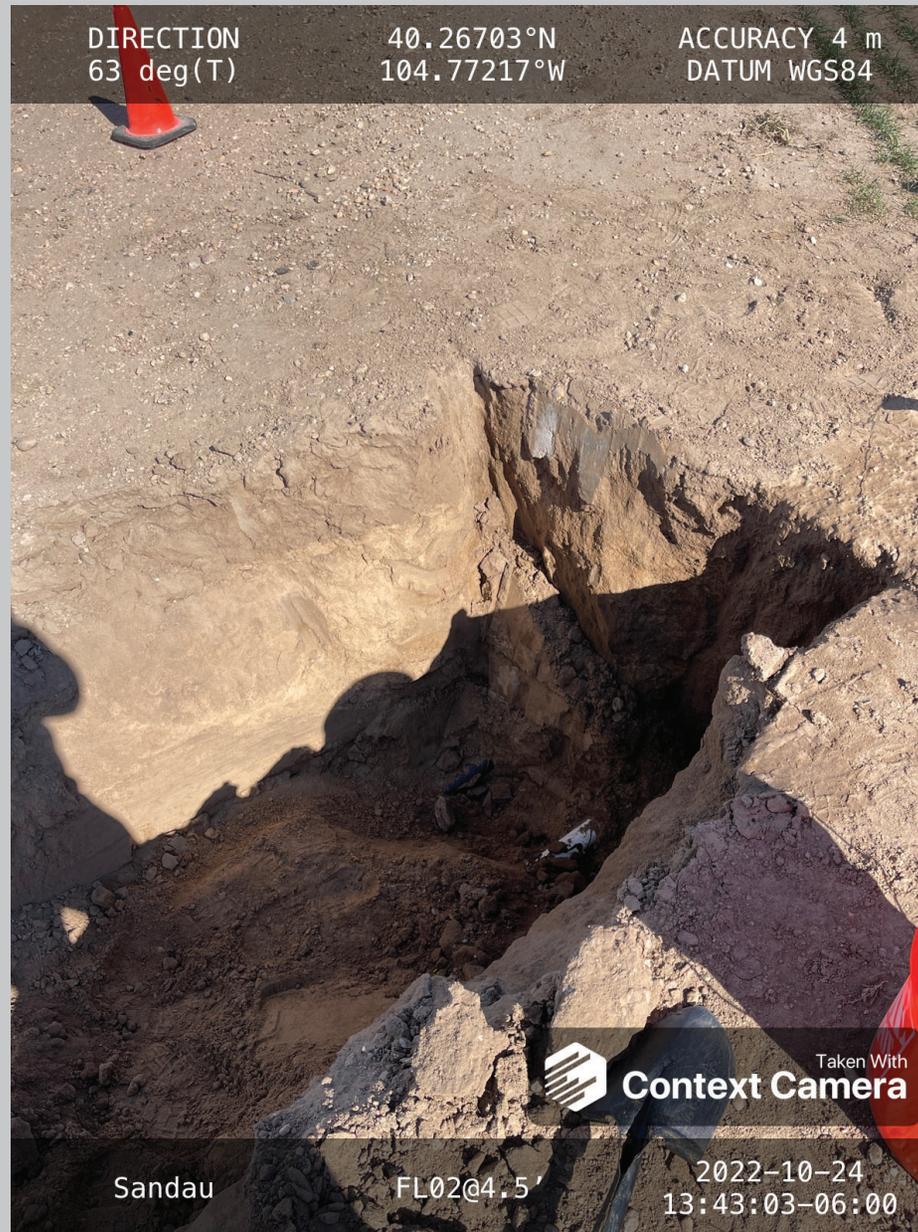
Photo Log



Description:

SEP02/FL01@4'

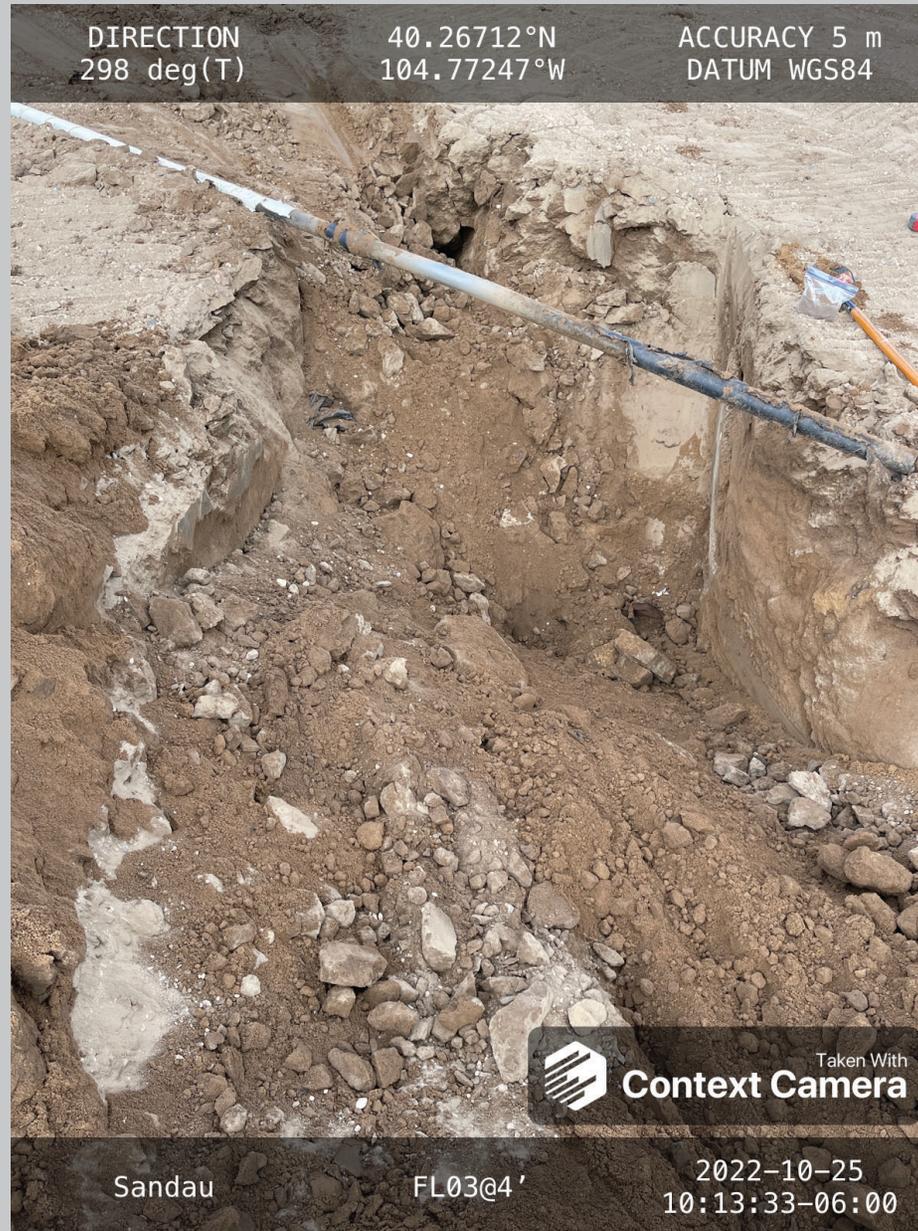
Photo Log



Description:

FL02@4.5'

Photo Log



Description:

FL03@4'

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 01, 2022

Paul Henchan

Fremont Environmental

PO Box 1289

Wellington, CO 80549

RE: Noble - Sandau 64N66W/34NWSW

Work Order #2210453

Enclosed are the results of analyses for samples received by Summit Scientific on 10/25/22 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 - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SEP02-FL01@4'	2210453-01	Soil	10/24/22 00:00	10/25/22 16:00
PWVE01@5'	2210453-03	Soil	10/24/22 00:00	10/25/22 16:00
PWVB01@6'	2210453-06	Soil	10/24/22 00:00	10/25/22 16:00
AST01@1'	2210453-07	Soil	10/24/22 00:00	10/25/22 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

2210453

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:

E-Mail: **Fremont Distribution List: PaulH, EthanB, JeffG and ChrisL. @fremontenv.com**

City/State/Zip:

Bill to Noble:

Phone:

Project Name: **SANDAU 64N66W/34NWSW**

Sampler Name: **Chris Latta**

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	TPH, BTEX, TMSs, Naph.	PAH (915)	EC, SAR, pH, Boron	Metals (915)	TDS, Chloride, Sulfate	HOLD			
1	SEP02/FL01@4'	10/24/22		1			X			X				X	X	X					
2	PWVNX1@5'			2										X	X	X					X
3	PWVEX1@5'			2										X	X	X					
4	PWVX01@5'			2																	X
5	PWVW01@5'			2																	X
6	PWVB01@6'			2										X	X	X					
7	AST01@1'	10/24/22		1			X			X				X	X	X					
8																					
9																					
10																					

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time (Check)	Notes:
Chris Latta	10/25/22	S2	10/25/22	Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/>	
				24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	48 hours <input type="checkbox"/>	Sample Integrity:
S2	10/25/22	[Signature]	10/25/22	Temperature Upon Receipt: <u>6.6</u>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

S₂

Sample Receipt Checklist

S2 Work Order# 2210453

Client: Fremont Client Project ID: Sanday C4NCEW/34NWSW

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

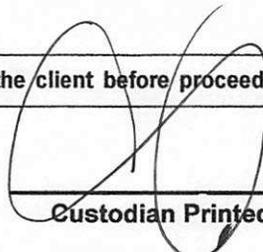
Matrix (Check all that apply) Air Soil/Solid Water Other

Temp (°C) Thermometer #

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

Additional Comments (if any):

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


Custodian Printed Name

10-25-22
Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

SEP02-FL01@4'
2210453-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0727	10/26/22	10/28/22	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: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		113 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0730	10/26/22	10/27/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		32.5 %	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 - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

SEP02-FL01@4'
2210453-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0786	10/28/22	10/29/22	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: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		59.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		86.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0647	0.0100	mg/L	1	BFJ0711	10/26/22	10/27/22	EPA 6020B	

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

Date Sampled: **10/24/22 00:00**

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

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

SEP02-FL01@4'
2210453-01 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	33.3	0.0550	mg/L dry	1	BFJ0780	10/27/22	10/28/22	EPA 6020B	
Magnesium	10.8	0.0550	"	"	"	"	"	"	
Sodium	2.59	0.0550	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0998	0.00100	units	1	BFJ0844	10/31/22	10/31/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	90.9		%	1	BFJ0716	10/26/22	10/26/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.212	0.0100	mmhos/cm	1	BFJ0812	10/28/22	10/28/22	EPA 120.1	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.07		pH Units	1	BFJ0813	10/28/22	10/28/22	EPA 9045D	

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVE01@5'
2210453-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0727	10/26/22	10/28/22	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	16	0.50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.5 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		109 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		166 %	50-150		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0730	10/26/22	10/27/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		30.8 %	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 - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVE01@5'
2210453-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0786	10/28/22	10/29/22	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: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		93.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		84.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0505	0.0100	mg/L	1	BFJ0711	10/26/22	10/27/22	EPA 6020B	

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

Date Sampled: **10/24/22 00:00**

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

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVE01@5'
2210453-03 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	69.7	0.0571	mg/L dry	1	BFJ0780	10/27/22	10/30/22	EPA 6020B	
Magnesium	10.7	0.0571	"	"	"	"	"	"	
Sodium	3.41	0.0571	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.100	0.00100	units	1	BFJ0844	10/31/22	10/31/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.6		%	1	BFJ0716	10/26/22	10/26/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.564	0.0100	mmhos/cm	1	BFJ0812	10/28/22	10/28/22	EPA 120.1	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.48		pH Units	1	BFJ0813	10/28/22	10/28/22	EPA 9045D	

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVB01@6'
2210453-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0727	10/26/22	10/28/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.041	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	0.10	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	0.20	0.0050	"	"	"	"	"	"	
Naphthalene	0.0040	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	72	5.0	"	10	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		96.1 %	50-150		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		103 %	50-150		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		212 %	50-150		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	110	50	mg/kg	1	BFJ0730	10/26/22	10/27/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		26.5 %	30-150		"	"	"	"	S-02

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 - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVB01@6'
2210453-06 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0786	10/28/22	10/29/22	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	0.00651	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: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		70.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		86.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.112	0.0100	mg/L	1	BFJ0711	10/26/22	10/27/22	EPA 6020B	

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

Date Sampled: **10/24/22 00:00**

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

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVB01@6'
2210453-06 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	46.5	0.0559	mg/L dry	1	BFJ0780	10/27/22	10/30/22	EPA 6020B	
Magnesium	8.16	0.0559	"	"	"	"	"	"	
Sodium	4.09	0.0559	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.145	0.00100	units	1	BFJ0844	10/31/22	10/31/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.5		%	1	BFJ0716	10/26/22	10/26/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.401	0.0100	mmhos/cm	1	BFJ0812	10/28/22	10/28/22	EPA 120.1	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.57		pH Units	1	BFJ0813	10/28/22	10/28/22	EPA 9045D	

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

AST01@1'
2210453-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0727	10/26/22	10/28/22	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: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		114 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0730	10/26/22	10/27/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		55.4 %	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 - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

AST01@1'
2210453-07 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0786	10/28/22	10/29/22	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: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		48.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		95.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0358	0.0100	mg/L	1	BFJ0711	10/26/22	10/27/22	EPA 6020B	

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

Date Sampled: **10/24/22 00:00**

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

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

AST01@1'
2210453-07 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	36.1	0.0556	mg/L dry	1	BFJ0780	10/27/22	10/30/22	EPA 6020B	
Magnesium	7.47	0.0556	"	"	"	"	"	"	
Sodium	3.71	0.0556	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.147	0.00100	units	1	BFJ0844	10/31/22	10/31/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.9		%	1	BFJ0716	10/26/22	10/26/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.253	0.0100	mmhos/cm	1	BFJ0812	10/28/22	10/28/22	EPA 120.1	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.11		pH Units	1	BFJ0813	10/28/22	10/28/22	EPA 9045D	

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFJ0727 - EPA 5030 Soil MS

Blank (BFJ0727-BLK1)

Prepared: 10/26/22 Analyzed: 10/28/22

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
1,2,4-Trimethylbenzene	ND	0.0050	"								
1,3,5-Trimethylbenzene	ND	0.0050	"								
Naphthalene	ND	0.0038	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0356		"	0.0400		89.1	50-150				
<i>Surrogate: Toluene-d8</i>	0.0434		"	0.0400		108	50-150				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0397		"	0.0400		99.3	50-150				

LCS (BFJ0727-BS1)

Prepared: 10/26/22 Analyzed: 10/28/22

Benzene	0.0888	0.0020	mg/kg	0.100		88.8	70-130				
Toluene	0.0726	0.0050	"	0.100		72.6	70-130				
Ethylbenzene	0.0980	0.0050	"	0.100		98.0	70-130				
m,p-Xylene	0.196	0.010	"	0.200		97.9	70-130				
o-Xylene	0.0940	0.0050	"	0.100		94.0	70-130				
1,2,4-Trimethylbenzene	0.0950	0.0050	"	0.100		95.0	70-130				
1,3,5-Trimethylbenzene	0.0968	0.0050	"	0.100		96.8	70-130				
Naphthalene	0.112	0.0038	"	0.100		112	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0322		"	0.0400		80.6	50-150				
<i>Surrogate: Toluene-d8</i>	0.0414		"	0.0400		103	50-150				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0392		"	0.0400		98.0	50-150				

Matrix Spike (BFJ0727-MS1)

Source: 2210403-04

Prepared: 10/26/22 Analyzed: 10/28/22

Benzene	0.0839	0.0020	mg/kg	0.100	ND	83.9	70-130				
Toluene	0.0829	0.0050	"	0.100	ND	82.9	70-130				
Ethylbenzene	0.0710	0.0050	"	0.100	ND	71.0	70-130				
m,p-Xylene	0.168	0.010	"	0.200	ND	84.0	70-130				
o-Xylene	0.0729	0.0050	"	0.100	ND	72.9	70-130				
1,2,4-Trimethylbenzene	0.0811	0.0050	"	0.100	ND	81.1	70-130				
1,3,5-Trimethylbenzene	0.0811	0.0050	"	0.100	ND	81.1	70-130				
Naphthalene	0.103	0.0038	"	0.100	ND	103	70-130				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0436		"	0.0400		109	50-150				
<i>Surrogate: Toluene-d8</i>	0.0520		"	0.0400		130	50-150				
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0431		"	0.0400		108	50-150				

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 - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BFJ0727 - EPA 5030 Soil MS

Matrix Spike Dup (BFJ0727-MSD1)	Source: 2210403-04			Prepared: 10/26/22 Analyzed: 10/28/22						
Benzene	0.0736	0.0020	mg/kg	0.100	ND	73.6	70-130	13.1	30	
Toluene	0.0775	0.0050	"	0.100	ND	77.5	70-130	6.70	30	
Ethylbenzene	0.0759	0.0050	"	0.100	ND	75.9	70-130	6.74	30	
m,p-Xylene	0.150	0.010	"	0.200	ND	75.0	70-130	11.4	30	
o-Xylene	0.0790	0.0050	"	0.100	ND	79.0	70-130	8.14	30	
1,2,4-Trimethylbenzene	0.0813	0.0050	"	0.100	ND	81.3	70-130	0.222	30	
1,3,5-Trimethylbenzene	0.0783	0.0050	"	0.100	ND	78.3	70-130	3.50	30	
Naphthalene	0.101	0.0038	"	0.100	ND	101	70-130	2.32	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0381</i>		<i>"</i>	<i>0.0400</i>		<i>95.2</i>	<i>50-150</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0451</i>		<i>"</i>	<i>0.0400</i>		<i>113</i>	<i>50-150</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>50-150</i>			

Summit Scientific

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



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BFJ0730 - EPA 3550A

Blank (BFJ0730-BLK1)

Prepared: 10/26/22 Analyzed: 10/27/22

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	8.20		"	12.5		65.6	30-150				

LCS (BFJ0730-BS1)

Prepared: 10/26/22 Analyzed: 10/27/22

C10-C28 (DRO)	510	50	mg/kg	500		102	70-130				
Surrogate: <i>o</i> -Terphenyl	8.65		"	12.5		69.2	30-150				

Matrix Spike (BFJ0730-MS1)

Source: 2210403-04

Prepared: 10/26/22 Analyzed: 10/27/22

C10-C28 (DRO)	443	50	mg/kg	500	27.9	83.1	70-130				
Surrogate: <i>o</i> -Terphenyl	8.04		"	12.5		64.3	30-150				

Matrix Spike Dup (BFJ0730-MSD1)

Source: 2210403-04

Prepared: 10/26/22 Analyzed: 10/27/22

C10-C28 (DRO)	483	50	mg/kg	500	27.9	91.1	70-130	8.66	20		
Surrogate: <i>o</i> -Terphenyl	9.29		"	12.5		74.3	30-150				

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 - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

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 BFJ0786 - EPA 5030 Soil MS

Blank (BFJ0786-BLK1)

Prepared & Analyzed: 10/28/22

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	0.0235		"	0.0333		70.4	40-150			
Surrogate: Fluoranthene-d10	0.0296		"	0.0333		88.9	40-150			

LCS (BFJ0786-BS1)

Prepared & Analyzed: 10/28/22

Acenaphthene	0.0349	0.00500	mg/kg	0.0333		105	31-137			
Anthracene	0.0358	0.00500	"	0.0333		107	30-120			
Benzo (a) anthracene	0.0320	0.00500	"	0.0333		95.9	30-120			
Benzo (a) pyrene	0.0308	0.00500	"	0.0333		92.5	30-120			
Benzo (b) fluoranthene	0.0299	0.00500	"	0.0333		89.7	30-120			
Benzo (k) fluoranthene	0.0302	0.00500	"	0.0333		90.6	30-120			
Chrysene	0.0324	0.00500	"	0.0333		97.3	30-120			
Dibenz (a,h) anthracene	0.0285	0.00500	"	0.0333		85.6	30-120			
Fluoranthene	0.0336	0.00500	"	0.0333		101	30-120			
Fluorene	0.0342	0.00500	"	0.0333		103	30-120			
Indeno (1,2,3-cd) pyrene	0.0289	0.00500	"	0.0333		86.6	30-120			
Pyrene	0.0321	0.00500	"	0.0333		96.2	35-142			
1-Methylnaphthalene	0.0316	0.00500	"	0.0333		94.7	35-142			
2-Methylnaphthalene	0.0271	0.00500	"	0.0333		81.3	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0304		"	0.0333		91.1	40-150			
Surrogate: Fluoranthene-d10	0.0355		"	0.0333		107	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 - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

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 BFJ0786 - EPA 5030 Soil MS

Matrix Spike (BFJ0786-MS1)	Source: 2210442-01			Prepared & Analyzed: 10/28/22							
Acenaphthene	0.0225	0.00500	mg/kg	0.0333	ND	67.4	31-137				
Anthracene	0.0222	0.00500	"	0.0333	ND	66.7	30-120				
Benzo (a) anthracene	0.0187	0.00500	"	0.0333	ND	56.1	30-120				
Benzo (a) pyrene	0.0170	0.00500	"	0.0333	ND	51.0	30-120				
Benzo (b) fluoranthene	0.0168	0.00500	"	0.0333	ND	50.4	30-120				
Benzo (k) fluoranthene	0.0173	0.00500	"	0.0333	ND	52.0	30-120				
Chrysene	0.0189	0.00500	"	0.0333	ND	56.7	30-120				
Dibenz (a,h) anthracene	0.0155	0.00500	"	0.0333	ND	46.5	30-120				
Fluoranthene	0.0220	0.00500	"	0.0333	ND	66.0	30-120				
Fluorene	0.0222	0.00500	"	0.0333	ND	66.6	30-120				
Indeno (1,2,3-cd) pyrene	0.0158	0.00500	"	0.0333	ND	47.3	30-120				
Pyrene	0.0190	0.00500	"	0.0333	ND	56.8	35-142				
1-Methylnaphthalene	0.0193	0.00500	"	0.0333	ND	58.0	15-130				
2-Methylnaphthalene	0.0206	0.00500	"	0.0333	ND	61.9	15-130				
Surrogate: 2-Methylnaphthalene-d10	0.0174		"	0.0333		52.1	40-150				
Surrogate: Fluoranthene-d10	0.0222		"	0.0333		66.5	40-150				

Matrix Spike Dup (BFJ0786-MSD1)	Source: 2210442-01			Prepared & Analyzed: 10/28/22							
Acenaphthene	0.0224	0.00500	mg/kg	0.0333	ND	67.2	31-137	0.244	30		
Anthracene	0.0231	0.00500	"	0.0333	ND	69.4	30-120	3.89	30		
Benzo (a) anthracene	0.0208	0.00500	"	0.0333	ND	62.3	30-120	10.5	30		
Benzo (a) pyrene	0.0191	0.00500	"	0.0333	ND	57.4	30-120	11.8	30		
Benzo (b) fluoranthene	0.0187	0.00500	"	0.0333	ND	56.0	30-120	10.5	30		
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.6	30-120	10.2	30		
Chrysene	0.0208	0.00500	"	0.0333	ND	62.4	30-120	9.53	30		
Dibenz (a,h) anthracene	0.0173	0.00500	"	0.0333	ND	52.0	30-120	11.1	30		
Fluoranthene	0.0226	0.00500	"	0.0333	ND	67.9	30-120	2.84	30		
Fluorene	0.0224	0.00500	"	0.0333	ND	67.2	30-120	0.767	30		
Indeno (1,2,3-cd) pyrene	0.0177	0.00500	"	0.0333	ND	53.2	30-120	11.7	30		
Pyrene	0.0201	0.00500	"	0.0333	ND	60.4	35-142	5.99	30		
1-Methylnaphthalene	0.0206	0.00500	"	0.0333	ND	61.8	15-130	6.37	50		
2-Methylnaphthalene	0.0229	0.00500	"	0.0333	ND	68.7	15-130	10.4	50		
Surrogate: 2-Methylnaphthalene-d10	0.0188		"	0.0333		56.3	40-150				
Surrogate: Fluoranthene-d10	0.0230		"	0.0333		68.9	40-150				

Summit Scientific

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



Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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

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

Batch BFJ0711 - EPA 3050B

Blank (BFJ0711-BLK1)

Prepared & Analyzed: 10/26/22

Boron ND 0.0100 mg/L

LCS (BFJ0711-BS1)

Prepared & Analyzed: 10/26/22

Boron 5.40 0.0100 mg/L 5.00 108 80-120

Duplicate (BFJ0711-DUP1)

Source: 2210442-01

Prepared: 10/26/22 Analyzed: 10/27/22

Boron 0.00980 0.0100 mg/L 0.0117 17.9 20

Matrix Spike (BFJ0711-MS1)

Source: 2210442-01

Prepared: 10/26/22 Analyzed: 10/27/22

Boron 5.37 0.0100 mg/L 5.00 0.0117 107 75-125

Matrix Spike Dup (BFJ0711-MSD1)

Source: 2210442-01

Prepared: 10/26/22 Analyzed: 10/27/22

Boron 5.50 0.0100 mg/L 5.00 0.0117 110 75-125 2.42 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 - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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

Summit Scientific

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

Batch BFJ0780 - General Preparation

Blank (BFJ0780-BLK1)

Prepared: 10/27/22 Analyzed: 10/28/22

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

LCS (BFJ0780-BS1)

Prepared: 10/27/22 Analyzed: 10/28/22

Calcium	4.48	0.0500	mg/L wet	5.00	89.6	70-130				
Magnesium	4.96	0.0500	"	5.00	99.2	70-130				
Sodium	5.13	0.0500	"	5.00	103	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 - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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

Summit Scientific

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

Batch BFJ0716 - General Preparation

Duplicate (BFJ0716-DUP1)

Source: 2210452-01

Prepared & Analyzed: 10/26/22

% Solids	89.8		%		88.9			1.10	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 - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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

Summit Scientific

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

Batch BFJ0812 - General Preparation

Blank (BFJ0812-BLK1)

Prepared & Analyzed: 10/28/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFJ0812-BS1)

Prepared & Analyzed: 10/28/22

Specific Conductance (EC) 0.149 0.0100 mmhos/cm 0.150 99.1 95-105

Duplicate (BFJ0812-DUP1)

Source: 2210449-01

Prepared & Analyzed: 10/28/22

Specific Conductance (EC) 0.927 0.0100 mmhos/cm 0.950 2.42 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 - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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

Summit Scientific

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

Batch BFJ0813 - General Preparation

LCS (BFJ0813-BS1)

Prepared & Analyzed: 10/28/22

pH 9.18 pH Units 9.18 100 95-105

Duplicate (BFJ0813-DUP1)

Source: 2210286-10

Prepared & Analyzed: 10/28/22

pH 8.13 pH Units 8.18 0.613 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 - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

Notes and Definitions

S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
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