

FREMONT ENVIRONMENTAL INC.

April 24, 2024

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

Subject: **Flowline Closure Data Submittal**
Derr 21-4
API # 05-123-30775
SENE Sec. 4, T5N, R65W
Weld County, Colorado
Fremont Project No. C023-291
Remediation # 29994

Dear Mr. Peterson:

As you requested, Fremont Environmental Inc. (Fremont) personnel conducted flowline closure activities for the Noble Energy Inc. (Noble) Derr 21-4. Impacted soil was not encountered during abandonment activities. Details of the Derr 21-4 closure activities are documented in the attached Closure Report. Groundwater was not encountered during flowline abandonment activities.

Please contact me at (336) 541-3048 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,

FREMONT ENVIRONMENTAL INC.



Aaron Otilar
Consultant

Attachments:

- Facility Closure Checklist
- Tables
- Figures
- Photos
- Laboratory Report

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> Derr 21-4/05-123-30775		<i>Date:</i> 11/10/23		<i>Remediation Project #:</i> 29994				
<i>Associated Wells:</i>		<i>Age of Site:</i> 2010				<i>Number of Photos Attached:</i> 7		

Starting point: (GPS coordinates and descriptions)
40.4313283, -104.6634472

End point: (GPS coordinates and descriptions)
40.4316229, -104.6679313

USCS Soil Type: GW *Estimated Depth to Groundwater:*

Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
None Observed

Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
None Observed

Flowlines

<i>Flowline type</i>	Combined Fluids							
<i>Depth</i>	4 Ft							
<i>Age</i>	2010							
<i>Length</i>	1250 ft							
<i>Construction Material</i>	Carbon Steel							
<i>Were flowlines pulled?</i>	Yes							
<i>Visual Integrity of lines</i>	No Damage							
<i>Visual impacts if trenched</i>	N/A							
<i>PID Readings if trenched</i>	N/A							
<i>Sample taken? Location/Sample ID#</i>	Yes, See Attached							
<i>Photo Number(s)</i>	See Attached							

Other observations regarding on location flowlines:

Summary

Was impacted soil identified?
 No Yes - less than 10 cubic yards Yes - more than 10 cubic yards

Total number of samples field screened: 7 *Total number of samples collected:* 7

Highest PID Reading: 8.4 ppm (FL01-02@4') *Total number of samples submitted to lab for analysis:* 5

If more than 10 cubic yards of impacted soil were observed:

Vertical extent: *Estimated spill volume:*

Lateral extent: *Volume of soil removed:*

Is additional investigation required?

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: *Was remedial groundwater removal conducted?* Yes No

Date Groundwater was encountered: *Commencement date of removal:*

Sheen on groundwater? Yes No *Volume of groundwater removed prior to sampling:*

Free product observed? Yes No *Volume of groundwater removed post sampling:*

Total number of samples collected: *Total Volume of groundwater removed:*

Total number of samples submitted to lab for analysis:

TABLE 1
FIELD DATA SUMMARY TABLE
NOBLE 100322
DERR 21-4, WELD COUNTY, COLORADO
REM # 29994

Sample ID	Sample Date	Depth (ft)	GPS Data Latitude/Longitude		PDOP Value	VOC Concentration (ppm)
FL01-01@4'	11/10/2023	4	40.4315523	-104.6644822	-	2.1
FL01-02@4'	11/10/2023	4	40.4315442	-104.6652881	-	8.4
FL01-03@4'	11/10/2023	4	40.4315106	-104.6661357	-	3.9
FL01-04@4'	11/10/2023	4	40.4315086	-104.6670516	-	2.9
FLR01@4'	11/10/2023	4	40.4313283	-104.6634472	-	3.4
SEP01-FL@4'	11/10/2023	4	40.4316229	-104.6679313	-	7.5
SEP02-FL@4'	11/10/2023	4	40.4315945	-104.6679795	-	3.5
BKG01	11/10/2023	4	40.4314992	-104.6635756	-	0.0
BKG02	11/10/2023	4	40.4314645	-104.6632243	-	0.0

1. Global Positioning System (GPS) data is provided in decimal degrees using North American Datum (NAD) 83 UTMZone 13 North.

2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

PDOP = Position Dilution of Precision

ppm = Parts per million

in. = Inches

ft. = Feet

bgs = Below ground surface

TABLE 2
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE 100322
DERR 21-4, WELD COUNTY, COLORADO
REM # 29994

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 (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500	500**		
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	500**		
FL01-01@4'	11/10/2023	4	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
FL01-04@4'	11/10/2023	4	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
FLR01@4'	11/10/2023	4	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
SEP01-FL@4'	11/10/2023	4	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
SEP02-FL@4'	11/10/2023	4	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50

1. Bold values exceed the ECMC Table 915-1 limit(s)
 2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
 3. * Indicates laboratory minimum detection limit in excess of SSL
 4. ** Summation of GRO+DRO+ORO must be less than 500 mg/kg
- (<) = Analytical result is less than the indicated laboratory reporting limit.
TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
TPH-DRO = Total petroleum hydrocarbons - diesel range organics
TPH-ORO = Total petroleum hydrocarbons - oil range organics
mg/kg = Milligrams per kilogram
ft. = Feet
bgs = Below ground surface
NA - Not analyzed

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE 100322
DERR 21-4, WELD COUNTY, COLORADO
REM # 29994

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)
ECMC 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
ECMC 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
FL01-01@4'	11/10/2023	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
FL01-04@4'	11/10/2023	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
FLR01@4'	11/10/2023	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
SEP01-FL@4'	11/10/2023	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
SEP02-FL@4'	11/10/2023	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

1. Bold values exceed the ECMC Table 915-1 limit(s)
 2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
 3. * Indicates laboratory minimum detection limit in excess of SSL
 4. ** Summation of GRO+DRO+ORO must be less than 500 mg/kg
- (<) = Analytical result is less than the indicated laboratory reporting limit.
TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
TPH-DRO = Total petroleum hydrocarbons - diesel range organics
TPH-ORO = Total petroleum hydrocarbons - oil range organics
mg/kg = Milligrams per kilogram
ft. = Feet
bgs = Below ground surface
NA - Not analyzed

TABLE 4
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE 100322
DERR 21-4, WELD COUNTY, COLORADO
REM # 29994

Sample ID	Sample Date	Depth (ft)	pH (Standard Units)	EC (mmhos/cm)	SAR (Standard Units)	Boron (mg/L)
ECMC Table 915-1 Soil Suitability Limits			6 - 8.3	4	6	2
FL01-01@4'	11/10/2023	4	9.02	1.31	0.838	<2.00
FL01-04@4'	11/10/2023	4	7.48	0.143	1.04	<2.00
FLR01@4'	11/10/2023	4	7.65	0.116	0.0881	<2.00
SEP01-FL@4'	11/10/2023	4	8.37	0.176	0.0456	<2.00
SEP02-FL@4'	11/10/2023	4	8.77	0.217	0.0458	<2.00
BKG01@4'	11/10/2023	4	8.77	1.24	1.14	<2.00
BKG02@4'	11/10/2023	4	7.94	1.21	1.12	<2.00
Maximum Background Concentration		4	8.77	1.24	1.14	<2.00

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within background concentrations.

2. **Bold** faced values exceed the ECMC Table 915-1 limit(s) and native background concentrations.

3. Brown highlighted soil analytical values indicate a regulatory exceedance.

NA - Not analyzed/Not applicable

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
NOBLE 100322
DERR 21-4, WELD COUNTY, COLORADO
REM # 29994

Sample ID	Sample Date	Depth (ft)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			0.68	15000	71	0.3	3100	400	1500	390	390	23000
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
FL01-01@4'	11/10/2023	4	1.70	65.4	<0.200	<0.30	2.39	4.30	2.27	0.267	0.0277	7.85
FL01-04@4'	11/10/2023	4	1.33	18.2	<0.200	<0.30	1.65	2.21	1.60	0.716	<0.0200	5.20
FLR01@4'	11/10/2023	4	1.52	74.2	0.233	<0.30	4.12	5.57	2.16	<0.260	0.0271	9.18
SEP01-FL@4'	11/10/2023	4	1.25	59.8	<0.200	<0.30	2.41	5.86	2.10	0.280	0.0278	9.61
SEP02-FL@4'	11/10/2023	4	1.68	82.6	0.320	<0.30	3.31	6.61	2.54	0.405	0.0354	12.5
BKG01@4'	11/10/2023	4	1.81	61.1	<0.200	<0.30	2.45	4.72	2.44	<0.260	0.0269	8.27
BKG02@4'	11/10/2023	4	1.53	59.1	<0.200	<0.30	2.09	4.19	2.09	<0.260	0.0238	7.23
1.25x Maximum Background Concentration		4	2.26	76.4	<0.200	<0.30	3.06	5.90	3.05	<0.260	0.0336	10.3

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within 1.25x background concentrations.
2. **Bold** faced values exceed the ECMC Table 915-1 limit(s) and native background concentrations.
3. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL).
4. Non-detect background results accounted for in the highest background concentration by using the reporting limit.

ECMC = Energy & Carbon Management Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

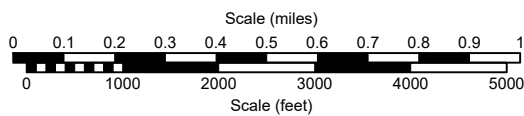
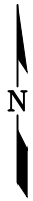
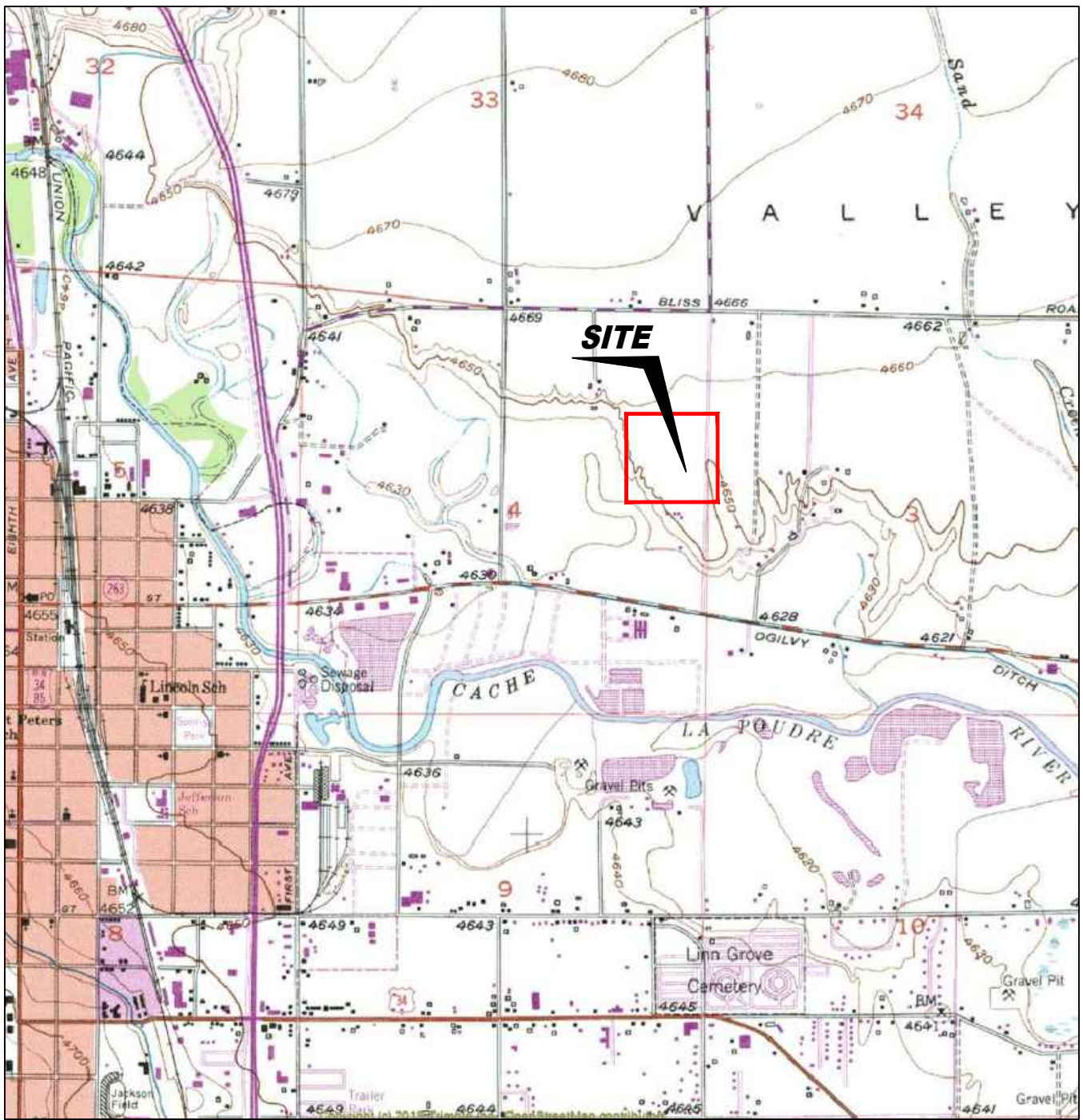
mg/kg = Milligrams per kilogram

ft. = Feet

bgs = Below ground surface

* Indicates laboratory minimum detection limit in excess of SSL

NA - Not analyzed/Not applicable



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP
NOBLE ENERGY INC - DERR 21-4

SENE Sec. 4, T5N, R65W, 6th PM
 Weld County, Colorado
 40.431342°, -104.663468°

Project # C023-291	API # 05-123-30775	Facility #
Date 6/18/24	Remediation # 29994	Filename 23291T





LEGEND

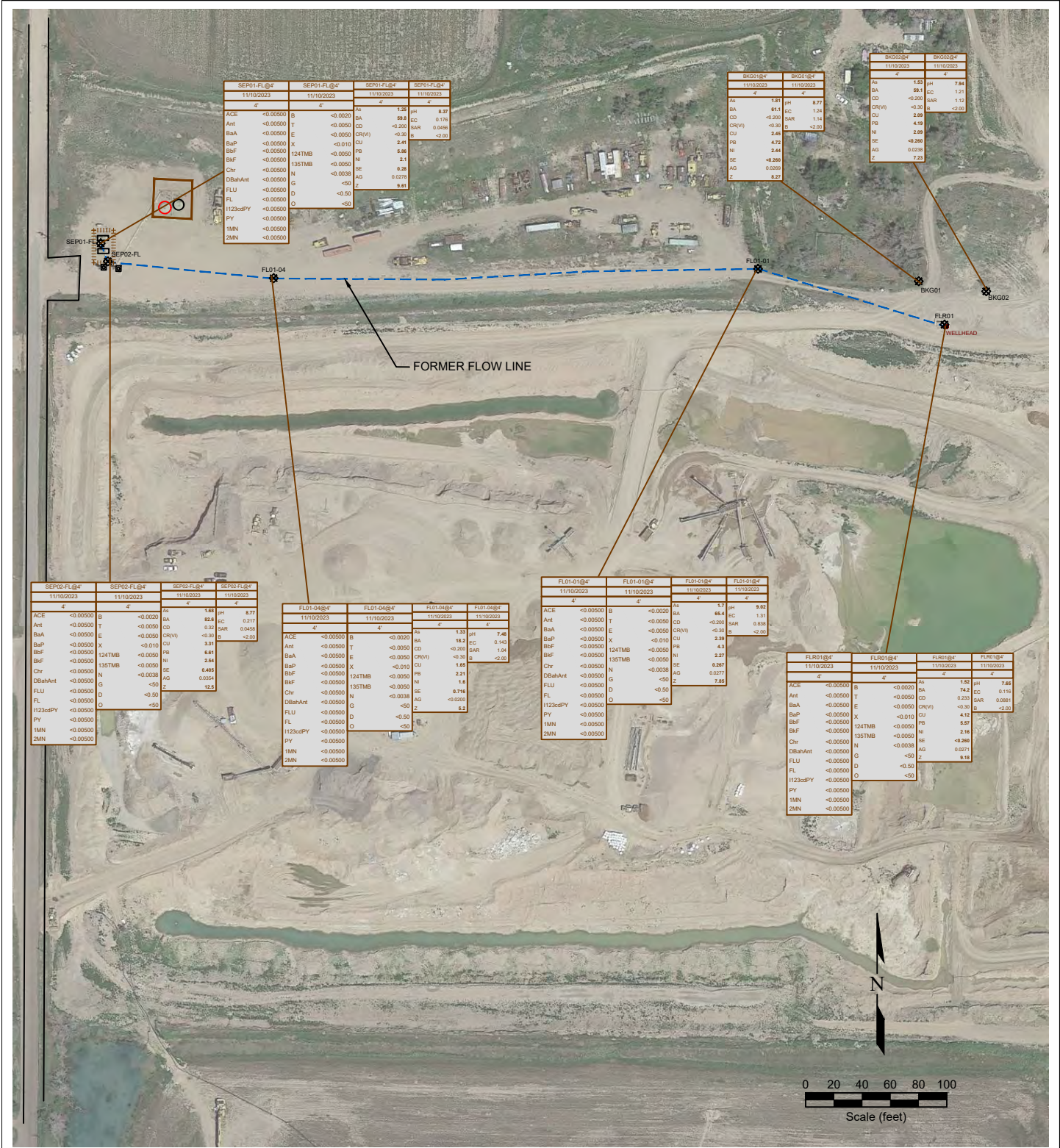
- WELL HEAD LOCATION
- ▲ PID READING LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- FORMER FLOW LINE
- FENCE LINE
- CONTAINMENT BERM
- CONTAINMENT WALL

**Figure 2
SITE MAP
NOBLE ENERGY INC - DERR 21-4**

SENE Sec. 4, T5N, R65W, 6th PM
Weld County, Colorado
40.431342°, -104.663468°

Project No. C023-291	API # 05-123-30775	Facility #
Date 6/18/24	Remediation # 29994	Filename 23291Q





LEGEND

- WELL HEAD LOCATION
- SOIL SAMPLE LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- FORMER FLOW LINE
- FENCE LINE
- CONTAINMENT BERM
- CONTAINMENT WALL
- NOT ANALYZED

SAMPLE ID	SAMPLE ID	SAMPLE ID	SAMPLE ID
DATE	DATE SAMPLED	DATE	DATE SAMPLED
DEPTH (ft)	DEPTH (ft)	DEPTH (ft)	DEPTH (ft)
ACE	ACENAPHTHENE (mg/kg)	ACE	ACENAPHTHENE (mg/kg)
Ant	ANTHRACENE (mg/kg)	Ant	ANTHRACENE (mg/kg)
BaA	BENZO (A) ANTHRACENE (mg/kg)	BaA	BENZO (A) ANTHRACENE (mg/kg)
BaP	BENZO (A) PYRENE (mg/kg)	BaP	BENZO (A) PYRENE (mg/kg)
BbF	BENZO (B) FLUORANTHENE (mg/kg)	BbF	BENZO (B) FLUORANTHENE (mg/kg)
BkF	BENZO (K) FLUORANTHENE (mg/kg)	BkF	BENZO (K) FLUORANTHENE (mg/kg)
Chr	CHRYSENE (mg/kg)	Chr	CHRYSENE (mg/kg)
DBahAnt	DIBENZO (A,H) ANTHRACENE (mg/kg)	DBahAnt	DIBENZO (A,H) ANTHRACENE (mg/kg)
FLU	FLUORANTHENE (mg/kg)	FLU	FLUORANTHENE (mg/kg)
FL	FLUORENE (mg/kg)	FL	FLUORENE (mg/kg)
FL123cdPY	INDENO (1,2,3-CD) PYRENE (mg/kg)	FL123cdPY	INDENO (1,2,3-CD) PYRENE (mg/kg)
PY	PYRENE (mg/kg)	PY	PYRENE (mg/kg)
1MN	1-METHYLNAPHTHALENE (mg/kg)	1MN	1-METHYLNAPHTHALENE (mg/kg)
2MN	2-METHYLNAPHTHALENE (mg/kg)	2MN	2-METHYLNAPHTHALENE (mg/kg)
As	ARSENIC (mg/kg)	As	ARSENIC (mg/kg)
Ba	BARIUM (mg/kg)	Ba	BARIUM (mg/kg)
CD	CADMIUM (mg/kg)	CD	CADMIUM (mg/kg)
CR(VI)	CHROMIUM (mg/kg)	CR(VI)	CHROMIUM (mg/kg)
CU	COPPER (mg/kg)	CU	COPPER (mg/kg)
FS	LEAD (mg/kg)	FS	LEAD (mg/kg)
NI	NICKEL (mg/kg)	NI	NICKEL (mg/kg)
SE	SELENIUM (mg/kg)	SE	SELENIUM (mg/kg)
AG	SILVER (mg/kg)	AG	SILVER (mg/kg)
Z	ZINC (mg/kg)	Z	ZINC (mg/kg)

Figure 3
SOIL CHEMISTRY MAP
NOBLE ENERGY INC - DERR 21-4

SENE Sec. 4, T5N, R65W, 6th PM
 Weld County, Colorado
 40.431342° , -104.663468°

Project No. C023-291	API # 05-123-30775	Facility #
Date 6/18/24	Remediation # 29994	Filename 23291Q

Photo Log



Description:

#1 Derr 21-4 Flowline: FL01-01



Description:

#2 Derr 21-4 Flowline: FL01-01

Photo Log



Description:

#3 Derr 21-4 Flowline: FL01-02



Description:

#4 Derr 21-4 Flowline: FL01-03



Description:

#5 Derr 21-4 Flowline: FL01-04

Photo Log



Description:

#6 Derr 21-4 Flowline: FLR01



Description:

#7 Derr 21-4 Flowline: SEP-FL