FREMONT ENVIRONMENTAL INC.

June 1, 2024

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

Subject: **Facility Closure Data Submittal**
Barnard-64N65W 4SWNW
SWNW Sec. 4, T4N, R65W
Weld County, Colorado
Fremont Project No. C023-264
Facility # 330172, Remediation # 28824

Dear Mr. Peterson:

As you requested, Fremont Environmental Inc. (Fremont) personnel conducted facility closure activities for the Noble Energy Inc. (Noble) Barnard-64N65W 4SWNW. Impacted soil was not encountered during abandonment activities. Details of the Barnard-64N65W 4SWNW facility closure activities are documented in the attached Closure Report. Groundwater was not encountered during facility decommissioning activities.

Please contact me at (303) 261-6246 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,

FREMONT ENVIRONMENTAL INC.

Stanley Gilbert
Environmental Scientist

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

1759 Redwing Lane, Broomfield, CO 80020
(303) 956-8714 (direct)

Tank Battery Closure Checklist

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

Additional attachments (optional):	☐	Pit Closure	☐	Wellhead Closure	☐	Flowline Closure	☑	Partially Buried Vault Closure

Site Name & COGCC Facility Number: BARNARD-64N65W 4SWNW Facility#:330172	*Date:* 10/13/2023	*Remediation Project #:* 28824
Associated Wells: Barnard 4-23 API:05-123-18550	*Age of Site:* 1994	*Number of Photos Attached:* See Atatched
Location: *(GPS coordinates of southeaster berm)* 40.3465314, -104.6745146		*Estimated Facility Size (acres):* ~1 Acre

General Condition of Site: *(General observations regarding housekeeping, corrosion, waste management, etc.)*

Good housekeeping. General condition for all the on-site equipment looked fine. Waste management well maintained.

USCS Soil Type:	*Estimated Depth to Groundwater:*
SP	>4'

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

Tanks

Tank Contents	OIL								
Size (barrels)	300								
Age	1994								
Construction Material	Steel								
Tank type (AST/BBV, etc.)	AST								
Visual Integrity of Tank	Good								
Condition of tank footprint	Good								
PID Readings	High @ 0.0ppm								
Soil impacts present at valves or hatches?	N/A								
PID Readings	N/A								
Sample taken? Location/ Sample ID#	Yes, See Attached								
Photo Number(s)	See Attached								

Other observations regarding tanks:

Separators

Separator size	Unknown								
Vertical or Horizontal	Horizontal								
Age	1994								
Soil impacts observed? If yes,	No Impacts								
PID Readings	High @ 0.4ppm								
Sample taken? Location/ Sample ID#	Yes, See Attached								
Photo Number(s)	See Attached								

Other observations regarding separators

Third Party Equipment

Type	Meter house								
Age	1994								

Third Party Operator	Unknown								
Removal Date	Still present								
Sample taken? Location/Sample	Field Screened Only								
PID Readings	High @ 0.0ppm								
Photo Number(s)	See Attached								

Other Facility Equipment

Equipment type	Flare	Flare			
Equipment Condition	Good	Good			
Age	1994	1994			
Soil impacts observed during	No Impacts	No Impacts			
PID Readings	High @ 0.0ppm	High @ 0.0ppm			
Sample taken? Location/Sample	Field Screened Only	Field Screened Only			
Photo Number(s)	See Attached	See Attached			

Other observations regarding other facility or third party equipment:

Summary

Was impacted soil identified? ☑ No ☐ Yes - less than 10 cubic yards ☐ Yes - more than 10 cubic yards	
Total number of samples field screened: 5	*Total number of samples collected:* 5
Highest PID Reading: High @ 0.4ppm (SEP DL 3')	*Total number of samples submitted to lab for analysis:* 2
If more than 10 cubic yards of impacted soil were observed: NA	
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:	

Buried or Partially Buried Vessel Closure Checklist

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

Additional attachments (optional):		Pit Closure		Wellhead Closure		Flowline Closure	X	Tank Battery Closure

Site Name & COGCC Facility Number: BARNARD-64N65W 4SWNW Facility#:330172	*Date:* 10/13/2023	*Remediation Project #:* 28824
Associated Wells: Barnard 4-23 API:05-123-18550	*Age of Site:* 1994	*Number of Photos Attached:* See Atatched
Location: *(GPS coordinates of vault or southeastern tank berm for multiple)* 40.3465314, -104.6745146		*Estimated Facility Size (acres):* ~1 Acre

General Condition of Site: *(General observations regarding housekeeping, corrosion, waste management, etc.)*
Good housekeeping. General condition for all the on-site equipment looked fine. Waste management well maintained.

USCS Soil Type: SP	*Estimated Depth to Groundwater:* >4'

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

Buried or Partially Buried Vessels

Tank Contents	Produced water								
Size (barrels)	100								
Age	1994								
Construction Material	PBV Concrete								
Visual Integrity of Tank	Good								
Condition of tank footprint	Good								
PID Readings	High @ 4.5ppm								
Condition of dump line	Good								
PID Readings	See Attached								
Sample taken? Location/Sample ID#	Yes, See Attached								
Photo Number(s)	See Attached								

Other observations regarding partially buried vessels:
The western sidewall of PWV excavation was the tie-in point for the dumpline to the separator. Dumplines were pulled

Summary

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

Total number of samples field screened: 5	*Total number of samples collected:* 5
Highest PID Reading: `High @ 4.5ppm (PWV Floor 4')	*Total number of samples submitted to lab for analysis:* 1
If more than 10 cubic yards of impacted soil were observed: NA	
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
BARNARD TANK, WELD COUNTY, COLORADO
REM # 28824

Sample ID	Sample Date	Depth (ft)	GPS Data Latitude/Longitude		PDOP Value	VOC Concentration (ppm)
AST 0.5'	10/13/2023	0.5'	40.3465759	-104.6745477	-	0.0
MH 0.5'	10/13/2023	0.5'	40.3462493	-104.6745715	-	0.0
FLARE01 0.5'	10/13/2023	0.5'	40.3463214	-104.6746075	-	0.0
FLARE02 0.5'	10/13/2023	0.5'	40.3463179	-104.6745040	-	0.0
SEP DL 3'	10/13/2023	3'	40.3462776	-104.6745942	-	0.4
PWV N WALL 3'	10/13/2023	3'	40.3465590	-104.6745442	-	0.2
PWV S WALL 3'	10/13/2023	3'	40.3465082	-104.6745462	-	0.8
PWV E WALL 3'	10/13/2023	3'	40.3465314	-104.6745146	-	0.5
PWV W WALL 3'	10/13/2023	3'	40.3465343	-104.6745680	-	1.6
PWV FLOOR 4'	10/13/2023	4'	40.3465330	-104.6745424	-	4.5
BKG01	10/13/2023	0.5', 3', 4'	40.3462957	-104.6747253	-	0.0
BKG02	10/13/2023	0.5', 3', 4'	40.3464292	-104.6747265	-	0.0
BKG03	10/13/2023	0.5', 3', 4'	40.3466032	-104.6747293	-	0.0
BKG04	10/13/2023	0.5', 3', 4'	40.3466506	-104.6743548	-	0.0
BKG05	10/13/2023	0.5', 3', 4'	40.3463085	-104.6742954	-	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
BARNARD TANK, WELD COUNTY, COLORADO
REM # 28824

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**		
AST 0.5'	10/13/2023	0.5'	*<0.0020*	*<0.0050*	*<0.0050*	*<0.010*	*<0.0050*	*<0.0050*	*<0.0038*	*<500*	*<0.50*	*<50*	*<50*
SEP DL 3'	10/13/2023	3'	*<0.0020*	*<0.0050*	*<0.0050*	*<0.010*	*<0.0050*	*<0.0050*	*<0.0038*	*<500*	*<0.50*	*<50*	*<50*
PWV FLOOR 4'	10/13/2023	4'	*<0.0020*	*<0.0050*	*<0.0050*	*<0.010*	0.0052	*<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
BARNARD TANK, WELD COUNTY, COLORADO
REM # 28824

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
AST 0.5'	10/13/2023	0.5'	*<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*
SEP DL 3'	10/13/2023	3'	*<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*
PWV FLOOR 4'	10/13/2023	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

BARNARD TANK, WELD COUNTY, COLORADO

REM # 28824

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
AST 0.5'	10/13/2023	0.5'	7.81	0.754	0.615	*<2.00*
SEP DL 3'	10/13/2023	3'	7.88	0.635	1.46	*<2.00*
PWV FLOOR 4'	10/13/2023	4'	8.18	0.361	0.614	*<2.00*

TABLE 4
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE 100322
BARNARD TANK, WELD COUNTY, COLORADO
REM # 28824

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
BKG01 0.5'	10/13/2023	0.5'	7.84	0.780	0.595	*<2.00*
BKG02 0.5'	10/13/2023	0.5'	7.75	0.926	0.477	*<2.00*
BKG03 0.5'	10/13/2023	0.5'	7.78	1.05	0.581	*<2.00*
BKG04 0.5'	10/13/2023	0.5'	7.81	0.624	0.384	*<2.00*
BKG05 0.5'	10/13/2023	0.5'	7.82	0.585	0.383	*<2.00*
BKG01 3'	10/13/2023	3'	7.79	1.02	1.84	*<2.00*
BKG02 3'	10/13/2023	3'	7.85	0.726	1.57	*<2.00*
BKG03 3'	10/13/2023	3'	8.03	0.248	0.930	*<2.00*
BKG04 3'	10/13/2023	3'	6.79	0.0574	0.0373	*<2.00*
BKG05 3'	10/13/2023	3'	**5.55**	0.23	0.0358	*<2.00*
BKG01 4'	10/13/2023	4'	8.04	0.422	0.585	*<2.00*
BKG02 4'	10/13/2023	4'	8.07	0.487	0.725	*<2.00*
BKG03 4'	10/13/2023	4'	8.17	0.408	0.536	*<2.00*
BKG04 4'	10/13/2023	4'	8.11	0.407	0.610	*<2.00*
BKG05 4'	10/13/2023	4'	8.03	0.503	0.826	*<2.00*
Maximum Background Concentration		0.5'	7.84	1.05	0.595	<2.00
Maximum Background Concentration		3'	5.55	1.02	1.84	<2.00
Maximum Background Concentration		4'	8.17	0.503	0.826	<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
BARNARD TANK, WELD COUNTY, COLORADO
REM # 28824

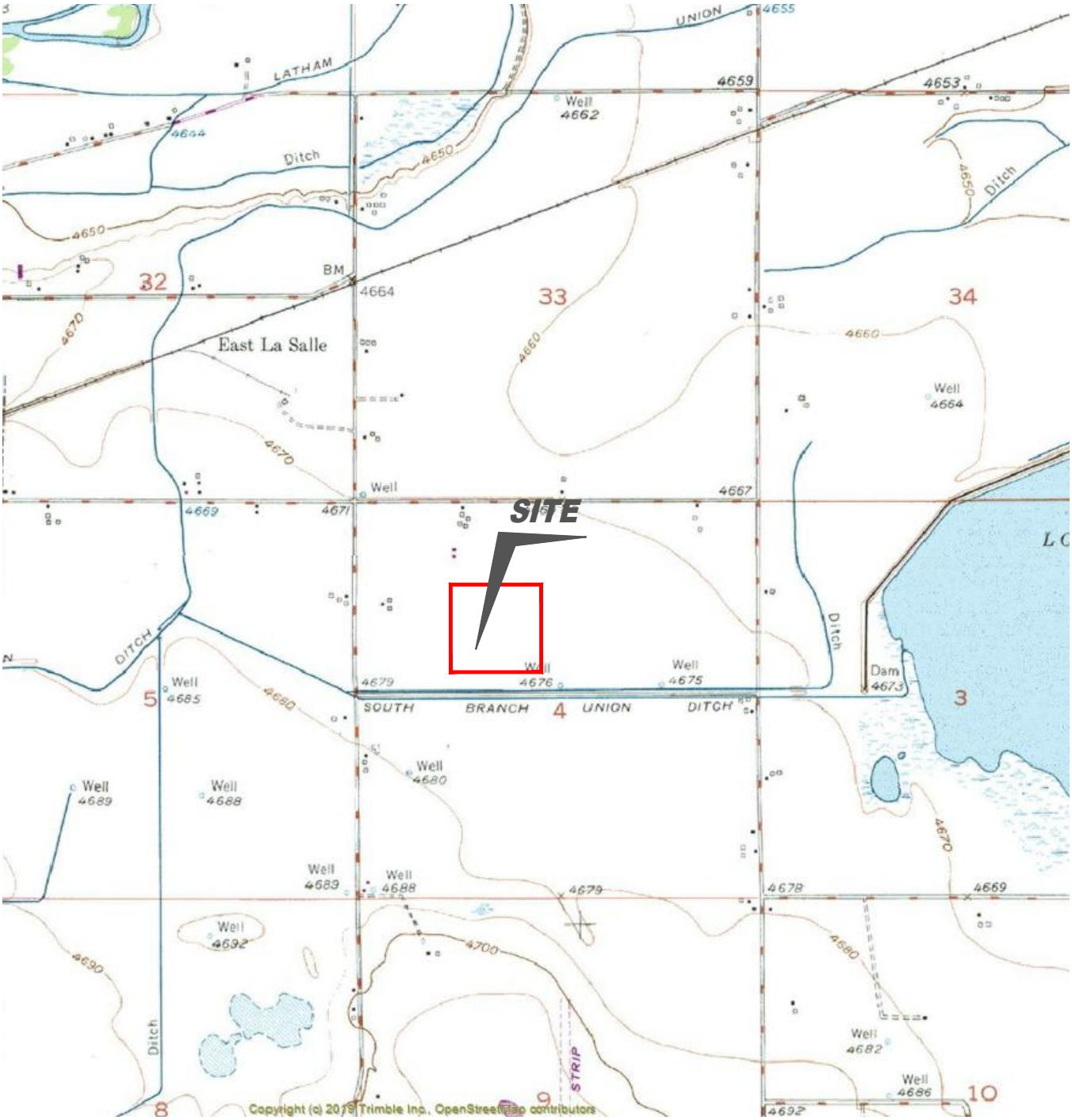
Sample ID	Sample Date	Depth (ft)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			0.68	15000	71	0.3	3100	400	1500	390	390	23000
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
AST 0.5'	10/13/2023	0.5'	**1.73**	48.0	*<0.200*	*<0.30*	3.84	6.28	2.60	*<0.260*	0.0269	17.9
SEP DL 3'	10/13/2023	3'	**2.81**	56.0	*<0.200*	*<0.30*	4.41	**17.6**	2.98	*<0.260*	0.0333	27.1
PWV FLOOR 4'	10/13/2023	4'	**1.73**	55.1	*<0.200*	*<0.30*	3.38	6.31	2.78	*<0.260*	0.0290	14.5

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
NOBLE 100322
BARNARD TANK, WELD COUNTY, COLORADO
REM # 28824

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
BKG01 0.5'	10/13/2023	0.5'	**1.61**	44.1	*<0.200*	*<0.30*	3.47	6.14	2.28	*<0.260*	0.0235	16.5
BKG02 0.5'	10/13/2023	0.5'	**2.18**	51.4	*<0.200*	*<0.30*	3.73	7.07	2.39	*<0.260*	0.0318	17.7
BKG03 0.5'	10/13/2023	0.5'	**1.73**	48.6	*<0.200*	*<0.30*	3.88	7.50	2.44	*<0.260*	0.0299	17.8
BKG04 0.5'	10/13/2023	0.5'	**1.47**	41.5	*<0.200*	*<0.30*	3.25	10.3	2.14	*<0.260*	0.0212	15.0
BKG05 0.5'	10/13/2023	0.5'	**1.86**	48.8	*<0.200*	*<0.30*	4.03	**15.1**	2.65	*<0.260*	0.0276	19.3
BKG01 3'	10/13/2023	3'	**1.96**	58.7	*<0.200*	*<0.30*	4.16	13.4	2.60	*<0.260*	0.0358	24.8
BKG02 3'	10/13/2023	3'	**2.25**	53.3	*<0.200*	*<0.30*	4.57	13.3	2.89	*<0.260*	0.0332	31.5
BKG03 3'	10/13/2023	3'	**1.71**	16.3	*<0.200*	*<0.30*	1.96	2.83	1.19	*<0.260*	*<0.0200*	6.82
BKG04 3'	10/13/2023	3'	**1.59**	62.0	*<0.200*	*<0.30*	3.69	6.33	3.30	*<0.260*	0.0348	15.4
BKG05 3'	10/13/2023	3'	**1.72**	75.3	*<0.200*	*<0.30*	4.57	6.77	3.89	*<0.260*	0.0314	16.6
BKG01 4'	10/13/2023	4'	**1.85**	54.6	*<0.200*	*<0.30*	3.66	6.70	2.85	*<0.260*	0.0471	14.6
BKG02 4'	10/13/2023	4'	**1.98**	59.3	*<0.200*	*<0.30*	4.05	6.57	3.10	*<0.260*	0.0291	16.3
BKG03 4'	10/13/2023	4'	**1.77**	54.7	*<0.200*	*<0.30*	3.47	6.34	2.64	*<0.260*	0.0281	14.5
BKG04 4'	10/13/2023	4'	**2.26**	79.1	*<0.200*	*<0.30*	3.43	6.52	3.23	*<0.260*	0.0274	15.9
BKG05 4'	10/13/2023	4'	**2.18**	70.4	*<0.200*	*<0.30*	3.67	6.60	3.30	*<0.260*	0.0316	17.3
1.25x Maximum Background Concentration		0.5'	2.73	64.3	<0.200	<0.30	5.04	18.9	3.31	<0.260	0.0398	24.1
1.25x Maximum Background Concentration		3'	2.81	94.1	<0.200	<0.30	5.71	16.8	4.86	<0.260	0.0448	39.4
1.25x Maximum Background Concentration		4'	2.83	98.9	<0.200	<0.30	5.06	8.38	4.13	<0.260	0.0589	21.6

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



N

Scale (miles)

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

0 1000 2000 3000 4000 5000

Scale (feet)

USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1

SITE LOCATION MAP

NOBLE ENERGY INC - BARNARD-64N65W 4SWNW

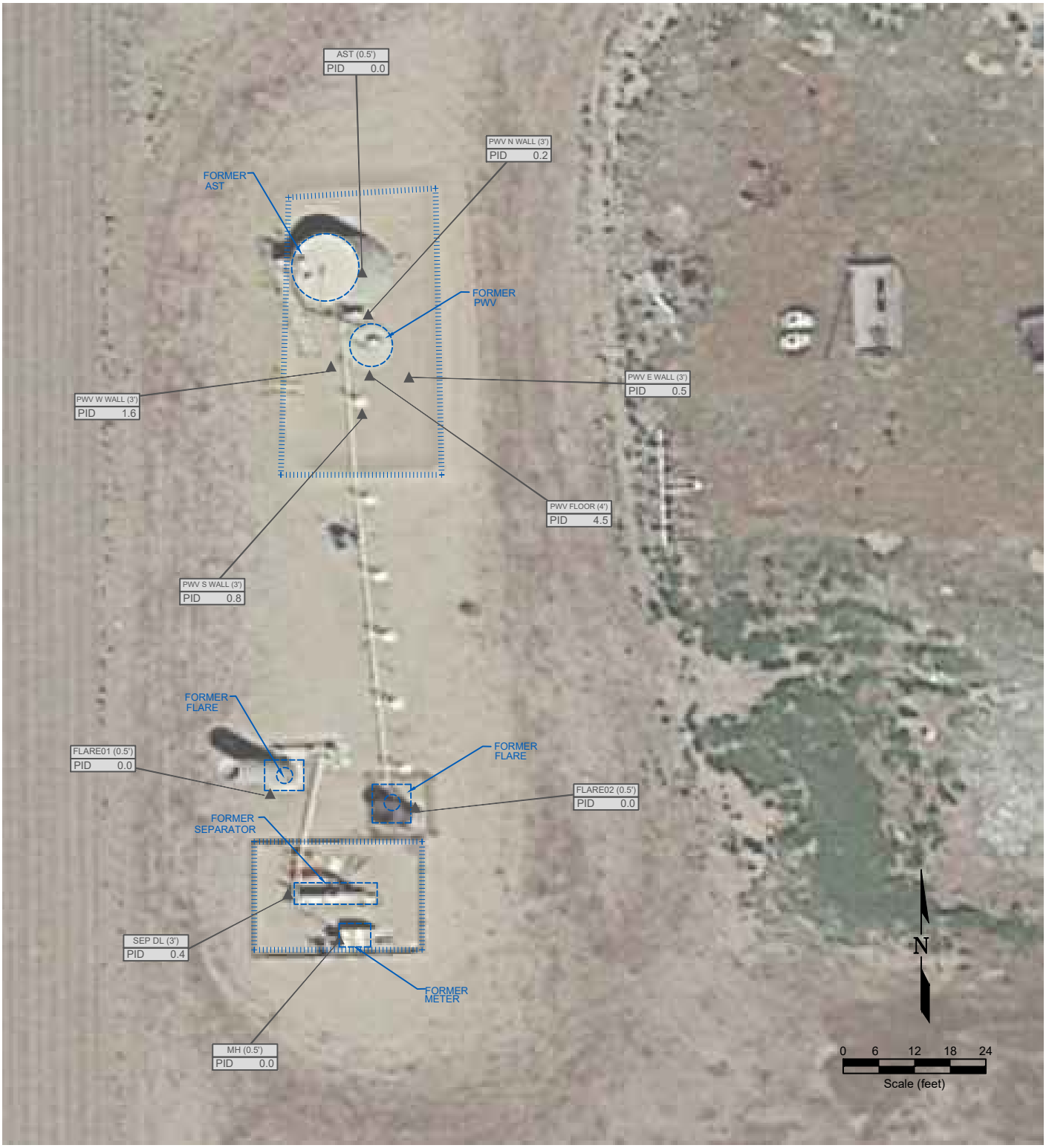
SWNW Sec. 4, T4N, R65W, 6th PM

Weld County, Colorado

40.346296°, -104.674571°

Project #	API #	Facility #
CO23-264		**330172**
Date	Remediation #	Filename
4/19/24	**28824**	**23264T**

FREMONT ENVIRONMENTAL



LEGEND

- SOIL BORING LOCATION
- PID READING LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER — FORMER FACILITY
- FLOW LINE
- CONTAINMENT BERM
- CONTAINMENT WALL
- FENCE LINE
- PWV W WALL (3') / PID 1.6 — PID READING LOCATION IDENTIFICATION / PHOTO IONIZATION DETECTION (ppm)

Figure 2

SITE MAP

NOBLE ENERGY INC - BARNARD-64N65W 4SWNW

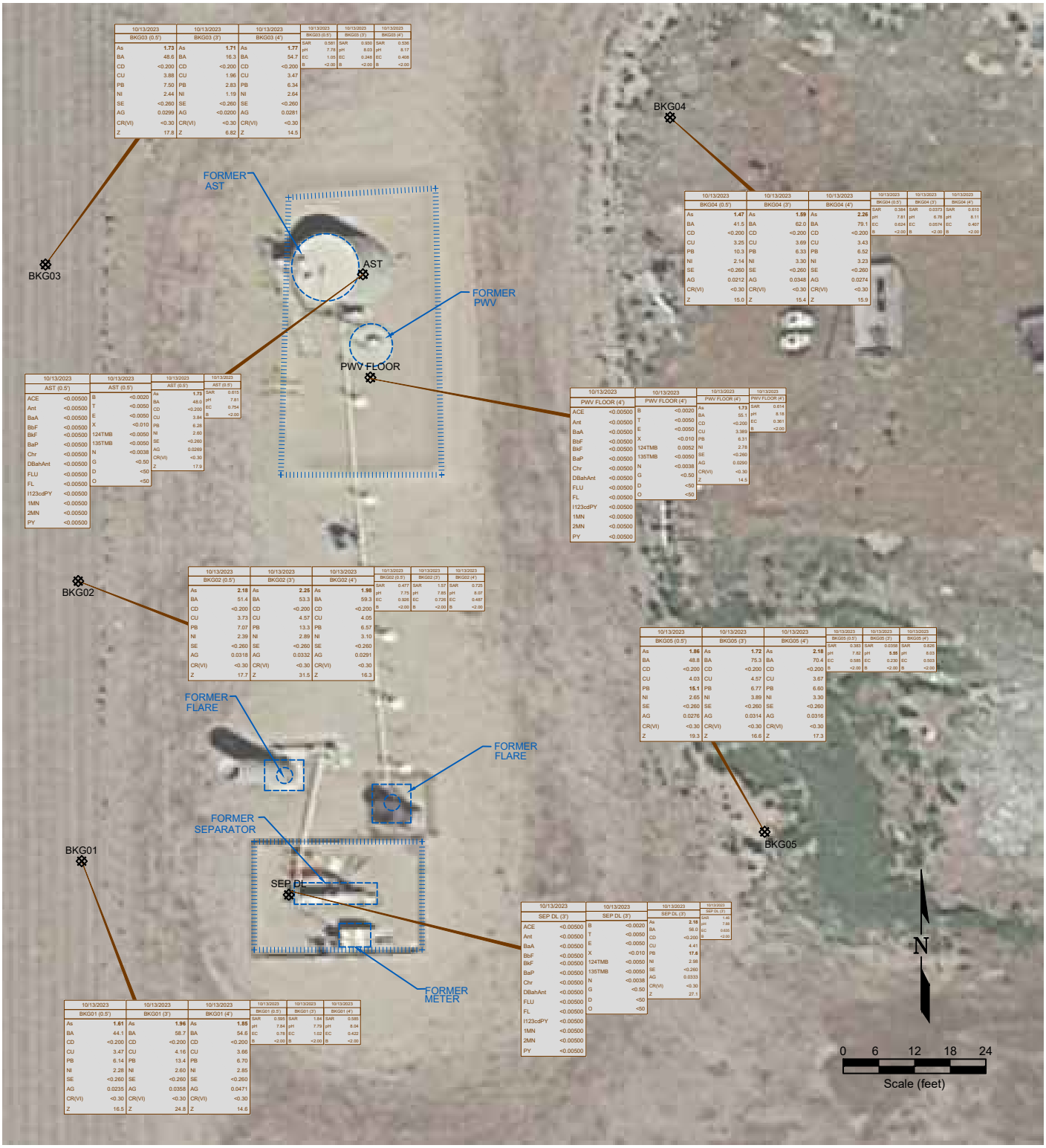
SWNW Sec. 4, T4N, R65W, 6th PM

Weld County, Colorado

40.346296°, -104.674571°

Project #	API #	Facility #
CO23-264		**330172**
Date	Remediation #	Filename
4/19/24	**28824**	**23264Q**

FREMONT ENVIRONMENTAL



10/13/2023	BKG03 (0.5')	10/13/2023	BKG03 (3')	10/13/2023	BKG03 (4')
As	1.73	As	1.71	As	1.77
BA	48.6	BA	16.3	BA	54.7
CD	<0.200	CD	<0.200	CD	<0.200
CU	3.88	CU	1.96	CU	3.47
PB	7.50	PB	2.83	PB	6.34
NI	2.44	NI	1.19	NI	2.64
SE	<0.260	SE	<0.260	SE	<0.260
AG	0.0299	AG	<0.0200	AG	0.0281
CR(VI)	<0.30	CR(VI)	<0.30	CR(VI)	<0.30
Z	17.8	Z	6.82	Z	14.5

10/13/2023	BKG03 (0.5')	10/13/2023	BKG03 (3')	10/13/2023	BKG03 (4')
SAR	0.581	SAR	0.930	SAR	0.536
pH	7.78	pH	8.03	pH	8.17
EC	1.05	EC	0.246	EC	0.408
B	<2.00	B	<2.00	B	<2.00

10/13/2023	BKG04 (0.5')	10/13/2023	BKG04 (3')	10/13/2023	BKG04 (4')
As	1.47	As	1.59	As	2.26
BA	41.5	BA	62.0	BA	79.1
CD	<0.200	CD	<0.200	CD	<0.200
CU	3.25	CU	3.69	CU	3.43
PB	10.3	PB	6.33	PB	6.52
NI	2.14	NI	3.30	NI	3.23
SE	<0.260	SE	<0.260	SE	<0.260
AG	0.0212	AG	0.0348	AG	0.0274
CR(VI)	<0.30	CR(VI)	<0.30	CR(VI)	<0.30
Z	15.0	Z	15.4	Z	15.9

10/13/2023	BKG04 (0.5')	10/13/2023	BKG04 (3')	10/13/2023	BKG04 (4')
SAR	0.384	SAR	0.0373	SAR	0.610
pH	7.81	pH	6.78	pH	8.11
EC	0.624	EC	0.0574	EC	0.407
B	<2.00	B	<2.00	B	<2.00

10/13/2023	AST (0.5')	10/13/2023	AST (0.5')
ACE	<0.00500	B	<0.0020
Ant	<0.00500	T	<0.0050
BaA	<0.00500	E	<0.0050
BbF	<0.00500	X	<0.010
BkF	<0.00500	124TMB	<0.0050
BaP	<0.00500	135TMB	<0.0050
Chr	<0.00500	N	<0.0038
DBahAnt	<0.00500	G	<0.50
FLU	<0.00500	D	<50
FL	<0.00500	O	<50
I123cdPY	<0.00500		
1MN	<0.00500		
2MN	<0.00500		
PY	<0.00500		

10/13/2023	AST (0.5')	10/13/2023	AST (0.5')
As	1.73	SAR	0.615
BA	48.0	pH	7.81
CD	<0.200	EC	0.754
CU	3.84	B	<2.00
PB	6.28		
NI	2.60		
SE	<0.260		
AG	0.0269		
CR(VI)	<0.30		
Z	17.9		

10/13/2023	PWV FLOOR (4')	10/13/2023	PWV FLOOR (4')
ACE	<0.00500	B	<0.0020
Ant	<0.00500	T	<0.0050
BaA	<0.00500	E	<0.0050
BbF	<0.00500	X	<0.010
BkF	<0.00500	124TMB	0.0052
BaP	<0.00500	135TMB	<0.0050
Chr	<0.00500	N	<0.0038
DBahAnt	<0.00500	G	<0.50
FLU	<0.00500	D	<50
FL	<0.00500	O	<50
I123cdPY	<0.00500		
1MN	<0.00500		
2MN	<0.00500		
PY	<0.00500		

10/13/2023	PWV FLOOR (4')	10/13/2023	PWV FLOOR (4')
As	1.73	SAR	0.614
BA	55.1	pH	8.18
CD	<0.200	EC	0.361
CU	3.389	B	<2.00
PB	6.31		
NI	2.78		
SE	<0.260		
AG	0.0290		
CR(VI)	<0.30		
Z	14.5		

10/13/2023	BKG02 (0.5')	10/13/2023	BKG02 (3')	10/13/2023	BKG02 (4')
As	2.18	As	2.25	As	1.98
BA	51.4	BA	53.3	BA	59.3
CD	<0.200	CD	<0.200	CD	<0.200
CU	3.73	CU	4.57	CU	4.05
PB	7.07	PB	13.3	PB	6.57
NI	2.39	NI	2.89	NI	3.10
SE	<0.260	SE	<0.260	SE	<0.260
AG	0.0318	AG	0.0332	AG	0.0291
CR(VI)	<0.30	CR(VI)	<0.30	CR(VI)	<0.30
Z	17.7	Z	31.5	Z	16.3

10/13/2023	BKG02 (0.5')	10/13/2023	BKG02 (3')	10/13/2023	BKG02 (4')
SAR	0.477	SAR	1.57	SAR	0.725
pH	7.75	pH	7.85	pH	8.07
EC	0.929	EC	0.726	EC	0.487
B	<2.00	B	<2.00	B	<2.00

10/13/2023	BKG05 (0.5')	10/13/2023	BKG05 (3')	10/13/2023	BKG05 (4')
As	1.86	As	1.72	As	2.18
BA	48.8	BA	75.3	BA	70.4
CD	<0.200	CD	<0.200	CD	<0.200
CU	4.03	CU	4.57	CU	3.67
PB	15.1	PB	6.77	PB	6.60
NI	2.65	NI	3.89	NI	3.30
SE	<0.260	SE	<0.260	SE	<0.260
AG	0.0276	AG	0.0314	AG	0.0316
CR(VI)	<0.30	CR(VI)	<0.30	CR(VI)	<0.30
Z	19.3	Z	16.6	Z	17.3

10/13/2023	BKG05 (0.5')	10/13/2023	BKG05 (3')	10/13/2023	BKG05 (4')
SAR	0.383	SAR	0.0358	SAR	0.826
pH	7.82	pH	5.58	pH	8.03
EC	0.585	EC	0.230	EC	0.503
B	<2.00	B	<2.00	B	<2.00

10/13/2023	SEP DL (3')	10/13/2023	SEP DL (3')
ACE	<0.00500	B	<0.0020
Ant	<0.00500	T	<0.0050
BaA	<0.00500	E	<0.0050
BbF	<0.00500	X	<0.010
BkF	<0.00500	124TMB	<0.0050
BaP	<0.00500	135TMB	<0.0050
Chr	<0.00500	N	<0.0038
DBahAnt	<0.00500	G	<0.50
FLU	<0.00500	D	<50
FL	<0.00500	O	<50
I123cdPY	<0.00500		
1MN	<0.00500		
2MN	<0.00500		
PY	<0.00500		

10/13/2023	SEP DL (3')	10/13/2023	SEP DL (3')
As	2.18	SAR	1.46
BA	56.0	pH	7.88
CD	<0.200	EC	0.630
CU	4.41	B	<2.00
PB	17.6		
NI	2.98		
SE	<0.260		
AG	0.0333		
CR(VI)	<0.30		
Z	27.1		

10/13/2023	BKG01 (0.5')	10/13/2023	BKG01 (3')	10/13/2023	BKG01 (4')
As	1.61	As	1.96	As	1.85
BA	44.1	BA	58.7	BA	54.6
CD	<0.200	CD	<0.200	CD	<0.200
CU	3.47	CU	4.16	CU	3.66
PB	6.14	PB	13.4	PB	6.70
NI	2.28	NI	2.60	NI	2.85
SE	<0.260	SE	<0.260	SE	<0.260
AG	0.0235	AG	0.0358	AG	0.0471
CR(VI)	<0.30	CR(VI)	<0.30	CR(VI)	<0.30
Z	16.5	Z	24.8	Z	14.6

10/13/2023	BKG01 (0.5')	10/13/2023	BKG01 (3')	10/13/2023	BKG01 (4')
SAR	0.565	SAR	1.64	SAR	0.585
pH	7.84	pH	7.79	pH	8.04
EC	0.78	EC	1.02	EC	0.422
B	<2.00	B	<2.00	B	<2.00

LEGEND

- SOIL BORING LOCATION
- SOIL SAMPLE LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER — FORMER FACILITY
- FLOW LINE
- CONTAINMENT BERM
- CONTAINMENT WALL
- FENCE LINE

10/13/2023	DATE SAMPLED
FL01 (4')	SAMPLE ID and DEPTH (ft)
ACE	<0.00500 ACENAPHTHENE (mg/kg)
Ant	<0.00500 ANTHRACENE (mg/kg)
BaA	<0.00500 BENZO (A) ANTHRACENE (mg/kg)
BbF	<0.00500 BENZO (B) FLUORANTHENE (mg/kg)
BkF	<0.00500 BENZO (K) FLUORANTHENE(mg/kg)
BaP	<0.00500 BENZO (A) PYRENE (mg/kg)
Chr	<0.00500 CHRYSENE (mg/kg)
DBahAnt	<0.00500 DIBENZ (A,H) ANTHRACENE (mg/kg)
FLU	<0.00500 FLUORANTHENE (mg/kg)
FL	<0.00500 FLUORENE (mg/kg)
I123cdPY	<0.00500 INDENO (1,2,3-CD) PYRENE(mg/kg)
1MN	<0.00500 1-METHYLNAPHTHALENE (mg/kg)
2MN	<0.00500 2-METHYLNAPHTHALENE (mg/kg)
PY	<0.00500 PYRENE (mg/kg)

10/13/2023	DATE SAMPLED
FL01 (4')	SAMPLE ID & DEPTH (ft)
SAR	0.600 SAR (units)
pH	8.04 pH (pH units)
EC	0.388 EC (mmhos/cm)
B	<2.00 BORON (mg/L)

10/13/2023	DATE SAMPLED
FL01 (4')	SAMPLE ID and DEPTH (ft)
As	<0.01 ARSENIC (mg/kg)
BA	<0.01 BARIUM (mg/kg)
CD	<0.01 CADMIUM (mg/kg)
CU	<0.01 COPPER (mg/kg)
PB	<0.05 LEAD (mg/kg)
NI	<0.05 NICKEL (mg/kg)
SE	<0.5 SELENIUM (mg/kg)
AG	<0.05 SILVER (mg/kg)
CR(VI)	<0.05 HEXAVALENT CHROMIUM (mg/kg)
Z	<0.05 ZINC (mg/kg)

10/13/2023	DATE SAMPLED
FL01 (4')	SAMPLE ID and DEPTH (ft)
B	<0.0020 BENZENE (mg/kg)
T	<0.0050 TOLUENE (mg/kg)
E	<0.0050 ETHYLBENZENE (mg/kg)
X	<0.010 TOTAL XYLENES (mg/kg)
124TMB	<0.0050 1,2,4-TRIMETHYLBENZENE (mg/kg)
135TMB	<0.0050 1,3,5-TRIMETHYLBENZENE (mg/kg)
N	<0.0038 NAPHTHALENE (mg/kg)
G	<0.50 TPH-GRO (mg/kg)
D	<50 TPH-DRO (mg/kg)
O	<50 TPH-ORO (mg/kg)

[NA] NOT ANALYZED

Figure 3

SOIL CHEMISTRY MAP

NOBLE ENERGY INC - BARNARD-64N65W 4SWNW

SWNW Sec. 4, T4N, R65W, 6th PM

Weld County, Colorado

40.346296°, -104.674571°

Project #	API #	Facility #
CO23-264		**330172**
Date	Remediation #	Filename
4/19/24	**28824**	**23264Q**

FREMONT ENVIRONMENTAL

Photo Log

Description:

#1- AST 0.5' - No visual staining or odor

Photo Log

Description:

#2- PWV N WALL 3' - No visual staining or odor

Photo Log

Description:

#3- PWV E WALL 3' - No visual staining or odor

Photo Log

Description:

#4- PWV S WALL 3' - No visual staining or odor

Photo Log

Description:

#5- PWV W WALL 3' - No visual staining or odor

Photo Log

Description:

#6- PWV FLOOR 4' - No visual staining or odor

Photo Log

Description:

#7- SEP DL 3' - No visual staining or odor

Photo Log

Description:

#8- MH 0.5' - No visual staining or odor

Photo Log

Description:

#9- FLARE01 0.5' - No visual staining or odor

Photo Log

Description:

#10- FLARE02 0.5' - No visual staining or odor