

# **FREMONT ENVIRONMENTAL INC.**

September 11, 2024

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

Subject:           **Flowline Closure Data Submittal**  
Ocoma C17-15  
API # 05-123-13493  
SWSE Sec. 17, T4N, R64W  
Weld County, Colorado  
Fremont Project No. C024-211  
Remediation # 34772

Dear Mr. Peterson:

As you requested, Fremont Environmental Inc. (Fremont) personnel conducted flowline closure activities for the Noble Energy Inc. (Noble) Ocoma C17-15. Impacted soil was not encountered during abandonment activities. Details of the Ocoma C17-15 flowline closure activities are documented in the attached Closure Report. Groundwater was not encountered during flowline abandonment activities.

Please contact me at (603) 477-6907 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,

**FREMONT ENVIRONMENTAL INC.**



Ethan D. Black, PG  
Geologist

Attachments:

- Facility Closure Checklist
- Tables
- Figures
- Photos

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

# 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 &amp; COGCC Facility Number:</i>		<i>Date:</i>						<i>Remediation Project #:</i>
<i>Associated Wells:</i>		<i>Age of Site:</i>						<i>Number of Photos Attached:</i>

*Starting point: (GPS coordinates and descriptions)*

*End point: (GPS coordinates and descriptions)*

*USCS Soil Type:* \_\_\_\_\_ *Estimated Depth to Groundwater:* \_\_\_\_\_

*Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)*

*Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)*

### Flowlines

<i>Flowline type</i>								
<i>Depth</i>								
<i>Age</i>								
<i>Length</i>								
<i>Construction Material</i>								
<i>Were flowlines pulled?</i>								
<i>Visual Integrity of lines</i>								
<i>Visual impacts if trenched</i>								
<i>PID Readings if trenched</i>								
<i>Sample taken?</i>								
<i>Location/Sample ID#</i>								
<i>Photo Number(s)</i>								

*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:* \_\_\_\_\_ *Total number of samples collected:* \_\_\_\_\_

*Highest PID Reading:* \_\_\_\_\_ *Total number of samples submitted to lab for analysis:* \_\_\_\_\_

*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  
OCOMA C 17-15, WELD COUNTY, COLORADO  
REM # 34772**

Sample ID	Sample Date	Depth	GPS Data		PDOP Value	VOC Concentration (ppm)
			Latitude	Longitude		
FL01 WH	9/10/2024	3	40.306547	-104.572387	1.20	0.8
FL02 3 Ft	9/10/2024	3	40.305569	-104.574847	0.90	0.0
SEP01 FLR 3 Ft	9/10/2024	3	40.305830	-104.574766	1.10	0.0
BKG 1	9/10/2024	Multiple	40.306097	-104.574700	1.00	0.0
BKG 2	9/10/2024	Multiple	40.306204	-104.574477	0.90	0.0
BKG 3	9/10/2024	Multiple	40.306310	-104.574137	0.90	0.0
BKG 4	9/10/2024	Multiple	40.306139	-104.573924	0.90	0.0
BKG 5	9/10/2024	Multiple	40.306247	-104.573393	0.90	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

= Source material characterization sample, excavated and transported off site for disposal.

= Material excavated and transported off site for disposal.

TABLE 2  
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA  
NOBLE 100322  
OCOMA C 17-15, WELD COUNTY, COLORADO  
REM # 34772

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 3FT	09/10/2024	3	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
FL02 3FT	09/10/2024	3	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
SEP01 FLR 3 Ft	9/10/2024	3	<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

NA - Not analyzed

= Source material characterization sample, excavated and transported off site for disposal.

= Material excavated and transported off site for disposal.

TABLE 3  
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA  
NOBLE 100322  
OCOMA C 17-15, WELD COUNTY, COLORADO  
REM # 34772

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 3FT	09/10/2024	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
FL02 3FT	09/10/2024	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
SEP01 FLR 3FT	09/10/2024	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

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

NA - Not analyzed

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= Material excavated and transported off site for disposal.

**TABLE 4**  
**SUMMARY OF SOIL SUITABILITY FOR RECLAMATION**  
**NOBLE 100322**  
**OCOMA C 17-15, WELD COUNTY, COLORADO**  
**REM # 34772**

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 3FT	09/10/2024	3	8.52	0.162	0.136	<2.00
FL02 3FT	09/10/2024	3	9.51	0.945	4.3	<2.00
SEP01 FLR 3FT	09/10/2024	3	8.63	0.129	0.0286	<2.00
BKG1 2FT	09/10/2024	2	8.47	0.12	0.203	<2.00
BKG2 2FT	09/10/2024	2	7.87	2.04	2.59	<2.00
BKG3 2FT	09/10/2024	2	8.58	2.54	7.21	<2.00
BKG4 2FT	09/10/2024	2	8.58	0.137	0.341	<2.00
BKG5 2FT	09/10/2024	2	6.13	0.475	0.161	<2.00
Maximum Root Background Concentration (0 - 3 ft)			8.58	2.54	7.21	NA
Average Root Background Concentration (0 - 3 ft)			7.926	1.062	2.101	NA
Maximum Background Concentration			8.58	2.54	7.21	NA
Average Background Concentration			7.926	1.062	2.101	NA

1. Bold faced values exceed the ECMC Table 915-1 limit(s)

2. Blue highlighted soil analytical values indicate a regulatory exceedance

NA - Not analyzed

  = Source material characterization sample, excavated and transported off site for disposal.

  = Material excavated and transported off site for disposal.

TABLE 5  
SUMMARY OF METALS IN SOIL CHEMISTRY DATA  
NOBLE 100322  
OCOMA C 17-15, WELD COUNTY, COLORADO  
REM # 34772

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 3FT	09/10/2024	3	<b>0.908</b>	<b>156</b>	0.225	<0.30	3.07	<b>28</b>	2.12	<0.260	0.04	13.2
FL02 3FT	09/10/2024	3	<b>0.595</b>	34.7	<0.181	<0.30	1.01	3.1	1.37	<0.236	0.0188	4.98
SEP01 FLR 3FT	09/10/2024	3	<b>2.08</b>	46.9	<0.200	<0.30	4.59	3.05	3.72	<0.260	<0.0200	14.4
BKG1 2FT	09/10/2024	2	<b>0.732</b>	51.6	<0.200	<0.30	1.64	4.74	1.69	<0.260	0.0337	7.13
BKG2 2FT	09/10/2024	2	<b>0.754</b>	46.2	<0.200	<0.30	1.12	4.1	1.54	<0.260	0.0321	5.51
BKG3 2FT	09/10/2024	2	<b>0.56</b>	30.3	<0.200	<0.30	0.958	3.45	1.19	<0.260	<0.0200	4.64
BKG4 2FT	09/10/2024	2	<b>0.684</b>	<b>82.3</b>	<0.200	<0.30	1.3	6.62	1.77	<0.260	0.0377	8.02
BKG5 2FT	09/10/2024	2	<b>0.61</b>	39.8	<0.200	<0.30	1.43	5.83	1.35	<0.260	<0.0200	6.92
Maximum Root Zone Background Concentration (0 - 3 ft)			<b>0.754</b>	<b>82.3</b>	NA	NA	1.64	6.62	1.77	NA	0.0377	8.02
125% Average Root Zone Background Concentration (0 - 3 ft)			<b>0.835</b>	62.55	NA	NA	1.612	6.185	1.885	NA	0.043125	8.055
Maximum Background Concentration			<b>0.754</b>	<b>82.3</b>	NA	NA	1.64	6.62	1.77	NA	0.0377	8.02
125% Average Background Concentration			<b>0.835</b>	62.55	NA	NA	1.612	6.185	1.885	NA	0.043125	8.055

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)

\* Indicates laboratory minimum detection limit in excess of SSL

NA - Not analyzed

= Source material characterization sample, excavated and transported off site for disposal.



= Material excavated and transported off site for disposal.



# Ocoma C17-15

SWSE Sec. 17, T4N, R64W  
40.306560, -104.572390  
Remediation Project #: 34772, API #: 05-123-13493  
Fremont No. C024-211

**Legend**

-  Multiphase Flowlines
-  Soil Sample Locations



# Ocoma C17-15

Background Sample Map



SWSE Sec. 17, T4N, R64W

40.306560, -104.572390

Remediation Project #: 34772, API #: 05-123-13493

Fremont No. C024-211

## Legend

-  Multiphase Flowlines
-  Soil Sample Locations



**Photo Log**



**Description:**

1 - Ocoma C 17-15 flowline - wellhead placard

**Photo Log**



**Description:**

2 - Ocoma C 17-15 flowline FL01 excavation, no staining or odor

**Photo Log**

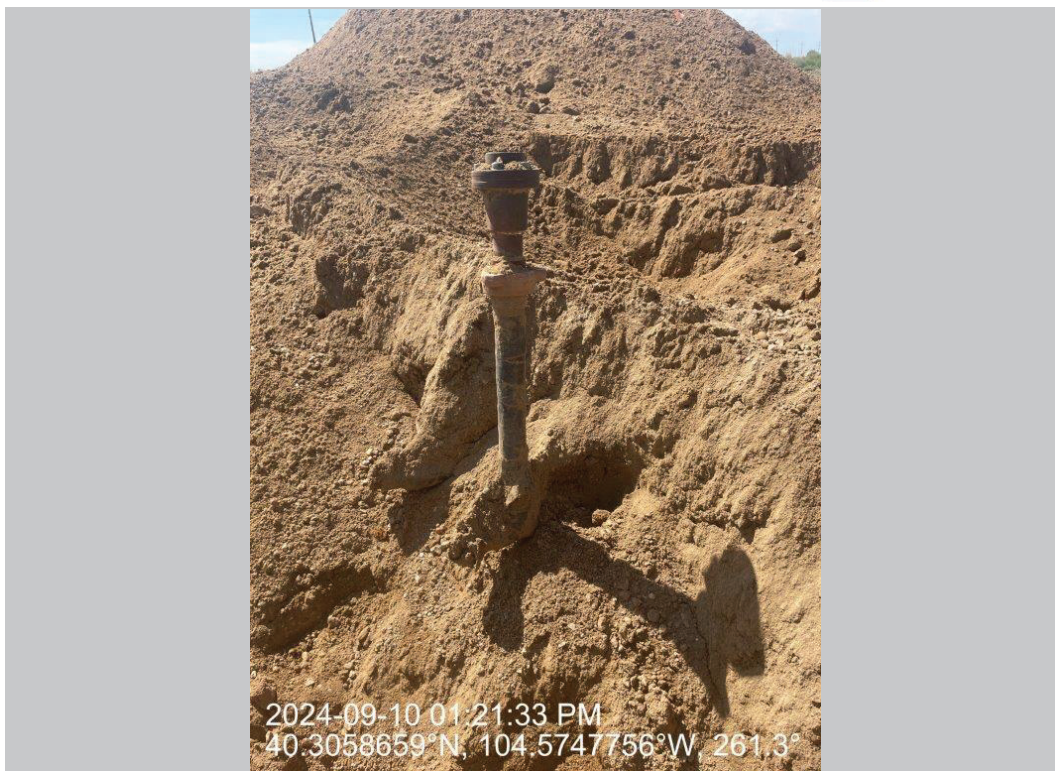


2024-09-10 01:25:50 PM  
40.3055369°N, 104.5748463°W, 8.9°

**Description:**

3 - Ocoma C 17-15 flowline FL02 3 Ft sample location @ directional change, FL partially AIP, no odor or staining

**Photo Log**



2024-09-10 01:21:33 PM  
40.3058659°N, 104.5747756°W, 261.3°

**Description:**

4 - Ocoma C 17-15 flowline SEP01-FLR 3 Ft sample location, prior to riser removal, no staining or odor