

State of Colorado
Energy & Carbon Management Commission

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Report taken by:
Kilian Collins

Site Investigation and Remediation Workplan (Supplemental Form)

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. However, this shall not preclude the Operator from taking immediate action to protect public health or safety, the environment, wildlife, or livestock.

This Form 27 describes site conditions as currently understood by the Operator; approval of this Form 27 by ECMC is based on the site conditions accurately described herein; any changes in site conditions identified during or subsequent to the performance of the approved workplan may necessitate additional investigation or remediation which shall be described on a supplemental Form 27. This Form 27 is intended to provide basic information regarding the proposed site investigation and remediation actions, but the workplan may be more fully described in attached documentation.

Closure request is not available for an Initial Site Investigation and Remediation Workplan.

OPERATOR INFORMATION

Name of Operator: NOBLE ENERGY INC	Operator No: 100322	Phone Numbers Phone: (970) 304-5000 Mobile: ()
Address: 1099 18TH STREET SUITE 1500		
City: DENVER	State: CO	Zip: 80202
Contact Person: Erica Zuniga	Email: rbueuf27@chevron.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 28820 Initial Form 27 Document #: 403371436

PURPOSE INFORMATION

- Rule 913.c.(1): Pit or Cuttings Trench closure.
- Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912.
- Rule 913.c.(4): Land treatment of Oily Waste pursuant to Rule 905.e.
- Rule 913.c.(5): Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h.
- Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.
- Rule 913.c.(7): Investigation and remediation of natural gas in soil or Groundwater.
- Rule 913.c.(8): When requested by the Director due to any potential risk to soil, Groundwater, or surface water.
- Rule 913.c.(9): Decommissioning of Oil and Gas Facilities.
- Rule 913.g: Changes of Operator.
- Rule 915.b: Request to leave elevated inorganics in situ.
- Other: _____

SITE INFORMATION

Yes Multiple Facilities

Facility Type: LOCATION	Facility ID: 447608	API #: _____	County Name: WELD
Facility Name: BOCKIUS 15-1,8, PFANNEBECKER C14-32 D,C15-22		Latitude: 40.312703	Longitude: -104.527565
		** correct Lat/Long if needed: Latitude: 40.312693	Longitude: -104.527923
QtrQtr: SENE	Sec: 15	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE	Facility ID: 489352	API #: _____	County Name: WELD
Facility Name: Bockius 15-1,8, Pfannebecker C14-32		Latitude: 40.312669	Longitude: -104.527671
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: SENE	Sec: 15	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SW _____

Most Sensitive Adjacent Land Use Cropland _____

Is domestic water well within 1/4 mile? Yes _____

Is surface water within 1/4 mile? Yes _____

Is groundwater less than 20 feet below ground surface? No _____

Other Potential Receptors within 1/4 mile

Aquatic Native Species Conservation Waters
Intermittent Riverine Wetlands 90ft W (Box Elder Creek)
No other potential receptors are located within 1/4 mile of the Site.
Above distances are approximations.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input checked="" type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input checked="" type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	Refer to Tables and Figures	Lab analysis
Yes	SOILS	Refer to Tables and Figures	Lab analysis

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

A site investigation was conducted pursuant to ECMC Rule 911 at the BOCKIUS PFANNEBECKER T4N-R64W-S15 L01 Facility and Tank Battery location.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Grab confirmation soil samples were collected from the produced water vessel(s) excavation, beneath the ground oil tank(s), and at the separator(s). Soil samples were analyzed by a certified laboratory for TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons) organic compounds in soil per ECMC Table 915-1, and EC, SAR, pH, boron and Table 915-1 metals. All samples collected were analyzed by a certified laboratory using approved ECMC laboratory analysis methods.

Proposed Groundwater Sampling

Will groundwater samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Groundwater was encountered during the excavation of impacted soil and a grab groundwater was collected and analyzed for all ECMC Table 915-1 organic and inorganic constituents.

Proposed Surface Water Sampling

Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Additional Investigative Actions

Additional alternative investigative actions described in attached Site Investigation Plan (summary):

Visual inspection of the tank battery area occurred during abandonment activities. Field personnel field screened all disturbed areas using a PID, visual, and olfactory senses to determine if laboratory confirmation sampling was required. The ECMC Tank Battery and Produced Water Vessel Closure Checklists were utilized and filled out during the abandonment process.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil	NA / ND
Number of soil samples collected <u>33</u>	-- Highest concentration of TPH (mg/kg) <u>5210</u>
Number of soil samples exceeding 915-1 <u>33</u>	-- Highest concentration of SAR <u>12.5</u>

Was the areal and vertical extent of soil contamination delineated? No

BTEX > 915-1 No

Approximate areal extent (square feet) 5148

Vertical Extent > 915-1 (in feet) 15

Groundwater

Number of groundwater samples collected 1

-- Highest concentration of Benzene (µg/l) 640

Was extent of groundwater contaminated delineated? No

ND Highest concentration of Toluene (µg/l)

Depth to groundwater (below ground surface, in feet) 15

-- Highest concentration of Ethylbenzene (µg/l) 96

Number of groundwater monitoring wells installed 0

-- Highest concentration of Xylene (µg/l) 61

Number of groundwater samples exceeding 915-1 1

NA Highest concentration of Methane (mg/l)

Surface Water

0 Number of surface water samples collected

 Number of surface water samples exceeding 915-1

If surface water is impacted, other agency notification may be required.

OTHER INVESTIGATION INFORMATION

Were impacts to adjacent property or offsite impacts identified?

Empty text box for impacts to adjacent property or offsite impacts identified.

Were background samples collected as part of this site investigation?

Fifteen background samples were collected during the tank battery decommissioning event from an area not impacted by oil and gas development at similar depths and lithologies as confirmation samples collected at the location and analyzed for ECMC Table 915-1 metals and soil suitability for reclamation standards (pH, EC, SAR, and Boron). All samples failed the ECMC standards for As, Ba, Cd, and Pb. One sample ailed the ECMC standard for pH.
Background Soil Sample Analysis (mg/kg)
Arsenic Max*1.25 = 4.73
Barium Max*1.25 = 366.25
Cadmium Max*1.25 = 1.41
Lead Max*1.25 = 72.9
Selenium Max*1.25 = 0.325
pH 4 Ft: Max = 8.59

Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards)

Volume of liquid waste (barrels)

Is further site investigation required?

Additional Background samples will be collected in five locations from an area not impacted by oil and gas development at similar depths (9', 14', and 15') and lithologies as the excavation confirmation samples and analyzed for ECMC Table 915-1 metals and soil suitability for reclamation standards (SSR) (pH, EC, SAR, and Boron). The samples will be used to characterize native soil and potentially attribute elevated metals and inorganics concentrations to native soil conditions.

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? Yes

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Impacted soil was removed from the Bockius15-1,8, Pfannebecker C14-32D Tank Battery release area by excavation. The impacted soil was disposed of at an approved landfill as non-hazardous waste in accordance with Rules 905 and 906. Copies of the waste manifests are available upon request.

REMEDIATION SUMMARY

Describe how remediation of existing impacts to soil and groundwater is to be accomplished (i.e. summarize remedial action plan). Provide a brief narrative description including: technical justification, schedule for implementation, estimated time to attain NFA status, plus plans and specifications for the selected remedial action technology.

The source was excavated and 33 confirmation soil samples were collected from the sidewalls and floor of the 5,148 sq. ft. excavation and analyzed for the full Table 915-1 suite of analytes. Sample locations DL01 @4', AST03@0.5', and PWV01-S@4' previously proposed to be resampled for Table 915-1 SSR constituents and metals were removed by excavation. Impacted soil remains in situ in six locations in the N, E, and S excavation sidewalls and in one location in the east excavation floor. Conventional excavation is limited to the N and E by underground utilities, and to the S by overhead and underground utilities. The Operator proposes to treat residual impacts in place with a soil vapor extraction system. System wells are proposed on the attached figures.

Impacted groundwater was encountered during the excavation of impacted soil. A groundwater sample was collected for Table 915-1 organic and inorganic constituents in groundwater (Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), naphthalene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Chloride ion, Sulfate ion and Total Dissolved Solids (TDS). The Operator proposes to install monitoring wells to monitor natural attenuation of impacted groundwater at the location.

NFA will be requested once soil concentrations comply with their respective Table 915-1 clean-up standards and four consecutive quarters of groundwater sampling have been completed and reported at the location with concentrations of Table 915-1 constituents below regulatory limits. As needed, soil and/or groundwater remediation plans will be developed and submitted to ECMC in a supplemental Form 27.

Soil Remediation Summary

<input type="checkbox"/> In Situ	<input checked="" type="checkbox"/> Ex Situ
_____ Bioremediation (or enhanced bioremediation)	Yes _____ Excavate and offsite disposal
_____ Chemical oxidation	_____ If Yes: Estimated Volume (Cubic Yards) _____ 2860
_____ Air sparge / Soil vapor extraction	_____ Name of Licensed Disposal Facility or ECMC Facility ID # _____
_____ Natural Attenuation	_____ Excavate and onsite remediation
_____ Other _____	_____ Land Treatment
	_____ Bioremediation (or enhanced bioremediation)
	_____ Chemical oxidation
	_____ Other _____

Groundwater Remediation Summary

No _____ Bioremediation (or enhanced bioremediation)

No _____ Chemical oxidation

Yes _____ Air sparge / Soil vapor extraction

Yes _____ Natural Attenuation

No _____ Other _____

GROUNDWATER MONITORING

If groundwater has been impacted, describe proposed monitoring plan, including # of wells or sample points, monitoring schedule, analytical methods, points of compliance. Attach a groundwater monitoring location diagram.

Operator proposes to install five soil borings that will be improved with PVC monitoring wells. One monitoring well will be installed within the source area (if possible) and additional wells will be installed to monitor up-gradient, down-gradient, and cross-gradient groundwater conditions. Each soil boring location will have the soil type logged, will be field screened with a PID, and the interval with the highest PID measurement and/or the interval directly above groundwater will be collected and submitted for analysis of Table 915-1 constituents in soil. Quarterly groundwater monitoring will be conducted until four consecutive quarters of groundwater sampling have been completed and reported at the location with concentrations of Table 915-1 constituents below regulatory limits. Groundwater monitoring wells will be sampled and submitted to a laboratory for analysis of Table 915-1 groundwater constituents: Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), naphthalene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Chloride ion, Sulfate ion and Total Dissolved Solids (TDS). Monitoring well locations are displayed on the attached.

Does the previous reply indicate consideration of background concentrations? _____

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

Operator shall comply with the ECMC 1000-Series Reclamation Requirements for all impacted and disturbed areas.

RECLAMATION PLAN

RECLAMATION PLANNING

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing.

Reclamation will be in accordance with ECMC 1000 Series Rules.

Is the described reclamation complete? Yes

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

Interim Final

Did the Surface Owner provide the seed mix? _____

If YES, does the seed mix comply with local soil conservation district recommendations? _____

Did the local soil conservation district provide the seed mix? _____

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. 10/31/2026

Proposed date of completion of Reclamation. 10/31/2028

IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

PRIOR DATES

Date of Surface Owner notification/consultation, if required. 03/29/2023

Actual Spill or Release date, or date of discovery. 01/16/2025

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 11/16/2023

Proposed site investigation commencement. 05/15/2023

Proposed completion of site investigation. 03/31/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 01/16/2025

Proposed date of completion of Remediation. 08/31/2026

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

Change from approved implementation schedule per Rule 913.d.(2).

Basis for change in implementation schedule:

Additional resampling is needed to deny or delineate the presence of elevated inorganics and metals. Active remediation is needed to remove soil impacts encountered during reclamation/excavation activities at the BOCKIUS 15-1,8, PFANNEBECKER C14-32 Tank Battery. Quarterly groundwater sampling is required for a minimum of four quarters to monitor impacts observed within the BOCKIUS 15-1,8, PFANNEBECKER C14-32 excavation.

OPERATOR COMMENT

In response to ECMC Form 27 Comment dated 07/07/2025 (Denied Document Number 404217082) Operator is submitting a replacement Form 27. This Form 27 is being submitted to include the excavation sample results, proposed monitoring wells and remediation system wells installation, resampling of locations and collection of background samples for the Bockius 15-1,8, Pfannebecker C14-32 Tank Battery (Rem #28820) location.

Based on currently available data, this project is not affected by data integrity irregularities and is not associated with Operator's data integrity review process and its Rule 525.e. Voluntary Disclosure. As part of its data integrity review process, Operator requested the lab protect the laboratory analytical reports from subsequent unauthorized modification by anyone outside the lab, which resulted in the labs reissuing the original report with additional protections (Reissued Report). The Reissued Report(s) received directly from the lab 3/28/2025 include the application of a Digital ID/Verified Certification (lock) to support reissuance. The metadata associated with the Reissued Report(s) also includes the lab representative's name, the date and time the laboratory reissued the report, and an explanation for the reissuance. The Reissued Reports are attached to this submission as stand alone documents.

In the event additional responsive information is received or discovered that would suggest this project should be incorporated into the ongoing data integrity review process associated with Operator's Rule 525.e. Voluntary Disclosure, Operator will update and/or amend the statements in this submission and provide any new or revised data or other information responsive to ECMC's general comments responding to Operator's Form 27 submission.

Operator was informed by the laboratory that the sample holding times were exceeded for various Table 915-1 constituents. Because not all analytes would be outside of holding times, the lab ran the samples for the full Table 915-1 suite. The full laboratory report (Report) is being transmitted to ECMC for transparency. The Report's case narrative identifies which constituents were run outside of the required holding times. The Report's note column also identifies the impacted constituents. Operator will not be relying on any results associated with a constituent that was outside of the required holding time. The anions chloride and sulfate analyzed by EPA Method 300.0 were analyzed outside of the allotted holding time due to delays at Summit Scientific for the groundwater samples collected during the quarterly groundwater monitoring event on 1/29/2025.

Pending ECMC approval, the Operator will schedule and complete the monitoring well installation and remediation system wells as outlined in this proposed Remedial Action workplan within the date range provided in the Remedial Action Dates section of the Implementation Schedule. Supplemental Form 27s will be prepared and submitted on a quarterly schedule to provide updates and progress of the remediation until closure criteria has been achieved.

I hereby certify all statements made in this form are to the best of my knowledge true, correct, and complete.

Signed: Ethan Black

Title: Consultant

Submit Date: 09/30/2025

Email: ethanb@fremontenv.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with ECMC Rules and applicable orders and is hereby approved.

ECMC Approved: Kilian Collins

Date: 10/22/2025

Remediation Project Number: 28820

COA Type

Description

COA Type	Description
1 COA	On next submittal, Operator shall provide a detailed timeline for the installation of monitoring and remediation wells.

ATTACHMENT LIST

Upon approval, the approved Form 27 and all listed attachments will be indexed to the Remediation Project file. Only the approved Form 27 will also be indexed to the related Facilities.

Att Doc Num	Name
404300792	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
404300834	REMEDATION PROGRESS REPORT
404300835	LABORATORY ANALYTICAL REPORT
404300837	LABORATORY ANALYTICAL REPORT
404300838	LABORATORY ANALYTICAL REPORT
404300839	LABORATORY ANALYTICAL REPORT
404300840	LABORATORY ANALYTICAL REPORT
404300841	LABORATORY ANALYTICAL REPORT
404300845	LABORATORY ANALYTICAL REPORT
404399969	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 10 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	Operator denotes the SAR value for sample EWall 04 9Ft as being within background. This is incorrect.	10/21/2025

Total: 1 comment(s)