

**State of Colorado  
Energy & Carbon Management Commission**

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Document Number:

404136512

Receive Date:

Report taken by:

**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	<b>Phone Numbers</b>
Address: 1099 18TH STREET SUITE 1500		Phone: (303) 597-6847
City: DENVER	State: CO	Zip: 80202
Contact Person: Phillip Porter	Email: phillip.porter@chevron.com	Mobile: ( )

**PROJECT, PURPOSE & SITE INFORMATION****PROJECT INFORMATION**

Remediation Project #: 22548 Initial Form 27 Document #: 402991588

**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: WELL	Facility ID: _____	API #: 123-15521	County Name: WELD
Facility Name: SANDAU 34-12F	Latitude: 40.266780	Longitude: -104.770970	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSW	Sec: 34	Twp: 4N	Range: 66W
Meridian: 6	Sensitive Area? Yes		

  

Facility Type: SPILL OR RELEASE	Facility ID: 482089	API #: _____	County Name: WELD
Facility Name: Sandau 34-12F	Latitude: 40.266780	Longitude: -104.770970	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSW	Sec: 34	Twp: 4N	Range: 66W
Meridian: 6	Sensitive Area? Yes		

Facility Type: SPILL OR RELEASE	Facility ID: 483347	API #:	County Name: WELD
Facility Name: SANDAU-64N66W 34NWSW	Latitude: 40.267012	Longitude: -104.772703	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: NWSW	Sec: 34	Twp: 4N	Range: 66W Meridian: 6 Sensitive Area? Yes

## **SITE CONDITIONS**

General soil type - USCS Classifications SC 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**

Farm Structures 0.08mi N, 0.09/0.1mi N, 0.15/0.16/0.17mi W, 0.24mi SW  
Residential 0.1mi NW, 0.13mi W, 0.22mi SW

## SITE INVESTIGATION PLAN

### TYPE OF WASTE:

- ☒ E&P Waste      ☐ Other E&P Waste      ☐ Non-E&P Waste
- ☒ Produced Water      ☐ Workover Fluids
- ☒ Oil      ☐ Tank Bottoms
- ☒ Condensate      ☐ Pigging Waste
- ☐ Drilling Fluids      ☐ Rig Wash
- ☐ Drill Cuttings      ☐ Spent Filters
- ☐ Pit Bottoms
- ☐ Other (as described by EPA)

### DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
UNDETERMINED	GROUNDWATER	NA	Lab analysis or field screening, if encountered
Yes	SOILS	Refer to tables and figures.	Soil sampling and 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.

Pursuant to ECMC Rule 911 a site investigation was conducted pertaining to the Sandau 34-12F wellhead cut and cap and flowline abandonment. Approximately 161 feet of flowline was removed, and 341 feet was abandoned-in-place. The wellhead was cut and capped per ECMC rules.

### 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 ):

One (1) grab soil sample was collected at the wellhead excavation. Two (2) soil samples were collected at the flowline terminus at the oil-water separator and one (1) sample was collected at the flowline terminus at the wellhead. 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, EC, SAR, pH, and boron. Five (5) soil samples were collected upon monitoring well installation and were analyzed for full Table 915-1.

Additional sampling of the flowline will occur, including a sample collected at flowline terminus at the wellhead and the oil-water separator as well as samples collected at 250 feet intervals along the flowline alignment. This will include any points of material change and/or hammer unions, directional changes, and at the bell holes on either side of a waterway. Soil samples will be analyzed for the full Table 915-1 organic and inorganic constituents.

#### Proposed Groundwater Sampling

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

Monitoring wells (MW-01 through MW-05) will resume quarterly sampling for full table 915-1 organic and inorganic constituents. If additional groundwater is encountered during the site investigation, grab groundwater samples will be collected and analyzed for all organic and inorganic compounds per ECMC Table 915-1.

#### 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 flowline and flowline area will occur during Supplemental Site Investigation (SSI) activities. During all field screenings, field personnel will use visual and olfactory senses as well as photoionization detection (PID) readings to determine if laboratory confirmation sampling will be required.

## SITE INVESTIGATION REPORT

### SAMPLE SUMMARY

**Soil**

Number of soil samples collected 9

Number of soil samples exceeding 915-1 2

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

Approximate areal extent (square feet) 50

**Groundwater**

Number of groundwater samples collected 20

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 6

Number of groundwater monitoring wells installed 5

Number of groundwater samples exceeding 915-1 0

**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.

**NA / ND**

-- Highest concentration of TPH (mg/kg) 41.46

-- Highest concentration of SAR 2.49

BTEX &gt; 915-1 No

Vertical Extent &gt; 915-1 (in feet) 6

ND Highest concentration of Benzene (µg/l)

ND Highest concentration of Toluene (µg/l)

ND Highest concentration of Ethylbenzene (µg/l)

ND Highest concentration of Xylene (µg/l)

NA Highest concentration of Methane (mg/l)

**OTHER INVESTIGATION INFORMATION**☐ Were impacts to adjacent property or offsite impacts identified?☒ Were background samples collected as part of this site investigation?

One (1) previous background soil sample was collected near the wellhead on 4/14/2022 and analyzed for metals in soil per ECMC Table 915-1. The background soil sample was collected at two (2) feet below ground surface (bgs). Five (5) background samples were collected at the site on 1/26/2024 and analyzed for metals in soil per ECMC Table 915-1. These background samples were collected at approximately 2-2.5 feet bgs.

Additional background soil samples will be collected in Supplemental Site Investigation from soil of native/similar lithologic material not impacted by oil and gas activity to further compare EC, SAR, pH, boron, and ECMC Table 915-1 metals.

☐ 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?

A Supplemental Site Investigation (SSI) will be conducted at the Sandau 34-12F to resample the flowline terminuses at the wellhead and the oil-water separator and to sample along the length of the flowline alignment at 250 foot sections for the full Table 915-1. Concurrently with the SSI, additional background samples along the wellhead and flowline will be collected and submitted per Table-915-1 inorganic and metals analysis. As part of Chevrone Data Integrity review for projects associated with Eagle Environmental, all point of compliance samples will be recollected in accordance with the approved Form 27 investigation plan and analyzed for full Table 915-1.

The organic and inorganic compound exceedances identified during decommissioning at WH-FS-01@6' will be removed through a remedial excavation and the impacted soil will be segregated for proper offsite disposal. Remedial excavation confirmation soil samples will be collected and analyzed for full ECMC Table 915-1 constituents. The results of which will be submitted on a subsequent Form 27.

**REMEDIAL ACTION PLAN**

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? No

**SOURCE REMOVAL SUMMARY**

Describe how source is to be removed.

Residual petroleum hydrocarbon impacts identified at the former wellhead location WH-FS-01@6' will be removed through a remedial excavation. Soil samples will be collected to confirm the vertical and lateral extents of the impacts following source removal and the impacted soil will be segregated for proper offsite disposal. Remedial excavation confirmation soil samples will be analyzed for full ECMC Table 915-1 constituents. The results of which will be submitted on a subsequent Form 27.

**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 will be excavated, and confirmation sidewall and floor soil samples will be collected and analyzed for the full Table 915 organic and inorganic constituents. If groundwater is encountered during the excavation of impacted soil, a groundwater sample will be collected for Table 915 organic and inorganic constituents in groundwater. The results of the excavation and additional Supplemental Site Investigation (SSI) activities including post-abandonment flowline sampling and background sampling will be provided in a subsequent Form 27. This work is proposed to be completed by the end of 4Q 2025, pending the approval of this form.

## **Soil Remediation Summary**

☐ **In Situ**

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )  
\_\_\_\_\_ Chemical oxidation  
\_\_\_\_\_ Air sparge / Soil vapor extraction  
\_\_\_\_\_ Natural Attenuation  
\_\_\_\_\_ Other \_\_\_\_\_

☐ **Ex Situ**

\_\_\_\_\_ Excavate and offsite disposal  
\_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_  
\_\_\_\_\_ Name of Licensed Disposal Facility or ECMC Facility ID # \_\_\_\_\_  
\_\_\_\_\_ Excavate and onsite remediation  
\_\_\_\_\_ Land Treatment  
\_\_\_\_\_ Bioremediation (or enhanced bioremediation)  
\_\_\_\_\_ Chemical oxidation  
\_\_\_\_\_ Other \_\_\_\_\_

## **Groundwater Remediation Summary**

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )  
\_\_\_\_\_ Chemical oxidation  
\_\_\_\_\_ Air sparge / Soil vapor extraction  
\_\_\_\_\_ Natural Attenuation  
\_\_\_\_\_ 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.

Initial subsurface assessment soil samples collected upon installation reported exceedances at location MH-01 of arsenic, barium, and naphthalene. All monitoring well sampling within the four-quarterly sampling events preceding reported no exceedances. Monitoring well samples were analyzed for BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, and inorganic parameters per ECMC Table 915-1. Four consecutive quarters of groundwater concentrations were compliant with these constituents. Attached to this form are the data packets and laboratory results of the previous monitoring well sampling activities reported at the Sandau 34-12F location.

Monitoring wells (MW-01 through MW-05) will resume quarterly sampling for full table 915-1 organic and inorganic constituents. NFA will only be requested once four consecutive quarters of groundwater sampling have been completed and reported at the location with concentrations of Table 915 constituents below regulatory limits.

## REMEDIATION PROGRESS UPDATE

### PERIODIC REPORTING

#### Approved Reporting Schedule:

☒ Quarterly☐ Semi-Annually☐ Annually☐ Other

#### ☐ Request Alternative Reporting Schedule:

☐ Semi-Annually☐ Annually☐ Other

Rule 913.e:

After initial approval of a Form 27, the Operator will provide quarterly update reports in a Supplemental Form 27 to document progress of site investigation and remediation, unless an alternative reporting schedule has been requested by the Operator and approved by the Director. The Director may request a more frequent reporting schedule based on site-specific conditions.

#### Report Type:

☐ Groundwater Monitoring☐ Land Treatment Progress Report☐ O&M Report☒ Other Quarterly Update

### Adequacy of Operator's General Liability Insurance and Financial Assurance

Describe the adequacy of the Operator's general liability insurance and Financial Assurance to fully address the anticipated costs of Remediation, including the estimated remaining cost for this project (below).

If this information has been provided on a Form 27 within the last 12 months, provide the Document Number of that form.

Noble intends to directly address the costs of remediation at the locations as part of our asset retirement obligation process and operations. Noble has general liability insurance (policy MWZZ 316714) and financial assurance in compliance with ECMC rules. Records are available on the ECMC's website. The cost for remediation is an estimate only, costs may change upwards or downward based on site-specific information. Noble makes no representation or guarantees as to the accuracy of the estimate.

Operator anticipates the remaining cost for this project to be: \$ 50000

### WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? No

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

Volume of E&P Waste (solid) in cubic yards

E&P waste (solid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility:

Volume of E&P Waste (liquid) in barrels

E&P waste (liquid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility:

## REMEDIATION COMPLETION REPORT

### REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No

If YES:

☐ Compliant with Rule 913.h.(1).☐ Compliant with Rule 913.h.(2).☐ Compliant with Rule 913.h.(3).

Do all soils meet Table 915-1 standards? No

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted? \_\_\_\_\_

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 COGCC 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. 04/14/2022

Proposed date of completion of Reclamation. 06/30/2027

## 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. 02/09/2022

Actual Spill or Release date, or date of discovery. 04/26/2022

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 04/14/2022

Proposed site investigation commencement. 04/14/2022

Proposed completion of site investigation. 12/31/2025

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/06/2025

Proposed date of completion of Remediation. 06/30/2026

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:

The implementation schedule has been changed for the Sandau 34-12F wellhead / flowline due to the necessity supplemental site investigation activities adjacent to the flowline and additional background sampling. The results of the excavation and additional Supplemental Site Investigation (SSI) activities including post-abandonment flowline sampling and background sampling will be provided in the subsequent Form 27. Monitoring wells will resume quarterly sampling and NFA will only be requested once four consecutive quarters of groundwater sampling have been completed and reported at the location with concentrations of Table 915 constituents below regulatory limits. Site soil sampling and excavation activities are tentatively scheduled to be completed by the end of 4Q 2025.

## OPERATOR COMMENT

This form has been submitted to provide a 1Q 2025 update for the Sandau 34-12F location (REM #22548). No work has been completed since previously reported investigation activities. Attached to this Form 27 is the data packets and laboratory analytical results of site soil investigations conducted on 1/26/2024 and 4/14/22. Additionally, the laboratory analytical results and tables for quarterly groundwater monitoring events conducted on 2/7/2024, 5/13/2024, 8/6/2024, and 11/07/2024 are attached. A secured analytical data report is pending for flowline activities conducted 9/6/2023. Upon receipt of a secured report, analytical findings will be summarized and provided.

Remediation and site investigation, previously directed by Eagle Environmental Consulting Inc (Eagle), is now under the direction of Montrose Environmental (Montrose). In accordance with the comment provided via the denied Form 27, Doc. #403940669, Montrose has conducted a review of the previously submitted laboratory report(s) to the re-issued (i.e., encrypted) laboratory report(s), which included a thorough review of the analytical results, including cross-checking reports against the previously submitted site investigation reports, tables, form text, and figures. No discrepancies were found.

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 report from subsequent unauthorized modification by anyone outside the lab, which resulted in the lab reissuing the original report with additional protections (Reissued Report). The Reissued Report was received directly from the lab on February 13, 2025, which includes a watermark confirming both the laboratory representative who reissued the report and the date and time of the reissuance. The metadata associated with this Reissued Report also includes the lab representative's name, the date and time the laboratory reissued the report, and an explanation for the report reissuance. The Reissued Report is attached to this submission.

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.

In accordance with COA stated on Form 27 (Doc. #403196278), a Supplemental Site Investigation (SSI) will be conducted at the Sandau 34-12F to resample the flowline terminuses at the wellhead and the oil-water separator and to sample along the length of the flowline alignment at 250 feet sections for the full Table 915-1. Concurrently with the SSI, additional background samples along the wellhead and flowline will be collected and submitted per Table-915-1 inorganic and metals analysis as further comparison with previous exceedance locations. Quarterly sampling of the Sandau 34-12F location monitoring wells will resume and NFA will be requested only once four consecutive quarters of groundwater sampling have been completed and reported at the location with concentrations of Table 915 constituents below regulatory limits.

In response to the ECMC comment dated 12/22/2022 (Doc. #403196278), the exceedances identified during decommissioning at WH-FS-01 @6' will be removed through a remedial excavation and the impacted soil will be segregated for proper offsite disposal. Remedial excavation confirmation soil samples will be collected and analyzed for full ECMC Table 915-1 constituents.

Quarterly reporting will be conducted until closure criteria are achieved for the remediation project. Site soil sampling and excavation activities are tentatively scheduled to be completed by the end of 4Q 2025.

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

Signed: Scott Williamson

Title: Environmental Consultant

Submit Date: \_\_\_\_\_

Email: ScottWilliamson@montrose-env.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: \_\_\_\_\_

Date: \_\_\_\_\_

Remediation Project Number: 22548

## COA Type

## Description

0 COA	

## 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

404136737	ANALYTICAL RESULTS
404136738	ANALYTICAL RESULTS
404136739	ANALYTICAL RESULTS
404137347	ANALYTICAL RESULTS
404142802	SITE INVESTIGATION REPORT
404142803	MONITORING REPORT



404142997	ANALYTICAL RESULTS
404142998	ANALYTICAL RESULTS
404143000	ANALYTICAL RESULTS
404143001	ANALYTICAL RESULTS
404143002	ANALYTICAL RESULTS
404143007	ANALYTICAL RESULTS
404143008	ANALYTICAL RESULTS
404143009	ANALYTICAL RESULTS
404143010	ANALYTICAL RESULTS
404143011	ANALYTICAL RESULTS
404143012	ANALYTICAL RESULTS
404143014	ANALYTICAL RESULTS

Total Attach: 18 Files

**General Comments**

<b><u>User Group</u></b>	<b><u>Comment</u></b>	<b><u>Comment Date</u></b>
		Stamp Upon Approval

Total: 0 comment(s)