

State of Colorado  
Energy & Carbon Management Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
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Document Number:

403711476

Receive Date:

03/07/2024

Report taken by:

Kyle Waggoner

## 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 ECOM 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
Address: 1099 18TH STREET SUITE 1500		Phone: (970) 730-7281
City: DENVER	State: CO	Zip: 80202
Contact Person: Dan Peterson	Email: rbueuf27@chevron.com	Mobile: ( )

## PROJECT, PURPOSE &amp; SITE INFORMATION

## PROJECT INFORMATION

Remediation Project #: 20156 Initial Form 27 Document #: 402816518

## 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: TANK BATTERY	Facility ID: 329417	API #: _____	County Name: WELD
Facility Name: FRANK-64N64W 12NWNE	Latitude: 40.331823	Longitude: -104.496621	
** correct Lat/Long if needed: Latitude: 40.332363		Longitude: -104.489845	
QtrQtr: NWNE	Sec: 12	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE	Facility ID: 481479	API #: _____	County Name: WELD
Facility Name: Frank 1, 12-02, 7-4	Latitude: 40.332204	Longitude: -104.489884	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NENE	Sec: 12	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes

## **SITE CONDITIONS**

General soil type - USCS Classifications SW \_\_\_\_\_

Most Sensitive Adjacent Land Use crop \_\_\_\_\_

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**

HPH: none, surface ponds ~0.13 mi NE, Latham Ditch ~0.20 mi SW, no buildings

## 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
Yes	GROUNDWATER	Refer to Tables and Figures	Laboratory Analysis
Yes	SOILS	Refer to Tables and Figures	Laboratory Analysis and Field Screening

### 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 ECOM Rule 911 at the FRANK T4N-R64W-S12 L02 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 ):

Ten (10) grab confirmation soil samples were collected from the partially-buried produced water vessel excavation, beneath the above-ground oil tank, and at the separator. Soil samples were analyzed by a certified laboratory for TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons), organic compounds in soil per ECOM Table 915-1, and EC, SAR, pH, and boron. Additionally, one soil sample (FS02@8') was analyzed for metals in soil per ECOM Table 915-1. All samples collected were analyzed by a certified laboratory using approved ECOM laboratory analysis methods.

#### Proposed Groundwater Sampling

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

A total of twenty-five (25) temporary monitoring wells have been installed at the site to delineate dissolved phase impacts. The existing monitoring wells will continue to be sampled on a quarterly basis, and analyzed for BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, total dissolved solids (TDS), chloride, and sulfate by a certified laboratory.

#### 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 ):

Site Assessment activities were conducted from 5/23/2022 to 11/13/2023 to delineate impacted media. Twenty-one soil borings were advanced in the area of potential impacts. BH01 was advanced at the same location as the waste characterization sample (FS02@8') to vertically delineate impacts at that location. BH02 - BH21 were advanced surrounding BH01 to vertically and laterally delineate impacts identified at FS01@6' and FL02@8'. Soil samples were collected and analyzed for TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons), organic compounds and metals in soil per ECOM Table 915-1, EC, SAR, pH, and boron. Based on the data presented, hydrocarbon compounds in exceedance of ECOM Table 915-1 standards have been fully delineated. Each of the 21 soil borings were converted into temporary groundwater monitoring wells to delineate dissolved phase impacts. The existing monitoring wells will continue to be sampled quarterly, as described in the Groundwater Monitoring section.

## SITE INVESTIGATION REPORT

### SAMPLE SUMMARY

Soil

NA / ND

Number of soil samples collected 99

Number of soil samples exceeding 915-1 66

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet) 2100

-- Highest concentration of TPH (mg/kg) 1680

-- Highest concentration of SAR 10.8

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 10

#### Groundwater

Number of groundwater samples collected 104

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 7

Number of groundwater monitoring wells installed 25

Number of groundwater samples exceeding 915-1 22

-- Highest concentration of Benzene (µg/l) 54

ND Highest concentration of Toluene (µg/l)

-- Highest concentration of Ethylbenzene (µg/l) 1.2

-- Highest concentration of Xylene (µg/l) 2.7

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?

☒ Were background samples collected as part of this site investigation?

Twenty-five (25) background soil samples from ten discrete soil boring locations were collected and analyzed for pH, SAR, and ECMC Table 915-1 metals. A detailed discussion of the background sampling results is presented in the Operator Comments section.

☐ 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 completed to horizontally delineate the elevated SAR results observed in sample locations BH08@6-8' and BH08@9-10', and to vertically and/or horizontally delineate the elevated pH results observed in sample locations BH03@6-8', BH04@15-17', BH18@6-8', BH18@10-12', BH18@15-17', BH19@10-12', BH19@15-17', BH20@6-7', BH21@6-7.5', and BH21@11-12' during the 5/23/2022 to 11/13/2023 site assessment activities. A proposed SSI map is provided in the Supplemental Site Assessment Report attached to this Form 27. Based on the pH and SAR exceedances identified during the previous site assessment activities, full delineation of hydrocarbon compounds in exceedance of ECMC Table 915-1 standards in both soil and groundwater, and elimination of metals as contaminants of concern, Noble proposes to limit future SSI soil sampling to pH and SAR only. Concurrently with the SSI, additional background soil samples will be collected to determine if elevated pH and SAR results are attributed to native soil conditions at the site. The SSI will be completed in accordance with the proposed implementation schedule, and the results of the SSI 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.

Preliminary delineation of the source material was conducted through the environmental site assessments completed on 5/23/2022 to 11/13/2023. The site assessment results, including sample location figures, analytical data tables, and laboratory analytical data, are attached to this Form 27. Based on the data presented, hydrocarbon compounds in exceedance of ECMC Table 915-1 standards have been fully delineated. Based on the comparative analysis of metals in the site assessment soil samples to the background soil samples, as described in the Operator Comments section, metals should not be considered contaminants of concern at the site. Quarterly groundwater monitoring will be continued until four consecutive quarters of compliant groundwater results have been achieved.

#### REMEDIAL 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.

A supplemental site investigation (SSI) will be completed to vertically and horizontally delineate the elevated pH and SAR results observed during the 5/23/2022 to 11/13/2023 site assessment activities, in accordance with the attached proposed site investigation map, and proposed sampling plan outlined in the Site Investigation Report. The groundwater monitoring wells will continue to be sampled on a quarterly basis to ensure the dissolved phase groundwater plume is stable and decreasing. Based on the latest groundwater monitoring data, provided as an attachment to this Form 27, quarterly groundwater monitoring will be conducted for a minimum of four additional quarters, until constituent concentrations remain in compliance with the applicable groundwater standards for at least four consecutive quarters. Following the additional SSI soil sampling activities outlined in the Site Investigation Report section, the generation of a detailed reclamation plan, and the completion of quarterly groundwater monitoring, Noble will request a No Further Action (NFA) designation for the site.

## 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

\_\_\_\_\_ No Bioremediation ( or enhanced bioremediation )  
 \_\_\_\_\_ No Chemical oxidation  
 \_\_\_\_\_ No 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.

A total of twenty-five (25) temporary monitoring wells (BH01 - BH21, BH10R, BH15R - BH17R) have been installed at the site to delineate dissolved phase impacts. The existing monitoring wells will continue to be sampled on a quarterly basis, and analyzed for BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, total dissolved solids (TDS), chloride, and sulfate until four consecutive quarters of compliant groundwater results has been achieved.

Monitoring wells BH15R - BH17R, BH20, and BH21 were noted as destroyed on arrival during the second quarter 2024 groundwater monitoring event. As such, five additional replacement monitoring wells (BH15R2 - BH17R2, BH20R, and BH21R) will be installed to maintain points-of-compliance (POC) and continue the quarterly monitoring program. The proposed replacement monitoring well locations are provided in the attached second quarter 2024 groundwater monitoring report.

Second quarter 2024 analytical results indicated that the 1-methylnaphthalene concentrations in monitoring wells BH10R and BH11 exceeded the USEPA Regional Screening Level for Resident Tapwater. Organic compound concentrations were in compliance with the applicable regulatory standards in the remaining 14 monitoring well locations that were sampled during the second quarter 2024. Monitoring well BH04 was used for establishing ugradient background levels for TDS, chloride, and sulfate. During the second quarter 2024 groundwater monitoring event, TDS, chloride, and sulfate concentrations were in compliance with the applicable ECMC Table 915-1 standards and/or within 1.25x the background concentrations in all 16 monitoring wells that were sampled.

## 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 Supplemental Site Investigation Summary & Proposal;  
Background Metals Evaluation

### 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? 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. 01/26/2022

Proposed date of completion of Reclamation. 12/31/2026

## 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. 08/04/2021

Actual Spill or Release date, or date of discovery. 01/27/2022

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/26/2022

Proposed site investigation commencement. 05/13/2022

Proposed completion of site investigation. 07/10/2025

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 11/13/2023

Proposed date of completion of Remediation. 12/31/2025

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 due to the necessity for additional supplemental site investigation activities to delineate pH and SAR. The proposed site investigation will be completed following the approval of this form, landowner negotiations, and crew availability. Based on the need for four consecutive quarters of compliant groundwater sampling, the date of proposed completion remediation has been updated.

## OPERATOR COMMENT

This Supplemental Form 27 is being re-submitted to summarize the results of the quarterly groundwater monitoring activities conducted during the 4Q2023 - 2Q2024 at the Frank 1, 12-02, 7-4 location. Quarterly groundwater monitoring activities at this site will continue until four consecutive quarters of compliant groundwater monitoring results have been achieved.

Second quarter 2024 analytical results indicated that the 1-methylnaphthalene concentrations in monitoring wells BH10R and BH11 exceeded the USEPA Regional Screening Level for Resident Tapwater. Organic compound concentrations were in compliance with the applicable regulatory standards in the remaining 14 monitoring well locations that were sampled during the second quarter 2024. Monitoring well BH04 was used for establishing ugradient background levels for TDS, chloride, and sulfate. During the second quarter 2024 groundwater monitoring event, TDS, chloride, and sulfate concentrations were in compliance with the applicable ECMC Table 915-1 standards and/or within 1.25x the background concentrations in all 16 monitoring wells that were sampled.

Site Assessment activities were conducted from 5/23/2022 to 11/13/2023 to delineate impacted media. The site assessment results, including sample location figures, analytical data tables, and laboratory analytical data, are attached to this Form 27. Based on the data presented herein, hydrocarbon compounds in exceedance of ECMC Table 915-1 standards have been fully delineated.

During site assessment activities, a total of 25 background samples were collected from 10 discrete locations and analyzed for pH, SAR, and ECMC Table 915-1 metals to assess background conditions at the Site. A statistical analysis was conducted to evaluate the arsenic, barium, cadmium, lead, and selenium concentrations recorded in confirmation soil samples and background samples collected on site. Due to the non-parametric distribution of the data, the Mann-Whitney-Wilcoxon rank-sum test was utilized to assess if site concentrations were representative of native background conditions. The analysis indicated that the arsenic, barium, cadmium, lead, and selenium concentrations were not significantly higher than background concentrations and consequently are representative of background conditions. Based on this data presented, Noble is requesting to remove Table 915-1 metals as contaminants of concern for this remediation project. Please reference the attached Metals Statistical Evaluation Summary for further discussion on the metals assessment and supporting data.

Additionally, the maximum background values of pH and SAR were compared to the soil boring and decommissioning values of pH and SAR. The maximum background level for pH was 8.47, and the maximum background level for SAR was 3.11. Based on a comparison to background levels, the pH and/or SAR results for soil sample locations BH03@6-8', BH04@15-17', BH08@6-8', BH08@9-10', BH18@6-8', BH18@10-12', BH18@15-17', BH19@10-12', BH19@15-17', BH20@6-7', BH21@6-7.5', and BH21@11-12' are above ECMC Table 915-1 soil standards, and additional site investigation soil boring activities will be conducted to vertically and/or horizontally delineate the elevated pH and SAR results, in accordance with the attached proposed site investigation map. Based on the pH and SAR exceedances identified during the previous site assessment activities, full delineation of hydrocarbon compounds in exceedance of ECMC Table 915-1 standards in both soil and groundwater, and elimination of metals as contaminants of concern, Noble proposes to limit future SSI soil sampling to pH and SAR only. Following the delineation of pH and SAR, a detailed reclamation plan will be generated.

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

Signed: Jake Whritenour

Title: Environmental Consultant

Submit Date: 03/07/2024

Email: chevroneform@tasman-geo.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: Kyle Waggoner

Date: 10/10/2024

Remediation Project Number: 20156

## COA Type

## Description

	Operator shall maintain quarterly reporting schedule.
	ECMC agrees to the removal of Table 915-1 metals from future site investigation activities.

2 COAs

## 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

403711476	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
403850198	MONITORING REPORT
403850200	MONITORING REPORT
403850204	MONITORING REPORT
403850206	OTHER
403850455	SITE INVESTIGATION REPORT



Total Attach: 7 Files

**General Comments**

<b><u>User Group</u></b>	<b><u>Comment</u></b>	<b><u>Comment Date</u></b>
Environmental	Operator has submitted a more recent form, document number: 403923644.	10/09/2024

Total: 1 comment(s)