

State of Colorado
Energy & Carbon Management Commission

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 25228 Initial Form 27 Document #: 403183031

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: 482870	API #: _____	County Name: WELD
Facility Name: Thompson T4N-R64W-28 LO2 482870	Latitude: 40.280322	Longitude: -104.559300	
** correct Lat/Long if needed: Latitude: 40.280792		Longitude: -104.559335	
QtrQtr: NESW	Sec: 28	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE	Facility ID: 483966	API #: _____	County Name: WELD
Facility Name: Thompson 28-10 Tank Battery	Latitude: 40.280708	Longitude: -104.559630	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSE	Sec: 28	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

Pond: 0.05mi NW

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	See Attach B	Lab analysis
Yes	SOILS	See Attach A	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 THOMPSON T4N-R64W-S28 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):

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, and boron. Additionally, one soil sample was submitted for laboratory analysis of metals in soil per ECMC Table 915-1. 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):

If groundwater is encountered during the site investigation a grab groundwater will be collected and analyzed for all organic 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 at the tank battery area occurred during abandonment activities. Field personnel field screened all disturbed areas using visual and olfactory senses to determine if laboratory confirmation sampling is required. The ECMC Tank Battery and Produced Water Vessel Closure Checklists were utilized and filled out during the abandonment process. A photolog is included in Attachment A.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

NA / ND

Number of soil samples collected 24

-- Highest concentration of TPH (mg/kg) 1.9

Number of soil samples exceeding 915-1 12

-- Highest concentration of SAR 2.75

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

BTEX > 915-1 No

Approximate areal extent (square feet) 100

Vertical Extent > 915-1 (in feet) 6

Groundwater

Number of groundwater samples collected 6

ND Highest concentration of Benzene (µg/l)

Was extent of groundwater contaminated delineated? Yes

ND Highest concentration of Toluene (µg/l)

Depth to groundwater (below ground surface, in feet) 10

ND Highest concentration of Ethylbenzene (µg/l)

Number of groundwater monitoring wells installed 6

ND Highest concentration of Xylene (µg/l)

Number of groundwater samples exceeding 915-1 0

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?

A total of fifteen background samples were collected from five discrete locations and analyzed for pH. Additionally, ten of the fifteen samples were analyzed for arsenic.

Based on the depth of the arsenic exceedances recorded in site confirmation soil samples, background arsenic concentrations were compared to site concentrations recorded at similar depths. Soil analytical results indicated that all site arsenic concentrations recorded between 5.5 feet to 6 feet bgs were below 1.25x the highest background concentration recorded at 6 feet bgs (2.24 mg/kg) and all site arsenic concentrations recorded at 18-19 feet bgs were below 1.25x the highest background concentration recorded at 18-19 feet bgs (5.00 mg/kg).

☐ 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?

Based on soil analytical results, further site investigation activities are necessary to confirm and vertically delineate the pH exceedance recorded in soil sample AST01 @ 0.5'. Analytical results received for samples collected during June 2023 site investigation activities indicated the pH exceedance has been successfully horizontally delineated. The proposed soil boring location is attached to this form.

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.

A Site Assessment was conducted on 6/2/2023 to delineate impacted media. Six soil borings were advanced in the area of impacts. BH01 was advanced at the same location as the waste characterization sample FS01@5.5' to vertically delineate impacts at that location. BH02-BH06 were advanced surrounding BH01 to vertically and laterally delineate impacts identified at FS01@5.5'. Soil samples were collected and analyzed for TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons), organic compounds in soil, arsenic EC, SAR, pH, and boron. Each of the six soil borings were converted to temporary groundwater monitoring wells. Six groundwater samples were collected and analyzed for BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-methylnaphthalene, and inorganic parameters.

Based on the four consecutive quarters of compliant groundwater results, Noble is requested to compare organic compounds in soil to ECOM Residential Soil Screening Levels (RSSLs). Soil analytical results indicated that the organic compound concentrations recorded in soil sample FS01@5.5' are not negatively affecting the groundwater and are in compliance with ECOM RSSLs. This request was approved on Supplemental Form 27 Document Number 403761373.

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.

Laboratory analytical results indicate pH was above ECMC Table 915-1 Soil Suitability for Reclamation (SSR) standards in one decommissioning soil sample (AST01@0.5'). All other samples collected during decommissioning and site assessment activities were in compliance with ECMC Table 915-1 SSR standards for pH, SAR, EC, and boron. Based on soil analytical results, further site investigation activities are necessary to confirm and vertically delineate the pH exceedance recorded in soil sample AST01 @ 0.5'. Analytical results received for samples collected during June 2023 site investigation activities indicated the pH exceedance has been successfully horizontally delineated. The proposed soil boring location is attached to this form.

Arsenic was detected above applicable ECMC standards in 11 soil samples submitted for laboratory analysis. To determine if arsenic should be considered a contaminant of concern, a total of ten background samples were collected from five discrete locations and analyzed for arsenic. Based on the depth of the arsenic exceedances recorded in site confirmation soil samples, background arsenic concentrations were compared to site concentrations recorded at similar depths. Soil analytical results indicated that all site arsenic concentrations recorded between 5.5 feet to 6 feet bgs were below 1.25x the highest background concentration recorded at 6 feet bgs (2.24 mg/kg) and all site arsenic concentrations recorded at 18-19 feet bgs were below 1.25x the highest background concentration recorded at 18-19 feet bgs (5.00 mg/kg).

MNA was selected as the remediation strategy between the second quarter 2023 and the first quarter 2024.

Soil Remediation Summary

☐ In Situ

☐ Ex Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ 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

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

Yes _____ 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.

Six monitoring wells (BH01-BH06) were installed at the site and will be sampled on a quarterly basis for BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, and inorganic parameters.

During the first quarter 2024, four consecutive quarters of organic compound concentrations and inorganic parameters in compliance with the applicable ECMC Tab1 915-1 regulatory standards were achieved. Groundwater was discontinued per the approved Supplemental Form 27 (Document No. 403761373).

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 Proposal

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?

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? _____

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 ECMC 1000 Series Rules.

Laboratory analytical results indicate pH was above ECMC Table 915-1 Soil Suitability for Reclamation (SSR) standards in one decommissioning soil sample (AST01 @ 0.5'). All other samples collected during decommissioning and site assessment activities were in compliance with ECMC Table 915-1 SSR standards for pH, SAR, EC, and boron. Following full delineation of the singular pH exceedance, a detailed reclamation plan will be submitted via Supplemental Form 27.

Is the described reclamation complete? No

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. 02/27/2023

Proposed date of completion of Reclamation. 06/28/2025

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. 03/09/2023

Actual Spill or Release date, or date of discovery. 03/09/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/27/2023

Proposed site investigation commencement. 12/20/2024

Proposed completion of site investigation. 12/20/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 03/26/2025

Proposed date of completion of Remediation. 03/31/2025

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 updated to allow for the supplemental site investigation to vertically delineate the pH exceedance recorded in soil sample AST01 @ 0.5'. The proposed soil boring location is illustrated on the attached Proposed Soil Boring Location Map and supplemental site investigation activities are tentatively scheduled for December 20, 2024. Following full delineation of the exceedance, a detailed reclamation plan will be submitted via Supplemental Form 27.

OPERATOR COMMENT

This Form 27 is being submitted as a fourth quarter 2024 timeline update Thompson 28-10 facility location.

Arsenic was detected above applicable ECMC standards in 11 soil samples submitted for laboratory analysis. To determine if arsenic should be considered a contaminant of concern, a total of ten background samples were collected from five discrete locations and analyzed for arsenic. Based on the depth of the arsenic exceedances recorded in site confirmation soil samples, background arsenic concentrations were compared to site concentrations recorded at similar depths. Soil analytical results indicated that all site arsenic concentrations recorded between 5.5 feet to 6 feet bgs were below 1.25x the highest background concentration recorded at 6 feet bgs (2.24 mg/kg) and all site arsenic concentrations recorded at 18-19 feet bgs were below 1.25x the highest background concentration recorded at 18-19 feet bgs (5.00 mg/kg). The updated soil tables are included in Attachment A.

After further review of soil analytical results, further site investigation activities are necessary to confirm and vertically delineate the pH exceedance recorded in soil sample AST01 @ 0.5'. Analytical results received for samples collected during June 2023 site investigation activities indicated the pH exceedance has been successfully horizontally delineated. The proposed soil boring location is illustrated on the attached Proposed Soil Boring Location Map and supplemental site investigation activities are tentatively scheduled for December 20, 2024. Following full delineation of the exceedance, a detailed reclamation plan will be submitted via Supplemental Form 27.

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

Signed: Allan Engelhardt

Title: Environmental Consultant

Submit Date: _____

Email: tas-chevron-2@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: _____

Date: _____

Remediation Project Number: 25228

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**

403955379	ANALYTICAL RESULTS
403955569	SITE INVESTIGATION PLAN

Total Attach: 2 Files

General Comments**User Group****Comment****Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)