FORM 27 Rev 5/22

State of Colorado
Energy & Carbon Management Commission

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Report taken by: Alexander Ahmadian

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 INFORMATON

Name of Operator: NOBLE ENERGY INC Operator No: 100322
Address: 1099 18TH STREET SUITE 1500
City: DENVER State: CO Zip: 80202
Contact Person: Dan Peterson Email: rbueuf27@chevron.com

Phone Numbers
Phone: (970) 730-7281
Mobile: ( )

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 29940 Initial Form 27 Document #: 403440460

PURPOSE INFORMATION

- [ ] Rule 913.c.(1): Pit or Cuttings Trench closure.
- [X] Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- [X] 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.
- [X] 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: 327037 API #: County Name: WELD
Facility Name: MATSUSHIMA-PM K-64N66W 2NENE Latitude: 40.346700 Longitude: -104.737190
** correct Lat/Long if needed: Latitude: 40.347096 Longitude: -104.737515
QtrQtr: NENE Sec: 2 Twp: 4N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 485348 API #: County Name: WELD
Facility Name: Matsushima-PM K 2-1 Latitude: 40.347152 Longitude: -104.737363
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NENE Sec: 2 Twp: 4N Range: 66W 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

Intermittent Riverine 0.07mi NW,
Farm Structures 0.09/0.10/0.11/0.23 WNW, 0.06/0.08 NW, 0.11/0.13/0.14 NE, 0.06/0.12/0.13/0.21 ENE, 0.06/0.09/0.13/0.18/0.22 E, 0.07/0.08/0.08/0.17/0.20/0.21 ESE, 0.10/0.11/0.12/0.13/0.23 SE, 0.13 SW
Residential 0.08/0.22/0.25 W, 0.04 WNW, 0.04 NW, 0.04/0.08/0.12 ENE, 0.12/0.17 NE, 0.11/0.15 E, 0.12/0.15 ESE, 0.15/0.24 SE, 0.08 SSE, 0.11 SW

SITE INVESTIGATION PLAN

TYPE OF WASTE:

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

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
UNDETERMINED	GROUNDWATER	NA	Lab analysis if encountered
Yes	SOILS	10' x 10' x 5' bgs	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 MATSUSHIMA T4N-R66W-S2 L01 Facility and Tank Battery location.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

[X] 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 risers for the flowline(s) and dumpline(s) of any 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, metals, EC, SAR, pH, and boron. All samples collected were analyzed by a certified laboratory using approved ECMC laboratory analysis methods.

Proposed Groundwater Sampling

[X] 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 was required. The ECMC Tank Battery and Produced Water Vessel Closure Checklists were utilized and filled out during the abandonment process. A photolog was submitted on the Subsequent Form 27.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 27

Number of soil samples exceeeding 915-1: 24

NA / ND

-- Highest concentration of TPH (mg/kg): 570

-- Highest concentration of SAR: 2.12

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

BTEX > 915-1 Yes

Approximate areal extent (square feet) 100

Vertical Extent > 915-1 (in feet) 8

Groundwater

Number of groundwater samples collected 5

-- Highest concentration of Benzene (µg/l) 3.3

Was extent of groundwater contaminated delineated? Yes

ND Highest concentration of Toluene (µg/l)

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

ND Highest concentration of Ethylbenzene (µg/l)

Number of groundwater monitoring wells installed 5

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 20 background samples were collected from five discrete locations (BG01 - BG05) and analyzed for pH, EC, SAR, boron, arsenic, barium, cadmium, lead, and selenium.

Background soil analytical results indicated that arsenic, barium, cadmium, and lead were in exceedance of the applicable ECMC regulatory standards in native soil on site.

☐ 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 received for samples collected during November 2023 site assessment activities, all site cadmium and lead concentrations were below the highest background concentrations x1.25 (0.721 mg/kg and 31.8 mgkg, respectively) recorded in native material. In addition, background and site data for selenium in soils were compared using the nonparametric Mann-Whitney-Wilcoxon rank-sum test to assess if site concentrations were substantially higher than background concentrations. The results of the metals evaluation indicated that concentrations for selenium concentrations recorded in the site data are not substantially different from background concentrations and consequently, are indicative of native soil conditions. Consequently, Noble is requesting to remove cadmium, lead, and selenium as contaminates of concern for this remediation project.

Based on the data, site arsenic and/or barium concentrations remain above 1.25x the highest background concentrations (1.35 mg/kg and 321 mg/kg, respectively) in four locations on site. Site assessment soil analytical results indicated that arsenic concentrations are successfully delineated.

Further site assessment activities are required to horizontally delineate the barium exceedance recorded in soil sample BH03 @ 6. In addition, three additional soil borings will be advanced to vertically and horizontally delineate the pH exceedances on site. Four additional background soil borings will be advanced surrounding the former tank battery to continue assessing pH, arsenic, and barium concentrations in native soil. The proposed soil boring locations are illustrated on Figure 4.

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.

On November 30, 2023, site assessment activities were initiated to delineate hydrocarbon impacted soil encountered during decommissioning activities. Five soil borings were advanced within and surrounding the former produced water vessel excavation to depths of approximately 12 feet and 13 feet bgs. Twenty soil samples were collected from the borings at depths ranging from approximately 2.5 feet to 13 feet bgs and submitted to Summit for laboratory analysis of Table 915-1 Organic Compounds in Soil, TPH (C6-C36), pH, EC, SAR, boron, arsenic, barium, cadmium, lead, and selenium.

Soil analytical results indicated that organic compound concentrations were in exceedance of the applicable ECMC regulatory standards in soil sample BH01 @ 8'. Organic compound concentrations were in compliance with the applicable regulatory standards in the remaining 19 soil sample locations. In addition, pH was in exceedance of the applicable regulatory standard in 10 soil sample locations. EC, SAR, and boron were in compliance with the regulatory standards in all soil samples on site.

The source identified at FS01@5' will be removed through a remedial excavation. Based on the analytical results and the results of the analytical assessments, Noble proposes to collect excavation confirmatory samples for analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, TPH (C6-C36), fluorene, 1-M, 2-M, arsenic, barium, and pH. The results of the remedial excavation 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.

Soil impacts on site will be removed via mechanical excavation.

Monitored natural attenuation (MNA) was selected as the remediation strategy for the groundwater on site during the fourth quarter 2023 and will remain the selected remediation strategy through the third quarter 2024.

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

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.

Quarterly groundwater monitoring at the five site monitoring wells (BH01 - BH05) will continue until closure criteria are achieved. Groundwater samples will be submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, TDS, chloride, and sulfate in accordance with Table 915-1.

Fourth quarter 2023 and first quarter 2024 analytical results indicated that organic compound concentrations and inorganic parameters were in compliance with the applicable regulatory standards in all five monitoring well locations.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

[X] 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: [X] Groundwater Monitoring [ ] Land Treatment Progress Report [ ] O&M Report

[X] Other Site Assessment Report, Site Assessment 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.

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. 12/31/2025

Proposed date of completion of Reclamation. 12/31/2028

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. 06/07/2023

Actual Spill or Release date, or date of discovery. 10/23/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 10/06/2023

Proposed site investigation commencement. 09/30/2024

Proposed completion of site investigation. 12/31/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 10/06/2023

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:

Further site assessment activities are required to horizontally delineate the barium exceedance recorded in soil sample BH03 @ 6. In addition, three additional soil borings will be advanced to vertically and horizontally delineate the pH exceedances on site. Four additional background soil borings will be advanced surrounding the former tank battery to continue assessing pH, arsenic, and barium concentrations in native soil. The proposed soil boring locations are illustrated on Figure 4.

OPERATOR COMMENT

This Supplemental Form 27 was submitted to summarize site assessment activities, quarterly groundwater monitoring activities, and analytical results collected during the fourth quarter 2023 and first quarter 2024 at the Matsuhima PMK 2-1 location.

On November 30, 2023, site assessment activities were initiated to delineate hydrocarbon impacted soil encountered during decommissioning activities. Five soil borings were advanced within and surrounding the former produced water vessel excavation to depths of approximately 12 feet and 13 feet bgs. Twenty soil samples were collected from the borings at depths ranging from approximately 2.5 feet to 13 feet bgs and submitted to Summit for laboratory analysis of Table 915-1 Organic Compounds in Soil, TPH (C6-C36), pH, EC, SAR, boron, arsenic, barium, cadmium, lead, and selenium.

Soil analytical results indicated that organic compound concentrations were in exceedance of the applicable ECMC regulatory standards in soil sample BH01 @ 8'. Organic compound concentrations were in compliance with the applicable regulatory standards in the remaining 19 soil sample locations. In addition, pH was in exceedance of the applicable regulatory standard in 10 soil sample locations. EC, SAR, and boron were in compliance with the regulatory standards in all soil samples on site.

Based on soil analytical results received for samples collected during November 2023 site assessment activities, all site cadmium and lead concentrations were below the highest background concentrations x1.25 (0.721 mg/kg and 31.8 mgkg, respectively) recorded in native material. In addition, background and site data for selenium in soils were compared using the nonparametric Mann-Whitney-Wilcoxon rank-sum test to assess if site concentrations were substantially higher than background concentrations. The results of the metals evaluation indicated that concentrations for selenium concentrations recorded in the site data are not substantially different from background concentrations and consequently, are indicative of native soil conditions. Consequently, Noble is requesting to remove cadmium, lead, and selenium as contaminates of concern for this remediation project.

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Fourth quarter 2023 and first quarter 2024 groundwater analytical results indicated that organic compound concentrations and inorganic parameters were in compliance with the applicable regulatory standards in all five monitoring well locations for two consecutive quarters.

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: 04/24/2024 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: Alexander Ahmadian Date: 08/06/2024

Remediation Project Number: 29940

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
403761346	FORM 27-SUPPLEMENTAL-SUBMITTED
403762977	MONITORING REPORT
403762979	MONITORING REPORT
403817875	MONITORING REPORT

Total Attach: 4 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)