

State of Colorado
Energy & Carbon Management Commission

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Document Number:
404257300

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		Mobile: ()
Contact Person: Dan Peterson	Email: danpeterson@chevron.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 29938 Initial Form 27 Document #: 403440407

PURPOSE INFORMATION

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

SITE INFORMATION

Yes Multiple Facilities

Facility Type: LOCATION	Facility ID: 330047	API #: _____	County Name: WELD
Facility Name: FIVE RIVERS K 09-28D	Latitude: 40.329380	Longitude: -104.786980	
** correct Lat/Long if needed: Latitude: 40.325936		Longitude: -104.790718	
QtrQtr: SENW	Sec: 9	Twp: 4N	Range: 66W Meridian: 6 Sensitive Area? Yes
Facility Type: SPILL OR RELEASE	Facility ID: 486824	API #: _____	County Name: WELD
Facility Name: Five Rivers K09-28D	Latitude: 40.325720	Longitude: -104.790779	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SENW	Sec: 9	Twp: 4N	Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SW _____

Most Sensitive Adjacent Land Use Industrial
Lowlands _____

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

Bald Eagle Roost or Communal Roost, Mule Deer Migration Corridor, Mule Deer Severe Winter Range
Freshwater Pond 105ft E, 0.16mi NE, Emergent Wetlands 0.05mi SE, 0.17mi S, Intermittent Riverine wetlands 0.08mi SE (Union Ditch), Forested/Shrub
Riparian wetlands 0.18mi N (South Platte River), Lower Perennial Riverine wetlands 0.23mi N (South Platte River)
Farm/Livestock Structures 0.13 SE
NA

SITE INVESTIGATION PLAN

TYPE OF WASTE:

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

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
UNDETERMINED	GROUNDWATER	NA	Lab analysis or Field Screening, if encountered
Yes	SOILS	Refer to Tables and Figures	Lab 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.

On March 20, 2024, a site investigation was conducted pursuant to ECMC Rule 911 at the FIVE RIVERS USX T4N-R66W-S9 L01 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 vessels excavation (FS01@4', FS02@4', FS03@4', FS04@4', and SS05@2'), beneath the ground oil tanks (AST01-AST04@0.5'), and at the risers for the flowline(s) and dumpline(s) of any separators (SEP01-DL@2' and SEP02-DL@2'). 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. 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 was required. A detailed summary of tank battery decommissioning activities, including field notes, site photos, figures, and laboratory analytical results, was attached to ECMC Document #403801400.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil	NA / ND
Number of soil samples collected <u>10</u>	ND Highest concentration of TPH (mg/kg) _____

Number of soil samples exceeding 915-1 10 -- Highest concentration of SAR 6.91

Was the areal and vertical extent of soil contamination delineated? No BTEX > 915-1 No

Approximate areal extent (square feet) 1000 Vertical Extent > 915-1 (in feet) 5

Groundwater

Number of groundwater samples collected 0 Highest concentration of Benzene (µg/l) _____

Was extent of groundwater contaminated delineated? Yes Highest concentration of Toluene (µg/l) _____

Depth to groundwater (below ground surface, in feet) _____ Highest concentration of Ethylbenzene (µg/l) _____

Number of groundwater monitoring wells installed _____ Highest concentration of Xylene (µg/l) _____

Number of groundwater samples exceeding 915-1 _____ 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?

On 11/15/2024, fifteen background samples were collected from 5 discrete locations (BG01-BG05) during the November 2024 site investigation and analyzed for metals in soil per ECMC Table 915-2, pH, SAR, EC, and boron. Background soil samples were collected from depths ranging between 2 to 10 feet below ground surface (ft. bgs). The maximum background concentrations for pH and SAR were observed to be 8.10 and 4.37, respectively. The maximum background concentrations with a 1.25x multiplier applied for arsenic and cadmium were calculated to be 1.33 mg/kg and 0.288 mg/kg, respectively. Selenium was not detected in any background samples.

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 the analytical results collected during the March 2024 decommissioning activities and November 2024 Supplemental Site Investigation (SSI), additional site investigation activities will be completed to further vertically and horizontally delineate the SAR exceedance observed at sample location SS05@2' observed during the November 2024 SSI, and the pH exceedances observed at sample locations FS01@4' observed during decommissioning and BH03@4-4.5' and BH05@2-3' observed during the November 2024 SSI. A proposed SSI map is attached to this Form 27. During the SSI, soil samples will be collected and analyzed for full ECMC Table 915-1 constituents. Additionally, the 1,3,5-trimethylbenzene exceedance observed at sample location SS05@2' will be removed through a remedial excavation. Concurrently with the SSI and remedial excavation proposal, additional background samples will be collected to determine if pH, SAR, arsenic, cadmium, and selenium 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 and remedial excavation 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.

In conjunction with the supplemental site investigation activities described below, the 1,3,5-trimethylbenzene exceedance observed at sample location SS05@2' will be removed through a remedial excavation. Remedial excavation confirmation soil samples will be collected in accordance with the proposed excavation map and analyzed for full ECMC Table 915-1 constituents. The results of the remedial excavation will be submitted on a subsequent Form 27.

REMEDICATION 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 site assessment was conducted on 11/15/2024 to delineate impacted media at SS05@2', during which five soil boring were advanced to depths ranging from 2 to 4.5 feet below ground surface (ft. bgs). BH01 was advanced at the same location as soil sample SS05@2' to vertically delineate impacts at that location. BH02-BH05 were advanced surrounding BH01 to vertically and laterally delineate impacts identified at SS05@2'. Soil samples were collected and analyzed for full ECMC Table 915-1 constituents. Groundwater was not encountered during this assessment. The 1,3,5-trimethylbenzene exceeding ECMC Table 915-1 standards identified during decommissioning at SS05@2' was not repeated by resample location BH01 @2-3'. The 1,3,5-trimethylbenzene exceedance observed at sample location SS05@2' will be removed through a remedial excavation.

Concurrently with the remedial excavation, a supplemental site investigation (SSI) will be completed to vertically and horizontally delineate the pH exceedances observed at FS01 @2', BH03@4-4.5, and BH05@2-3', and SAR exceedance at sample location SS05@2', in accordance with the attached proposed site investigation map, and proposed sampling plan outlined in the Site Investigation Report section of this Form 27.

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

_____ 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.

Groundwater was not encountered during initial decommissioning or site assessment activities.

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 Updated Site Investigation and Remedial Excavation 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 (policies MWZZ316714 and MWZX316724) 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? 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. 03/20/2024

Proposed date of completion of Reclamation. 12/26/2026

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. 01/11/2021

Actual Spill or Release date, or date of discovery. 05/23/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/20/2024

Proposed site investigation commencement. 06/26/2025

Proposed completion of site investigation. 12/26/2026

REMEDIAL ACTION DATES

Proposed start date of Remediation. 06/26/2025

Proposed date of completion of Remediation. 06/26/2026

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 due to the completion of the November 2024 supplemental site investigation (SS) at the Five Rivers K09-28D tank battery and necessity for additional SSI and remedial excavation activities adjacent to the tank battery. The proposed site investigation will be completed following the approval of this form.

OPERATOR COMMENT

This Form 27 is being submitted as a 2Q25 timeline update and updated site investigation and remedial excavation proposal for the Five Rivers K09-28D Tank Battery location. A summary of tank battery decommissioning activities was submitted under prior Form 27 #403440407. The historical release discovered during decommissioning was reported in Form 19 #403802154 (Spill ID:486824). A summary of the November 2024 site assessment was submitted under prior Form 27 #404042777.

A site assessment was conducted on 11/15/2024 to delineate impacted media, during which five soil boring were advanced to depths ranging from 2 to 4.5 feet below ground surface (ft. bgs). BH01 was advanced at the same location as soil sample SS05@2' to vertically delineate impacts at that location. BH02-BH05 were advanced surrounding BH01 to vertically and laterally delineate impacts identified at SS05@2'. Soil samples were collected and analyzed for full ECMC Table 915-1 constituents. Groundwater was not encountered during this assessment. The 1,3,5-trimethylbenzene exceeding ECMC Table 915-1 standards identified during decommissioning at SS05@2' was not repeated by resample location BH01@2-3'.

On 11/15/2024, fifteen background samples were collected from 5 discrete locations (BG01-BG05) during the November 2024 site investigation and analyzed for metals in soil per ECMC Table 915-2, pH, SAR, EC, and boron. Background soil samples were collected from depths ranging between 2 to 10 feet below ground surface (ft. bgs). The maximum background concentrations for pH and SAR were observed to be 8.10 and 4.37, respectively. The maximum background concentrations with a 1.25x multiplier applied for arsenic and cadmium were calculated to be 1.33 mg/kg and 0.288 mg/kg, respectively. Selenium was not detected in any background samples.

Based on the analytical results collected during the March 2024 decommissioning activities and November 2024 Supplemental Site Investigation (SSI), additional site investigation activities will be completed to further vertically and horizontally delineate the SAR exceedance observed at sample location SS05@2' observed during the November 2024 SSI, and the pH exceedances observed at sample locations FS01@4' observed during decommissioning and BH03@4-4.5' and BH05@2-3' observed during the November 2024 SSI. A proposed SSI map is attached to this Form 27. During the SSI, soil samples will be collected and analyzed for full ECMC Table 915-1 constituents. Additionally, the 1,3,5-trimethylbenzene exceedance observed at sample location SS05@2' will be removed through a remedial excavation. Concurrently with the SSI and remedial excavation proposal, additional background samples will be collected to determine if pH, SAR, arsenic, cadmium, and selenium 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 and remedial excavation will be submitted on a subsequent Form 27.

Pursuant to Rule 913.e, quarterly reporting will be conducted until closure criteria are achieved for the remediation project. The results of the SSI will be submitted on a subsequent Form 27.

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

Signed: Andy Sagen

Title: Environmental Consultant

Submit Date: _____

Email: asagen@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: 29938

COA Type

Description

0 COA	
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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

404257778	SITE INVESTIGATION REPORT
404264936	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)