

State of Colorado
Energy & Carbon Management Commission

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Document Number:
404159824

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 #: 27437 Initial Form 27 Document #: 403294209

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: 329441	API #: _____	County Name: WELD
Facility Name: BERNHARDT-64N67W 13NWNE	Latitude: 40.316842	Longitude: -104.836827	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWNE	Sec: 13	Twp: 4N	Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION	Facility ID: 332683	API #: _____	County Name: WELD
Facility Name: BERNHARDT O-64N67W 13SWNE	Latitude: 40.313270	Longitude: -104.836920	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SWNE	Sec: 13	Twp: 4N	Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 484712 API #: _____ County Name: WELD
 Facility Name: BERNHARDT-64N67W 13NWNE Latitude: 40.318437 Longitude: -104.839044
 ** correct Lat/Long if needed: Latitude: _____ Longitude: _____
 QtrQtr: NWNE Sec: 13 Twp: 4N Range: 67W 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? No
 Is groundwater less than 20 feet below ground surface? No

Other Potential Receptors within 1/4 mile

Mule Deer Severe Winter Range
 Railroad 80ft NE
 Farm Structures 0.16/0.19 WNW
 Residential 0.24 SW, 0.23 WSW, 0.12 W, 0.11 WNW, 0.11 NW, 0.13 N, 0.09 NE
 No other potential receptors are located within ¼ mile of the Site.
 Above distances are approximations.

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 if encountered
Yes	SOILS	See Attached Via Doc #: 403964320	Field Screening and Lab Analysis

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

A site investigation was conducted pursuant to ECMC Rule 911 at the BERNHARDT 13-12 and BERNHARDT O13-07 Tank Battery locations.

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 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, 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 full Table 915-1 organic and inorganic constituents in groundwater (Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), naphthalene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Chloride ion, Sulfate ion and Total Dissolved Solids (TDS).

Proposed Surface Water Sampling

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

Additional Investigative Actions

Additional alternative investigative actions described in attached Site Investigation Plan (summary):

Visual inspection of the tank battery area occurred during abandonment activities. Field personnel field screened all disturbed areas using a PID, 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 attached.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

NA / ND

Number of soil samples collected 20

ND Highest concentration of TPH (mg/kg) _____

Number of soil samples exceeding 915-1 4 -- Highest concentration of SAR 3.06

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

Approximate areal extent (square feet) 400 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?

Ten background soil samples were collected from an area not impacted by oil and gas development and at similar depths and lithologies as confirmation soil samples collected at the location and analyzed for Table 915-1 metals and SSR constituents. Background soil sample analytical results were reported with elevated levels of pH, arsenic (As), barium (Ba) and chromium (Cr).

Background Soil Sample Analysis (mg/kg)

pH @ 3.5ft: Max = 8.53
pH @ 4.5ft: Max = 8.50
As @ 3.5ft: Max*1.25 = 4.90
As @ 4.5ft: Max*1.25 = 4.26
Ba @ 3.5ft: Max*1.25 = 106
Ba @ 4.5ft: Max*1.25 = 97.4
Cr @ 3.5ft: Max*1.25 = 0.298
Cr @ 4.5ft: Max*1.25 = 0.319

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?

Excavation confirmation samples—including (SEP02) Backfill, (PWV01) Backfill, (PWV02) S02@3.5', W02@3.5', (SEP02) N01@3.5', S01@3.5', E01@3.5', W01@3.5', (PWV01) N01@3.5', S01@3.5', E01@3.5', W01@3.5', (SEP02) B01@4.5' and (PWV01) B01@4.5'—at the former Bernhardt-64N67W 13NWNE Tank Battery were submitted outside of the required temperature preservation range. These samples will be re-collected at the original locations and depths to confirm initial analytical results. If reanalysis demonstrates compliance with ECMC Table 915-1 concentration standards, Noble will request a No Further Action (NFA) determination. Background samples will be utilized to support any elevated concentrations.

Additionally, elevated Chromium (Cr) was detected at one discrete location within the PWV02 FLOOR 4 feet excavation. Soil will be re-sampled and analyzed for the full Table 915-1 analyte suite at the (PWV02) N01@3.5' location, corresponding to the depth at which the exceedance was observed. An NFA will be requested if the reanalyzed results comply with applicable standards, with background data supporting any elevated concentrations.

The operator will also re-sample and analyze soil from the following locations: AST01 0.5 feet, AST02 0.5 feet, FL06 3 feet, SEP01 DL 3 feet, and FL20 4 feet. These efforts aim to confirm previous decommissioning analytical results and obtain metal concentration data. Additional local background samples will be collected to further characterize native soil conditions. If re-sampled data meet Table 915-1 standards, Noble will request an NFA designation. Background data will be used to justify any exceedances, where applicable.

Please refer to the attached site investigation plan for the proposed re-sample locations.

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? Yes

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

The organic compound exceedances observed at sample locations PWV01 N WALL 2 feet, PWV02 FLOOR 4 feet and SEP02 DL 4 feet were removed through a remedial excavation. Remedial excavation confirmation soil samples were collected and analyzed for full ECMC Table 915-1 constituents.

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.

Laboratory analytical results indicated a historical release had occurred at the location of soil sample PWV01 N WALL 2 feet, PWV02 FLOOR 4 feet and SEP02 DL 4 feet and was reported as a historic release in Form 19 document number 403414084.

Excavation of impacted soil was conducted and completed on June 3, 2024 to address contamination identified at two feet below ground surface (bgs) at the PWV01 N Wall 2 feet sample location, and at four feet bgs at the SEP02 DL 4 feet and PWV02 FLOOR 4 feet sample locations. Following each excavation, confirmation soil samples were collected and analyzed for constituents outlined in ECMC Table 915-1 for organics and soil suitability for reclamation. These included Total Petroleum Hydrocarbons (TPH), BTEX, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Naphthalene, Polycyclic Aromatic Hydrocarbons (PAHs), pH, Sodium Adsorption Ratio (SAR), Electrical Conductivity (EC), and Boron. Samples were also analyzed for ECMC Table 915-1 metals. Groundwater was not encountered during remedial excavation activities.

For further details on the necessary remedial actions, please refer to the site investigation as outlined in the proposed Site Investigation Report work plan.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____ 112

_____ Air sparge / Soil vapor extraction

_____ Name of Licensed Disposal Facility or ECMC Facility ID # _____

_____ Natural Attenuation

No _____ Excavate and onsite remediation

_____ Other _____

_____ 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

No _____ 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.

If groundwater is encountered during additional site assessment activities, a grab groundwater sample will be collected and analyzed for all organic compounds and inorganic parameters per Table 915-1.

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 Timeline Update & 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:

No beneficial use

Volume of E&P Waste (solid) in cubic yards 112

E&P waste (solid) description Hydrocarbon impacted soil

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: Buffalo Ridge Landfill in Keenesburg, Colorado

Volume of E&P Waste (liquid) in barrels 0

E&P waste (liquid) description _____

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: _____

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

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

If YES:

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

Do all soils meet Table 915-1 standards? No

Does the previous reply indicate consideration of background concentrations? _____

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted? _____

Operator shall comply with the ECMC 1000-Series Reclamation Requirements for all impacted and disturbed areas.

RECLAMATION PLAN

RECLAMATION PLANNING

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing.

Reclamation will be in accordance with 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. 02/01/2023

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

IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

PRIOR DATES

Date of Surface Owner notification/consultation, if required. 12/15/2022

Actual Spill or Release date, or date of discovery. 05/25/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/15/2023

Proposed site investigation commencement. 02/01/2023

Proposed completion of site investigation. 12/31/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/15/2023

Proposed date of completion of Remediation. 06/23/2024

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 supplemental site investigation activities adjacent to the former Bernhardt-64N67W 13NWNE 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 Q2 2025 timeline update for the former Bernhardt-64N67W 13NWN tank battery location to include updated decommissioning results and propose a supplemental site investigation.

The operator will conduct a supplemental site investigation to collect re-samples from previously submitted excavation confirmation sample locations that were received outside the required temperature preservation range. These locations include: (SEP02) Backfill, (PWV01) Backfill, (PWV02) S02@3.5', W02@3.5', (SEP02) N01@3.5', S01@3.5', E01@3.5', W01@3.5', (PWV01) N01@3.5', S01@3.5', E01@3.5', W01@3.5', (SEP02) B01@4.5', and (PWV01) B01@4.5'. Re-sampling at these locations is intended to confirm the initial analytical results.

In addition, a supplemental re-sample will be collected at the (PWV02) N01@3.5' excavation confirmation sample location to verify the presence or absence of the elevated Chromium concentration previously observed during the PWV02 FLOOR 4 feet remedial excavation.

Further re-sampling will be conducted at the AST01 0.5 feet, AST02 0.5 feet, FL06 3 feet, SEP01 DL 3 feet, and FL20 4 feet sample locations, originally collected during the initial decommissioning activities in May 2023, to confirm the initial analytical results and obtain complete metal concentration data.

Local background samples will also be collected as part of the investigation to further characterize native soil conditions and support data evaluation.

Please refer to the site investigation as outlined in this proposed Site Investigation Report workplan and the attached proposed Site Investigation Plan for sample locations. The operator will complete the additional site investigation activities as outlined in the proposed Site Investigation Report workplan following the approval of this form.

Based on currently available data, this project is not affected by data integrity irregularities and is not associated with the operator's data integrity review process and its Rule 525.e. Voluntary Disclosure. As part of its data integrity review process, the operator requested the lab protect the laboratory analytical reports from subsequent unauthorized modification by anyone outside the lab, which resulted in the lab reissuing the original reports with additional protections (Reissued Reports). The Reissued Reports were received directly from the lab on April 4, 2025, which the application of a Digital ID/Verified Certification (lock) to support reissuance. The metadata associated with this Reissued Reports also includes the lab representative's name, the date and time the laboratory reissued the reports, and an explanation for the reports reissuance. The Reissued Reports are attached to this submission.

In the event additional responsive information is received or discovered that would suggest this project should be incorporated into the ongoing data integrity review process associated with Operator's Rule 525.e. Voluntary Disclosure, Operator will update and/or amend the statements in this submission and provide any new or revised data or other information.

Quarterly reporting will be conducted until closure criteria are achieved for the remediation project. The results of the supplemental site investigation 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: Ethan Black

Title: Consultant

Submit Date: _____

Email: ethanb@fremontenv.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: 27437

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

404159825	ANALYTICAL RESULTS
404159826	ANALYTICAL RESULTS
404159827	ANALYTICAL RESULTS
404160677	SITE INVESTIGATION REPORT
404160679	SITE INVESTIGATION PLAN

Total Attach: 5 Files

General Comments

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

Total: 0 comment(s)