

State of Colorado
Energy & Carbon Management Commission

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403565879

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 COGCC 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: 2001 16TH STREET SUITE 900		Phone: (715) 562-0251
City: DENVER State: CO Zip: 80202		Mobile: ()
Contact Person: Dan Peterson	Email: rbueuf27@chevron.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 20046 Initial Form 27 Document #: 402776590

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: 306558	API #: _____	County Name: WELD
Facility Name: LOLOFF B-65N64W 35NWNW	Latitude: 40.362870	Longitude: -104.522230	
** correct Lat/Long if needed: Latitude: 40.363270		Longitude: -104.521914	
QtrQtr: NWNW	Sec: 35	Twp: 5N	Range: 64W Meridian: 6 Sensitive Area? Yes
Facility Type: SPILL OR RELEASE	Facility ID: 481084	API #: _____	County Name: WELD
Facility Name: Loloff 2,3,B35-19	Latitude: 40.363328	Longitude: -104.521721	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWNW	Sec: 35	Twp: 5N	Range: 64W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SW _____

Most Sensitive Adjacent Land Use animal farm
across the road _____

Is domestic water well within 1/4 mile? No _____

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

dwelling ~0.21 mi NW, buildings ~0.15 mi SW, surface ponds ~0.05 mi SE and ~0.07 mi S

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
No	GROUNDWATER	NA	laboratory analysis
Yes	SOILS	10' X 10' X 3' BGS	laboratory 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 COGCC Rule 911 at the LOLOFF T5N-R64W-S26 L03 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):

Seven (7) grab confirmation soil samples were collected from the three (3) produced water vessels excavation, beneath the ground oil tanks, 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 COGCC Table 915-1, and EC, SAR, pH, and boron. Additionally, one grab confirmation soil sample was collected and analyzed for Table 915-1 metals. All samples collected were analyzed by a certified laboratory using approved COGCC 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 COGCC 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):

A Site Assessment was conducted to delineate impacted media at the facility. A total of five soil borings were advanced in the area of impacts. Soil samples were collected and analyzed for TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons), organic compounds in soil per COGCC Table 915-1, metals in soil per COGCC Table 915-1, and pH, EC, SAR, and boron. One of the five soil borings was converted to a temporary groundwater monitoring well. One groundwater sample was collected on June 22, 2022 and analyzed for BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and inorganic parameters. A second groundwater sample was collected on September 16, 2022 and analyzed for benz(a)anthracene.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

NA / ND

Number of soil samples collected 17 -- Highest concentration of TPH (mg/kg) 25.6
 Number of soil samples exceeding 915-1 11 -- Highest concentration of SAR 3.43
 Was the areal and vertical extent of soil contamination delineated? Yes BTEX > 915-1 No
 Approximate areal extent (square feet) 100 Vertical Extent > 915-1 (in feet) 3

Groundwater

Number of groundwater samples collected 1 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) 8 ND Highest concentration of Ethylbenzene (µg/l) _____
 Number of groundwater monitoring wells installed 1 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?
 Two background samples (BG01 @3' and BG01 @5') were collected and analyzed for pH. Additionally, BG01 @3' was analyzed for Table 915-1 metals. Additional background samples (BG02 @3' through BG06 @3' and BG02 @8' through BG06 @8') were collected on 10/04/2022 and analyzed for pH, arsenic, barium, and selenium.

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?

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.
 The benz(a)anthracene GW SSL exceedance originally detected during Site decommissioning at sample location SEP01-FL@3' has been successfully removed through the remedial excavation completed on 4/27/2023 and 5/3/2023. Based on the justification provided in the attached Remedial Excavation Report and in the Operator Comments section of this Form 27, metals should not be considered contaminants of concern at the site. As such, Noble is requesting a No further Action (NFA) designation for the site.

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 total of approximately 35 cubic yards of impacted material were removed for off-Site disposal at the Buffalo Ridge Waste Management Landfill in Keenesburg, Colorado under signed Noble waste manifests. A total of approximately 35 cubic yards of imported clean fill was used to backfill the excavation. The final remedial excavation extent measured approximately 19 feet (ft) by 14-ft by 5-ft below ground surface (bgs).

Soil Remediation Summary

In Situ Ex Situ
 _____ Bioremediation (or enhanced bioremediation) Yes Excavate and offsite disposal
 _____ Chemical oxidation If Yes: Estimated Volume (Cubic Yards) 35

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

_____ Name of Licensed Disposal Facility or COGCC 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

_____ 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.

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 Excavation Report

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 COGCC rules. Records are available on the COGCC's website.

Operator anticipates the remaining cost for this project to be: \$ 0

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? Yes

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

N/A

Volume of E&P Waste (solid) in cubic yards 35

E&P waste (solid) description Soil

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Waste Management Buffalo Ridge Landfill

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

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes

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? Yes

Does the previous reply indicate consideration of background concentrations? Yes

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted? _____

Operator shall comply with the COGCC 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.

The source will be delineated through an environmental site assessment.

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. 04/19/2024

Proposed date of completion of Reclamation. 10/19/2024

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. 07/19/2021

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). _____

Proposed site investigation commencement. 10/29/2021

Proposed completion of site investigation. 12/27/2022

REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/27/2022

Proposed date of completion of Remediation. 10/19/2023

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:

OPERATOR COMMENT

A total of ten background samples were collected from five discrete locations by Tasman on October 4, 2022 from depths of 3-ft bgs and 8-ft bgs. The average background concentrations of arsenic, barium and selenium from 3-ft bgs with a 1.25 multiplier applied were calculated to be 1.66 mg/kg, 65.2 mg/kg, and 0.528 mg/kg, respectively. The average concentrations of arsenic, barium and selenium from the decommissioning, site assessment and remedial excavation soil samples collected from 3-4-ft bgs were calculated to be 1.62 mg/kg, 57.7 mg/kg, and 0.359 mg/kg, respectively. The average background concentrations for arsenic, barium and selenium were calculated to be higher than the average concentrations in the site decommissioning, site assessment and remedial excavation soil samples at the 3-4-ft bgs depth interval.

The average background concentrations of arsenic, barium and selenium from 8-ft bgs with a 1.25 multiplier applied were calculated to be 3.99 mg/kg, 104 mg/kg, and 0.715 mg/kg, respectively. The average concentrations of arsenic, barium and selenium from the decommissioning, site assessment, and remedial excavation soil samples collected from 5-10-ft bgs were calculated to be 2.82 mg/kg, 73.1 mg/kg, and 0.432 mg/kg, respectively. The average background concentrations for arsenic, barium and selenium were calculated to be higher than the average concentrations in the site decommissioning, site assessment and remedial excavation soil samples at the 5-10-ft bgs depth interval.

Laboratory analytical results for soil samples collected during the decommissioning, site assessment, background assessment, and excavation indicate an increase in metals concentrations with sample depth, as shown in Table 1 and illustrated on Figure 2. While background samples were not collected at depths correlating to the 12-15-ft site assessment soil boring samples, average background concentrations for metals collected from the 3-ft bgs and 8-ft bgs depth interval were calculated to be greater than the site assessment boring and excavation confirmatory samples collected from the similar depth intervals. Additionally, there is a significant increase in metals concentrations across the ECMC Table 915-1 list from the 3-4-ft bgs soil boring samples to the 12-15-ft bgs soil boring samples, which is also observed in the background sampling area between 3-ft bgs and 8-ft bgs. After reviewing the soil boring logs included as an attachment to the Site Assessment Report (refer to ECMC Document # 403179459), the lithology transitions from coarse grain deposits (poorly graded fine sands) at shallower intervals of 0-10-ft bgs to fine grain deposits (low-plasticity sandy clays) at deeper intervals of 10-15-ft bgs. The elevated metals at the 12-15-ft bgs depth interval are naturally concentrating in the clay deposits, rather than being artificially increased by oil and gas activity. Additionally, there are no other indications of hydrocarbon or inorganic (EC/SAR/boron) alterations to the subsurface soil chemistry, further supporting that the metals concentrations increasing with depth are naturally occurring. As such, metals should not be considered contaminants of concern at the Site.

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: chevroneform@tasman-geo.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: _____

Date: _____

Remediation Project Number: 20046

COA Type

Description

COA Type	Description
0 COA	

Attachment Check 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

403566162	REMEDATION PROGRESS REPORT
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Total Attach: 1 Files

General Comments

User Group

Comment

Comment Date

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)