

State of Colorado  
Energy & Carbon Management Commission

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Report taken by:  
Kyle Waggoner

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

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 25214 Initial Form 27 Document #: 403182453

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: 481072	API #: _____	County Name: WELD
Facility Name: 29-4N-64W NWNE Johnson RC TB Loc	Latitude: 40.290300	Longitude: -104.573400	
** correct Lat/Long if needed: Latitude: 40.290469		Longitude: -104.573779	
QtrQtr: NWNE	Sec: 29	Twp: 4N	Range: 64W Meridian: 6 Sensitive Area? Yes
Facility Type: SPILL OR RELEASE	Facility ID: 484125	API #: _____	County Name: WELD
Facility Name: Johnson RC 29-02	Latitude: 40.290451	Longitude: -104.573551	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWNE	Sec: 29	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**

House: 0.06mi NW, 0.21mi E  
Pond: 0.23mi E

# 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
Yes	GROUNDWATER	Refer to Table 2 and Figure 4	Lab analysis if encountered
Yes	SOILS	10'x10'x4' 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 JOHNSON T4N-R64W-S29 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. 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. The ECMC Tank Battery and Produced Water Vessel Closure Checklists was utilized and filled out during the abandonment process. A detailed summary of decommissioning activities, including field notes, site photos, figures, and laboratory analytical results was submitted on the Subsequent Form 27 (Doc. No. 403454037).

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

### NA / ND

Number of soil samples collected 9

-- Highest concentration of TPH (mg/kg) 1220

Number of soil samples exceeding 915-1

-- Highest concentration of SAR 0.946

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

BTEX > 915-1 Yes

Approximate areal extent (square feet) 100

Vertical Extent > 915-1 (in feet) 4

Groundwater

Number of groundwater samples collected 9

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

Highest concentration of Ethylbenzene (µg/l)

Number of groundwater monitoring wells installed 9

Highest concentration of Xylene (µg/l)

Number of groundwater samples exceeding 915-1 2

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?

Empty text box for adjacent property impacts.

Were background samples collected as part of this site investigation?

On March 1, 2024, five background soil borings were advanced to approximately 10 feet bgs surrounding the former tank battery to assess Table 915-1 metals and soil suitability constituent concentrations in native material on location. Ten soil samples were collected from the borings at depths of 4-5 feet and 9-10 feet bgs and were submitted to Summit for laboratory analysis of pH, SAR, EC, boron, arsenic, barium, cadmium, lead, and selenium.

Background soil analytical results indicated that pH, SAR, EC, boron, arsenic, and barium were in exceedance of the applicable regulatory standards in native soil on site. In addition, based on the location of BH08 in the adjacent field and off of the tank battery pad, soil samples collected from this boring are considered background material. Conversely, background borings BG01 - BG03/BG03R were collected within the former tank battery pad and results collected from these borings were not used in the metal assessment.

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?

A Site Assessment was conducted on 4/19/2023 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@4' to vertically delineate impacts at that location. BH02-BH06 were advanced surrounding BH01 to vertically and laterally delineate impacts identified at FS01@4'. Soil samples were collected and analyzed for the Full Table 915-1 Analytical Suite. Each of the six soil borings were converted to temporary groundwater monitoring wells.

Soil analytical results indicated that organic compound concentrations were in exceedance of the applicable ECOM regulatory standards in borings BH01 - BH03, BH05, and BH06.

Based on the results of April 2023 site investigation activities, a second site assessment was conducted on February 27, 2024 to delineate organic exceedances on site. Three soil borings (BH07 - BH09) were advanced surrounding the existing monitoring well network. Samples were collected from each of the borings at depths ranging from approximately 2-3 feet to 16-17 feet bgs and were submitted to Summit for laboratory analysis of the Table 915-1 Organic Compounds in Soil, TPH (C6-C36), pH, SAR, EC, boron, arsenic, barium, cadmium, and selenium. All three soil borings were converted to temporary groundwater monitoring wells and were added to the quarterly sampling and analysis plan.

Soil analytical results indicated that organic compound concentrations were in compliance with the applicable ECOM regulatory standards in all soil sample locations.

Please reference the Remediation Summary section of this form for details on the comparison of backgrounds to site soil suitability and metals concentrations.

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.

Based on analytical data, supplemental source mass removal activities are scheduled to be conducted at this location to remove remaining organic and inorganic exceedances on site. Excavation activities are tentatively scheduled for mid November 2024 and analytical results will be included in the subsequent Supplemental 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.

Following receipt of analytical results from February and March 2024 site investigation activities, a background assessment was conducted to compare background concentrations to site soil suitability and metals concentrations. Based on the data, site pH and SAR concentrations were all below background concentrations and indicative of native conditions.

Based on the boring logs, all soil on site was observed to be the same lithology (fine to coarse grained sand). Consequently, the highest arsenic, barium, and selenium concentrations were used to compare to site metals concentrations:

Arsenic: Maximum background (BG04@4-5') x1.25 = 3.91 mg/kg x1.25 = 4.89 mg/kg  
Barium: Maximum background (BG04@9-10') x1.25 = 117 mg/kg x1.25 = 146 mg/kg  
Selenium: Maximum background (BH08@16-17') x1.25 = 1.24 mg/kg x1.25 = 1.55 mg/kg

Based on the results, all site arsenic, barium, and selenium concentrations on site were below background concentrations and indicative of native soil conditions.

The cadmium concentration in soil sample BH03@2.5' remains above background concentrations on site and will be removed during the upcoming supplemental source mass removal activities tentatively scheduled for mid November 2024.

Remaining source mass on site will be removed via mechanical excavation.

## 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.

Nine temporary groundwater monitoring wells (BH01 - BH09) were installed to assess groundwater on site. These wells will be sampled by Tasman Geosciences on a quarterly basis. The groundwater samples will be transported to Summit Scientific for analysis of BTEX, naphthalene, 1,2,4-TMB, and 1,3,5-TMB by EPA Method 8260b, 2-M by EPA Method 8270D SIM, TDS, chlorides, and sulfates by Method SM2540C.

Third quarter 2024 analytical data indicated that 1,2,4- TMB concentrations were in exceedance of with the applicable regulatory standards in monitoring wells BH01 and BH03. TDS and chloride concentrations were in exceedance of the applicable regulatory standards and greater than 1.25x the background concentrations of the up-/cross-gradient monitoring wells (BH05 and BH09) in monitoring well BH08. Sulfate concentrations were within 1.25x the background concentrations in all monitoring well locations.



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. 08/17/2022

Actual Spill or Release date, or date of discovery. 03/27/2023

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/23/2023

Proposed site investigation commencement. 11/15/2024

Proposed completion of site investigation. 11/30/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/11/2025

Proposed date of completion of Remediation. 05/11/2026

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:

Remaining source mass on site will be removed via mechanical excavation. Excavation activities are tentatively scheduled for mid November 2024 and analytical results will be included in the subsequent Supplemental Form 27.

**OPERATOR COMMENT**

This Supplemental Form 27 was submitted to summarize quarterly groundwater monitoring activities and analytical results collected during the third quarter 2024 at the Johnson RC 29-02 location.

Third quarter 2024 analytical data indicated that 1,2,4- TMB concentrations were in exceedance of the applicable regulatory standards in monitoring wells BH01 and BH03. TDS and chloride concentrations were in exceedance of the applicable regulatory standards and greater than 1.25x the background concentrations of the up-/cross-gradient monitoring wells (BH05 and BH09) in monitoring well BH08. Sulfate concentrations were within 1.25x the background concentrations in all monitoring well locations.

Based on analytical data, supplemental source mass removal activities are scheduled to be conducted at this location to remove remaining source mass on site. Excavation activities are tentatively scheduled for mid November 2024 and analytical results will be included in the subsequent Supplemental Form 27.

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

Signed: Mike Medina

Title: Environmental Consultant

Submit Date: 11/04/2024

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: Kilian Collins

Date: 11/15/2024

Remediation Project Number: 25214

**COA Type**

**Description**

	Should the schedule to complete the remedial excavation change, Operator shall submit a Supplemental Form 27 with adequate reasoning for the change at least 14 days in advance per Rule 913.d.(2).
1 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.

<b>Att Doc Num</b>	<b>Name</b>
403974286	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403975716	ANALYTICAL RESULTS
403981623	MONITORING REPORT
403996675	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 4 Files

**General Comments**

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

Total: 0 comment(s)