

**State of Colorado**  
**Oil and Gas Conservation Commission**

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Document Number:  
402193145  
Receive Date:  
10/04/2019

Report taken by:  
Candice (Nikki) Graber

**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.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

**OPERATOR INFORMATION**

Name of Operator: <u>NOBLE ENERGY INC</u>	Operator No: <u>100322</u>	<b>Phone Numbers</b>
Address: <u>1001 NOBLE ENERGY WAY</u>		Phone: <u>(303) 228-4048</u>
City: <u>HOUSTON</u>	State: <u>TX</u>	Zip: <u>77070</u>
Contact Person: <u>Curtis Rueter</u>	Email: <u>curtis.rueter@NBLenergy.com</u>	Mobile: <u>( )</u>

**PROJECT, PURPOSE & SITE INFORMATION**

**PROJECT INFORMATION**

Remediation Project #: 9445 Initial Form 27 Document #: 2615172

**PURPOSE INFORMATION**

- |  |  |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination                                       | <input type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water                   |
| <input type="checkbox"/> 909.c.(1), Rule 905: Pit or PW vessel closure                             | <input type="checkbox"/> Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b. |
| <input type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation                            | <input type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project                                  |
| <input type="checkbox"/> 909.c.(3), Rule 907.e.: Land treatment of oily waste                      | <input type="checkbox"/> Rule 906.c.: Director request   |
| <input type="checkbox"/> 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure | <input checked="" type="checkbox"/> Other <u>Possible natural gas in aquifer</u>                           |

**SITE INFORMATION**

N Multiple Facilities ( in accordance with Rule 909.c. )

Facility Type: <u>NONFACILITY</u>	Facility ID: <u>-99999</u>	API #: _____	County Name: _____
Facility Name: _____	Latitude: _____	Longitude: _____	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: _____	Sec: _____	Twp: _____	Range: _____
		Meridian: _____	Sensitive Area? <u>Yes</u>

**SITE CONDITIONS**

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use IRRIGATED

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? Yes

**Other Potential Receptors within 1/4 mile**

3 water wells within 1/4 mile; 6 water wells within 1/2 mile

# SITE INVESTIGATION PLAN

## TYPE OF WASTE:

- E&P Waste       Other E&P Waste       Non-E&P Waste
- Produced Water       Workover Fluids
- Oil       Tank Bottoms
- Condensate       Pigging Waste
- Drilling Fluids       Rig Wash
- Drill Cuttings       Spent Filters
- Pit Bottoms
- Other (as described by EPA) groundwater sampling wastes (purge water, etc.)

## DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	To be determined	Sampling of Sand Creek MW

## INITIAL ACTION SUMMARY

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

Initial work to date has been first sampling and confirmation sampling of water well conducted by Colorado Water Watch and COGCC.

## 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 ):

### Proposed Groundwater Sampling

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

### 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 ):

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 0  
Number of soil samples exceeding 910-1 \_\_\_\_\_  
Was the areal and vertical extent of soil contamination delineated? \_\_\_\_\_  
Approximate areal extent (square feet) \_\_\_\_\_

### NA / ND

\_\_\_\_\_ Highest concentration of TPH (mg/kg) \_\_\_\_\_  
\_\_\_\_\_ Highest concentration of SAR \_\_\_\_\_  
\_\_\_\_\_ BTEX > 910-1 \_\_\_\_\_  
\_\_\_\_\_ Vertical Extent > 910-1 (in feet) \_\_\_\_\_

### Groundwater

Number of groundwater samples collected 1  
Was extent of groundwater contaminated delineated? No  
Depth to groundwater (below ground surface, in feet) 20'  
Number of groundwater monitoring wells installed \_\_\_\_\_  
Number of groundwater samples exceeding 910-1 0

\_\_\_\_\_ ND Highest concentration of Benzene (µg/l) \_\_\_\_\_  
\_\_\_\_\_ ND Highest concentration of Toluene (µg/l) \_\_\_\_\_  
\_\_\_\_\_ ND Highest concentration of Ethylbenzene (µg/l) \_\_\_\_\_  
\_\_\_\_\_ ND Highest concentration of Xylene (µg/l) \_\_\_\_\_  
\_\_\_\_\_ ND Highest concentration of Methane (mg/l) \_\_\_\_\_

### Surface Water

0 Number of surface water samples collected  
\_\_\_\_\_ Number of surface water samples exceeding 910-1  
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?

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?

The landowner installed a new water well in 2017 (shown on attached map). This well was sampled in November 2017, and no impacts were identified. The sample data was uploaded to COGCC.  
The existing Sand Creek monitoring well is sampled monthly and analyzed for stray gas. The results have been consistent over time (see attached graphs). Flow measurements for the monitoring well are collected weekly and the rate has been less than the detection limit (0.2 ft<sup>3</sup>/min) since February 2, 2017.

# 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 accordance with Dec. 22 letter from COGCC, Noble will evaluate surrounding oil & gas wells (producing and P&A) within 3/4 miles of the monitoring well as potential sources of gas. Noble will review well files and records for adequate surface casing coverage, pressure/production anomalies, and casing integrity issues. Noble will also review any bradenhead pressure data and natural gas analyses. Nobel will meet with COGCC by 1/31/2016 to review findings and identify wells for possible further field investigation efforts, which may include natural gas sampling, bradenhead testing, pressure testing, or additional investigative/remedial approaches needed to evaluate the condition of the wellbore and casing.

## 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.

Noble continues to monitor the gas flow rate and composition in the Sand Creek monitoring well.

## 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 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.

Because no flow has been detected in over 24 months, Noble recommends and respectfully requests that the frequency of flow monitoring be reduced to monthly. Additionally, given the stability of the gas composition, Noble requests that the analytical frequency be reduced from monthly to quarterly (a gas sample will still be collected with every flow monitoring event, but only one sample/quarter will be analyzed unless flow is observed or there is an anomaly with the quarterly sample that warrants additional investigation).

## REMEDIATION PROGRESS UPDATE

### PERIODIC REPORTING

Frequency:  Quarterly  Semi-Annually  Annually  Other \_\_\_\_\_

Report Type:  Groundwater Monitoring  Land Treatment Progress Report  O&M Report  
 Other \_\_\_\_\_

### WASTE DISPOSAL INFORMATION

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

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 \_\_\_\_\_

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: \_\_\_\_\_

Volume of E&P Waste (liquid) in barrels \_\_\_\_\_

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? No \_\_\_\_\_

Do all soils meet Table 910-1 standards? \_\_\_\_\_

Does the previous reply indicate consideration of background concentrations? \_\_\_\_\_

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? \_\_\_\_\_

Does Groundwater meet Table 910-1 standards? \_\_\_\_\_

Is additional groundwater monitoring to be conducted? \_\_\_\_\_

## 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.

No reclamation is planned at this time. Reclamation will be planned once the monitoring well can be abandoned.

Is the described reclamation complete? \_\_\_\_\_

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

Interim?  Final?

Did the Surface Owner approve the seed mix? \_\_\_\_\_

If NO, does the seed mix comply with local soil conservation district recommendations? \_\_\_\_\_

# IMPLEMENTATION SCHEDULE

## **PRIOR DATES**

Date of Surface Owner notification/consultation, if required. \_\_\_\_\_

Actual Spill or Release date, if known. \_\_\_\_\_

## **SITE INVESTIGATION DATES**

Date of Initial Actions described in Site Investigation Plan (start date). 12/22/2015

Date of commencement of Site Investigation. \_\_\_\_\_

Date of completion of Site Investigation. \_\_\_\_\_

## **REMEDIAL ACTION DATES**

Date of commencement of Remediation. \_\_\_\_\_

Date of completion of Remediation. \_\_\_\_\_

## **SITE RECLAMATION DATES**

Date of commencement of Reclamation. \_\_\_\_\_

Date of completion of Reclamation. \_\_\_\_\_

**OPERATOR COMMENT**

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

Signed: ` Curtis Rueter \_\_\_\_\_

Title: Asset Manager \_\_\_\_\_

Submit Date: ` 10/04/2019 \_\_\_\_\_

Email: curtis.rueter@NBLenergy.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: Candice (Nikki) Graber \_\_\_\_\_

Date: 10/15/2019 \_\_\_\_\_

Remediation Project Number: 9445 \_\_\_\_\_

**COA Type****Description**

	Operator shall submit Form 27 Reports semi-annually providing all analytical reports, COGIS sample ID #'s, and field measured flow data.
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**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**

402193145	FORM 27-SUPPLEMENTAL-SUBMITTED
402193235	MONITORING REPORT
402193245	AERIAL IMAGE
402199878	MONITORING REPORT
402199881	ANALYTICAL RESULTS

Total Attach: 5 Files

**General Comments****User Group****Comment****Comment Date**

Environmental	<p>Returned to draft on 10/3/2019:</p> <ol style="list-style-type: none"> <li>1. Missing progress report</li> <li>2. Need document number for new water well sample</li> </ol> <p>Resubmitted on 10/4/2019. Pending new water well sample upload.</p> <p>Document number provided on 10/15/2019. Upated Related Forms and approved.</p>	10/03/2019
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Total: 1 comment(s)