FORM 27 Rev 5/22

# State of Colorado
# Energy & Carbon Management Commission

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Report taken by: Laurel Anderson

## 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 INFORMATON

Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP Operator No: 47120
Address: P O BOX 173779
City: DENVER State: CO Zip: 80217-3779
Contact Person: Phillip Hamlin Email: Phillip_Hamlin@oxy.com

**Phone Numbers**
Phone: (970) 336-3500
Mobile: ( )

## PROJECT, PURPOSE & SITE INFORMATION

### PROJECT INFORMATION

Remediation Project #: 23466 Initial Form 27 Document #: 403056997

### 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.
- [X] 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.
- [X] 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.
- [X] Other: Closure of remediation project

### SITE INFORMATION

Yes Multiple Facilities

Facility Type: TANK BATTERY Facility ID: 446417 API #: County Name: WELD
Facility Name: HOWARD 4N-29HZ Latitude: 40.007922 Longitude: -104.922433
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SWNW Sec: 32 Twp: 1N Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 481695 API #: County Name: WELD
Facility Name: Howard 28N-29HZ Produced Water Latitude: 40.007831 Longitude: -104.922047
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SWNW Sec: 32 Twp: 1N Range: 67W Meridian: 6 Sensitive Area? Yes

## SITE CONDITIONS

General soil type - USCS Classifications GW

Most Sensitive Adjacent Land Use Crop Land

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? Yes

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

Surface water is located approximately 650 feet northwest of the facility location.
A wetland is located approximately 700 feet northwest of the facility location.

# SITE INVESTIGATION PLAN

## TYPE OF WASTE:

- [X] **E&P Waste**
  - [X] Produced Water
  - [X] Oil
  - [X] Condensate
  - [ ] Drilling Fluids
  - [ ] Drill Cuttings
- [ ] **Other E&P Waste**
  - [ ] Workover Fluids
  - [ ] Tank Bottoms
  - [ ] Pigging Waste
  - [ ] Rig Wash
  - [ ] Spent Filters
  - [ ] Pit Bottoms
  - [ ] Other (as described by EPA) _____
- [ ] **Non-E&P Waste** _____

## DESCRIPTION OF IMPACT

| Impacted? | Impacted Media | Extent of Impact | How Determined |
|---|---|---|---|
| Yes | GROUNDWATER | See attached data | Groundwater sampling / laboratory analyis |
| Yes | SOILS | 23' (E-W) x 23' (N-S) x 11' bgs | Excavation / soil sampling / 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.

On March 3, 2022, a release of an unknown volume of produced water was discovered during a routine inspection at the Howard 28N-29HZ separator location, and hydro-excavation activities were initiated. Groundwater was encountered within the hydro-excavation area at approximately 7 feet below ground surface (bgs). The ECMC issued Spill/Release Point 481464 for this release. Soil and groundwater sample location and field screening data are presented in Table 1.

## PROPOSED SAMPLING PLAN

### Proposed Soil Sampling

[X] Will soil samples be collected as part of this investigation? ( Number, type (grab/composite), analyses, and locations of samples ):

Soil samples were collected from the final hydro-excavation extent, as described in a previous Form 27-Supplemental update (Document No. 403152763). Based on the data presented, impacted soils in the hydro-excavation area were remediated to be in compliance with the applicable ECMC Table 915-1 standards and/or within the range of site-specific background results, with exception to the Pb result for sample E05@6'. However, this material will be left in place at this time, as approved by the ECMC (Document No. 403152763), as the facility infrastructure has been replaced and/or will remain in place at this time, and the surface area will maintain its current usage as an active facility. As such, the inorganic concentrations in soil are not applicable to the current land usage, and the metals concentrations will be reassessed at the time of future facility decommissioning. Soil sample analytical data is presented in Tables 2 through 5; the soil sample locations are illustrated on Figure 1.

### Proposed Groundwater Sampling

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

On April 7, 2022, a groundwater sample (GW01) was collected from the hydro-excavation area and submitted for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4- and 1,3,5-trimethylbenzene (TMB), by USEPA Method 8260D. Analytical results indicated that the benzene concentration in sample GW01 exceeded the ECMC Table 915-1 standard. Quarterly groundwater monitoring was initiated on December 2, 2022, at temporary monitoring wells BH01 - BH06, and was continued at monitoring wells BH01 - BH04 and BH06, until concentrations remained in compliance with ECMC Table 915-1 standards for four consecutive quarters. Groundwater analytical data is presented in Table 6. The excavation groundwater sample location is illustrated on Figure 1. The monitoring well locations are illustrated on Figures 2 through 5. Laboratory analytical reports for the previous four quarters of groundwater monitoring are provided as Attachment A.

### 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 ):

Temporary groundwater monitoring well placements were limited due to active facility infrastructure and the presence of several underground gas lines on site. The temporary monitoring well and underground utility locations are illustrated on Figures 2 through 5.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

**Soil**

Number of soil samples collected: 20
Number of soil samples exceeeding 915-1: 11
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet): 475

**NA / ND**

-- Highest concentration of TPH (mg/kg): 44.44
-- Highest concentration of SAR: 35.7
BTEX > 915-1: Yes
Vertical Extent > 915-1 (in feet): 11

**Groundwater**

Number of groundwater samples collected: 24
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet): 5
Number of groundwater monitoring wells installed: 6
Number of groundwater samples exceeding 915-1: 1

-- Highest concentration of Benzene (µg/l): 11.2
-- Highest concentration of Toluene (µg/l): 9.61
ND Highest concentration of Ethylbenzene (µg/l):
-- Highest concentration of Xylene (µg/l): 6.61
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?

Fourteen (14) background soil samples were collected from native material adjacent to the production facility location, from comparable depth and material as the confirmation soil samples, as described in a previous Form 27-Supplemental update (Document No. 403152763).

☐ 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.

Between March 14 and July 29, 2022, approximately 196 cubic yards of impacted hydro-excavation soil slurry with groundwater were removed from the excavation area via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. The hydro-excavation area was subsequently backfilled and contoured to match pre-existing conditions, and the affected facility infrastructure was replaced.

## 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 indicate that impacted soils in the hydro-excavation area were remediated to be in compliance with the applicable ECMC Table 915-1 standards and/or within the range of site-specific background results, with exception to the Pb result for sample E05@6'. However, this material will be left in place at this time, as approved by the ECMC in a previous Form 27-Supplemental update (Document No. 403152763), as the facility infrastructure has been replaced and/or will remain in place at this time, and the surface area will maintain its current usage as an active facility. As such, the inorganic concentrations in soil are not applicable to the current land usage, and the metals concentrations will be reassessed at the time of future facility decommissioning. On July 14, 2022, approximately 55 pounds of OxPure® activated carbon were added to the groundwater within the hydro-excavation area, to mitigate remaining hydrocarbon impacts in groundwater. Analytical results indicate that consituent concentrations in the groundwater samples collected from the temporary monitoring wells were in compliance with ECMC Table 915-1 standards for four consecutive quarters. Based on the analytical data presented herein, remediation is complete at this site and Kerr-McGee is requesting a No Further Action (NFA) determination for this release.

## Soil Remediation Summary

☐ **In Situ**

- ____ Bioremediation ( or enhanced bioremediation )
- ____ Chemical oxidation
- ____ Air sparge / Soil vapor extraction
- ____ Natural Attenuation
- ____ Other ____

☒ **Ex Situ**

- Yes — Excavate and offsite disposal
  - If Yes: Estimated Volume (Cubic Yards) 196
  - Name of Licensed Disposal Facility or COGCC Facility ID # 434766
- No — Excavate and onsite remediation
  - ____ 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
- Yes — Natural Attenuation
- Yes — Other: OxPure® activated carbon application

## 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.

November 16, 2022, 6 temporary groundwater monitoring wells (BH01 - BH06) were installed to further assess the extent of the remaining groundwater impacts. Monitoring well BH05 was removed from the groundwater sampling program under an approved reduction request (Document No. 403344262) and was gauged only during subsequent quarterly monitoring events. Kerr-McGee previously received ECMC approval to remove the inorganic constituents in Table 915-1 (chloride, sulfate, total dissolved solids [TDS]) from the ongoing quarterly groundwater monitoring program at this location, as described in a previous Form 27-Supplemental Update (Document No. 403344262). Analytical results for the groundwater samples collected from the temporary monitoring wells indicate that constituent concentrations were in compliance with the ECMC Table 915-1 standards for four consecutive quarters. The temporary groundwater monitoring well locations and quarterly groundwater elevation contour maps are illustrated on Figures 2 through 5. Well completion logs for the temporary monitoring wells are provided as Attachment B.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

**Approved Reporting Schedule:**

☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other Final Report

☐ **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 NFA Request

## 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.

KMOG has sufficient insurance and bonding to fully address the anticipated costs of Remediation, including the remaining estimated costs for this project. KMOG currently has over 40 million in bonds with the Colorado Energy and Carbon Management Commission. The cost for remediation is a preliminary estimate only, costs may change upwards or downward based on site-specific information. KMOG makes no representation or guarantees as to the accuracy of the preliminary estimate.

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:

Approximately 196 cubic yards of impacted hydro-excavation soil slurry with groundwater were removed from the excavation area via vacuum truck and transported to
the Kerr-McGee Aggregate Recycle Facility in Weld County Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards 196

E&P waste (solid) description Impacted hydro-excavation soil slurry with groundwater

COGCC Disposal Facility ID #, if applicable: 434766

Non-COGCC Disposal Facility:

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? 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 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 facility infrastructure has been replaced and/or will remain in place at this time. The site will be reclaimed in accordance with ECMC 1000 Series Reclamation Rules, pending future facility decommissioning activities.

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.

Proposed date of completion of Reclamation.

# 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. 03/03/2022

Actual Spill or Release date, or date of discovery. 03/03/2022

## SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/03/2022

Proposed site investigation commencement. 03/14/2022

Proposed completion of site investigation. 11/16/2022

## REMEDIAL ACTION DATES

Proposed start date of Remediation. 03/14/2022

Proposed date of completion of Remediation. 09/21/2023

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

As described, laboratory analytical data for the soil samples collected from the final lateral and vertical extents of the excavation areas were in compliance with the ECMC Table 915-1 standards and/or within the range of site-specific background results, with exception to the Pb result for sample E05@6'. However, this material will be left in place at this time, as approved by the ECMC in a previous Form 27-Supplemental update (Document No. 403152763), as the facility infrastructure has been replaced and/or will remain in place at this time, and the surface area will maintain its current usage as an active facility. As such, the inorganic concentrations in soil are not applicable to the current land usage, and the metals concentrations will be reassessed at the time of future facility decommissioning. Laboratory analytical data for the groundwater samples collected from the temporary monitoring wells indicated that constituent concentrations were in compliance with the ECMC Table 915-1 standards for four consecutive quarters. Based on the remediation activities completed at the site and the analytical results presented herein, Kerr-McGee is requesting an NFA determination for this location. The project implementation summary is provided as Attachment C.

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

Signed: Phillip Hamlin  Title: Senior Environmental Rep

Submit Date: 10/13/2023  Email: Phillip_Hamlin@oxy.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: Laurel Anderson  Date: 01/04/2024

Remediation Project Number: 23466

| COA Type | Description |
|---|---|
| | Based on the information presented, it appears that no further action is necessary at this time and the ECMC approves the closure request. However, if future conditions at the site indicate contaminant concentrations in soils exceeding ECMC standards or if groundwater is found to be impacted, then further investigation and/or remediation activities may be required.<br><br>The surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. For locations with active ongoing oil and gas operations, comply with Rule 1003 interim reclamation requirements and for locations that will no longer have active oil and gas operations, comply with Rule 1004 Final Reclamation requirements. |
| 1 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 |
|---|---|
| 403547869 | INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL) |
| 403547880 | ANALYTICAL RESULTS |
| 403547881 | LOGS |
| 403547882 | IMPLEMENTATION SCHEDULE |
| 403547883 | SOIL SAMPLE LOCATION MAP |
| 403547884 | GROUND WATER ELEVATION MAP |
| 403547885 | ANALYTICAL RESULTS |
| 403547886 | ANALYTICAL RESULTS |
| 403644721 | FORM 27-SUPPLEMENTAL-SUBMITTED |

Total Attach: 9 Files

## General Comments

| User Group | Comment | Comment Date |
|---|---|---|
| | | Stamp Upon Approval |

Total: 0 comment(s)