

State of Colorado  
Energy & Carbon Management Commission

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Document Number:  
403873274  
Receive Date:  
08/09/2024  
Report taken by:  
Taylor Robinson

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 ECOM 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: <u>KERR MCGEE OIL &amp; GAS ONSHORE LP</u> | Operator No: <u>47120</u>                 | <b>Phone Numbers</b>         |
| Address: <u>P O BOX 173779</u>                               |   | Phone: <u>(713) 350-4906</u> |
| City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80217-3779</u>  |   | Mobile: <u>( )</u>           |
| Contact Person: <u>Ariana Ochoa</u>                          | Email: <u>DJRemediation_Forms@oxy.com</u> |                              |

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 29312 Initial Form 27 Document #: 403395203

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: <u>LOCATION</u>  | Facility ID: <u>328480</u>                                | API #: _____                  | County Name: <u>WELD</u> |
| Facility Name: <u>HSR-COOPER-63N66W 10NWSW</u>  | Latitude: <u>40.237670</u>                                | Longitude: <u>-104.770560</u> |                          |
|   | ** correct Lat/Long if needed: Latitude: <u>40.239287</u> | Longitude: <u>-104.772483</u> |                          |
| QtrQtr: <u>NWSW</u> Sec: <u>10</u> Twp: <u>3N</u> Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u> |   |                               |                          |

|   |  |                               |                          |
|---|--|-------------------------------|--------------------------|
| Facility Type: <u>SPILL OR RELEASE</u>  | Facility ID: <u>484930</u>                     | API #: _____                  | County Name: <u>WELD</u> |
| Facility Name: <u>Cooper 12-10A O SA</u>  | Latitude: <u>40.239287</u>                     | Longitude: <u>-104.772483</u> |                          |
|   | ** correct Lat/Long if needed: Latitude: _____ | Longitude: _____              |                          |
| QtrQtr: <u>NWSW</u> Sec: <u>10</u> Twp: <u>3N</u> Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u> |  |                               |                          |

## SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Crop land

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**

Domestic water well: approximately 1280' N  
Surface water: approximately 600' W  
Wetlands: multiple areas with wetland characteristics are located within 1/4 mile  
Spring: none  
Livestock: none  
Occupied Building: approximately 1200' N  
High Priority Habitats: none

## **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)

## DESCRIPTION OF IMPACT

| Impacted?    | Impacted Media | Extent of Impact                 | How Determined  |
|--------------|----------------|----------------------------------|---|
| UNDETERMINED | GROUNDWATER    | TBD                              | Groundwater samples/laboratory analytical results     |
| Yes          | SOILS          | 65' (N-S) x 120' (E-W) x 15' bgs | Inspection/soil samples/laboratory analytical results |

## INITIAL ACTION SUMMARY

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

Decommissioning activities were completed at the Cooper 12-10A O SA production facility on August 3, 2023. Groundwater was encountered in the excavation area at a depth of approximately 6' below ground surface (bgs). Visual inspection and field screening of soils at one separator, one meter house, one produced water vessel (PWV), and one aboveground storage tank (AST) was conducted following removal activities and soil samples (SEP-B01@3', SEP-B02@5', PW-B01@4', PW-W01@2', AST-B01@3", DL-B01@4', DL-B02@4') were submitted for laboratory analysis to determine if a release occurred. Laboratory analytical results indicated that 1,2,4-trimethylbenzene (TMB) and 1,3,5-TMB concentrations in soil sample DL-B01@4' exceeded the applicable ECOM Table 915-1 standards. As such, a Form 19-Initial Spill/Release Report (Document No. 403487855) was submitted on August 9, 2023, and the ECOM issued Spill/Release Point ID 484930. A topographic Site Location Map showing the geographic setting of the site location is provided as Figure 1. Soil sample location and field screening data is presented in Table 1. The facility soil sample and field screening locations are illustrated on Figures 2 and 3. The laboratory analytical reports are provided as Attachment A. The field notes and photographic log are provided as Attachment B.

## 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 ):

From August 3, 2023 through April 29, 2024, excavation activities were conducted to address remaining soil impacts beneath the former facility and soil samples were collected from the sidewalls and base of the final excavation extent, at depths ranging from 4-15' bgs. Based on the waste characterization results (DL-B01@4', AST-B01@3"), subsequent soil samples have been submitted for laboratory analysis of TEX, TPH, naph., TMBs, EC, 1 and 2 methyl-naph., arsenic, barium, and cadmium using ECOM-approved methods. Analytical results indicate that TMBs, 1-methyl-naph., and As soil impacts remain in the excavation area. However, the remaining impacts will be left in-place due to the presence of groundwater within the excavation, and will be addressed through quarterly groundwater monitoring. Soil analytical results are summarized in Tables 2 through 5.

### Proposed Groundwater Sampling

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

During remediation activities, groundwater was encountered within the excavation area at approximately 6' bgs. On October 5 and 27, 2023 and December 4, 2023, groundwater samples (GW-01, GW-02, GW-03, respectively) were collected from the excavation area and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, and 1,3,5-TMB by USEPA Method 8260D as approved in the Form 27-Initial (Document No. 403395203). Groundwater analytical results indicated that the groundwater samples were in compliance with the ECOM Table 915-1 standards for organic constituents as summarized in Table 6. Groundwater sample locations are illustrated on Figure 2. Given that groundwater was in contact with soil exceeding Table 915-1 and background levels for arsenic and barium, temporary monitoring wells will be installed at the site and sampled for four consecutive quarters to monitor for groundwater compliance.

### 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 ):

On August 3, 2023, visual inspections and field screening of soils was conducted at three sidewalls of the former PWV excavation, one former meter house, and one former AST location. Based on the inspection and screening results, hydrocarbon-impacted soils were not observed at the soil screening locations. As a result, no soil samples were submitted for laboratory analysis from these areas in accordance with the ECOM Operator Guidance for Oil & Gas Facility Closure document.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 49

Number of soil samples exceeding 915-1 44

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

Approximate areal extent (square feet) 7800

### NA / ND

-- Highest concentration of TPH (mg/kg) 225.5

-- Highest concentration of SAR 0.7

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 15

### Groundwater

Number of groundwater samples collected 3

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 6

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 0

-- Highest concentration of Benzene (µg/l) 1.04

-- Highest concentration of Toluene (µg/l) 1.89

-- Highest concentration of Ethylbenzene (µg/l) 44.9

-- Highest concentration of Xylene (µg/l) 130

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?

Background soil samples PW-BG02 through PW-BG04 and WH-BG03 - WH-BG06 were collected from native material near the tank battery ranging at depths of 3" to 15' bgs. Additional background samples from the Four Raith Unit 1 and HSR-Cooper 12-10A wellheads (located within approximately 0.7 miles) collected from similar soil type, depth, and land use have been included. The background soil samples were submitted for laboratory analysis of the Soil Suitability for Reclamation Parameters and metals using standard methods appropriate for detecting target analytes in Table 915-1. Additional background soil samples may be collected following source removal activities. Analytical results for the background soil samples are presented in Tables 3-5. Background sample locations are illustrated on Figures 2 through 7.

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?

Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the remaining soil impacts. Based on groundwater being in contact with 1 and 2 methylnaphthalene, arsenic, and barium soil impacts in the former facility excavation area, groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of the full ECMC Table 915-1 groundwater analytical suite, as well as 1 and 2 methylnaphthalene and dissolved metals (arsenic and barium). A background groundwater sample will be collected and submitted for laboratory analysis of TDS, sulfate ions, and chloride ions to establish background levels.

## 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 August 3, 2023 through April 29, 2024, approximately 4,050 cubic yards of impacted material were excavated and transported to the Buffalo Ridge Landfill located in Keenesburg, Colorado for disposal and approximately 230 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling. Approximately 1,904 barrels of impacted groundwater were removed from the dumpline excavation area via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility for recycling. Laboratory analytical results indicate that TMBs, 1-methylnaphthalene, and arsenic soil impacts remain in the excavation area. However, Kerr-McGee is requesting the Director's approval to delineate remaining soil impacts during monitoring well installation activities and assess groundwater compliance through quarterly groundwater monitoring. The excavation areas will be backfilled and contoured to match pre-existing conditions.

## REMIEDIATION 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 TMBs, 1-methylnaphthalene, and arsenic soil impacts remain in the excavation area. However, Kerr-McGee is requesting the Director's approval to delineate remaining soil impacts during monitoring well installation activities and assess groundwater compliance through quarterly groundwater monitoring. Based on the soil impacts remaining beneath the site, the groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of the full ECMC Table 915-1 groundwater analytical suite, as well as 1 and 2 methylnaphthalene and dissolved metals (arsenic and barium). Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of impacted groundwater, and the efficacy of the selected remedial technologies.

**Soil Remediation Summary**

|   |     |   |
|---|-----|---|
| <input type="checkbox"/> In Situ                    |     | <input checked="" type="checkbox"/> Ex Situ                           |
| _____ Bioremediation ( or enhanced bioremediation ) | Yes | Excavate and offsite disposal   |
| _____ Chemical oxidation                            |     | If Yes: Estimated Volume (Cubic Yards) _____ 4280                     |
| _____ Air sparge / Soil vapor extraction            |     | Name of Licensed Disposal Facility or ECMC Facility ID # _____ 149007 |
| _____ 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

\_\_\_\_\_ 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.

Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the remaining soil impacts. Based on groundwater being in contact with 1 and 2 methylnaphthalene, arsenic, and barium soil impacts in the former facility excavation area, groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of the full ECMC Table 915-1 groundwater analytical suite, as well as 1 and 2 methylnaphthalene and dissolved metals (arsenic and barium). A groundwater monitoring location figure illustrating the locations of the surveyed monitoring wells will be provided in a Form 27-Supplemental update.

# 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

## 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 ECMC. 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: \$ 13500

## 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 230 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling. Approximately 1,904 barrels of impacted groundwater were removed from the dumpline excavation area via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility for recycling.

Volume of E&P Waste (solid) in cubic yards 4280

E&P waste (solid) description impacted soil

ECMC Disposal Facility ID #, if applicable: 149007

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

Volume of E&P Waste (liquid) in barrels 1904

E&P waste (liquid) description impacted groundwater

ECMC Disposal Facility ID #, if applicable: 434766

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?

Does the previous reply indicate consideration of background concentrations?

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.

The site will be reclaimed in accordance with ECMC 1000 Series Reclamation Rules.

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 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. 02/09/2023

Actual Spill or Release date, or date of discovery. 08/07/2023

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 08/03/2023

Proposed site investigation commencement. 08/03/2023

Proposed completion of site investigation. 12/31/2025

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 08/07/2023

Proposed date of completion of Remediation. 12/31/2025

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**

|  |
|--|
|  |
|--|

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

Signed: Ariana Ochoa

Title: Sr. HSE Advisor

Submit Date: 08/09/2024

Email: DJRemediation\_Forms@oxy.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: Taylor Robinson

Date: 09/26/2024

Remediation Project Number: 29312

**COA Type****Description**

|       |   |
|-------|---|
|       | ECMC does not approve leaving organic/metals impacts exceeding Table 915-1 in soil. ECMC only considers this option for an active Location. Operator shall define the vertical and lateral extent of impacts and propose a remedial strategy to address soil impacts. |
| 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.

**Att Doc Num****Name**

|           |  |
|-----------|--|
| 403873274 | INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL) |
| 403873446 | PHOTO DOCUMENTATION                              |
| 403873447 | SITE MAP   |
| 403873448 | SOIL SAMPLE LOCATION MAP                         |
| 403873492 | SOIL SAMPLE LOCATION MAP                         |
| 403873494 | SOIL SAMPLE LOCATION MAP                         |
| 403873495 | SOIL SAMPLE LOCATION MAP                         |
| 403873496 | SOIL SAMPLE LOCATION MAP                         |
| 403873497 | SOIL SAMPLE LOCATION MAP                         |
| 403873511 | ANALYTICAL RESULTS                               |
| 403873514 | ANALYTICAL RESULTS                               |
| 403936817 | FORM 27-SUPPLEMENTAL-SUBMITTED                   |

Total Attach: 12 Files

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

|  |  |                     |
|--|--|---------------------|
|  |  | Stamp Upon Approval |
|--|--|---------------------|

Total: 0 comment(s)