

State of Colorado  
Energy & Carbon Management Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
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Document Number:

403724614

Receive Date:

03/25/2024

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 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: KERR MCGEE OIL & GAS ONSHORE LP	Operator No: 47120	Phone Numbers
Address: P O BOX 173779		Phone: (970) 336-3500
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Phil Hamlin	Email: Phillip_Hamlin@oxy.com	Mobile: ( )

## PROJECT, PURPOSE &amp; SITE INFORMATION

## PROJECT INFORMATION

Remediation Project #: 9670 Initial Form 27 Document #: 200439560

## 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: 318952	API #: _____	County Name: WELD
Facility Name: WARNER-62N66W 24NWNE	Latitude: 40.128030	Longitude: -104.720690	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWNE	Sec: 24	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes

## SITE CONDITIONS

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use Non-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? No

## Other Potential Receptors within 1/4 mile

A livestock pen is located approximately 1,075 feet northwest of the release location. A building is located approximately 1,125 feet northwest of the release location.

## 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
Yes	GROUNDWATER	See attached data	Groundwater sampling and laboratory analysis
Yes	SOILS	70' (N-S) x 60' (E-W) x 26' bgs	Soil boring, soil sampling, and 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.

Between March 13 and 15, 2013, a Limited Phase II Site Assessment was conducted at the Warner 1 production facility. Historical petroleum hydrocarbon impacts to soil and groundwater were discovered during this investigation, and groundwater was encountered in soil borings at approximately 26 feet below ground surface (bgs). The Energy and Carbon Management Commission (ECMC) has issued Spill/Release Point ID 2232616 for this release.

### 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 ):

Between March 2013 and April 2014, soil samples were collected during the Limited Phase II Site Assessment and subsequent soil boring activities, as described in the Initial Form 27 (ECMC Doc. No. 2526257). Based on the subsurface soil assessment, impacted soil remained at the site adjacent to soil boring locations SB02, SB03, and SB07.

Between September 11 and October 23, 2019, the impacted soil was excavated. Sixty-two soil samples were collected from the excavation for analysis of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and naphthalene. The base soil samples were also analyzed for pH, specific conductivity (EC), and sodium adsorption ratio (SAR). Laboratory results indicated the samples were in full compliance with applicable ECMC standards at the time of excavation at the extent of the excavation.

#### Proposed Groundwater Sampling

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

Between March 13, 2013 and February 11, 2019, twenty-three (23) temporary monitoring wells (SB01 - SB18, SB03R, SB04R, SB04R2, SB05R, SB06R) were installed to assess the extent of groundwater impacts. Quarterly groundwater monitoring was initiated on August 5, 2013. The groundwater monitoring wells were removed from the site prior to the September 2019 excavation activities and reinstalled in May and June 2020 following completion of excavation activities. Groundwater monitoring resumed on a quarterly basis in June 2020.

#### 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 79

Number of soil samples exceeding 915-1 9

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet) 15300

### NA / ND

-- Highest concentration of TPH (mg/kg) 3309

-- Highest concentration of SAR 37.77

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 30

### Groundwater

Number of groundwater samples collected 559

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 29

Number of groundwater monitoring wells installed 47

Number of groundwater samples exceeding 915-1 269

-- Highest concentration of Benzene (µg/l) 730

-- Highest concentration of Toluene (µg/l) 31

-- Highest concentration of Ethylbenzene (µg/l) 1160

-- Highest concentration of Xylene (µg/l) 12700

NA Highest concentration of Methane (mg/l)

### Surface Water

0 Number of surface water samples collected

0 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?

Soil impacts have been identified in off-site soil borings SB02 and SB07. Impacted groundwater has been detected in off-site temporary groundwater monitoring wells SB02, SB04R, SB07, SB08, and SB10 through SB12.

☐ 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?

## 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 September and October 2019, approximately 6,140 cubic yards of petroleum hydrocarbon impacted soil were excavated and transported to Buffalo Ridge Landfill in Keenesburg, Colorado, for disposal. The petroleum hydrocarbon impacted soil was excavated into the phreatic zone to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. The excavation footprint is depicted on the Site Map provided as Figure 1.

## REMEDATION 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.

Between August 4 and 8, 2014, an initial round of in-situ chemical oxidation (chemox) injections was performed at temporary monitoring wells SB02, SB03, and SB09 through SB12. Chemox injections were suspended due to formation back-pressure and oxidant surfacing at SB03 and SB09. In the fourth quarter of 2014, light non-aqueous phase liquid (LNAPL) was observed in well SB07. A passive LNAPL recovery bailer was installed in well SB07; bi-weekly LNAPL gauging and recovery events were initiated on December 3, 2014 and ended prior to 2019 excavation activities. Approximately 1.8 gallons of LNAPL were removed from temporary monitoring well SB07 via LNAPL bailing.

## Soil Remediation Summary

☒ In Situ

No Bioremediation ( or enhanced bioremediation )

Yes Chemical oxidation

No Air sparge / Soil vapor extraction

Yes Natural Attenuation

No Other

☒ Ex Situ

Yes Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) 6140

Name of Licensed Disposal Facility or ECMC Facility ID #

No Excavate and onsite remediation

Land Treatment

Bioremediation (or enhanced bioremediation)

Chemical oxidation

Other

## Groundwater Remediation Summary

No Bioremediation ( or enhanced bioremediation )

Yes Chemical oxidation

No Air sparge / Soil vapor extraction

Yes Natural Attenuation

Yes Other LNAPL Recovery

## 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 SB01R, SB02R, SB03R2, SB04R3, SB05R2, SB06R2, SB07R through SB18R, and SB19 through SB24 are sampled on a quarterly basis for the full list of analyses for groundwater in Table 915-1. Upgradient and historically compliant groundwater monitoring well SB20 was established as a representative background sample for calculating the inorganic parameters in Table 915-1. Based on a comparison to background concentrations, point-of-compliance (POC) monitoring wells SB23 and SB24 were above the Table 915-1 standards for chloride ion during the December 2023 monitoring event; however, POC for organic constituents remains established. Kerr-McGee will continue to evaluate POC for Table 915-1 on a quarterly basis based on the site-specific local background concentrations. The monitoring well locations are depicted on Figure 1. The Groundwater Elevation Contour Map generated using the December 2023 survey data is provided as Figure 2. The groundwater analytical results are summarized in Table 1, and the laboratory analytical reports for the March 2023, June 2023, September 2023, and December 2023 groundwater monitoring events are attached.

Groundwater monitoring will continue on a quarterly basis until a No Further Action status request is warranted.

## 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: \$ 50000

### 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 1.8 gallons of LNAPL were removed from temporary monitoring well SB07 via LNAPL bailing and transported to the Aggregate Recycle Facility in Weld County, Colorado.

Volume of E&P Waste (solid) in cubic yards 6140

E&P waste (solid) description Petroleum hydrocarbon impacted soil

ECMC Disposal Facility ID #, if applicable:

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

Volume of E&P Waste (liquid) in barrels 1

E&P waste (liquid) description Bailed LNAPL (1.8 gallons)

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? No

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

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 Kerr-McGee facility was decommissioned. The site will be reclaimed in accordance with ECMC 1000 Series Reclamation 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. \_\_\_\_\_

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. 03/21/2022

Actual Spill or Release date, or date of discovery. 03/25/2013

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/13/2013

Proposed site investigation commencement. 03/13/2013

Proposed completion of site investigation. 09/08/2020

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 08/04/2014

Proposed date of completion of Remediation. 12/31/2026

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:

**OPERATOR COMMENT**

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

Signed: Phil Hamlin

Title: Senior Environmental Rep.

Submit Date: 03/25/2024

Email: Phillip\_Hamlin@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: Laurel Anderson

Date: 07/09/2024

Remediation Project Number: 9670

**COA Type****Description**

	In accordance with Rule 915.f., Operator will collect and analyze confirmation soil samples for all contaminants of concern in Table 915-1 to document compliance with ECMC Rule 915 effective January 15, 2021 prior to requesting No Further Action for Remediation Project.
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**

403724614	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
403724715	ANALYTICAL RESULTS
403727428	ANALYTICAL RESULTS
403728653	SITE MAP
403728654	GROUND WATER ELEVATION MAP
403848768	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 6 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)