FORM 27 Rev 5/22

State of Colorado
Energy & Carbon Management Commission

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Report taken by: Alexander Ahmadian

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 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: Phil Hamlin Email: Phillip_Hamlin@oxy.com

Phone Numbers
Phone: (970) 515-1161
Mobile: ( )

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 4891 Initial Form 27 Document #: 1632378

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: Monitoring well reduction request

SITE INFORMATION

No Multiple Facilities

Facility Type: LOCATION Facility ID: 320405 API #: County Name: ADAMS
Facility Name: HSR-DREYER-61S65W 5SWNW Latitude: 39.996994 Longitude: -104.693622
** correct Lat/Long if needed: Latitude: 39.996825 Longitude: -104.693891
QtrQtr: SWNW Sec: 5 Twp: 1S Range: 65W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

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

Surface water approximately 700 feet (ft) west, freshwater emergent wetland approximately 1,050 ft southwest, water well approximately 400 ft south, building approximately 440 ft southwest, and groundwater approximately 8 ft below ground surface (bgs).

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [X] **E&P Waste**
  - [X] Produced Water
  - [X] Oil
  - [ ] 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 Samples/Lab Analysis
Yes	SOILS	25ft N-S X 25ft E-W X 10ft bgs	Soil Samples/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.

The partially buried produced water sump at the HSR-Dreyer 5-5 tank battery floated following a heavy rain event. The produced water sump was removed, and it was discovered that the dumpline threads connecting to the sump were partially stripped, releasing an unknown volume of oil and produced water. The petroleum hydrocarbon impacted soil was excavated. Groundwater was encountered in the excavation at approximately 9 ft bgs.

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):

Between September 17 and 25, 2009, thirteen soil samples were collected from the excavation for laboratory analysis of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), pH, and specific conductivity (EC). Laboratory analytical results indicated that the soil samples were in full compliance with Emission and Carbon Management Commission (ECMC) allowable levels at the time of excavation for TPH, BTEX, pH, and EC at the lateral extent of the excavation.

Proposed Groundwater Sampling

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

On September 25, 2009, one groundwater sample (GW01) was collected from the excavation and submitted for laboratory analysis of BTEX. Laboratory analytical results indicated sample GW01 exceeded the ECMC allowable levels at the time of excavation for benzene, toluene, and total xylenes at concentrations of 15,000 micrograms per liter (µg/L), 21,000 µg/L, and 7,200 µg/L, respectively. The groundwater sample location is depicted on Figure 1. The groundwater sample analytical results are summarized in Table 1.

Groundwater monitoring has been conducted on a quarterly basis since December 2009.

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: 13
Number of soil samples exceeeding 915-1: 5
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet): 625

NA / ND

-- Highest concentration of TPH (mg/kg): 5130
NA Highest concentration of SAR:
BTEX > 915-1: Yes
Vertical Extent > 915-1 (in feet): 9

Groundwater

Number of groundwater samples collected: 1489
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet): 10
Number of groundwater monitoring wells installed: 36
Number of groundwater samples exceeding 915-1: 488

-- Highest concentration of Benzene (µg/l): 48000
-- Highest concentration of Toluene (µg/l): 68000
-- Highest concentration of Ethylbenzene (µg/l): 1700
-- Highest concentration of Xylene (µg/l): 44000
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

[X] Were impacts to adjacent property or offsite impacts identified?

Petroleum hydrocarbon impacted groundwater was encountered northwest and south of the excavation.

[ ] 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):

[X] Is further site investigation required?

Monitoring well MW21, which is needed to provide point of compliance (POC) up- and cross-gradient for non-compliant monitoring wells MW10 and MW20R, has been periodically dry or contained insufficient water for sampling since 2012. An attempt will be made to reinstall a deeper well in the vicinity of MW21, within the same water bearing zone, to verify that POC remains on the eastern side of the monitoring well network.

Dissolved-phase impacts remain at monitoring wells MW10 and MW19. At the time of monitoring well installation, vertical delineation based on field observation was not achieved at MW10. As such, Kerr-McGee recommends the reinstallation of monitoring wells MW10 and MW19 to assess current conditions in both locations to verify that the existing air sparge wells in the vicinity are screened appropriately.

During monitoring well reinstallation, one sample will be collected from each soil boring from either the interval exhibiting the highest level of impact or from directly above the water table if no indication of impact is present. The samples will be submitted for analysis of full list Table 915-1.

A soil assessment to evaluate site conditions as compared to 915-1 allowable levels will be conducted following the reinstallation of MW10, MW19, and MW21 and the assessment scope of work will be submitted in a subsequent Form 27 supplemental report for ECMC review and approval.

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.

Approximately 230 cubic yards of petroleum hydrocarbon impacted soil were removed from the excavation and transported to Buffalo Ridge Landfill in Keenesburg, Colorado, for disposal. The impacted soil was excavated into the capillary and phreatic zones to address potential hydrocarbon impacts that may have been present below the groundwater table due to past seasonal fluctuations. Approximately 58 barrels of petroleum hydrocarbon impacted groundwater were removed from the excavation and transported to a licensed injection facility for disposal. The general site layout and excavation footprint are depicted on the Site Map provided as Figure 1.

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.

Please refer to the attached Remediation Summary.

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) 230
  - 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

- Yes Bioremediation (or enhanced bioremediation)
- No Chemical oxidation
- Yes Air sparge / Soil vapor extraction
- Yes Natural Attenuation
- Yes Other Groundwater Removal and MicroBlaze® 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.

Groundwater monitoring wells MW01 through MW12, MW15 through MW22, MW24, MW25, MW29R, and MW31 are sampled on a quarterly basis for Table 915-1 organic constituents in groundwater. Monitoring wells MW13, MW14, MW23, MW26, MW27, MW28, and MW30 were removed from the quarterly groundwater monitoring program, as approved in the Form 27 Supplemental dated September 27, 2023 (Document No. 403539679). The ECMC approved the request to remove Table 915-1 inorganic constituents from the quarterly monitoring program in the Form 27 Supplemental dated September 30, 2024 (Document No. 403934180). Monitoring well MW21, which is needed to provide POC up- and cross-gradient for non-compliant monitoring wells MW10 and MW20R, has been periodically dry or contained insufficient water for sampling since 2012. An attempt will be made to reinstall a deeper well in the vicinity of MW21, within the same water bearing zone, to verify that POC remains on the eastern side of the monitoring well network. POC continues to be maintained across the rest of the site. The monitoring well locations are depicted on Figure 1. The Groundwater Elevation Contour Map generated using the August 2025 gauging data is provided as Figure 2. The groundwater analytical results are summarized in Table 1, and the laboratory analytical reports for the December 2024, February 2025, May 2025, and August 2025 groundwater monitoring events are attached.

Based on the laboratory analytical results to date, Kerr-McGee is requesting the removal of monitoring wells MW04R and MW05 from the quarterly monitoring program. Monitoring wells MW04 and MW05 have been in compliance with Table 915-1 allowable levels for greater than four consecutive quarters and are no longer needed for POC.

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: $ 200000

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:

NA

Volume of E&P Waste (solid) in cubic yards 230

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 58

E&P waste (liquid) description Petroleum hydrocarbon impacted groundwater (49 barrels from excavation; 9 barrels bailed from MWs)

ECMC Disposal Facility ID #, if applicable: 159443

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. 09/18/2009

Actual Spill or Release date, or date of discovery. 09/18/2009

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/18/2009

Proposed site investigation commencement. 09/18/2009

Proposed completion of site investigation. 09/13/2018

REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/18/2009

Proposed date of completion of Remediation. 09/30/2026

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

Based on the laboratory analytical results to date, Kerr-McGee is requesting the removal of monitoring wells MW04R and MW05 from the quarterly monitoring program. Monitoring wells MW04 and MW05 have been in compliance with Table 915-1 allowable levels for greater than four consecutive quarters and are no longer needed for POC.

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A soil assessment to evaluate site conditions as compared to 915-1 allowable levels will be conducted following the reinstallation of MW10, MW19, and MW21 and the assessment scope of work will be submitted in a subsequent Form 27 supplemental report for ECMC review and approval.

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: 09/25/2025 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: Alexander Ahmadian Date: 11/07/2025

Remediation Project Number: 4891

COA Type	Description
	Operator shall abandon the monitoring wells in accordance with DWR regulations within 90 days of the approval of this Form 27.
	ECMC agrees to the removal of MW04R and MW05 from the groundwater monitoring program. If future data indicate the need for additional site characterization or establishing point of compliance, ECMC may require additional monitoring wells be returned to the program.
2 COAs	

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
404338734	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
404338765	REMEDIATION PROGRESS REPORT
404338766	OTHER
404338768	LABORATORY ANALYTICAL REPORT
404338769	ANALYTICAL DATA SUMMARY TABLE(S)
404338771	LABORATORY ANALYTICAL REPORT
404338772	LABORATORY ANALYTICAL REPORT
404338774	LABORATORY ANALYTICAL REPORT
404338776	GROUND WATER ELEVATION MAP
404340122	SITE MAP
404427787	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 11 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)