

State of Colorado
Energy & Carbon Management Commission

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Document Number:
404668933

Receive Date:

Report taken by:

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 INFORMATION

Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP	Operator No: 47120	Phone Numbers
Address: P O BOX 173779		
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Phil Hamlin	Email: Phillip_Hamlin@oxy.com	Phone: (970) 515-1161
		Mobile: ()

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 3672 Initial Form 27 Document #: 1395205

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

No Multiple Facilities

Facility Type: TANK BATTERY	Facility ID: 445940	API #: _____	County Name: WELD
Facility Name: ODENBAUGH, CULLEN C UNIT-63N67W 12SWSW		Latitude: 40.234767	Longitude: -104.845442
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SWSW	Sec: 12	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Agriculture and Livestock

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

Water well approximately 720 feet (ft) northwest, surface water and wetlands located approximately 1,000 ft northeast, livestock on site, an occupied building approximately 280 ft east, and groundwater approximately 2 ft below ground surface (bgs).

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input checked="" type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	See attached data	Groundwater Sampling/Laboratory Analysis
Yes	SOILS	75'N-S X 140'E-W X 5ft bgs (max)	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.

In November 2005, a leak in the partially-buried produced water vessel was discovered while reconfiguring the Cullen Odenbaugh C UT 1 tank battery. The volume of the release is unknown. The petroleum hydrocarbon impacted soil was excavated. A new produced water sump and dump lines were installed.

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):

Please refer to the Form 27 submitted to the ECOM on May 23, 2006, for 2005 soil sampling activities.

In November 2017, additional petroleum hydrocarbon impacted soil was excavated during tank battery deconstruction activities. On November 3 and 8, 2017, fourteen soil samples were collected from the excavation and submitted for laboratory analysis of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), pH, and specific conductivity (EC). Analytical results indicated that BTEX, TPH, pH, and EC concentrations and levels were compliant with ECOM Table 910-1 allowable levels at the lateral extent of the excavation. The excavation dimensions are depicted on the Site Map provided as Figure 1. The soil sample analytical results are summarized in Table 1.

Proposed Groundwater Sampling

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

Quarterly groundwater monitoring has been performed at the site since February 2006.

In November 2017, additional petroleum hydrocarbon impacted soil was excavated during tank battery deconstruction activities. On November 9, 2017, two groundwater samples (GW01 and GW02) were collected from the excavation and submitted for laboratory analysis of BTEX. Laboratory analytical results indicated samples GW01 and GW02 exceeded the ECOM Table 910-1 allowable level for benzene at 5.8 micrograms per liter (µg/L) and 13.8 µg/L, respectively. The groundwater sample locations are depicted on Figure 1. The groundwater sample analytical results are summarized in Table 2.

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 18
Number of soil samples exceeding 915-1 5
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 300

NA / ND

-- Highest concentration of TPH (mg/kg) 3393
NA Highest concentration of SAR _____
BTEX > 915-1 No
Vertical Extent > 915-1 (in feet) 3

Groundwater

Number of groundwater samples collected 498
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 2
Number of groundwater monitoring wells installed 35
Number of groundwater samples exceeding 915-1 112

-- Highest concentration of Benzene (µg/l) 5100
-- Highest concentration of Toluene (µg/l) 262
-- Highest concentration of Ethylbenzene (µg/l) 220
-- Highest concentration of Xylene (µg/l) 6000
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?

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?

A soil assessment will be conducted to verify that soil complies with Table 915-1 allowable levels. The proposed soil boring locations are depicted on Figure 3.

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? Yes

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

In November 2005, approximately 60 cubic yards of petroleum hydrocarbon impacted soil were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling. 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.

In November 2017, the Cullen Odenbaugh C UT #1, Stanley Odenbaugh 13-12 tank battery was deconstructed and additional petroleum hydrocarbon impacted soil was removed from under the location of the former tank battery. Approximately 1,210 cubic yards of petroleum hydrocarbon impacted soil was excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. In addition, approximately 2,850 barrels of petroleum hydrocarbon impacted groundwater was removed from the excavation and transported to the Aggregate Recycle Facility in Weld County, Colorado, for recycling.

In February 2021, during site reclamation activities, additional petroleum hydrocarbon impacted soil was removed from the area around monitoring well MW01R. Approximately 770 cubic yards of petroleum hydrocarbon impacted soil was excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling. The 2005, 2017, and 2021 excavation locations are depicted on Figure 1.

REMEDICATION 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.

In November 2017, while backfilling the excavation, 140 pounds of COGAC®, a carbon-based bioremediation product designed to capture and degrade petroleum hydrocarbons via chemical oxidation and passive bio-stimulation, were applied to the clean backfill in a series of lifts in the capillary and phreatic horizons. In February 2021, while backfilling the excavation, 600 pounds of COGAC® were applied to the clean backfill in a series of lifts in the capillary and phreatic horizons.

Additional soil assessment activities will be conducted to assess whether impacts exceeding the Table 915-1 allowable levels remain at the extents of the former excavation. The proposed boring locations were selected based on the ECMC Operator Guidance for Rule 915.E.(2). Table 1 and the former excavation perimeter linear footage and area. Soil borings located adjacent to the former excavation sidewalls and within the former excavation footprint will be advanced to a minimum depth of 3.5 ft bgs, the depth of the 2005 excavation. If field indication of impact is present in any location, the soil borings will be advanced to a depth below any evidence of impact (hydrocarbon staining, odor, and elevated PID readings). If field indication of impact is present, soil samples will be collected from the interval exhibiting the highest indication of impact and from the total depth. If no field indication of impact is present, soil samples will be collected from total depth only. The soil samples will be submitted for analysis of full list Table 915-1 constituents. The need for additional delineation and/or remediation activities will be evaluated following receipt of the initial assessment results.

Remedial alternatives will be evaluated following the completion of soil assessment activities as an effective remedial strategy for the site cannot be developed until the presence or absence of soil impacts exceeding Table 915-1 allowable levels has been verified.

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) _____ 2040
_____ Air sparge / Soil vapor extraction	Name of Licensed Disposal Facility or ECMC Facility ID # _____ 149007
_____ Natural Attenuation	No Excavate and onsite remediation
_____ Other _____	_____ Land Treatment
	_____ Bioremediation (or enhanced bioremediation)
	_____ Chemical oxidation
	_____ Other _____

Groundwater Remediation Summary

Yes _____ Bioremediation (or enhanced bioremediation)

Yes _____ Chemical oxidation

No _____ Air sparge / Soil vapor extraction

Yes _____ Natural Attenuation

Yes _____ Other Groundwater Removal and
COGAC 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 MW01R2, MW02R4, MW04R2, MW05R2, MW06R3, and MW07R3 are sampled on a quarterly basis for the full list of analyses for groundwater in Table 915-1. The ECMC approved the request to remove monitoring wells MW03R3 and MW08R3 from the quarterly monitoring program on December 20, 2023. Cross-gradient and historically compliant groundwater monitoring well MW05R2 was established as a representative background sample for calculating the inorganic parameters in Table 915-1. The monitoring well locations are depicted on Figure 1. A groundwater elevation contour map generated using the March 2025 gauging data is provided as Figure 2. The groundwater analytical results are summarized in Table 2, and the laboratory analytical reports for the December 2025 and March 2026 groundwater monitoring events are attached.

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 Energy and Carbon Management. 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: \$ 60000

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:

Petroleum hydrocarbon impacted soil from the 2005, 2017, and 2021 excavations were transported to the Kerr McGee Land Treatment Facility in Weld County, Colorado, for recycling. The petroleum hydrocarbon impacted groundwater removed from the 2017 excavation was transported to the Aggregate Recycle Facility in Weld County, Colorado, for recycling.

Volume of E&P Waste (solid) in cubic yards 2040

E&P waste (solid) description Petroleum hydrocarbon impacted soil (2005, 2017, and 2021 excavations)

ECMC Disposal Facility ID #, if applicable: 149007

Non-ECMC Disposal Facility:

Volume of E&P Waste (liquid) in barrels 2850

E&P waste (liquid) description Petroleum hydrocarbon impacted groundwater (2017 excavation)

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 production facility was decommissioned in November 2017. 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. 11/14/2005

Actual Spill or Release date, or date of discovery. 11/14/2005

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 11/14/2005

Proposed site investigation commencement. 11/14/2005

Proposed completion of site investigation. 06/30/2028

REMEDIAL ACTION DATES

Proposed start date of Remediation. 11/14/2005

Proposed date of completion of Remediation. 06/30/2028

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

Per the conditions of approval (COAs) issued by the ECMC for Form 27 Document No. 404417144, additional soil assessment activities will be conducted to assess whether impacts exceeding the Table 915-1 allowable levels remain at the extents of the former excavation. The proposed boring locations were selected based on the ECMC Operator Guidance for Rule 915.E.(2). Table 1 and the former excavation perimeter linear footage and area. Soil borings located adjacent to the former excavation sidewalls and within the former excavation footprint will be advanced to a minimum depth of 3.5 ft bgs, the depth of the 2005 excavation. If field indication of impact is present in any location, the soil borings will be advanced to a depth below any evidence of impact (hydrocarbon staining, odor, and elevated PID readings). If field indication of impact is present, soil samples will be collected from the interval exhibiting the highest indication of impact and from the total depth. If no field indication of impact is present, soil samples will be collected from total depth only. The soil samples will be submitted for analysis of full list Table 915-1 constituents. The need for additional delineation and/or remediation activities will be evaluated following receipt of the initial assessment results. The proposed soil boring locations are depicted on Figure 3.

Remedial alternatives will be evaluated following the completion of soil assessment activities as an effective remedial strategy for the site cannot be developed until the presence or absence of soil impacts exceeding Table 915-1 allowable levels has been verified.

KMOG will request access to implement the soil assessment activities upon approval of this scope of work; however, the investigation may not be completed by August 3rd, 2026 if landowner access and drill rig availability cannot be secured between the approval date of this Form 27 and the August 3rd, 2026 deadline presented in Form 27 Document No. 404417144.

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: _____

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: _____

Date: _____

Remediation Project Number: 3672

<u>COA Type</u>	<u>Description</u>
0 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.

<u>Att Doc Num</u>	<u>Name</u>
404668940	ANALYTICAL DATA SUMMARY TABLE(S)
404668941	LABORATORY ANALYTICAL REPORT
404668942	LABORATORY ANALYTICAL REPORT
404668943	SOIL SAMPLE LOCATION MAP
404668944	GROUND WATER ELEVATION MAP
404668945	SITE MAP

Total Attach: 6 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)