

State of Colorado Oil and Gas Conservation Commission

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Document Number:

403249528

Receive Date:

05/10/2023

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 INFORMATION

Name of Operator: <u>KERR MCGEE OIL & GAS ONSHORE LP</u>	Operator No: <u>47120</u>	Phone Numbers
Address: <u>P O BOX 173779</u>		Phone: <u>(970) 515-1698</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80217-3779</u>
Contact Person: <u>Gregory Hamilton</u>	Email: <u>Gregory_Hamilton@oxy.com</u>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 23794 Initial Form 27 Document #: 403090087

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>435425</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>NRC 3C-4HZ</u>	Latitude: <u>40.059228</u>	Longitude: <u>-104.898020</u>	
** correct Lat/Long if needed: Latitude: <u>40.059598</u>		Longitude: <u>-104.901287</u>	
QtrQtr: <u>SESW</u>	Sec: <u>9</u>	Twp: <u>1N</u>	Range: <u>67W</u>
Meridian: <u>6</u>	Sensitive Area? <u>Yes</u>		
Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>482577</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>NRC 3C-4HZ Facility</u>	Latitude: <u>40.059543</u>	Longitude: <u>-104.901216</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWSW</u>	Sec: <u>9</u>	Twp: <u>1N</u>	Range: <u>67W</u>
Meridian: <u>6</u>	Sensitive Area? <u>Yes</u>		

SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Agriculture

Is domestic water well within 1/4 mile? No

Is surface water within 1/4 mile? No

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

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	TBD	Groundwater Samples/Laboratory Analytical Results
Yes	SOILS	See attached data.	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.

This form has been prepared to summarize ongoing assessment activities conducted during the closure of two separators at the NRC 3C-4HZ Facility. Assessment activities began on July 13, 2022. Soil assessment activities are being conducted in accordance with COGCC Rule 911.a. A photo log is attached.

On July 15, 2022, upon receipt of the laboratory analytical report for samples collected on July 13, 2022, historically impacted soil was discovered at both separator inlets. Laboratory analytical results indicated the separator soil samples Sep01-inlet@6'-WP and Sep02-inlet@6'-WP exceeded the COGCC Table 915-1 allowable levels for 1,2,4-trimethylbenzene, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, arsenic, cadmium, and/or selenium. The release was reported to the COGCC in the Form 19 Initial dated July 19, 2022 (Document No. 403106792). The volume of the release is unknown. Excavation activities are ongoing.

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 July 13, 2022 and March 2, 2023, soil samples were collected from the separators (Figure 1). The samples were field screened for total volatile organic compounds using a photoionization detector (PID). One soil sample from each inlet and one soil sample from each outlet were submitted for analysis. Based on analytical results, additional samples were submitted for analysis. Analytical results indicated soil was in full compliance with Table 915-1 standards or the analytical variability of background at the extents of the excavations except for metals which will be addressed during groundwater sampling. Therefore, further excavation was not warranted. The PID readings and soil sample results are summarized in Table 1 and Table 2, respectively, and the laboratory reports are attached.

Proposed Groundwater Sampling

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

On July 13, 2022, two groundwater samples were collected from the separator excavations and submitted for Table 915-1 analyses. Based on the laboratory analytical results, groundwater within the Sep01 excavation exceeded the COGCC Table 915-1 allowable level for sulfate and the Sep02 excavation exceeded the COGCC Table 915-1 allowable level for naphthalene. The excavation groundwater sample locations are depicted on Figure 1. The groundwater sample analytical results are summarized in Table 3.

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 14

Number of soil samples exceeding 915-1 14

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

Approximate areal extent (square feet) 140

NA / ND

-- Highest concentration of TPH (mg/kg) 0.56

-- Highest concentration of SAR 6.91

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 8

Groundwater

Number of groundwater samples collected 2

Was extent of groundwater contaminated delineated? No

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

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 2

ND Highest concentration of Benzene (µg/l)

ND Highest concentration of Toluene (µg/l)

ND Highest concentration of Ethylbenzene (µg/l)

ND Highest concentration of Xylene (µg/l)

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?

Six background soil samples were collected near the associated wellheads and submitted for laboratory analysis of pH, specific conductivity (EC), sodium adsorption ratio (SAR), boron, and metals. Laboratory analytical results indicate that EC, SAR, boron, arsenic, barium, lead, and selenium are naturally high in the native soil.

☐ 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 to delineate the plume. A remedial plan will be submitted after delineation has been completed. The monitoring well installation scope of work will be submitted in a subsequent Form 27 supplemental report.

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 16 cubic yards of impacted soil were removed from the site and transported to the Aggregate Recycle Facility in Weld County, Colorado for recycling. Disposal records are kept on file and are available upon request.

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.

Impacted soils have been transported to a licensed disposal facility.

Groundwater monitoring wells will be installed to delineate the plume. A remedial plan will be submitted after delineation has been completed. The monitoring well installation scope of work will be submitted in a subsequent Form 27 supplemental report.

Soil Remediation Summary

☐ In Situ

☒ Ex Situ

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

Yes _____ Excavate and offsite disposal
_____ If Yes: Estimated Volume (Cubic Yards) _____ 16
_____ 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

_____ 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 to delineate the plume. Groundwater samples will be collected from the monitoring wells on a quarterly basis and will be submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, total dissolved solids, chloride ion, and sulfate ion per COGCC Rule 912.a. Due to the metal exceedances in the proposed soil to be left in place (as discussed in the Proposed Soil Sampling section), the groundwater samples will also be analyzed for dissolved arsenic and cadmium in accordance with the Water Quality Control Commission Regulation 41. The laboratory analytical and assessment results will be summarized in a supplemental Form 27.

REMEDATION 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 Colorado Oil and Gas Conservation 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: \$ 12500

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 16 cubic yards of impacted soil were removed from the site and transported to the Aggregate Recycle Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards 16

E&P waste (solid) description Impacted Soil

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:

REMEDATION COMPLETION REPORT

REMEDATION 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 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 site will be reclaimed in accordance with COGCC 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. 07/15/2022

Actual Spill or Release date, or date of discovery. 07/15/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 07/13/2022

Proposed site investigation commencement. 07/13/2022

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 07/13/2022

Proposed date of completion of Remediation. _____

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: Gregory Hamilton

Title: Sr. Env. Consultant

Submit Date: 05/10/2023

Email: Gregory_Hamilton@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: 07/17/2023

Remediation Project Number: 23794

COA Type**Description**

	Background samples reported were collected from areas off-location, at the wellheads and are not representative of background conditions at the production facility. Operator shall refrain from using these samples as background samples. If Operator proposed additional background sampling; Operator shall obtain background samples from locations near the production facility, not impacted by oil and gas activity, and from similar depths and soil horizons or lithologic materials for comparison to confirmation soil samples.
	Operator states: "Due to the metal exceedances in the proposed soil to be left in place (as discussed in the Proposed Soil Sampling section) the groundwater samples will also be analyzed for dissolved arsenic and cadmium in accordance with the Water Quality Control Commission Regulation 41." ECMC does not approve Operator's request to leave soil impacts above Table 915-1 groundwater protection soil screening levels in-situ. Operator shall reevaluate and compare confirmation soil sample analytical data to newly collected background samples for review.
	Operator shall install monitoring wells upgradient, cross-gradient, and downgradient and within the source zone to properly characterize groundwater. Additionally, if impacted soil is encountered during monitoring well installation, Operator shall submit a minimum of one soil sample from the interval exhibiting the highest degree of impact for laboratory analysis of all Table 915-1 contaminants of concern. Additionally, depending on the results, Operator may be required to install additional soil borings and/or monitoring wells to fully delineate soil and/or groundwater impacts.
	Operator shall fully populate the implementation schedule in accordance with Rule 913.d on the next Form 27.
4 COAs	

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**

403249528	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403265231	PHOTO DOCUMENTATION
403343157	ANALYTICAL RESULTS
403343160	SOIL SAMPLE LOCATION MAP
403344411	SOIL SAMPLE LOCATION MAP
403467355	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 6 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	ECMC added Spill ID 482577 and selected Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912. in addition to the current selection.	07/17/2023

Total: 1 comment(s)