

State of Colorado Oil and Gas Conservation Commission

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Document Number:

403417202

Receive Date:

05/31/2023

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 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) 336-3500</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80217-3779</u>		Mobile: <u>(970) 515-1698</u>
Contact Person: <u>Gregory Hamilton</u>	Email: <u>Gregory_Hamilton@oxy.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 19714 Initial Form 27 Document #: 402781851

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>WELL</u>	Facility ID: _____	API #: <u>123-21673</u>	County Name: <u>WELD</u>
Facility Name: <u>WEST FARM 2-14A</u>	Latitude: <u>40.227950</u>	Longitude: <u>-104.854710</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWNE</u>	Sec: <u>14</u>	Twp: <u>3N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>TANK BATTERY</u>	Facility ID: <u>446409</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>DONALD K NORGREN C UNIT-63N67W 14SWNE</u>	Latitude: <u>40.227252</u>	Longitude: <u>-104.853912</u>	
** correct Lat/Long if needed: Latitude: <u>40.226968</u>		Longitude: <u>-104.853673</u>	
QtrQtr: <u>SWNE</u>	Sec: <u>14</u>	Twp: <u>3N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: SPILL OR RELEASE	Facility ID: 481148	API #:	County Name: WELD
Facility Name: West Farm 2-14A Flowline Release	Latitude: 40.227220	Longitude: -104.854050	
** correct Lat/Long if needed: Latitude: Longitude:			
QtrQtr: SWNE	Sec: 14	Twp: 3N	Range: 67W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SW 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? Yes

Other Potential Receptors within 1/4 mile

Multiple buildings and livestock holding pens are located within ¼ mile of the facility.
The nearest building is located approximately 1,050 feet to the southwest.
The nearest domestic water well is located approximately 640 feet to the south.
Surface water is located approximately 170 feet to the east.
The wellhead is located within a designated high-priority habitat.

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 samples/laboratory analytical results
Yes	SOILS	120' (E-W) x 125' (N-S) x 5' 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.

On November 22, 2021, historically impacted soil was discovered during removal of the flowline associated with the West Farms 2-14A wellhead, and excavation activities were conducted as described in a previous Form 27-Supplemental update (COGCC Document No. 403249973). During impacted soil excavation activities along the former flowline, an abandoned concrete vessel (PIT) was discovered and removed from the site. Groundwater was encountered in the flowline / PIT excavation area at approximately 4 to 5 feet below ground surface (bgs). The COGCC issued Spill/Release Point ID 481148 for this release. The West Farms 2-14A wellhead was previously plugged and abandoned and no further activities are required at the former wellhead location, as described in a previous Form 27-Supplemental update (COGCC Document No. 402957578).

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):

Soil samples were collected from the final extent of the flowline / PIT excavation area, as described in a previous Form 27-Supplemental update (COGCC Document No. 403249973). Based on the data presented, impacted soils in the flowline / PIT excavation area were remediated to be in compliance with the COGCC Table 915-1 standards and/or within the range of site-specific background metals results, with exception to the TMB, PAHs, and/or Se concentrations in multiple samples. However, this material will be left in-place at this time to be addressed through quarterly groundwater monitoring, due to the proximity of the South Platte River, shallow groundwater depth, and associated safety concerns with unstable soils and the inability to safely remove additional material from the base and sidewalls of the excavation area and collect confirmation samples from these areas.

Proposed Groundwater Sampling

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

Groundwater was encountered in the flowline / PIT excavation area at approximately 4 to 5 feet bgs. On November 19, 2021 and January 13, 2022, groundwater samples FL-GW01 and PIT-GW01 were collected from the excavation area and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4- and 1,3,5-TMB by USEPA Method 8260D. Analytical results indicated that constituent concentrations in groundwater sample FL-GW01 were in compliance with COGCC Table 915-1 standards. Analytical results indicate that the 1,2,4-TMB concentration in sample PIT-GW01 exceeded the COGCC Table 915-1 standard. The excavation groundwater sample locations are illustrated on Figure 1, and groundwater analytical data is summarized in Table 1. Based on the remaining TMB, PAHs, and Se impacts in the flowline / PIT excavation area, future groundwater samples will be submitted for the COGCC Table 915-1 groundwater analytical suite, as well as PAHs and dissolved Se.

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):

No additional assessment activities have been conducted at this site since the previous Form 27-Supplemental update was submitted to the COGCC on March 31, 2023 (Document No. 403316183). Temporary groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the potential remaining groundwater impacts. Site access and monitoring well placements are currently being considered.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 97

Number of soil samples exceeding 915-1 66

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

Approximate areal extent (square feet) 12900

NA / ND

-- Highest concentration of TPH (mg/kg) 4679

-- Highest concentration of SAR 11.8

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 12

Groundwater

Number of groundwater samples collected 3

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 4

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 1

-- Highest concentration of Benzene (µg/l) 3.17

ND Highest concentration of Toluene (µg/l)

-- Highest concentration of Ethylbenzene (µg/l) 22

-- Highest concentration of Xylene (µg/l) 94.8

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?

Twenty (20) background soil samples were collected from the native material adjacent to the wellhead cut and cap and the PIT excavation areas, as described in a previous Form 27-Supplemental update (COGCC Document No. 403249973).

☐ 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?

Temporary groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the potential remaining groundwater impacts. Based on the remaining TMB, PAHs, and Se impacts in the flowline / PIT excavation area, the temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis the COGCC Table 915-1 groundwater analytical suite, as well as PAHs and dissolved Se.

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 November 19, 2021 and July 29, 2022, approximately 3,960 cubic yards of impacted material were excavated and transported to the Front Range Landfill in Erie, Colorado for disposal; approximately 780 cubic yards of impacted material were excavated and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal; approximately 1,400 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling. Between November 19, 2021 and July 29, 2022, approximately 22,903 barrels of groundwater were removed from the excavation area via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. Laboratory analytical results indicate that constituent concentrations in the confirmation soil samples collected from the final lateral and vertical extents of the flowline / PIT excavation area were in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background metals results, with exception to the TMB, PAHs, and/or Se concentrations in multiple samples. However, this material will be left in-place at this time, to be addressed through quarterly groundwater monitoring. Excavation activities to address remaining soil impacts associated with the PIT have been suspended, due to the proximity of the South Platte River, shallow groundwater depth, and safety concerns associated with soil stability and the inability to safely remove additional material from the base and sidewalls of the excavation area and collect confirmation samples from these areas. The excavation area will be backfilled and contoured to match pre-existing site conditions.

REMEDIAL ACTION 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.

The West Farms 2-14A wellhead was previously plugged and abandoned and no further activities are required at the former wellhead location, as described in a previous Form 27-Supplemental update (COGCC Document No. 402957578). Laboratory analytical results indicate that constituent concentrations in the soil samples collected from the final extents of the flowline / PIT excavation area were in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background metals results, with exception to the TMB, PAHs, and/or Se concentrations in multiple samples. However, this material will be left in-place at this time, to be addressed through quarterly groundwater monitoring. Excavation activities to address remaining soil impacts associated with the PIT have been suspended, due to the proximity of the South Platte River, shallow groundwater depth, and safety concerns associated with soil stability and the inability to safely remove additional material from the base and sidewalls of the excavation area and collect confirmation samples from these areas. Prior to backfilling, approximately 385 pounds of OxPure® activated carbon were added to the groundwater in the excavation area, to mitigate remaining groundwater impacts. Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the potential remaining groundwater impacts. Based on the remaining soil impacts, the temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for the COGCC Table 915-1 groundwater analytical suite, as well as PAHs and dissolved Se. Following the initiation of quarterly groundwater sampling activities, additional remediation measures may be evaluated, as necessary, to address potential remaining groundwater impacts. 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

☐ 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)

6140

Name of Licensed Disposal Facility or COGCC Facility ID #

149007

No

Excavate and onsite remediation

Land Treatment

Bioremediation (or enhanced bioremediation)

Chemical oxidation

Other

Groundwater Remediation Summary

No

Bioremediation (or enhanced bioremediation)

No

Chemical oxidation

No

Air sparge / Soil vapor extraction

Yes

Natural Attenuation

Yes

Other

Groundwater removal; activated carbon adsorption.

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.

Temporary groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the potential remaining groundwater impacts. Site access and monitoring well placements are currently being considered. Based on the remaining TMB, PAHs, and Se impacts to soil in the flowline / PIT excavation area, the temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis the COGCC Table 915-1 groundwater analytical suite, as well as PAHs and dissolved Se. A groundwater monitoring location figure illustrating the locations of the surveyed temporary 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 Project status update

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: \$ 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:

Approximately 1,400 cubic yards of impacted material have been excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling. Approximately 22,903 barrels of groundwater have been transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling.

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

E&P waste (solid) description Impacted soil

COGCC Disposal Facility ID #, if applicable: 149007

Non-COGCC Disposal Facility: Buffalo Ridge Landfill - Keenesburg, Colorado; Front Range Landfill - Erie, Colorado

Volume of E&P Waste (liquid) in barrels 22903

E&P waste (liquid) description Groundwater

COGCC Disposal Facility ID #, if applicable: 434766

Non-COGCC 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 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. Timeliness of reclamation initiation and completion will be subject to NFA, surface owner discretion and land use, and suitable ground conditions which allow for execution of surface reclamation activities so as to not cause unwarranted damages.

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? Yes

If YES, does the seed mix comply with local soil conservation district recommendations? Yes

Did the local soil conservation district provide the seed mix? No

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. 12/31/2026

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

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. 11/22/2021

Actual Spill or Release date, or date of discovery. 11/19/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/08/2021

Proposed site investigation commencement. 09/08/2021

Proposed completion of site investigation. 12/31/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 11/19/2021

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

Laboratory analytical results indicate that constituent concentrations in the soil samples collected from the final extents of the flowline / PIT excavation area were in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background metals results, with exception to the TMB, PAHs, and/or Se concentrations in multiple samples. However, this material will be left in-place at this time, to be addressed through quarterly groundwater monitoring. Excavation activities to address remaining soil impacts associated with the PIT have been suspended, due to the proximity of the South Platte River, shallow groundwater depth, and safety concerns associated with soil stability and the inability to safely remove additional material from the base and sidewalls of the excavation area and collect confirmation samples from these areas.

Based on the remaining TMB, PAHs, and Se impacts to soil in the flowline / PIT excavation area, future groundwater samples will be submitted for the COGCC Table 915-1 groundwater analytical suite, as well as PAHs and dissolved Se. Form 27-Supplemental updates will be submitted to the COGCC on a quarterly basis until the extent of groundwater impacts has been fully delineated. The project implementation summary is provided as Attachment A.

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

Signed: Gregory Hamilton

Title: Senior Env. Consultant

Submit Date: 05/31/2023

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: Taylor Robinson

Date: 07/11/2023

Remediation Project Number: 19714

COA Type**Description**

	COGCC does not approve leaving organic or selenium impacts in situ in soil. Operator shall define the vertical and lateral extent of impacts and propose a remedial strategy.
1 COA	

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**

403417202	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403417225	GROUND WATER SAMPLE LOCATION
403417226	IMPLEMENTATION SCHEDULE
403417228	ANALYTICAL RESULTS
403460872	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 5 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)