

# State of Colorado Oil and Gas Conservation Commission

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Document Number:

403249973

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 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: KERR MCGEE OIL & GAS ONSHORE LP	Operator No: 47120	<b>Phone Numbers</b>  Phone: (970) 336-3500 Mobile: (970) 515-1698
Address: P O BOX 173779		
City: DENVER	State: CO Zip: 80217-3779	
Contact Person: Gregory Hamilton	Email: Gregory_Hamilton@oxy.com	

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

Facility Type: <u>SPILL OR RELEASE</u>		Facility ID: <u>481148</u>	API #: _____	County Name: <u>WELD</u>	
Facility Name: <u>West Farm 2-14A Flowline Release</u>		Latitude: <u>40.227220</u>		Longitude: <u>-104.854050</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>

## **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 1/4 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:**

- |  |  |  |
|--|--|--|
| <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 checked="" 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 samples/laboratory analytical results
Yes	SOILS	120' (E-W) x 125' (N-S) x 12' 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, historical soil impacts were discovered during removal of the flowline associated with the West Farms 2-14A wellhead, and excavation activities were initiated. 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). 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). Based on field screening and preliminary analytical results, soil samples FL-B04@4' and PIT-N01@4' were selected for waste characterization purposes and were submitted for laboratory analysis of the full Table 915-1 analytical suite, using standard methods appropriate for detecting the target analytes. Analytical results indicated that soil impacts due to benzene, ethylbenzene, total petroleum hydrocarbons (TPH), 1,2,4- and 1,3,5-trimethylbenzene (TMB), polycyclic aromatic hydrocarbons (PAHs), and selenium (Se) were present at the former flowline / PIT location. As such, a Form 19-Initial/Supplemental Spill/Release Report was submitted on November 23, 2021, and the COGCC issued Spill/Release Point ID 481148. Excavation and site assessment activities to address remaining soil impacts associated with the PIT have been placed on hold, as described herein. Soil and groundwater sample location and field screening data are presented in Table 1. The final PIT excavation extent and associated soil and groundwater sample locations are illustrated on Figure 1.

### **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 base and sidewalls of the PIT excavation area, at depths ranging from approximately 4 feet to 12 feet bgs. Based on the results for waste characterization soil sample PIT-N01@4' (highest degree of impacts), subsequent confirmation soil samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), TMB, and TPH - GRO (C6-C10), DRO (C10-C28), and ORO (C28-C40), PAHs, and Se. Analytical results for the soil samples collected from the final excavation extent indicated that impacts due to TMB, PAHs, and/or Se remained at multiple sample locations. However, excavation activities to address remaining soil impacts have been placed on hold, and Kerr-McGee is requesting the Director's approval to leave the remaining soil impacts in-place at this time, to be addressed through quarterly groundwater monitoring as described herein.

## 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. Groundwater analytical data is presented in Table 6. Based on the remaining PAHs and Se impacts in the 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 ):

Excavation and site assessment activities to address remaining soil impacts associated with the PIT have been placed on hold, due to 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. Soil and groundwater sample location and field screening data are presented in Table 1. Soil analytical results are presented in Tables 2 through 5. Groundwater analytical results are presented in Table 6. The final PIT excavation extent and associated soil and groundwater sample locations are illustrated on Figure 1. The laboratory analytical reports as well as the field notes and photographic log were provided in a previous Form 27-Supplemental update (COGCC Document No. 403150233).

# 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, at depths ranging from approximately 2 feet to 10 feet bgs. The background soil samples were submitted for laboratory analysis of the Soil Suitability for Reclamation Parameters and/or Table 915-1 metals using standard methods appropriate for detecting the target analytes in Table 915-1.

☐ 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?

Impacted soil and groundwater remain at the site. Excavation and site assessment activities to address remaining soil impacts associated with the PIT have been placed on hold, due to 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. Groundwater monitoring wells will be installed at the site to fully define the nature and extent of the remaining groundwater impacts. The temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of 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. Excavation and site assessment activities to address remaining soil impacts associated with the PIT have been placed on hold, due to 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. The excavation area will be backfilled and contoured to match pre-existing conditions.

### 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.

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). Impacted soil and groundwater remain at the site, associated with the former PIT location. Laboratory analytical results for the soil samples collected from the final excavation extent indicated that impacts due to TMB, PAHs, and/or Se remained at multiple sample locations. However, excavation activities to address remaining soil impacts have been placed on hold, due to 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, and Kerr-McGee is requesting the Director's approval to leave the remaining soil impacts in-place at this time, to be addressed through quarterly groundwater monitoring. Prior to backfilling, approximately 385 pounds of OxPure® activated carbon were added to the groundwater within the excavation area, to mitigate remaining hydrocarbon impacts in groundwater. The SDS for the activated carbon is provided as Attachment A. Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the remaining groundwater impacts. Based on the remaining PAH and Se impacts to be left in place in the 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. 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 )

Yes \_\_\_\_\_ Excavate and offsite disposal

\_\_\_\_\_ Chemical oxidation

\_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) 6140

\_\_\_\_\_ Air sparge / Soil vapor extraction

\_\_\_\_\_ Name of Licensed Disposal Facility or COGCC Facility ID # 149007

\_\_\_\_\_ Natural Attenuation

No \_\_\_\_\_ Excavate and onsite remediation

\_\_\_\_\_ Other \_\_\_\_\_

\_\_\_\_\_ 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.

Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the remaining groundwater impacts. Based on the remaining PAH and Se impacts to soil in the 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.

## 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 Remediation progress 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:

## 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? 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.

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. 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. \_\_\_\_\_

### **REMEDIAL ACTION DATES**

Proposed start date of Remediation. 11/19/2021

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

Excavation and site assessment activities to address remaining soil impacts associated with the PIT have been placed on hold, due to 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. As such, Kerr-McGee is requesting the Director's approval to leave the remaining soil impacts in-place at this time, to be addressed through quarterly groundwater monitoring. Based on the remaining PAH and Se impacts in the 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.

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

Signed: Gregory Hamilton

Title: Environmental Consultant

Submit Date: \_\_\_\_\_

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: \_\_\_\_\_

Date: \_\_\_\_\_

Remediation Project Number: 19714

## COA Type

## Description

0 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

403250199	OTHER
403250205	SOIL SAMPLE LOCATION MAP
403250207	ANALYTICAL RESULTS

Total Attach: 3 Files

## General Comments

### User Group

### Comment

### Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)