

State of Colorado  
Oil and Gas Conservation Commission

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403217306  
Receive Date:  
03/29/2023  
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 &amp; GAS ONSHORE LP</u>	Operator No: <u>47120</u>	<b>Phone Numbers</b>
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>
Contact Person: <u>Phillip Hamlin</u>	Email: <u>Phillip_Hamlin@oxy.com</u>	Mobile: <u>( )</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 18130 Initial Form 27 Document #: 402687604

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: Closure of remediation project

SITE INFORMATION

Yes  Multiple Facilities

Facility Type: <u>LOCATION</u>	Facility ID: <u>332165</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>RUBY O-64N67W 15SWSE</u>	Latitude: <u>40.307469</u>	Longitude: <u>-104.875404</u>	
	** correct Lat/Long if needed: Latitude: <u>40.308064</u>	Longitude: <u>-104.876720</u>	
QtrQtr: <u>SWSE</u>	Sec: <u>15</u>	Twp: <u>4N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>480244</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Star O 15-10, 23 Dump Line Release</u>	Latitude: <u>40.308222</u>	Longitude: <u>-104.876712</u>	
	** correct Lat/Long if needed: Latitude: _____	Longitude: _____	
QtrQtr: <u>SWSE</u>	Sec: <u>15</u>	Twp: <u>4N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

## **SITE CONDITIONS**

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use Residential

Is domestic water well within 1/4 mile? No

Is surface water within 1/4 mile? Yes

Is groundwater less than 20 feet below ground surface? Yes

### **Other Potential Receptors within 1/4 mile**

Surface water is located approximately 1,300 feet east of the facility.  
Multiple buildings and livestock holding pens are located within 1/4 mile of the facility.  
A designated high priority habitat is located within 1/4 mile to the east of the facility.

# 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 sampling and laboratory analytical results
Yes	SOILS	18' (E-W) x 13' (N-S) x 5' bgs	Excavation, soil sampling, and 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.

On June 28, 2021, historical impacts were discovered below the dump lines during decommissioning activities at the Star O 15-10 production facility location, and excavation activities were initiated. Groundwater was encountered in the dump line excavation area at approximately 4 feet below ground surface (bgs). The COGCC issued Spill/Release Point ID 480244 for this release.

## 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 excavation extent, as described in a previous Form 27-Supplemental update (Document No. 402791688). Based on the data presented, impacted soils in the excavation area were remediated to be in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background results. Per that COA that was issued, soil samples were also collected from each soil boring location (BH01 - BH06) during monitoring well installation activities on January 18, 2022. The borehole soil samples were submitted for laboratory analysis of Table 915-1 VOCs, TPH, and PAHs, using standard methods appropriate for detecting the target analytes. Analytical results for the borehole soil samples indicated that constituent concentrations were in compliance with the applicable COGCC Table 915-1 standards. Soil sample analytical data is presented in Tables 2 through 5. The decommissioning and excavation soil sample locations are illustrated on Figure 1.

### Proposed Groundwater Sampling

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

On June 25, 2021, groundwater sample DL-GW01 was collected from the dump line excavation area and submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, 1,2,4- and 1,3,5-trimethylbenzene (TMB). Analytical results indicated that the benzene concentration in sample DL-GW01 exceeded the COGCC Table 915-1 groundwater standard. Quarterly groundwater monitoring was initiated on January 27, 2022, at temporary monitoring wells BH01 - BH06 and was continued until concentrations remained in compliance with the COGCC Table 915-1 standards. Groundwater analytical data is presented in Table 1. The excavation groundwater sample location is illustrated on Figure 1. The monitoring well locations are illustrated on Figures 2 through 5. Laboratory analytical reports for the quarterly groundwater monitoring activities are provided as Attachment A.

### 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 17

Number of soil samples exceeding 915-1 1

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

Approximate areal extent (square feet) 234

### NA / ND

-- Highest concentration of TPH (mg/kg) 823.8  
5

-- Highest concentration of SAR 2.18

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 5

### Groundwater

Number of groundwater samples collected 31

Was extent of groundwater contaminated delineated? Yes

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

Number of groundwater monitoring wells installed 6

Number of groundwater samples exceeding 915-1 4

-- Highest concentration of Benzene (µg/l) 18.5

-- Highest concentration of Toluene (µg/l) 79.9

-- Highest concentration of Ethylbenzene (µg/l) 5.82

-- Highest concentration of Xylene (µg/l) 99.3

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?

Background soil sample PW-BG01@2' was collected from native material adjacent to the production facility location, as described in a previous Form 27-Supplemental update (COGCC Document No. 402791688).

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?

## 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 June 25 and August 19, 2021, approximately 110 cubic yards of impacted material were removed from the dump line excavation area and transported to the Front Range Landfill in Erie, Colorado for disposal. Laboratory analytical results indicated that constituent concentrations in the soil samples collected from the final lateral and vertical extents of the excavation area were in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background results. The final excavation extent and associated sample locations are illustrated 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.

Laboratory analytical data indicate that impacted soils in the excavation area have been remediated to be in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background results. Groundwater analytical results indicate that the BTEX, naphthalene, and TMB concentrations were in compliance with the COGCC Table 915-1 standards for greater than four consecutive quarters. Groundwater analytical results indicate that the TDS, chloride, and sulfate concentrations were in compliance with the COGCC Table 915-1 standards and/or within the range of site-specific background concentrations x1.25 during the First Quarter 2023 groundwater monitoring event. Based on the analytical data presented herein, remediation is complete at this site and Kerr-McGee is requesting a No Further Action (NFA) determination for this release.

## Soil Remediation Summary

In Situ

Ex Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

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

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

\_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 110

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

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

\_\_\_\_\_ 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

No \_\_\_\_\_ 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.

On January 18, 2022, 6 temporary groundwater monitoring wells (BH01 - BH06) were installed to assess the extent of the potentially remaining groundwater impacts. The monitoring wells were sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. Upgradient dedicated background monitoring well BH01 was selected as the site-specific background location for comparison to inorganic groundwater standards in Table 915-1. Based on a comparison to site-specific background concentrations, inorganic constituents in all of the site monitoring wells were in compliance with Table 915-1 standards during the First Quarter 2023. In response to the COGCC Comment, organic parameter trends were examined over time with respect to background concentrations and groundwater elevation. Based on this evaluation, the elevated TDS and sulfate concentrations observed in monitoring well BH06 are directly correlated with a rise in groundwater elevation at the site. As a result, it is believed that the rise in inorganic concentrations in this well is related to the influx of groundwater mobilizing these constituents from the irrigated crop land located directly upgradient of the site, or from other native material. Upgradient monitoring wells BH01 and BH02 also exhibited higher inorganic concentrations during periods of higher groundwater elevation, although the difference was not as pronounced as in BH06. During the First Quarter 2023, groundwater elevation dropped, and inorganic constituents decreased in BH01 and BH02, and were below Table 915-1 standards in BH06. As such, Kerr-McGee is requesting a No Further Action (NFA) determination for this site. Temporary groundwater monitoring well locations and quarterly groundwater elevation contour maps are illustrated on Figures 2 through 5. Well completion logs for the temporary monitoring wells are provided as Attachment B. Inorganic groundwater trend graphs for TDS and sulfate are provided as Attachment C.

# 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 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: \$ 0

## 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:

Volume of E&P Waste (solid) in cubic yards 110

E&P waste (solid) description Impacted soil

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: Front Range Landfill - Erie, Colorado

Volume of E&P Waste (liquid) in barrels 0

E&P waste (liquid) description \_\_\_\_\_

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

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? Yes

Does the previous reply indicate consideration of background concentrations? Yes

Does Groundwater meet Table 915-1 standards? Yes

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. 06/29/2021

Actual Spill or Release date, or date of discovery. 06/28/2021

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/23/2021

Proposed site investigation commencement. 06/23/2021

Proposed completion of site investigation. 01/18/2022

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 06/25/2021

Proposed date of completion of Remediation. 01/19/2023

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

As described, laboratory analytical data for the soil samples collected from the final lateral and vertical extents of the excavation area were in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background results. Laboratory analytical data for the groundwater samples collected from the temporary monitoring wells indicated that the BTEX, naphthalene, and TMB concentrations were in compliance with the COGCC Table 915-1 standards for four consecutive quarters. Based on a comparison to site-specific background concentrations, inorganic constituents in all of the site monitoring wells were in compliance with Table 915-1 standards during the First Quarter 2023. In response to the COGCC Comment, organic parameter trends were examined over time with respect to background concentrations and groundwater elevation. Based on this evaluation, the elevated TDS and sulfate concentrations observed in monitoring well BH06 are directly correlated with a rise in groundwater elevation at the site. As a result, it is believed that the rise in inorganic concentrations in this well is related to the influx of groundwater mobilizing these constituents from the irrigated crop land located directly upgradient of the site, or from other native material. Upgradient monitoring wells BH01 and BH02 also exhibited higher inorganic concentrations during periods of higher groundwater elevation, although the difference was not as pronounced as in BH06. During the First Quarter 2023, groundwater elevation dropped, and inorganic constituents decreased in BH01 and BH02, and were below Table 915-1 standards in BH06. Groundwater analytical results are summarized in Table 1; soil analytical results are summarized in Tables 2 through 5. The decommissioning and excavation soil and groundwater sample locations are illustrated on Figure 1; temporary monitoring well locations and quarterly groundwater contour maps are illustrated on Figures 2 through 5. Laboratory analytical reports for the quarterly groundwater monitoring activities are provided as Attachment A; temporary monitoring well completion logs are provided as Attachment B; inorganic groundwater trend graphs for TDS and sulfate are provided as Attachment C; a project implementation summary is provided as Attachment D. Based on the remediation activities completed at the site and the analytical results presented herein, Kerr-McGee is requesting an NFA determination for this location.

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

Signed: Phillip Hamlin

Title: Senior Environmental Rep

Submit Date: 03/29/2023

Email: Phillip\_Hamlin@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: 04/05/2023

Remediation Project Number: 18130

## COA Type

## Description

	As the Operator has achieved four consecutive clean quarters for organics, the COGCC will allow the Operator to reduce their monitoring program to include only TDS and sulfate.
	COGCC has removed the Operator's request for closure. More data is needed to establish a decreasing trend in TDS and sulfate. The Operator will continue quarterly groundwater monitoring for TDS and sulfate.
2 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

403217306	FORM 27-SUPPLEMENTAL-SUBMITTED
403344572	LOGS
403344574	SOIL SAMPLE LOCATION MAP
403344576	GROUND WATER ELEVATION MAP
403344583	OTHER
403344585	ANALYTICAL RESULTS
403344594	ANALYTICAL RESULTS
403344595	ANALYTICAL RESULTS
403344890	IMPLEMENTATION SCHEDULE

Total Attach: 9 Files

## General Comments

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

Total: 0 comment(s)