

State of Colorado  
Oil and Gas Conservation Commission

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Document Number:  
402784997  
Receive Date:  
09/01/2021

Report taken by:  
PETER GINTAUTAS

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>Phil Hamlin</u>	Email: <u>Phil_Hamlin@oxy.com</u>	Mobile: <u>( )</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9407 Initial Form 27 Document #: 200438326

PURPOSE INFORMATION

- Rule 913.c.(1): Pit or Cuttings Trench closure.
- Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912.
- Rule 913.c.(4): Land treatment of Oily Waste pursuant to Rule 905.e.
- Rule 913.c.(5): Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h.
- Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.
- Rule 913.c.(7): Investigation and remediation of natural gas in soil or Groundwater.
- Rule 913.c.(8): When requested by the Director due to any potential risk to soil, Groundwater, or surface water.
- Rule 913.c.(9): Decommissioning of Oil and Gas Facilities.
- Rule 913.g: Changes of Operator.
- Rule 915.b: Request to leave elevated inorganics in situ.
- Other: \_\_\_\_\_

SITE INFORMATION

No  Multiple Facilities

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>443083</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>SPILL/RELEASE POINT</u>	Latitude: <u>40.215889</u>	Longitude: <u>-104.938253</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NWNW</u>	Sec: <u>19</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 CL Most Sensitive Adjacent Land Use Agriculture  
 Is domestic water well within 1/4 mile? Yes 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**

Water well approximately 570 feet (ft) northwest, livestock approximately 1,180 feet north, occupied building approximately 850 ft south, and groundwater approximately 5 ft below ground surface (bgs).

**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 Sampling/Laboratory Analysis
Yes	SOILS	36ft N-S x 30ft E-W x 8.5ft bgs	Soil Sampling/Laboratory Analysis

**INITIAL ACTION SUMMARY**

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

While deconstructing the HSR-Sekich 31-19 (formally HSR-Sekich-63N67W/19SWNW) location, soil with historical petroleum hydrocarbon impacts was encountered beneath the production tanks. The volume of the release is unknown. The petroleum hydrocarbon impacted soil was excavated.

**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 ):

On August 24 and 25, 2015, seven soil samples were collected from the excavation sidewalls for laboratory analysis of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and total xylenes (BTEX), pH, and specific conductivity (EC). Laboratory analytical results indicated that the soil samples were in full compliance with COGCC Table 910-1 allowable levels for TPH, BTEX, and EC at the lateral extent of the excavation. Soil sample N01@6.5' exceeded the COGCC Table 910-1 allowable level for pH at 9.07 standard units. However, this sample was collected below the root zone (depth greater than 3 ft bgs); therefore, no further excavation was necessary. The excavation extent and soil sample locations are depicted on Figure 1. The soil sample analytical results are summarized in Table 1.

**Proposed Groundwater Sampling**

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

On August 25, 2015, one groundwater sample (GW01) was collected from the excavation and submitted for laboratory analysis of BTEX. Laboratory analytical results indicated sample GW01 exceeded the COGCC Table 910-1 allowable levels for benzene and total xylenes at concentrations of 45.7 micrograms per liter (µg/L) and 3,090 µg/L, respectively. The excavation groundwater sample location is depicted on Figure 1. The groundwater sample analytical results are summarized in Table 2.

**Proposed Surface Water Sampling**

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

**Additional Investigative Actions**

Additional alternative investigative actions described in attached Site Investigation Plan ( summary ):

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 7  
Number of soil samples exceeding 915-1 2  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 1110

### NA / ND

-- Highest concentration of TPH (mg/kg) 1250  
NA Highest concentration of SAR           
BTEX > 915-1 Yes  
Vertical Extent > 915-1 (in feet) 7

### Groundwater

Number of groundwater samples collected 190  
Was extent of groundwater contaminated delineated? Yes  
Depth to groundwater (below ground surface, in feet) 5'  
Number of groundwater monitoring wells installed 16  
Number of groundwater samples exceeding 915-1 22

-- Highest concentration of Benzene (µg/l) 3690  
-- Highest concentration of Toluene (µg/l) 1960  
-- Highest concentration of Ethylbenzene (µg/l) 377  
-- Highest concentration of Xylene (µg/l) 4020  
NA Highest concentration of Methane (mg/l)         

### Surface Water

0 Number of surface water samples collected  
         Number of surface water samples exceeding 915-1  
If surface water is impacted, other agency notification may be required.

## OTHER INVESTIGATION INFORMATION

Were impacts to adjacent property or offsite impacts identified?

Were background samples collected as part of this site investigation?

Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards)          Volume of liquid waste (barrels)         

Is further site investigation required?

## 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 270 cubic yards of impacted soil were removed from the 2007 excavation and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling. The impacted soil was excavated into the capillary and phreatic zones to address potential hydrocarbon impacts that may have been present below the groundwater table due to past seasonal fluctuations. The general site layout and excavation footprint are depicted on the Site Map provided as Figure 2.

### 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.

While backfilling the excavation, 150 pounds of COGAC®, a carbon-based bioremediation product designed to capture and degrade petroleum hydrocarbons via chemical oxidation and passive bio-stimulation, were applied to the clean backfill in a series of lifts in the capillary and phreatic horizons.

Measurable free product was detected in monitoring well MW02 in September 2016. In October 2016, MW02 was replaced with two-inch monitoring well MW02R. A product skimmer was installed in the well in March 2017, and product recovery events resumed on a bi-monthly schedule. To date, a total of approximately 710 gallons of free product mixed with groundwater have been purged from the monitoring well and transferred to a Kerr-McGee produced water sump or transferred to the Aggregate Recycle Facility in Weld County, Colorado, for recycling. The quarterly depth to water and depth to product measurements are summarized in Table 2.

On August 14, 2019, three fluid recovery wells (EFR01 through EFR03) were installed around groundwater monitoring well MW02R. First event October 30, 2019. A series of enhanced fluid recovery events were conducted on October 17, 2019, October 31, 2019, and December 13, 2019 to address remaining free product in MW02R. Monitoring well MW02R has been in full compliance with COGCC Table 910-1 allowable levels for BTEX since the enhanced fluid recovery events were initiated. The EFR wells are depicted on Figure 2. Laboratory analytical results are summarized in Table 2.

### Soil Remediation Summary

<input type="checkbox"/> In Situ	<input checked="" type="checkbox"/> Ex Situ
_____ Bioremediation ( or enhanced bioremediation )	Yes Excavate and offsite disposal
_____ Chemical oxidation	If Yes: Estimated Volume (Cubic Yards) _____ 270
_____ 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

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

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

No \_\_\_\_\_ Air sparge / Soil vapor extraction

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

Yes \_\_\_\_\_ Other COGAC® Application and Free Product Removal \_\_\_\_\_

### 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.

Between December 2015 and November 2019, nine groundwater monitoring wells (MW01 through MW09), four temporary monitoring wells (TMW01 through TMW04), and three replacement monitoring wells (MW02R, MW06R, and MW06R2) were installed at the site. Groundwater monitoring continued on a quarterly basis. The monitoring well locations are depicted on Figure 2. Boring logs with monitoring well completion diagrams are attached.

In January 2016, monitoring wells MW01 through MW04 were surveyed to obtain the relative groundwater and top-of-casing well elevation data. The survey data indicated the groundwater flow direction at the site is to the northeast. Between November 2017 and May 2020, monitoring wells MW01 through MW09, MW02R, MW06R, and MW06R2 and temporary monitoring wells TMW01 through TMW04 were surveyed to obtain the relative groundwater and top-of-casing well elevation data. The survey data indicated the groundwater flow direction at the site is to the east, northeast and northwest. Relative groundwater elevations are provided in Table 2. Groundwater Elevation Contour Maps for the fourth quarter 2020 through third quarter 2021 monitoring events are provided as Figures 3A through 3D, respectively.

As of the July 2021 quarterly monitoring event, BTEX concentrations in monitoring wells MW01 through MW09 and temporary monitoring wells TMW01 through TMW04 were in full compliance with COGCC Table 910-1 allowable levels for four consecutive quarterly monitoring events. The groundwater analytical results are summarized in Table 2. The laboratory analytical reports for the four compliant groundwater monitoring events are attached.

Kerr-McGee Oil and Gas Onshore, LP has requested and been approved for a variance to continue sampling groundwater for BTEX under the COGCC Table 910-1 standards, as defined under the 900 Series Rule 915.f. for Remediations in Progress.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

### Approved Reporting Schedule:

Quarterly  Semi-Annually  Annually  Other \_\_\_\_\_

### Request Alternative Reporting Schedule:

Semi-Annually  Annually  Other Final Report

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 \_\_\_\_\_

## 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:

The petroleum hydrocarbon impacted soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling.

Volume of E&P Waste (solid) in cubic yards 270  
E&P waste (solid) description Petroleum hydrocarbon impacted soil  
COGCC Disposal Facility ID #, if applicable: 149007  
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: \_\_\_\_\_

# REMEDIATION COMPLETION REPORT

## REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes  
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? \_\_\_\_\_

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 Kerr-McGee facility was deconstructed. The site will be reclaimed in accordance with COGCC 1000 Series Reclamation Rules.

Is the described reclamation complete? No \_\_\_\_\_

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

Interim  Final

Did the Surface Owner provide the seed mix? \_\_\_\_\_

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

Did the local soil conservation district provide the seed mix? \_\_\_\_\_

## SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. \_\_\_\_\_

Proposed date of completion of Reclamation. \_\_\_\_\_

## IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

### PRIOR DATES

Date of Surface Owner notification/consultation, if required. 08/26/2015

Actual Spill or Release date, or date of discovery. 08/26/2015

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 08/24/2015

Proposed site investigation commencement. 08/26/2015

Proposed completion of site investigation. 02/16/2018

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 08/26/2015

Proposed date of completion of Remediation. 07/08/2021

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**

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

Signed: Phil Hamlin \_\_\_\_\_

Title: Senior Environmental Rep. \_\_\_\_\_

Submit Date: 09/01/2021 \_\_\_\_\_

Email: Phil\_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: PETER GINTAUTAS \_\_\_\_\_

Date: 09/01/2021 \_\_\_\_\_

Remediation Project Number: 9407 \_\_\_\_\_

**Condition of Approval****COA Type****Description**

1 COA	Based on the information presented, it is concluded that no further action is necessary at this time and the COGCC approves the closure request based the remediation actions taken by the Operator and the analytical results presented. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if ground water is found to be impacted, then further investigation and/or further remediation activities may be required. In addition, the surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules as required by rule 913.b.(6).
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**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**

402784997	FORM 27-SUPPLEMENTAL-SUBMITTED
402785085	LOGS
402790445	ANALYTICAL RESULTS
402790506	GROUND WATER ELEVATION MAP
402790510	SITE MAP
402790511	SOIL SAMPLE LOCATION MAP

Total Attach: 6 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)