

# State of Colorado Oil and Gas Conservation Commission

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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.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

### 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>(970) 515-1161</u>

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 9549 Initial Form 27 Document #: 200439143

#### PURPOSE INFORMATION

- |  |  |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination                                       | <input checked="" type="checkbox"/> 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water        |
| <input type="checkbox"/> 909.c.(1), Rule 905: Pit or PW vessel closure                             | <input type="checkbox"/> Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b. |
| <input checked="" type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation                 | <input type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project                                  |
| <input type="checkbox"/> 909.c.(3), Rule 907.e.: Land treatment of oily waste                      | <input type="checkbox"/> Rule 906.c.: Director request   |
| <input type="checkbox"/> 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure | <input type="checkbox"/> Other _____   |

#### SITE INFORMATION

N Multiple Facilities ( in accordance with Rule 909.c. )

Facility Type: <u>PIT</u>	Facility ID: <u>103144</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>HELGOTH HEIRS 1</u>	Latitude: <u>40.117610</u>	Longitude: <u>-104.732555</u>	
	** correct Lat/Long if needed: Latitude: <u>40.117610</u>	Longitude: <u>-104.732555</u>	
QtrQtr: <u>SWSW</u>	Sec: <u>24</u>	Twp: <u>2N</u>	Range: <u>66W</u>
	Meridian: <u>6</u>	Sensitive Area? <u>Yes</u>	

#### SITE CONDITIONS

General soil type - USCS Classifications CL Most Sensitive Adjacent Land Use Crop Land

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

The nearest domestic water well is located approximately 1,050 feet northwest of the release location.

# 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 and laboratory analysis
Yes	SOILS	54' (E-W) x 128' (N-S) x 25' bgs	Excavation, soil boring, 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.

Between March 13 and April 8, 2013, a Limited Phase II Site Assessment was conducted at the Helgoth Heirs Unit #1 production facility. Historical impacts to soil and groundwater were discovered during this investigation. The facility was subsequently abandoned, associated infrastructure was removed, and excavation activities were initiated. The COGCC issued Spill/Release Point ID 2232617 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 during the Limited Phase II Site Assessment and subsequent excavation activities, as described in the Initial Form 27 (COGCC Document No. 2525951) and the associated Supplemental Remedial Report (COGCC Document No. 2525953). Based on the data presented, impacted soils remain in place at approximately 19 feet below ground surface (bgs) in the southern portion of the northern excavation area. The estimated extent of remaining soil impacts is illustrated on Figure 1.

### Proposed Groundwater Sampling

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

Between March 13, 2013 and June 19, 2019, forty-six (46) temporary monitoring wells (SB01 - SB42, SB07R, SB08R, SB11R, SB13R) were installed to assess the extent of groundwater impacts and for remediation purposes. Quarterly groundwater sampling was initiated on January 13, 2014, and is ongoing at the thirty-one (31) monitoring wells remaining at the site (SB07R, SB08R, SB10, SB11R, SB13R, SB17 - SB42). Monitoring wells SB01 - SB06, SB09, SB12, and SB14 - SB16 were removed during excavation activities; monitoring wells SB07, SB08, SB11, and SB13 were historically dry or damaged, and were subsequently replaced. Groundwater analytical data is presented in Table 1, and the groundwater sample locations are illustrated on Figure 1. The laboratory analytical reports for the previous four quarters of groundwater monitoring 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 47  
Number of soil samples exceeding 910-1 10  
Was the areal and vertical extent of soil contamination delineated? No  
Approximate areal extent (square feet) 4930

### NA / ND

-- Highest concentration of TPH (mg/kg) 6700  
NA Highest concentration of SAR           
BTEX > 910-1 Yes  
Vertical Extent > 910-1 (in feet) 25

### Groundwater

Number of groundwater samples collected 385  
Was extent of groundwater contaminated delineated? Yes  
Depth to groundwater (below ground surface, in feet) 20'  
Number of groundwater monitoring wells installed 46  
Number of groundwater samples exceeding 910-1 118

-- Highest concentration of Benzene (µg/l) 3340  
-- Highest concentration of Toluene (µg/l) 5420  
-- Highest concentration of Ethylbenzene (µg/l) 1980  
-- Highest concentration of Xylene (µg/l) 23800  
NA Highest concentration of Methane (mg/l)         

### Surface Water

0 Number of surface water samples collected  
0 Number of surface water samples exceeding 910-1  
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?

Impacted soil and groundwater remain at the site. The 31 existing temporary groundwater monitoring wells (SB07R, SB08R, SB10, SB11R, SB13R, SB17 - SB42) will continue to be sampled on a quarterly basis and submitted for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4- and 1,3,5-trimethylbenzene (TMB), chloride, sulfate, and total dissolved solids (TDS) until concentrations remain in full compliance with the COGCC Table 915-1 standards for four consecutive quarters. Additional remediation measures are currently under evaluation.

# 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 July 29 and December 20, 2013, approximately 2,760 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado.

## REMEDIATION SUMMARY

Describe how remediation of existing impacts to soil and groundwater is to be accomplished (i.e. summarize remedial action plan). Provide a brief narrative description including: technical justification, schedule for implementation, estimated time to attain NFA status, plus plans and specifications for the selected remedial action technology.

As described in the Supplemental Remedial Report (COGCC Document No. 2525953), hydrocarbon-impacted soil and groundwater remain at the site. A solar-powered light non-aqueous phase liquid (LNAPL) recovery system (Spill Buster) was installed in temporary monitoring well SB23, and LNAPL recovery activities were initiated on February 14, 2014. On March 4, 2014, passive LNAPL bailers were installed in wells SB21 and SB22, and bi-weekly LNAPL gauging and recovery events were initiated to supplement Spill Buster LNAPL recovery activities. The Spill Buster and passive LNAPL bailers have been re-deployed to various wells based on field observations and to optimize LNAPL removal. The Spill Buster was removed from the site on September 13, 2018, but manual LNAPL gauging and recovery activities are ongoing. To-date, a total of approximately 3 barrels of LNAPL have been removed via Spill Buster operation and LNAPL bailing, and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado. Quarterly groundwater monitoring is ongoing and will be continued until concentrations remain in full compliance with the COGCC Table 915-1 standards for four consecutive quarters. Additional remediation measures are currently under evaluation to address remaining soil and groundwater impacts at the site. Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of soil and groundwater impacts, and the efficacy of the selected remedial technologies.

## Soil Remediation Summary

☐ In Situ

Bioremediation ( or enhanced bioremediation )

Chemical oxidation

Air sparge / Soil vapor extraction

Natural Attenuation

Other

☒ Ex Situ

Yes Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) 2760

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 LNAPL recovery

## 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 March 13, 2013 and June 19, 2019, a total of 46 temporary monitoring wells (SB01 - SB42, SB07R, SB08R, SB11R, SB13R) were installed to assess the extent of groundwater impacts and for remediation purposes. Monitoring wells SB01 - SB06, SB09, SB12, and SB14 - SB16 were subsequently removed during excavation activities; monitoring wells SB07, SB08, SB11, and SB13 were historically dry or damaged, and were subsequently replaced. The 31 existing temporary groundwater monitoring wells (SB07R, SB08R, SB10, SB11R, SB13R, SB17 - SB42) will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX, naphthalene, TMB, chloride, sulfate, and TDS until concentrations remain in full compliance with the COGCC Table 915-1 standards for four consecutive quarters. Groundwater sample locations are illustrated on Figure 1, and a potentiometric surface contour map for the First Quarter 2021 is presented as Figure 2. Well completion logs for the temporary monitoring wells are provided as Attachment B.

## REMEDIATION PROGRESS UPDATE

### PERIODIC REPORTING

**Frequency:** ☒ Quarterly ☐ Semi-Annually ☐ Annually ☐ Other \_\_\_\_\_

**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:

Approximately 2,760 cubic yards of impacted soil were transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado, for recycling.  
Approximately 3 barrels of LNAPL 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 \_\_\_\_\_ 2760

E&P waste (solid) description \_\_\_\_\_ Hydrocarbon-impacted soil

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_ 149007

Non-COGCC Disposal Facility: \_\_\_\_\_

Volume of E&P Waste (liquid) in barrels \_\_\_\_\_ 3

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

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 \_\_\_\_\_

Do all soils meet Table 910-1 standards? No \_\_\_\_\_

Does the previous reply indicate consideration of background concentrations? \_\_\_\_\_

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? No \_\_\_\_\_

Does Groundwater meet Table 910-1 standards? No \_\_\_\_\_

Is additional groundwater monitoring to be conducted? Yes \_\_\_\_\_

## 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 has been restored to its pre-release grade. Kerr-McGee will conduct reclamation activities in accordance with COGCC 1000 Series 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 approve the seed mix? \_\_\_\_\_

If NO, does the seed mix comply with local soil conservation district recommendations? \_\_\_\_\_

## IMPLEMENTATION SCHEDULE

### **PRIOR DATES**

Date of Surface Owner notification/consultation, if required. \_\_\_\_\_

Actual Spill or Release date, if known. \_\_\_\_\_

### **SITE INVESTIGATION DATES**

Date of Initial Actions described in Site Investigation Plan (start date). 03/13/2013

Date of commencement of Site Investigation. 03/13/2013

Date of completion of Site Investigation. \_\_\_\_\_

### **REMEDIAL ACTION DATES**

Date of commencement of Remediation. 07/29/2013

Date of completion of Remediation. \_\_\_\_\_

### **SITE RECLAMATION DATES**

Date of commencement of Reclamation. \_\_\_\_\_

Date of completion of Reclamation. \_\_\_\_\_

**OPERATOR COMMENT**

The extent of groundwater impacts has been fully delineated based on Table 910-1 standards as of the January 2021 groundwater monitoring event. Form 27 update reports will continue to be submitted to the COGCC on a quarterly basis until POC is established based on Table 915-1 standards. The Project Implementation Summary is provided as Attachment C.

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: 04/05/2021

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: PETER GINTAUTAS

Date: 04/05/2021

Remediation Project Number: 9549

**Condition of Approval****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**

402644301	FORM 27-SUPPLEMENTAL-SUBMITTED
402644302	LOGS
402644303	GROUND WATER SAMPLE LOCATION
402644304	GROUND WATER ELEVATION MAP
402644305	ANALYTICAL RESULTS
402644306	ANALYTICAL RESULTS
402644345	IMPLEMENTATION SCHEDULE

Total Attach: 7 Files

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

	<p>This report serves as adequate project summary and status update required to be submitted prior to April 15, 2021 as per rule 913.e.(2).</p> <p>Submit reports of site investigation and progress of remediation including results of sampling and analysis at a minimum on a quarterly basis until further site investigation activities show that adequate points of compliance with respect to Table 915-1 groundwater impacts have been established.</p>	04/05/2021
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Total: 1 comment(s)