

# 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>Phil.Hamlin@anadarko.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 1</u>		Latitude: <u>40.118312</u>	Longitude: <u>-104.732594</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

A building is located approximately 900 feet northwest of the release location.

## 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 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 hydrocarbon impacts to soil and groundwater were discovered during this investigation. The facility was subsequently abandoned, associated infrastructure removed, and excavation activities were initiated. The COGCC has 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 at the site below 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 December 13, 2018, forty (40) temporary monitoring wells (SB01 - SB36, SB07R, SB08R, SB11R, SB13R) were installed to assess the extent of groundwater impacts. Quarterly groundwater sampling was initiated on January 13, 2014, and is ongoing at the twenty-five (25) temporary monitoring wells remaining at the site (SB17 - SB36, SB07R, SB08R, SB10, SB11R, SB13R). Wells SB01 - SB06, SB09, SB12, and SB14 - SB16 were removed during excavation activities; wells SB07, SB08, SB11, and SB13 were consistently dry or have been damaged, and were subsequently replaced. Groundwater samples are collected from the temporary monitoring wells on a quarterly basis and analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX). The groundwater sample locations are illustrated on Figure 1, and groundwater analytical data is presented in Table 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 193

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 20'

Number of groundwater monitoring wells installed 40

Number of groundwater samples exceeding 910-1 92

-- 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?

Hydrocarbon impacted soil and groundwater remain at the site. The 25 temporary groundwater monitoring wells remaining at the site (SB17 - SB36, SB07R, SB08R, SB10, SB11R, SB13R) will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain in full compliance with COGCC standards for four consecutive quarters. Additional temporary monitoring wells will be installed as necessary to maintain point of compliance (POC). Additional confirmation soil samples will be collected from the final extent of the impacted soil area, to verify that all soils are compliant with COGCC standards.

# 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, 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. To date, a total of approximately 102.4 gallons of LNAPL have been removed via Spill Buster operation and LNAPL bailing. The Spill Buster was removed from the site on September 13, 2018, but manual LNAPL gauging and recovery activities are ongoing. Quarterly groundwater monitoring is ongoing and will be continued until concentrations remain in full compliance with COGCC standards for four consecutive quarters. Additional remediation measures, including in-situ and ex-situ technologies, 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 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 December 13, 2018, a total of 40 temporary monitoring wells (SB01 - SB36, SB07R, SB08R, SB11R, SB13R) were installed to assess the extent of groundwater impacts and/or for remediation purposes. Wells SB01 - SB06, SB09, SB12, and SB14 - SB16 were subsequently removed during excavation activities; wells SB07, SB08, SB11, and SB13 were consistently dry or have been damaged, and were subsequently replaced. The 25 temporary groundwater monitoring wells remaining at the site (SB17 - SB36, SB07R, SB08R, SB10, SB11R, SB13R) will continue to be sampled on a quarterly basis and submitted for laboratory analysis of BTEX until concentrations remain in full compliance with COGCC standards for four consecutive quarters. Additional temporary monitoring wells will be installed as necessary to maintain POC. Groundwater sample locations are illustrated on Figure 1, and a potentiometric surface contour map for the First Quarter 2019 is presented as Figure 2. Well completion logs for the temporary monitoring wells are provided as Attachment B.

## REMEDATION 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:

NA

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 2

E&P waste (liquid) description LNAPL

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

Non-COGCC Disposal Facility: Licensed disposal facility

## REMEDATION COMPLETION REPORT

### REMEDATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No \_\_\_\_\_

Do all soils meet Table 910-1 standards? \_\_\_\_\_

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? \_\_\_\_\_

Does Groundwater meet Table 910-1 standards? \_\_\_\_\_

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

## 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 consult with the surface owner to determine reclamation specifics to properly 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

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 HSE Representative

Submit Date: ` 05/30/2019

Email: Phil.Hamlin@anadarko.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: 05/30/2019

Remediation Project Number: 9549

### COA Type

### Description

	Submit reports of site investigation and progress of remediation including results of sampling and analysis on an annual basis or more often until remediation is closed.
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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.

<u>Att Doc Num</u>	<u>Name</u>
402005417	FORM 27-SUPPLEMENTAL-SUBMITTED
402005628	ANALYTICAL RESULTS
402005633	ANALYTICAL RESULTS
402010100	GROUND WATER SAMPLE LOCATION
402010116	GROUND WATER ELEVATION MAP
402010129	LOGS

Total Attach: 6 Files

### General Comments

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

Total: 0 comment(s)