

State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
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Document Number:  
401254361

Receive Date:

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Report taken by:

Site Investigation and Remediation Workplan (Initial 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: KERR MCGEE OIL & GAS ONSHORE LP	Operator No: 47120	<b>Phone Numbers</b>
Address: P O BOX 173779		Phone: (720) 929-4306
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Erik Mickelson	Email: erik.mickelson@anadarko.com	Mobile: ( )

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: \_\_\_\_\_ Initial Form 27 Document #: 401254361

PURPOSE INFORMATION

- |  |  |
|--|--|
| <input type="checkbox"/> 901.e. Sensitive Area Determination                                       | <input 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 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 checked="" type="checkbox"/> Other Water wells impacted with thermogenic gas.                       |

SITE INFORMATION

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

Facility Type: NONFACILITY	Facility ID: 449412	API #: _____	County Name: WELD
Facility Name: Conquest Stray Gas 449412		Latitude: 40.192116	Longitude: -104.699401
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: SESE	Sec: 30	Twp: 3N	Range: 65W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Dry land farming/stock

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

Groundwater

# SITE INVESTIGATION PLAN

## TYPE OF WASTE:

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> E&P Waste       | <input type="checkbox"/> Other E&P Waste                   | <input checked="" type="checkbox"/> Non-E&P Waste |
| <input type="checkbox"/> Produced Water  | <input type="checkbox"/> Workover Fluids                   | Thermogenic Gas _____                             |
| <input type="checkbox"/> Oil             | <input type="checkbox"/> Tank Bottoms                      |   |
| <input 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	Water wells with thermogenic gas	Sampling & analysis of domestic water wells

## INITIAL ACTION SUMMARY

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

In 2016 thermogenic gas was detected in the following water wells: DWR Permit #272956 & #78801-F-R. Later in 2016, the COGCC approached Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee) with a request to initiate an investigation into the dissolved hydrocarbon present in the water wells, and to conduct quarterly sampling of the affected water wells. At that time, Kerr-McGee began an assessment to determine if any of their producing gas wells in the area were potentially the source of the dissolved hydrocarbon in the water wells. Kerr-McGee conducted their first quarterly sampling event of the affected water wells on January 26, 2017.

## 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 ):

### Proposed Groundwater Sampling

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

The subject water wells (permit #272956 & #78801-F-R) were sampled by Kerr-McGee on January 26, 2017, and will continue to be sampled on at least a quarterly basis until a decline in the impacts to the wells can be demonstrated. All samples will be analyzed for the analytes noted in COGCC Rule 318A.f.(6). (and 318A.f.(8), as appropriate) at a minimum. Notification requirements in COGCC Rule 318A.f.(8) & (9). will be followed, as appropriate. Analytical tables associated with the January 2017 sampling event for the subject wells are attached to this document.

### 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 0  
Number of soil samples exceeding 910-1           
Was the areal and vertical extent of soil contamination delineated?           
Approximate areal extent (square feet)         

### NA / ND

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

### Groundwater

Number of groundwater samples collected 2  
Was extent of groundwater contaminated delineated? No  
Depth to groundwater (below ground surface, in feet) 235`  
Number of groundwater monitoring wells installed 0  
Number of groundwater samples exceeding 910-1 0

ND Highest concentration of Benzene (µg/l)           
ND Highest concentration of Toluene (µg/l)           
ND Highest concentration of Ethylbenzene (µg/l)           
ND Highest concentration of Xylene (µg/l)           
-- Highest concentration of Methane (mg/l) 18

### 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?

Kerr-McGee is continuing to assess their production wells in the vicinity of the subject water well.

# REMEDIAL ACTION PLAN

## SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Any production well identified as a potential source of the impact to the subject water wells will be remediated. Once the source has been eliminated, rapid natural attenuation of the impact is expected.

## 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.

Once the source has been eliminated, it is anticipated that the impacts will attenuate rapidly.

## Soil Remediation Summary

### In Situ

- \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )
- \_\_\_\_\_ Chemical oxidation
- \_\_\_\_\_ Air sparge / Soil vapor extraction
- \_\_\_\_\_ Natural Attenuation
- \_\_\_\_\_ Other \_\_\_\_\_

### Ex Situ

- \_\_\_\_\_ Excavate and offsite disposal
- \_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_
- \_\_\_\_\_ Name of Licensed Disposal Facility or COGCC Facility ID # \_\_\_\_\_
- \_\_\_\_\_ Excavate and onsite remediation
- \_\_\_\_\_ Land Treatment
- \_\_\_\_\_ Bioremediation (or enhanced bioremediation)
- \_\_\_\_\_ Chemical oxidation
- \_\_\_\_\_ Other \_\_\_\_\_

## Groundwater Remediation Summary

- \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )
- \_\_\_\_\_ Chemical oxidation
- \_\_\_\_\_ Air sparge / Soil vapor extraction
- Yes \_\_\_\_\_ Natural Attenuation
- \_\_\_\_\_ 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.

See comments under Proposed Groundwater Sampling in the Site Investigation Plan section of this document.

# 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? No

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

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

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

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

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

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

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

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

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

## 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.

NA

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 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). 01/26/2017

Date of commencement of Site Investigation. \_\_\_\_\_

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

### REMEDIAL ACTION DATES

Date of commencement of Remediation. \_\_\_\_\_

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

### SITE RECLAMATION DATES

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

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

**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: Erik Mickelson \_\_\_\_\_

Title: Sr. HSE Representative \_\_\_\_\_

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

Email: erik.mickelson@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: \_\_\_\_\_

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

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

**COA Type**

**Description**

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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**

401254991	ANALYTICAL RESULTS
401254992	ANALYTICAL RESULTS

Total Attach: 2 Files

**General Comments**

**User Group**

**Comment**

**Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)