

**State of Colorado  
Oil and Gas Conservation Commission**

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Document Number:

401475157

Receive Date:

05/04/2018

Report taken by:

CHRIS CANFIELD

**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: <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>(720) 929-4306</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80217-3779</u>
Contact Person: <u>Erik Mickelson</u>	Email: <u>Erik.Mickelson@anadarko.com</u>	Mobile: <u>( )</u>

**PROJECT, PURPOSE & SITE INFORMATION**

**PROJECT INFORMATION**

Remediation Project #: 11328 Initial Form 27 Document #: 401475157

**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 checked="" 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 type="checkbox"/> Other _____   |

**SITE INFORMATION**

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

Facility Type: <u>LOCATION</u>	Facility ID: <u>305428</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>BRANDT-61N66W 13SWSE</u>	Latitude: <u>40.046140</u>	Longitude: <u>-104.723800</u>	
	** correct Lat/Long if needed: Latitude: <u>40.044226</u>	Longitude: <u>-104.724751</u>	
QtrQtr: <u>SWSE</u>	Sec: <u>13</u>	Twp: <u>1N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>LOCATION</u>	Facility ID: <u>306444</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>BUJALSKI-USX S-64N68W 25NENE</u>	Latitude: <u>40.288440</u>	Longitude: <u>-104.945540</u>	
	** correct Lat/Long if needed: Latitude: <u>40.291763</u>	Longitude: <u>-104.946366</u>	
QtrQtr: <u>NENE</u>	Sec: <u>25</u>	Twp: <u>4N</u>	Range: <u>68W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>LOCATION</u>	Facility ID: <u>318259</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>WILLIAM DEASON GAS UNIT-61N66W 6NWSE</u>	Latitude: <u>40.076840</u>	Longitude: <u>-104.818120</u>	
	** correct Lat/Long if needed: Latitude: <u>40.077457</u>	Longitude: <u>-104.818100</u>	
QtrQtr: <u>NWSE</u>	Sec: <u>6</u>	Twp: <u>1N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: LOCATION		Facility ID: 319230	API #:	County Name: WELD		
Facility Name: YOXALL FARMS INC B-61N67W 28SESE		Latitude: 40.017886	Longitude: -104.889903			
		** correct Lat/Long if needed: Latitude: 40.017200	Longitude: -104.888570			
QtrQtr: SESE	Sec: 28	Twp: 1N	Range: 67W	Meridian: 6	Sensitive Area? Yes	

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Facility Type: LOCATION		Facility ID: 327264	API #:	County Name: WELD		
Facility Name: EAST ERIE-61N68W 17CNE		Latitude: 40.054700	Longitude: -105.022940			
		** correct Lat/Long if needed: Latitude: 40.057361	Longitude: -105.022748			
QtrQtr: CNE	Sec: 17	Twp: 1N	Range: 68W	Meridian: 6	Sensitive Area? Yes	

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Facility Type: LOCATION		Facility ID: 331656	API #:	County Name: WELD		
Facility Name: WESTERN-62N68W 21NENW		Latitude: 40.129410	Longitude: -105.010210			
		** correct Lat/Long if needed: Latitude: 40.126172	Longitude: -105.015087			
QtrQtr: NENW	Sec: 21	Twp: 2N	Range: 68W	Meridian: 6	Sensitive Area? Yes	

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Facility Type: LOCATION		Facility ID: 332903	API #:	County Name: WELD		
Facility Name: T.P.HOLTON GAS UNIT TRUE- 61N66W 6SWNW		Latitude: 40.083130	Longitude: -104.825280			
		** correct Lat/Long if needed: Latitude: 40.082805	Longitude: -104.825343			
QtrQtr: SWNW	Sec: 6	Twp: 1N	Range: 66W	Meridian: 6	Sensitive Area? Yes	

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Facility Type: LOCATION		Facility ID: 336284	API #:	County Name: WELD		
Facility Name: FL GREENS FEDERAL 35N-8HZ		Latitude: 40.070244	Longitude: -104.805306			
		** correct Lat/Long if needed: Latitude: 40.070788	Longitude: -104.805759			
QtrQtr: NWNW	Sec: 8	Twp: 1N	Range: 66W	Meridian: 6	Sensitive Area? Yes	

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Facility Type: TANK BATTERY		Facility ID: 441026	API #:	County Name: WELD		
Facility Name: GLACIER-USX UU-61N68W 3SENE		Latitude: 40.082900	Longitude: -104.981200			
		** correct Lat/Long if needed: Latitude: 40.082970	Longitude: -104.981330			
QtrQtr: SENE	Sec: 3	Twp: 1N	Range: 68W	Meridian: 6	Sensitive Area? Yes	

**SITE CONDITIONS**

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use Various  
 Is domestic water well within 1/4 mile? Yes 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**

Various

# 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 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
No	SOILS	34' (N-S) x 30' (E-W) x 3 feet bgs	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.

As required by COGCC rule 905.b, soil and groundwater (if present) samples will be collected when buried or partially buried produced water vessels are removed from service. One soil sample will be collected for laboratory analysis from the area most likely to be impacted directly beneath the water vessel upon removal. If groundwater is encountered below the water vessel, a groundwater sample will be collected for laboratory analysis. Additionally, if groundwater is encountered, four sidewall samples will be collected for field screening. The sidewall sample exhibiting the highest apparent impacts will be submitted for laboratory analysis. The soil samples will be analyzed for total petroleum hydrocarbons (TPH-C6-C36); benzene, toluene, ethylbenzene, total xylenes (BTEX); electrical conductivity (EC); and pH. Analysis for sodium adsorption ratio (SAR) will be conducted should the initial EC concentration exceed the Table 910-1 standards. Groundwater samples will be analyzed for BTEX.

## 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 each Site and submitted for laboratory analysis. The soil samples were analyzed for total petroleum hydrocarbons (TPHC6C36); benzene, toluene, ethylbenzene, total xylenes (BTEX); electrical conductivity (EC); and pH.

### Proposed Groundwater Sampling

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

### 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 16

Number of soil samples exceeding 910-1 0

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

Approximate areal extent (square feet) 1020

### NA / ND

-- 178.1 Highest concentration of TPH (mg/kg)

NA            Highest concentration of SAR

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 3

### Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet)           

Number of groundwater monitoring wells installed           

Number of groundwater samples exceeding 910-1           

NA            Highest concentration of Benzene (µg/l)

NA            Highest concentration of Toluene (µg/l)

NA            Highest concentration of Ethylbenzene (µg/l)

NA            Highest concentration of Xylene (µg/l)

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?

# REMEDIAL ACTION PLAN

## SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Any impacted soils above the concentration levels listed in Table 910-1 will be removed from the excavation. Impacted soils exceeding Table 910-1 standards for only EC, pH, and SAR will not be removed below the root zone, established as 3 feet below ground surface (per COGCC guidance).

## 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.

Impacted soils (if present) will be taken to either a licensed disposal facility or to Kerr-McGee's land treatment facility. A site-specific groundwater monitoring plan will be developed for COGCC approval (as appropriate) in the event that groundwater impacts exceeding the Table 910-1 Concentrations Levels are detected.

## 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) \_\_\_\_\_ 40
- Name of Licensed Disposal Facility or COGCC Facility ID # \_\_\_\_\_ 149007
- 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
- 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.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

Frequency:  Quarterly  Semi-Annually  Annually  Other Produced Water Vessel Closure

Report Type:  Groundwater Monitoring  Land Treatment Progress Report  O&M Report

Other Produced Water Vessel Closure Report

## 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 40

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 0

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.

If the facility remains in place, reclamation will not be necessary. If a facility is removed, the site will be restored as closely as possible to its pre-existing grade and reclaimed in accordance with COGCC 1004 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). 04/08/2017

Date of commencement of Site Investigation. 04/08/2017

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

### REMEDIAL ACTION DATES

Date of commencement of Remediation. 04/08/2017

Date of completion of Remediation. 09/26/2017

### 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: Senior HSE Representative \_\_\_\_\_

Submit Date: 05/04/2018 \_\_\_\_\_

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: CHRIS CANFIELD \_\_\_\_\_

Date: 05/11/2018 \_\_\_\_\_

Remediation Project Number: 11328 \_\_\_\_\_

**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**

401475157	FORM 27-INITIAL-SUBMITTED
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Total Attach: 1 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)