

State of Colorado  
Oil and Gas Conservation Commission

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Report taken by:  
CHRIS CANFIELD

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) 515-1698</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80217-3779</u>
Contact Person: <u>Greg Hamilton</u>	Email: <u>Gregory.Hamilton@anadarko.com</u>	Mobile: <u>( )</u>

PROJECT, PURPOSE & SITE INFORMATION

<b>PROJECT INFORMATION</b>	
Remediation Project #: <u>12132</u>	Initial Form 27 Document #: <u>401852957</u>
<b>PURPOSE INFORMATION</b>	
<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 checked="" 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 _____
<b>SITE INFORMATION</b>	
Y <u>Multiple Facilities ( in accordance with Rule 909.c. )</u>	
Facility Type: <u>LOCATION</u>	Facility ID: <u>305399</u> API #: _____ County Name: <u>WELD</u>
Facility Name: <u>AMATO-61N66W 1SEW</u>	Latitude: <u>40.081560</u> Longitude: <u>-104.728523</u>
** correct Lat/Long if needed: Latitude: <u>40.080588</u> Longitude: <u>-104.728091</u>	
QtrQtr: <u>SEW</u> Sec: <u>1</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>318659</u> API #: _____ County Name: <u>WELD</u>
Facility Name: <u>STATE OF COLORADO AL-61N68W 16NWNE</u>	Latitude: <u>40.055690</u> Longitude: <u>-105.005150</u>
** correct Lat/Long if needed: Latitude: <u>40.057000</u> Longitude: <u>-105.002749</u>	
QtrQtr: <u>NWNE</u> Sec: <u>16</u> Twp: <u>1N</u> Range: <u>68W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>	
Facility Type: <u>LOCATION</u>	Facility ID: <u>319504</u> API #: _____ County Name: <u>WELD</u>
Facility Name: <u>PAUL JACOBUCCI G.U. TRUE-61N67W 30NESE</u>	Latitude: <u>40.019300</u> Longitude: <u>-104.927320</u>
** correct Lat/Long if needed: Latitude: <u>40.019622</u> Longitude: <u>-104.924150</u>	
QtrQtr: <u>NESE</u> Sec: <u>30</u> Twp: <u>1N</u> Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>	

Facility Type: LOCATION Facility ID: 327328 API #: County Name: WELD  
Facility Name: UPRR 43 PAN AM UNIT Y-61N68W 25SWNW Latitude: 40.025110 Longitude: -104.957870  
\*\* correct Lat/Long if needed: Latitude: 40.025540 Longitude: -104.958883  
QtrQtr: SWNW Sec: 25 Twp: 1N Range: 68W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 328935 API #: County Name: WELD  
Facility Name: WATADA RED-61N66W 19NWSE Latitude: 40.033969 Longitude: -104.816050  
\*\* correct Lat/Long if needed: Latitude: 40.033510 Longitude: -104.815708  
QtrQtr: NWSE Sec: 19 Twp: 1N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 330861 API #: County Name: WELD  
Facility Name: JOHNSON-61N68W 24SENW Latitude: 40.038150 Longitude: -104.953560  
\*\* correct Lat/Long if needed: Latitude: 40.037703 Longitude: -104.954279  
QtrQtr: SENW Sec: 24 Twp: 1N Range: 68W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 418016 API #: County Name: WELD  
Facility Name: STONEBRAKER 25-12 Latitude: 40.068010 Longitude: -104.949690  
\*\* correct Lat/Long if needed: Latitude: 40.069629 Longitude: -104.947841  
QtrQtr: SWNE Sec: 12 Twp: 1N Range: 68W Meridian: 6 Sensitive Area? Yes

### **SITE CONDITIONS**

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use Agriculture and Irrigation Canal  
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**

NA

# 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                   | No Waste Generated _____                          |
| <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	See Sump Closure Reports	See Sump Closure Reports

## INITIAL ACTION SUMMARY

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

The objective of the soil sampling was to determine if petroleum hydrocarbon impacts to the subsurface media resulted from operating a produced water sump at the site.

## 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 sampling was conducted to determine if petroleum hydrocarbon impacts to subsurface soil resulted from operating a produced water sump at the respective sites. For each sump closure site, one or more soil samples were collected for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH), pH, and specific conductivity (EC). The soil sampling activities, laboratory analytical results, and conclusions are summarized in the attached Sump Closure Reports.

### 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 7

Number of soil samples exceeding 910-1 0

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

Approximate areal extent (square feet) 0

### NA / ND

-- Highest concentration of TPH (mg/kg) 378

NA Highest concentration of SAR         

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 0

### Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet)         

Number of groundwater monitoring wells installed         

Number of groundwater samples exceeding 910-1         

         Highest concentration of Benzene (µg/l)         

         Highest concentration of Toluene (µg/l)         

         Highest concentration of Ethylbenzene (µg/l)         

         Highest concentration of Xylene (µg/l)         

         Highest concentration of Methane (mg/l)         

### Surface Water

0 Number of surface water samples collected

         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

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.

Soil samples were collected from the sump excavations for laboratory analysis of TPH, BTEX, pH, and EC. Soil samples were in full compliance with COGCC Table 910-1 allowable levels. The Sump Closure Reports are attached.

## **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.

Soil impacts were not encountered above COGCC Table 910-1 allowable levels. No further action is required for these sites.

## **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**

- No \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )
- No \_\_\_\_\_ Chemical oxidation
- No \_\_\_\_\_ Air sparge / Soil vapor extraction
- No \_\_\_\_\_ Natural Attenuation
- No \_\_\_\_\_ 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.

NA

## REMEDIATION PROGRESS UPDATE

### PERIODIC REPORTING

**Frequency:**  Quarterly  Semi-Annually  Annually  Other Final Report \_\_\_\_\_

**Report Type:**  Groundwater Monitoring  Land Treatment Progress Report  O&M Report  
 Other Produced water vessel closure \_\_\_\_\_

### 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: \_\_\_\_\_

## REMEDIATION COMPLETION REPORT

### REMEDIATION COMPLETION SUMMARY

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

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

Does the previous reply indicate consideration of background concentrations? No \_\_\_\_\_

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? Yes \_\_\_\_\_

Is additional groundwater monitoring to be conducted? No \_\_\_\_\_

## 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.

Sump closure sites have been reclaimed (interim) or are in the process of being reclaimed (final) 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 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). 06/25/2018  
 Date of commencement of Site Investigation. 06/25/2018  
 Date of completion of Site Investigation. 09/19/2018

### 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

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

Signed: Greg Hamilton Title: Sr. Staff HSE Rep.  
 Submit Date: 12/03/2018 Email: Gregory.Hamilton@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: 12/14/2018

Remediation Project Number: 12132

<u>COA Type</u>	<u>Description</u>

### **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>
401855202	FORM 27-SUPPLEMENTAL-SUBMITTED
401855276	SITE INVESTIGATION REPORT
401855277	SITE INVESTIGATION REPORT
401855280	SITE INVESTIGATION REPORT
401855283	SITE INVESTIGATION REPORT
401855284	SITE INVESTIGATION REPORT
401855288	SITE INVESTIGATION REPORT
401855291	SITE INVESTIGATION REPORT

Total Attach: 8 Files

### **General Comments**

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

Total: 0 comment(s)