

State of Colorado  
Oil and Gas Conservation Commission

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Document Number:  
401904397

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

Report taken by:  
\_\_\_\_\_

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: KERR MCGEE OIL & GAS ONSHORE LP	Operator No: 47120	Phone Numbers Phone: (970) 515-1698 Mobile: ( )
Address: P O BOX 173779		
City: DENVER	State: CO Zip: 80217-3779	
Contact Person: Greg Hamilton	Email: gregory.hamilton@anadarko.com	

PROJECT, PURPOSE & SITE INFORMATION

**PROJECT INFORMATION**  
Remediation Project #: 12301 Initial Form 27 Document #: 401873149

**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: LOCATION	Facility ID: 318971	API #: _____	County Name: WELD
Facility Name: LISA-62N67W 18NESW	Latitude: 40.136856	Longitude: -104.935711	
** correct Lat/Long if needed: Latitude: 40.136623		Longitude: -104.935584	
QtrQtr: NESW	Sec: 18	Twp: 2N	Range: 67W Meridian: 6 Sensitive Area? No

Facility Type: LOCATION	Facility ID: 328645	API #: _____	County Name: WELD
Facility Name: DINNEL-63N66W 14NENE	Latitude: 40.230970	Longitude: -104.737360	
** correct Lat/Long if needed: Latitude: 40.230511		Longitude: -104.735093	
QtrQtr: NENE	Sec: 14	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? No

Facility Type: LOCATION	Facility ID: 329899	API #: _____	County Name: WELD
Facility Name: CAMENISCH-64N67W 33NWSE	Latitude: 40.268120	Longitude: -104.893820	
** correct Lat/Long if needed: Latitude: 40.269363		Longitude: -104.891590	
QtrQtr: NWSE	Sec: 33	Twp: 4N	Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 330051 API #: County Name: WELD  
Facility Name: HSR-PAUL SCHMIDT-63N66W 33SESE Latitude: 40.176110 Longitude: -104.775090  
\*\* correct Lat/Long if needed: Latitude: 40.177945 Longitude: -104.779725  
QtrQtr: SESE Sec: 33 Twp: 3N Range: 66W Meridian: 6 Sensitive Area? No

Facility Type: LOCATION Facility ID: 330070 API #: County Name: WELD  
Facility Name: HSR-SALAZAR-63N67W 20SWNW Latitude: 40.212650 Longitude: -104.920260  
\*\* correct Lat/Long if needed: Latitude: 40.213456 Longitude: -104.918312  
QtrQtr: SWNW Sec: 20 Twp: 3N Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 330474 API #: County Name: WELD  
Facility Name: VARRA 20-32 Latitude: 40.176394 Longitude: -104.906000  
\*\* correct Lat/Long if needed: Latitude: 40.175391 Longitude: -104.906244  
QtrQtr: SESE Sec: 32 Twp: 3N Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 336625 API #: County Name: WELD  
Facility Name: ZADEL 16C-35HZ Latitude: 40.263880 Longitude: -104.883610  
\*\* correct Lat/Long if needed: Latitude: 40.264261 Longitude: -104.881978  
QtrQtr: SWSW Sec: 34 Twp: 4N Range: 67W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 429183 API #: County Name: WELD  
Facility Name: NICHOLS TANK BATTERY 37N-31HZ Latitude: 40.161280 Longitude: -104.704962  
\*\* correct Lat/Long if needed: Latitude: 40.160947 Longitude: -104.704905  
QtrQtr: SWSE Sec: 6 Twp: 2N Range: 65W Meridian: 6 Sensitive Area? Yes

## SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Rangeland, Cropland  
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? No

### Other Potential Receptors within 1/4 mile

Residential areas are located north of NICHOLS TANK BATTERY 37N-31HZ, east of ZADEL 16C-35HZ, southeast of HSR-SALAZAR-63N67W 20SWNW, northwest of VARRA 20-32, and south of LISA-62N67W 18NESW. A wetland is located east of ZADEL 16C-35HZ and VARRA 20-32, and west of CAMENISCH-64N67W 33NWSE.

# 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	No impacts	Sampling 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.

The objective of the soil sampling was to determine if the operation of produced water sumps at the sites resulted in petroleum hydrocarbon impacts to the subsurface media.

## 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 the operation of produced water sumps resulted in petroleum hydrocarbon impacts at the respective sites. For each sump closure site, one or more samples were collected for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by USEPA Method 8260C, TPH – diesel range organics and residual range organics (DRO and RRO, respectively) by USEPA Method 8015C, electrical conductivity (EC), and pH. The soil sampling activities, laboratory analytical results, and conclusions will be summarized in a Sump Closure Report for each site.

### 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 11  
Number of soil samples exceeding 910-1 0  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 960

### NA / ND

-- Highest concentration of TPH (mg/kg) 1.32  
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?

Background samples were collected from each site. Laboratory analytical results indicate that pH and EC levels were compliant or samples were collected below the designated root zone (>3 feet bgs) at the extent of the excavation; therefore, the background soil samples were not submitted for laboratory analysis.

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 excavation for laboratory analysis of TPH, BTEX, pH, and EC. No impacted soil was encountered.

## 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.

Source removal, as applicable, completed at the sump closure sites will be summarized in the Sump Closure Reports. Groundwater was not encountered at any of the locations. No further action is requested 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

- \_\_\_\_\_ 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 sump closure

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

Other Produced water sump 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). 09/10/2018

Date of commencement of Site Investigation. 09/10/2018

Date of completion of Site Investigation. 01/29/2019

### REMEDIAL ACTION DATES

Date of commencement of Remediation. 09/10/2018

Date of completion of Remediation. 01/29/2019

### 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: Senior Environmental Rep.

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

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: \_\_\_\_\_

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

Remediation Project Number: 12301

### COA Type

### Description

	request to provide EC and pH data from location 329899 Camenisch battery.
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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>
401910873	SITE INVESTIGATION REPORT
401910885	SITE INVESTIGATION REPORT
401910903	SITE INVESTIGATION REPORT
401910905	SITE INVESTIGATION REPORT
401910907	SITE INVESTIGATION REPORT
401910910	SITE INVESTIGATION REPORT
401910912	SITE INVESTIGATION REPORT
401923769	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)