

State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:  
402725011  
Receive Date:  
06/29/2021  
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) 336-3500</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80217-3779</u>
Contact Person: <u>Phil Hamlin</u>	Email: <u>Phil_Hamlin@oxy.com</u>	Mobile: <u>( )</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 3211 Initial Form 27 Document #: 1170169

PURPOSE INFORMATION

- Rule 913.c.(1): Pit or Cuttings Trench closure.
- Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912.
- Rule 913.c.(4): Land treatment of Oily Waste pursuant to Rule 905.e.
- Rule 913.c.(5): Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h.
- Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.
- Rule 913.c.(7): Investigation and remediation of natural gas in soil or Groundwater.
- Rule 913.c.(8): When requested by the Director due to any potential risk to soil, Groundwater, or surface water.
- Rule 913.c.(9): Decommissioning of Oil and Gas Facilities.
- Rule 913.g: Changes of Operator.
- Rule 915.b: Request to leave elevated inorganics in situ.
- Other: \_\_\_\_\_

SITE INFORMATION

No Multiple Facilities

Facility Type: <u>LOCATION</u>	Facility ID: <u>319232</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>DAVID HOWARD UNIT C-61N67W 32SWNW</u>	Latitude: <u>40.010230</u>	Longitude: <u>-104.919560</u>	
** correct Lat/Long if needed: Latitude: <u>40.009475</u>		Longitude: <u>-104.919396</u>	
QtrQtr: <u>SWNW</u>	Sec: <u>32</u>	Twp: <u>1N</u>	Range: <u>67W</u>
Meridian: <u>6</u>		Sensitive Area? <u>Yes</u>	

SITE CONDITIONS

General soil type - USCS Classifications CL Most Sensitive Adjacent Land Use Surface Water and Agriculture  
 Is domestic water well within 1/4 mile? No 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**

Surface water (irrigation ditch) is located approximately 40 feet (ft) southeast, and groundwater is present approximately 3 ft below ground surface (bgs).

**SITE INVESTIGATION PLAN**

**TYPE OF WASTE:**

- E&P Waste
- Other E&P Waste
- Non-E&P Waste
- Produced Water
- Workover Fluids
- Oil
- Tank Bottoms
- Condensate
- Pigging Waste
- Drilling Fluids
- Rig Wash
- Drill Cuttings
- Spent Filters
- Pit Bottoms
- Other (as described by EPA)

**DESCRIPTION OF IMPACT**

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	See attached data	Groundwater Samples/Lab Results
Yes	SOILS	85' NE-SW x 40' NW-SE x 6' bgs	Soil Samples/Lab Results

**INITIAL ACTION SUMMARY**

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

On December 12, 2003, a load line valve froze and split, resulting in the release of approximately 1 barrel (bbl) of oil and 29 bbls of produced water within the Howard David C 2 tank battery containment berm. The petroleum hydrocarbon impacted soil was excavated.

**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 ):

Please refer to the attached Soil Sampling Summary.

**Proposed Groundwater Sampling**

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

Groundwater was encountered in the excavation at approximately 3 ft bgs. On April 8, 2015, groundwater sample GW01 was collected from the excavation and submitted for laboratory analysis of BTEX analysis. Laboratory analytical results indicated sample GW01 exceeded the COGCC Table 910-1 allowable levels for benzene at a concentration of 120 micrograms per liter. The excavation groundwater sample location is depicted on Figure 1. The groundwater sample analytical results are summarized in Table 2.

**Proposed Surface Water Sampling**

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

Quarterly surface water monitoring was conducted at the site from June 2004 through December 2020. Laboratory analytical results indicated surface water sample D-01 was below the laboratory reporting limit for BTEX for the duration of the sampling program. The surface water sampling location is depicted on Figure 2. The surface water sample analytical results are summarized on Table 3.

**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 4  
Number of soil samples exceeding 915-1 0  
Was the areal and vertical extent of soil contamination delineated? No  
Approximate areal extent (square feet) 3400

### NA / ND

-- Highest concentration of TPH (mg/kg) 434  
NA Highest concentration of SAR           
BTEX > 915-1 No  
Vertical Extent > 915-1 (in feet) 0

### Groundwater

Number of groundwater samples collected 916  
Was extent of groundwater contaminated delineated? Yes  
Depth to groundwater (below ground surface, in feet) 3'  
Number of groundwater monitoring wells installed 27  
Number of groundwater samples exceeding 915-1 215

-- Highest concentration of Benzene (µg/l) 3420  
-- Highest concentration of Toluene (µg/l) 6850  
-- Highest concentration of Ethylbenzene (µg/l) 410  
-- Highest concentration of Xylene (µg/l) 6900  
NA Highest concentration of Methane (mg/l)         

### Surface Water

38 Number of surface water samples collected  
0 Number of surface water samples exceeding 915-1

If surface water is impacted, other agency notification may be required.

## OTHER INVESTIGATION INFORMATION

Were impacts to adjacent property or offsite impacts identified?

Petroleum hydrocarbon impacts to groundwater were encountered in the field northwest of the former tank battery.

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?

Additional subsurface assessment activities will be conducted to determine if impacted soil remain in the subsurface.

## 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.

In December 2003, approximately 146 cubic yards of petroleum hydrocarbon impacted soil was transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado. The impacted soil was excavated into the capillary and phreatic zones to address potential hydrocarbon impacts that may have been present below the groundwater table due to past seasonal fluctuations.

In February 2015, following tank battery decommissioning, additional source removal (saturated zone) was completed via excavation to assist the groundwater remediation. Approximately 750 cubic yards of petroleum hydrocarbon impacted soil was transported to Front Range Landfill in Erie, Colorado, for disposal. Approximately 300 cubic yards of petroleum hydrocarbon impacted groundwater were removed from the excavation and transported to the Kerr-McGee 16-24I injection facility, for disposal. The general site layout and 2003 and 2015 excavation footprints are depicted on the Site Map provided as Figure 2.

## 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.

While backfilling the 2015 excavation, 300 pounds of COGAC™, a carbon-based bioremediation product designed to capture and degrade petroleum hydrocarbons via chemical oxidation and passive bio-stimulation, was applied to the groundwater and clean backfill through a series of lifts to insure distribution through the phreatic and smear zones.

## Soil Remediation Summary

In Situ

Ex Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

Yes \_\_\_\_\_ Excavate and offsite disposal

\_\_\_\_\_ Chemical oxidation

\_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 896

\_\_\_\_\_ Air sparge / Soil vapor extraction

\_\_\_\_\_ Name of Licensed Disposal Facility or COGCC Facility ID # \_\_\_\_\_ 149007

\_\_\_\_\_ Natural Attenuation

No \_\_\_\_\_ Excavate and onsite remediation

\_\_\_\_\_ Other \_\_\_\_\_

\_\_\_\_\_ Land Treatment

\_\_\_\_\_ Bioremediation (or enhanced bioremediation)

\_\_\_\_\_ Chemical oxidation

\_\_\_\_\_ Other \_\_\_\_\_

## Groundwater Remediation Summary

Yes \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

Yes \_\_\_\_\_ Chemical oxidation

No \_\_\_\_\_ Air sparge / Soil vapor extraction

Yes \_\_\_\_\_ Natural Attenuation

Yes \_\_\_\_\_ Other \_\_\_\_\_  
Groundwater Removal and  
COGAC™ Application

## 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.

Groundwater monitoring wells MW01, MW02R, MW03R, MW05R, MW07R, MW08R3, MW09, MW10, MW11, MW13, MW14, MW15, MW19, and MW20 are sampled on a quarterly basis for the full list of analyses for groundwater in Table 915-1. Surface water sample location D-01 was removed from the quarterly sampling program, as approved in the Form 27 submitted on January 3, 2020. Cross gradient and historically compliant groundwater monitoring well MW09 was established as a representative background sample for calculating the inorganic parameters in Table 915-1. The monitoring well locations are depicted on Figure 2. The Groundwater Elevation Contour Map generated using the June 2021 survey data is provided as Figure 3. The groundwater analytical results are summarized in Table 2, and the laboratory analytical reports for the March 2021 and June 2021 groundwater monitoring events are attached.

A project implementation schedule is included as an attachment. Groundwater and surface water monitoring will continue on a quarterly basis until a No Further Action status request is warranted.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

### Approved Reporting Schedule:

Quarterly     Semi-Annually     Annually     Other

### Request Alternative Reporting Schedule:

Semi-Annually     Annually     Other

Rule 913.e:

After initial approval of a Form 27, the Operator will provide quarterly update reports in a Supplemental Form 27 to document progress of site investigation and remediation, unless an alternative reporting schedule has been requested by the Operator and approved by the Director. The Director may request a more frequent reporting schedule based on site-specific conditions.

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:

Approximately 146 cubic yards of petroleum hydrocarbon impacted soil was removed from the 2003 excavation and transported to the Kerr-McGee Land Treatment Facility, in Weld County, Colorado, for recycling.

Volume of E&P Waste (solid) in cubic yards 896  
E&P waste (solid) description Petroleum hydrocarbon impacted soil  
COGCC Disposal Facility ID #, if applicable: 149007  
Non-COGCC Disposal Facility: Front Range Landfill in Erie, Colorado (750 cubic yards from the 2015 excavation)  
Volume of E&P Waste (liquid) in barrels 300  
E&P waste (liquid) description Petroleum hydrocarbon impacted groundwater  
COGCC Disposal Facility ID #, if applicable: 159443  
Non-COGCC Disposal Facility: \_\_\_\_\_

# REMEDIATION COMPLETION REPORT

## REMEDIATION COMPLETION SUMMARY

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

If YES:

- Compliant with Rule 913.h.(1).
- Compliant with Rule 913.h.(2).
- Compliant with Rule 913.h.(3).

Do all soils meet Table 915-1 standards? No

Does the previous reply indicate consideration of background concentrations? \_\_\_\_\_

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

Operator shall comply with the COGCC 1000-Series Reclamation Requirements for all impacted and disturbed areas.

# 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 tank battery was reconstructed following completion of the 2003 excavation activities. In 2015, the Kerr-McGee facility was deconstructed, and the site was restored to its pre-release grade. The site will be reclaimed 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 provide the seed mix? \_\_\_\_\_

If YES, does the seed mix comply with local soil conservation district recommendations? \_\_\_\_\_

Did the local soil conservation district provide the seed mix? \_\_\_\_\_

## SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. \_\_\_\_\_

Proposed date of completion of Reclamation. \_\_\_\_\_

## IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

### PRIOR DATES

Date of Surface Owner notification/consultation, if required. \_\_\_\_\_

Actual Spill or Release date, or date of discovery. 12/15/2003

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/16/2003

Proposed site investigation commencement. 12/16/2003

Proposed completion of site investigation. \_\_\_\_\_

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/16/2003

Proposed date of completion of Remediation. \_\_\_\_\_

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

Change from approved implementation schedule per Rule 913.d.(2).

Basis for change in implementation schedule:

**OPERATOR COMMENT**

Form 27 update reports will be submitted to the COGCC on a quarterly basis until the extent of subsurface impacts have been fully delineated.

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

Signed: Phil Hamlin \_\_\_\_\_

Title: Senior Environmental Rep. \_\_\_\_\_

Submit Date: 06/29/2021 \_\_\_\_\_

Email: Phil\_Hamlin@oxy.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: 06/30/2021 \_\_\_\_\_

Remediation Project Number: 3211 \_\_\_\_\_

**Condition of Approval****COA Type****Description**

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

**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**

402725011	FORM 27-SUPPLEMENTAL-SUBMITTED
402725133	ANALYTICAL RESULTS
402725134	LOGS
402728186	SOIL SAMPLE LOCATION MAP
402728187	SITE MAP
402728188	GROUND WATER ELEVATION MAP
402730863	IMPLEMENTATION SCHEDULE
402733043	SOIL SAMPLE LOCATION MAP

Total Attach: 8 Files

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

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

Total: 0 comment(s)