

State of Colorado
Oil and Gas Conservation Commission

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



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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 & GAS ONSHORE LP</u>	Operator No: <u>47120</u>	Phone Numbers
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>Phillip Hamlin</u>	Email: <u>Phil.Hamlin@anadarko.com</u>	Mobile: <u>(970) 515-1161</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION
Remediation Project #: 10803 Initial Form 27 Document #: 401369130

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 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 _____

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

Facility Type: <u>WELL</u>	Facility ID: _____	API #: <u>123-19638</u>	County Name: <u>WELD</u>
Facility Name: <u>(HSR) NORTHGLENN STATE 13-36</u>		Latitude: <u>40.003692</u>	Longitude: <u>-104.958119</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>SWSW</u>	Sec: <u>36</u>	Twp: <u>1N</u>	Range: <u>68W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications CL Most Sensitive Adjacent Land Use Agriculture

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

An occupied building is located approximately 1,032 feet northeast of the release location.

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 type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input checked="" 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	See Attached Data	Groundwater sampling and laboratory analysis
Yes	SOILS	36' (N-S) x 14' (E-W) x 15' bgs	Excavation, 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.

On January 3, 2014, a corroded dump line resulted in the release of approximately 1 barrel of crude oil outside of containment at the HSR-Northglenn State 13-36 production facility. The facility was shut in, affected infrastructure removed, and excavation activities were initiated. Groundwater was encountered in the excavation at approximately 15 feet below ground surface (bgs). The COGCC has assigned Spill/Release Tracking number 2147415 to this release, although this number is listed as the Form 19 'Document Number' in the COGIS database.

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 as described in the Initial Form 27. Based on the data presented, impacted soils in the excavation area were remediated to be in full compliance with State standards. Soil sample analytical data is presented in Table 1, and soil sample locations are illustrated on Figure 1.

Proposed Groundwater Sampling

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

Groundwater samples were collected as described herein. Based on the data presented, groundwater concentrations were in full compliance with State standards for a minimum of four consecutive quarters. Groundwater analytical data is presented in Table 2. The excavation groundwater sample locations are illustrated on Figure 1, and the temporary groundwater monitoring well locations are illustrated on Figure 2. The laboratory analytical reports are included as Attachment A.

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):

A partially-buried produced water vessel was replaced during facility upgrade activities. Soil sample Sump-B01@4' was collected from the base of the sump replacement excavation and submitted to eAnalytics for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), total petroleum, hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260C, TPH - diesel and oil range organics (DRO and ORO) by USEPA Method 8015, electrical conductivity (EC), and pH. Laboratory analytical data indicate that constituent concentrations in sample Sump-B01@4' were in full compliance with State standards.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 6
Number of soil samples exceeding 910-1 1
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 504

NA / ND

-- Highest concentration of TPH (mg/kg) 281
NA Highest concentration of SAR
BTEX > 910-1 Yes
Vertical Extent > 910-1 (in feet) 15

Groundwater

Number of groundwater samples collected 105
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 15
Number of groundwater monitoring wells installed 9
Number of groundwater samples exceeding 910-1 16

-- Highest concentration of Benzene (µg/l) 514
-- Highest concentration of Toluene (µg/l) 1377
-- Highest concentration of Ethylbenzene (µg/l) 137
-- Highest concentration of Xylene (µg/l) 1547
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

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.

On January 21, 2014, excavation activities commenced and approximately 280 cubic yards of impacted material were excavated and transported to the Front Range Regional Landfill in Erie, Colorado. Laboratory analytical results indicate that constituent concentrations in the soil samples collected from the final lateral extent of the excavation area were in full compliance with State standards. Soils were excavated into the phreatic zone to address potential hydrocarbon impacts that may have been present below the current groundwater table due to seasonal fluctuations. Groundwater was encountered in the excavation at approximately 15 feet bgs. A groundwater sample (GW01) was collected from the excavation and submitted for laboratory analysis of BTEX. Groundwater analytical results received on January 21, 2014, indicated that the benzene, toluene, and total xylenes concentrations in sample GW01 were above State standards. A second groundwater sample (GW02) was collected following the removal of approximately 5 barrels of impacted groundwater from the excavation, and submitted for laboratory analysis of BTEX. Analytical results received on January 23, 2014, indicated that the benzene concentration in sample GW02 remained above the State standard.

REMIEDIATION 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.

Prior to backfilling the excavation, approximately 100 pounds of chemically-activated granular carbon were added to the groundwater within the excavation area to mitigate remaining hydrocarbon impacts in groundwater. Based on the analytical data presented herein, remediation is complete at this site and Kerr-McGee is requesting a No Further Action (NFA) determination for this release.

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) 280
Name of Licensed Disposal Facility or COGCC Facility ID # _____
No 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
Yes _____ Natural Attenuation
Yes _____ Other Activated carbon adsorption _____

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.

Between January 23, 2014, and January 9, 2015, eight (8) temporary monitoring wells and 1 horizontal remediation well were installed at the site to assess the extent of groundwater impacts and/or for remediation purposes. These wells were sampled on a quarterly basis and submitted for laboratory analysis of BTEX. Analytical results for the groundwater samples collected from the temporary monitoring wells confirmed that constituent concentrations were in full compliance with State standards for a minimum of four consecutive quarters.

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 NFA Request

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 280

E&P waste (solid) description Hydrocarbon impacted soil

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Front Range Regional Landfill - Erie, Colorado

Volume of E&P Waste (liquid) in barrels 5

E&P waste (liquid) description Hydrocarbon impacted groundwater

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Licensed 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.

The site has been restored to its pre-release grade. Kerr-McGee's production facility remains on-site.

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. 01/03/2014

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/03/2014

Date of commencement of Site Investigation. 01/03/2014

Date of completion of Site Investigation. 01/09/2015

REMEDIAL ACTION DATES

Date of commencement of Remediation. 01/21/2014

Date of completion of Remediation. 05/17/2017

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

As described, laboratory analytical data for the soil samples collected from the final lateral extent of the excavation were in full compliance with State standards. Laboratory analytical data for the groundwater samples collected from the temporary monitoring wells confirmed that constituent concentrations were in full compliance with State standards for a minimum of four consecutive quarters. Soil analytical results are summarized in Table 1, and groundwater analytical results are summarized in Table 2. Excavation soil and groundwater sample locations are illustrated on Figure 1, temporary monitoring well locations are illustrated on Figure 2, and quarterly groundwater contour maps are presented on Figures 3, 4, 5, and 6. Groundwater laboratory analytical reports and temporary monitoring well completion diagrams are included as Attachments A and B, respectively. Based on the remediation activities completed at the site and the analytical results presented herein, Kerr-McGee is requesting an NFA determination for this release.

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

Signed: Phillip Hamlin

Title: Senior HSE Representative

Submit Date: 01/22/2018

Email: Phil.Hamlin@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: 01/29/2018

Remediation Project Number: 10803

COA Type**Description**

COA Type	Description

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**

401491794	FORM 27-SUPPLEMENTAL-SUBMITTED
401493430	ANALYTICAL RESULTS
401493440	ANALYTICAL RESULTS
401493443	ANALYTICAL RESULTS
401518138	LOGS
401519316	SOIL SAMPLE LOCATION MAP
401519319	GROUND WATER SAMPLE LOCATION
401519339	GROUND WATER ELEVATION MAP

Total Attach: 8 Files

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

Environmental	The Colorado Oil & Gas Conservation Commission (COGCC) has reviewed and hereby approves your 12/20/2017 request for a determination of No Further Action at the above-referenced location. However, should future conditions indicate that contaminant concentrations in soils exceed COGCC standards, or if ground water is found to be impacted, further investigation and/or remediation activities could be required. Remediation Project 10803 will be closed in the COGIS database. Note that surface reclamation must meet the COGCC 1004 series rules.	01/29/2018
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Total: 1 comment(s)