

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:
Kari Brown

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.

Closure request is not available for an Initial Site Investigation and Remediation Workplan.

OPERATOR INFORMATION

Name of Operator: <u>KERR MCGEE OIL & GAS ONSHORE LP</u>	Operator No: <u>47120</u>	Phone Numbers Phone: <u>(970) 336-3500</u> Mobile: <u>(970) 515-1698</u>
Address: <u>P O BOX 173779</u>		
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80217-3779</u>		
Contact Person: <u>Gregory Hamilton</u> Email: <u>Gregory_Hamilton@oxy.com</u>		

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 22016 Initial Form 27 Document #: 402957537

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

Yes Multiple Facilities

Facility Type: <u>WELL</u>	Facility ID: _____	API #: <u>123-31521</u>	County Name: <u>WELD</u>
Facility Name: <u>COTTONWOOD 11-33</u>	Latitude: <u>40.092354</u>	Longitude: <u>-104.788414</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NWSW</u>	Sec: <u>33</u>	Twp: <u>2N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: <u>WELL</u>	Facility ID: _____	API #: <u>123-31526</u>	County Name: <u>WELD</u>
Facility Name: <u>COTTONWOOD 12-33</u>	Latitude: <u>40.092288</u>	Longitude: <u>-104.788496</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NWSW</u>	Sec: <u>33</u>	Twp: <u>2N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: WELL	Facility ID: _____	API #: 123-31541	County Name: WELD
Facility Name: COTTONWOOD 33-33	Latitude: 40.092253	Longitude: -104.788545	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSW	Sec: 33	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 123-31542	County Name: WELD
Facility Name: COTTONWOOD 32-33	Latitude: 40.092331	Longitude: -104.788446	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSW	Sec: 33	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 123-31544	County Name: WELD
Facility Name: COTTONWOOD 13-33	Latitude: 40.092309	Longitude: -104.788471	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSW	Sec: 33	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 123-31548	County Name: WELD
Facility Name: COTTONWOOD 34-33	Latitude: 40.092272	Longitude: -104.788518	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWSW	Sec: 33	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: FLOWLINE	Facility ID: 417179	API #: _____	County Name: WELD
Facility Name: COTTONWOOD TANK BATTERY 12-33	Latitude: 40.089717	Longitude: -104.788849	
** correct Lat/Long if needed: Latitude: 40.089843		Longitude: -104.788764	
QtrQtr: SWSW	Sec: 33	Twp: 2N	Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SW _____ Most Sensitive Adjacent Land Use Non-crop land _____

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

Multiple buildings and livestock holding pens are located within ¼ mile of the wellheads.
 The nearest building is located approximately 960 feet northwest of the wellheads.
 The nearest domestic water well is located approximately 1,180 feet south of the wellheads.
 Surface water is located approximately 1,020 feet southeast of the wellheads.
 A wetland is located approximately 840 feet southeast of the wellheads.

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 checked="" type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input checked="" 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 encountered	Inspection/soil samples/laboratory analytical 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.

Wellhead cut and cap operations were completed at the Cottonwood 11, 12, 13, 32, 33, 34-33 wellheads on March 4, 2022. Groundwater was not encountered in the wellhead cut and cap excavation area. Visual inspection and field screening of soils around the wells and associated pumping equipment was conducted following cut and cap operations, and soil samples (11-33-WH-B01@6', 12-33-WH-B01@6', 13-33-WH-B01@6', 32-33-WH-B01@6', 33-33-WH-B01@6', and 34-33-WH-B01@6') were submitted for laboratory analysis to determine if a release occurred. The flowlines associated with these wellheads were removed on April 14 through 21, 2022. Soil samples were collected from the locations where the flowline risers were disconnected at the wellheads (11-33-FL-B01@3', 12-33-FL-B01@3', 13-33-FL-B01@3', 32-33-FL-B01@3', 33-33-FL-B01@3', and 34-33-FL-B01@3') and separator (FL-B01@4' and FL-B02@4'), and where the flowlines changed direction (FL-B13@4'), and submitted for laboratory analysis to determine if a release occurred. Additionally, soil samples were collected from select wellhead excavation sidewall screening locations (33-33-WH-N01@5' and WH-S01@5'), based on PID readings. A topographic Site Location Map showing the geographic setting of the site location is provided as Figure 1. Soil sample location and field screening data are presented in Table 1. The wellhead soil sample and field screening locations are illustrated on Figure 2. The flowline soil sample and field screening locations are illustrated on Figure 3. The field notes and a photographic log are provided as Attachment B.

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):

On March 4 through April 21, 2022, 17 soil samples were collected from the excavation and flowline removal potholes. Based on PID readings, samples 32-33-FL-B01@3', 33-33-WH-N01@5', and 33-33-WH-S01@5' were submitted for laboratory analysis of the full Table 915-1 analytical suite. The remaining soil samples were submitted for laboratory analysis of select Table 915-1 constituents in accordance with the COGCC Operator Guidance document. Analytical results indicated that constituent concentrations in the confirmation soil samples were in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background concentrations, with exception to the pH values in multiple samples. However, the pH results were within the acceptable range of soil variability, and they alone do not indicate that a hydrocarbon or produced water release occurred at the former wellheads. Due to the depth of the elevated pH results, they were determined to be acceptable to leave in place.

Proposed Groundwater Sampling

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

Groundwater was not encountered during wellhead cut and cap or flowline removal operations.

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):

On March 4, 2022, visual inspection and field screening of soils was conducted at 12 sidewall locations within the wellhead cut and cap excavation area, and 14 locations at the ground surface adjacent to the cut and cap excavation. Based on the inspection and screening results, no soil samples were submitted from these areas in accordance with COGCC Operator Guidance. On March 11, 2022, a soil gas survey was conducted at 27 soil vapor points installed adjacent to the former Cottonwood 11, 12, 13, 32, 33, 34-33 wellheads following cut and cap operations. GEM 5000 field readings were non-detect for methane at all 5 soil vapor points. The SVP screening results are summarized in Table 6. Soil analytical results are presented in Tables 2 through 5. The laboratory analytical reports are provided as Attachment A. The field notes and a photographic log are provided as Attachment B.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 17
Number of soil samples exceeding 915-1 0
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 0

NA / ND

ND Highest concentration of TPH (mg/kg) _____
-- Highest concentration of SAR 7.71
BTEX > 915-1 No
Vertical Extent > 915-1 (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 915-1 _____

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 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?

Were background samples collected as part of this site investigation?

Background soil samples WH-BG01@3' - WH-BG03@3' and WH-BG01@6' - WH-BG03@6' were collected from native material adjacent to the wellhead cut and cap excavation area. The background soil samples were submitted for laboratory analysis of the Soil Suitability for Reclamation Parameters and Table 915-1 metals using standard methods appropriate for detecting the target analytes in Table 915-1. Analytical results for the background soil samples are presented in Tables 4 and 5.

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.

Laboratory results indicate that constituent concentrations in the 17 soil samples collected from the wellhead cut and cap excavation area and during flowline removal were in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background concentrations, with exception to the pH values in multiple samples. However, the pH results were within the acceptable range of soil variability, and they alone do not indicate that a hydrocarbon or produced water release occurred at the former wellheads. Due to the depth of the elevated pH results, they were determined to be acceptable to leave in place. As such, no soils were removed during wellhead cut and cap or flowline removal operations. The excavation areas were backfilled and contoured to match pre-existing site conditions.

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.

Laboratory results indicate that constituent concentrations in the 17 soil samples collected from the wellhead cut and cap excavation area and during flowline removal were in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background concentrations, with exception to the pH values in multiple samples. However, the pH results were within the acceptable range of soil variability, and they alone do not indicate that a hydrocarbon or produced water release occurred at the former wellheads. Due to the depth of the elevated pH results, they were determined to be acceptable to leave in place. Groundwater was not encountered during wellhead cut and cap or flowline removal operations. Based on the analytical and soil screening data presented herein, assessment is complete at this site and no further activities are required. As such, Kerr-McGee is requesting a No Further Action (NFA) determination for this location.

Soil Remediation Summary

In Situ

Ex Situ

- _____ Bioremediation (or enhanced bioremediation)
- _____ Chemical oxidation
- _____ Air sparge / Soil vapor extraction
- _____ Natural Attenuation
- _____ Other _____

- _____ 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

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 NFA Request _____

Adequacy of Operator's General Liability Insurance and Financial Assurance

Describe the adequacy of the Operator's general liability insurance and Financial Assurance to fully address the anticipated costs of Remediation, including the estimated remaining cost for this project (below).
If this information has been provided on a Form 27 within the last 12 months, provide the Document Number of that form.

KMOG has sufficient insurance and bonding to fully address the anticipated costs of Remediation, including the remaining estimated costs for this project. KMOG currently has over 40 million in bonds with the Colorado Oil and Gas Conservation Commission.

Operator anticipates the remaining cost for this project to be: \$ 0 _____

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? 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? Yes

Is additional groundwater monitoring to be conducted? _____

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 site will be reclaimed in accordance with COGCC 1000 Series Reclamation Rules.

Is the described reclamation complete? _____

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. 11/18/2021

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/04/2022

Proposed site investigation commencement. 03/04/2022

Proposed completion of site investigation. 04/21/2022

REMEDIAL ACTION DATES

Proposed start date of Remediation. _____

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

Laboratory results indicate that constituent concentrations in the 17 soil samples collected from the wellhead cut and cap excavation area and during flowline removal were in compliance with COGCC Table 915-1 standards and/or within the range of site-specific background concentrations, with exception to the pH values in multiple samples. However, the pH results were within the acceptable range of soil variability, and they alone do not indicate that a hydrocarbon or produced water release occurred at the former wellheads. Due to the depth of the elevated pH results, they were determined to be acceptable to leave in place. As a result, Kerr-McGee is requesting an NFA determination for this location, based on the analytical and soil screening data provided herein.

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

Signed: Gregory Hamilton

Title: Environmental Consultant

Submit Date: 07/20/2022

Email: Gregory_Hamilton@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: Candice (Nikki) Graber

Date: 11/30/2022

Remediation Project Number: 22016

COA Type**Description**

	COGCC removed closure of this remediation project. pH of 10.7 and 11.8 is not within the acceptable range of soil variability (background between 7.71 - 8.62). Operator shall collect an additional sample from 11-33-WH-B01@6', 12-33-WH-B01@6', and 12-33-WH-B01@6' and analyze for Full Table 915-1.
1 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**

403110421	FORM 27-SUPPLEMENTAL-SUBMITTED
403110573	SITE MAP
403111092	PHOTO DOCUMENTATION
403111093	OTHER
403111156	ANALYTICAL RESULTS
403111243	SOIL SAMPLE LOCATION MAP
403111342	ANALYTICAL RESULTS
403111353	SOIL SAMPLE LOCATION MAP

Total Attach: 8 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)