

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:

403256889

Receive Date:

12/14/2022

Report taken by:

BOB CHESSON

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 #: 23522 Initial Form 27 Document #: 403070659

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>LOCATION</u>	Facility ID: <u>332556</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>PSC-63N67W 11SWSE</u>		Latitude: <u>40.233850</u>	Longitude: <u>-104.856680</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>SWSE</u>	Sec: <u>11</u>	Twp: <u>3N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>481901</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>PSC-63N67W Separator Release</u>		Latitude: <u>40.236063</u>	Longitude: <u>-104.855308</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>SWSE</u>	Sec: <u>11</u>	Twp: <u>3N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications CH

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

The nearest domestic water well is located approximately 625 feet south of the release location.
Surface water is located approximately 625 feet northwest of the release location.
A wetland is located approximately 1,050 feet south of the release location.

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 sampling / laboratory analysis
Yes	SOILS	80' (N-S) x 60' (E-W) x 12' bgs	Excavation / soil sampling / 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 February 23, 2022, an estimated 0.23 barrels of condensate were released to the ground surface at the PSC-63N67W (PSC 15-11) Production Facility due to a broken sight glass on the separator. During soil cleanup activities on March 18, 2022, the release became State Reportable due to observed soil impacts in contact with groundwater. The COGCC issued Spill/Release Point 481901 for this release (COGCC Document No. 402988996). On March 21, 2022, soil samples B01@6' and W01@5' were collected from the initial excavation area during ongoing cleanup activities. Based on the field screening results and photoionization detector (PID) readings, these samples were selected for waste characterization purposes and were submitted for laboratory analysis of the full Table 915-1 analytical suite using COGCC-approved methods. Analytical results for the waste characterization samples indicated that soil impacts were present due to benzene, toluene, ethylbenzene, total xylenes (BTEX), total petroleum hydrocarbons (TPH), 1,2,4- and 1,3,5-trimethylbenzene (TMB), polycyclic aromatic hydrocarbons (PAHs), arsenic (As), and selenium (Se). Groundwater was encountered within the excavation area at approximately 6 feet below ground surface (bgs). Excavation and site assessment activities are ongoing, and will be summarized in a forthcoming Form 27-Supplemental update. Soil and groundwater sample location and field screening data are presented in Table 1.

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 have been collected from the base and sidewalls of the excavation area at depths ranging from approximately 5 to 12 feet bgs. Based on the waste characterization results for samples B01@6' and W01@5, subsequent confirmation soil samples have been submitted for analysis of BTEX, 1,2,4- and 1,3,5-TMB, TPH-GRO (C6-C10), DRO (C10-C28), and ORO (C28-C40), PAHs, As, and Se, as approved by the COGCC in the Initial Form 27 (COGCC Document No. 403070659). Excavation and soil sampling activities are ongoing, and will be summarized in a forthcoming Form 27-Supplemental update. Confirmation soil samples will continue to be submitted for laboratory analysis of the reduced analytical suite described herein, based on the waste characterization results. The current excavation extents and associated soil sample locations are illustrated on Figure 1. Soil analytical results are summarized in Tables 2 through 5.

Proposed Groundwater Sampling

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

Groundwater was encountered within the excavation area at approximately 6 feet bgs. On March 21, 2022, a groundwater sample (GW01) was collected from the excavation area and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4- and 1,3,5-TMB by United States Environmental Protection Agency (USEPA) Method 8260D. Groundwater analytical results indicate that the benzene, toluene, total xylenes, naphthalene, 1,2,4- and 1,3,5-TMB concentrations in sample GW01 exceeded the COGCC Table 915-1 standards. Groundwater analytical data is presented in Table 6, and the groundwater sample location is illustrated on Figure 1.

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):

Excavation and site assessment activities to address remaining soil impacts are currently ongoing, and will be summarized in a forthcoming Form 27-Supplemental update. Soil and groundwater sample location and field screening data are presented in Table 1. Soil analytical results are summarized in Tables 2 through 5. Groundwater analytical results are summarized in Table 6. The current excavation extent and associated soil and groundwater sample locations are illustrated on Figure 1. The laboratory analytical report for the soil samples collected since the previous Form 27-Supplemental update (COGCC Document No. 403162769) was submitted on September 14, 2022, are provided as Attachment A. The field notes and photographic log are provided as Attachment B.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 39

Number of soil samples exceeding 915-1 18

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet) 4800

NA / ND

-- Highest concentration of TPH (mg/kg) 6641

-- Highest concentration of SAR 0.781

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 10

Groundwater

Number of groundwater samples collected 1

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 6

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 1

-- Highest concentration of Benzene (µg/l) 1160

-- Highest concentration of Toluene (µg/l) 5400

-- Highest concentration of Ethylbenzene (µg/l) 491

-- Highest concentration of Xylene (µg/l) 5930

NA 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 BG01@4' - BG04@4', BG05@5', BH05@8', and BH06@4' - BG08@4' were collected from native material adjacent to the release area. The background soil samples were submitted for laboratory analysis of the Soil Suitability for Reclamation Parameters and/or select 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?

Impacted soil and groundwater remain at the site. Excavation and site assessment activities to address remaining soil impacts are currently ongoing and will be summarized in a forthcoming Form 27-Supplemental update. Following the completion of impacted soil excavation activities, groundwater monitoring wells will be installed at the site to fully define the nature and extent of the remaining groundwater impacts. The temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents.

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.

To-date, approximately 162 cubic yards of impacted soil slurry have been removed from the excavation area via vacuum truck hydro-excavation activities and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling; approximately 2,650 cubic yards of impacted material have been excavated and transported to the Front Range Landfill in Erie, Colorado for disposal; approximately 790 cubic yards of impacted material have been excavated and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. To-date, approximately 9,494 barrels of impacted groundwater have been removed from the excavation area via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. Excavation and site assessment activities are ongoing and will be summarized in a forthcoming Form 27-Supplemental update.

REMEDIAL 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.

Impacted soil and groundwater remains at the site. Excavation and site assessment activities to address remaining soil impacts are currently ongoing and will be summarized in a forthcoming Form 27-Supplemental update. Following the completion of impacted soil excavation activities, temporary groundwater monitoring wells will be installed at the site to fully define the nature and extent of the remaining groundwater impacts. The temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents until concentrations remain in compliance with COGCC standards. Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of impacted soil and groundwater, and the efficacy of the selected remedial technologies.

Soil Remediation Summary

<input type="checkbox"/> In Situ	<input checked="" type="checkbox"/> Ex Situ
<input type="checkbox"/> Bioremediation (or enhanced bioremediation)	<input type="checkbox"/> Yes Excavate and offsite disposal
<input type="checkbox"/> Chemical oxidation	<input type="checkbox"/> If Yes: Estimated Volume (Cubic Yards) 3602
<input type="checkbox"/> Air sparge / Soil vapor extraction	<input type="checkbox"/> Name of Licensed Disposal Facility or COGCC Facility ID # 434766
<input type="checkbox"/> Natural Attenuation	<input type="checkbox"/> No Excavate and onsite remediation
<input type="checkbox"/> Other	<input type="checkbox"/> Land Treatment
	<input type="checkbox"/> Bioremediation (or enhanced bioremediation)
	<input type="checkbox"/> Chemical oxidation
	<input type="checkbox"/> Other

Groundwater Remediation Summary

<input type="checkbox"/> No	<input type="checkbox"/> Bioremediation (or enhanced bioremediation)
<input type="checkbox"/> No	<input type="checkbox"/> Chemical oxidation
<input type="checkbox"/> No	<input type="checkbox"/> Air sparge / Soil vapor extraction
<input type="checkbox"/> Yes	<input type="checkbox"/> Natural Attenuation
<input type="checkbox"/> No	<input type="checkbox"/> 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.

Following the completion of impacted soil excavation activities, temporary groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the remaining groundwater impacts. The temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of Table 915-1 constituents. A groundwater monitoring location figure illustrating the locations of the surveyed temporary monitoring wells will be provided in a Form 27-Supplemental update.

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 Remediation progress update

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. The cost for remediation is a preliminary estimate only, costs may change upwards or downward based on site-specific information. KMOG makes no representation or guarantees as to the accuracy of the preliminary estimate.

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

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 162 cubic yards of impacted soil slurry have been removed from the excavation area via vacuum truck hydro-excavation activities and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. Approximately 9,494 barrels of impacted groundwater have been removed from the excavation area via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards 3602

E&P waste (solid) description Impacted soil

COGCC Disposal Facility ID #, if applicable: 434766

Non-COGCC Disposal Facility: Front Range Landfill - Erie, Colorado;
Buffalo Ridge Landfill - Keenesburg,
Colorado

Volume of E&P Waste (liquid) in barrels 9494

E&P waste (liquid) description Impacted groundwater

COGCC Disposal Facility ID #, if applicable: 434766

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? _____

Does the previous reply indicate consideration of background concentrations? _____

Does Groundwater meet Table 915-1 standards? _____

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.

Following the completion of excavation and assessment activities, the site will be restored to its pre-release grade and Kerr-McGee's production infrastructure will be replaced.

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. 03/21/2022

Actual Spill or Release date, or date of discovery. 03/18/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/23/2022

Proposed site investigation commencement. 03/21/2022

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 02/23/2022

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

Excavation and site assessment activities to address remaining soil impacts are currently ongoing, and will be summarized in a forthcoming Form 27-Supplemental update. Form 27-Supplemental updates will continue to be submitted to the COGCC on a quarterly basis.

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: 12/14/2022

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: BOB CHESSON

Date: 03/13/2023

Remediation Project Number: 23522

COA Type**Description**

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**

403256889	FORM 27-SUPPLEMENTAL-SUBMITTED
403257001	PHOTO DOCUMENTATION
403257004	SOIL SAMPLE LOCATION MAP
403257005	ANALYTICAL RESULTS
403257278	ANALYTICAL RESULTS

Total Attach: 5 Files

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

Environmental	This Form 27 Supplemental is being approved as submitted. However, the next Form 27 Supplemental must be populated with the Adequacy of Operator's General Liability Insurance and Financial Assurance data field under the Remediation Progress Update tab to describe how Operator's Financial Assurance meets the requirements of Rule 703.b. and General Liability Insurance meets the requirements of Rule 705.b.	03/13/2023
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Total: 1 comment(s)