

State of Colorado
Energy & Carbon Management Commission

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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 ECMC 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: KERR MCGEE OIL & GAS ONSHORE LP	Operator No: 47120	Phone Numbers
Address: P O BOX 173779		Phone: (720) 929-4306
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Erik Mickelson	Email: DJRemediation_Forms@oxy.com	Mobile: ()

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 30488 Initial Form 27 Document #: 403448682

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: LOCATION Facility ID: 432204 API #: _____ County Name: WELD

Facility Name: MCKINSTRY 2C-21HZ Latitude: 40.216703 Longitude: -104.981393

** correct Lat/Long if needed: Latitude: 40.218393 Longitude: -104.981121

QtrQtr: NENE Sec: 22 Twp: 3N Range: 68W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 484800 API #: _____ County Name: WELD

Facility Name: MCKINSTRY 28N 21N 7C 2N O SA Latitude: 40.218020 Longitude: -104.981240

** correct Lat/Long if needed: Latitude: _____ Longitude: _____

QtrQtr: NENE Sec: 22 Twp: 3N Range: 68W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use Crop land

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

Domestic water well: none
Surface water: approximately 10' N
Wetlands: none
Spring: none
Livestock: none
Occupied Building: multiple occupied buildings within 1/4 mile
High Priority Habitats: none

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
Yes	GROUNDWATER	TBD	Groundwater samples/laboratory analytical results
Yes	SOILS	55' (E-W) x 25' (N-S) x 18' bgs	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.

Assessment activities were completed at the McKinstry 28N 21N 7C 2N O SA facility on June 7, 2023, to assess a release from a water line failure due to corrosion. Visual inspection and field screening of soils at the release location was completed and soil sample Initial Waste Characterization@3" was collected and submitted for laboratory analysis of the full ECMC Table 915-1 suite using ECMC-approved methods appropriate for detecting the target analytes. Analytical results indicated that the BTEX, TPH, naphthalene, TMBs, boron, SAR, EC, 1-methylnaph, 2-methylnaph, benzo(a)anthracene, arsenic, and barium concentrations in soil sample Initial Waste Characterization@3" exceeded the applicable ECMC Table 915-1 standards. As such, a Form 19-Initial Spill/Release Report (ECMC Document No. 403426060) was submitted on June 9, 2023, and the ECMC issued Spill/Release Point ID 484800. Additional assessment and excavation activities were completed to remove soil impacts through October 5, 2023. Groundwater was encountered during excavation activities at approximately 13 feet bgs. 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 is presented in Table 1. The soil sample and field screening locations are illustrated on Figures 2 and 3. The laboratory analytical reports are provided as Attachment A. 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):

From 6/7/23 - 10/5/23, excavation activities were conducted to address remaining soil impacts at the separator location, and 20 confirmation soil samples were collected from the base and sidewalls of the final excavation extent at depths ranging from approximately 3' - 18' bgs. Based on waste characterization results (Initial Waste Characterization@3"), the confirmation soil samples were submitted for laboratory analysis of BTEX, naphthalene, TMBs, TPH, boron, SAR, EC, PAHs, As, Ba, Se, and Cd. Analytical results for the soil samples collected from the final excavation extent were in compliance with the applicable ECMC Table 915-1 standards with exception to the As, Ba, Se, boron, SAR, and/or EC concentrations in multiple samples. However, the remaining As, Ba, and Se impacts will be left in-place at this time, to be addressed through quarterly groundwater monitoring and collection of additional background soil samples to further characterize arsenic concentrations in native soil.

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 area at approximately 13 feet bgs. On September 5, 2023, groundwater sample GW-01 was collected from the excavation area and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4- and 1,3,5-TMB, by USEPA Method 8260D. Analytical results indicate that the benzene concentration in groundwater sample GW-01 exceed the ECMC Table 915-1 standard. Based on the remaining metal impacts in the excavation area, future groundwater samples will be submitted for the ECMC Table 915-1 groundwater analytical suite, as well as dissolved arsenic, barium, and selenium. The groundwater sample location is illustrated on Figure 2, and groundwater analytical results are summarized in Table 6.

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):

Collection of additional background soil samples is planned for the fall of 2024 once crops are harvested to further characterize arsenic concentrations in native soil.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil		NA / ND	
Number of soil samples collected	50	--	Highest concentration of TPH (mg/kg) 962
Number of soil samples exceeding 915-1	43	--	Highest concentration of SAR 58.8
Was the areal and vertical extent of soil contamination delineated?	Yes		BTEX > 915-1 Yes
Approximate areal extent (square feet)	1375		Vertical Extent > 915-1 (in feet) 18
Groundwater			
Number of groundwater samples collected	1	--	Highest concentration of Benzene (µg/l) 37.3
Was extent of groundwater contaminated delineated?	No	--	Highest concentration of Toluene (µg/l) 14
Depth to groundwater (below ground surface, in feet)	13	--	Highest concentration of Ethylbenzene (µg/l) 2.83
Number of groundwater monitoring wells installed	0	--	Highest concentration of Xylene (µg/l) 48.2
Number of groundwater samples exceeding 915-1	1	ND	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 SEP-BG01@3" - SEP-BG04@3" were collected from non-impacted areas with similar lithology and land use to the release location. The background soil samples were submitted for laboratory analysis of the Soil Suitability for Reclamation Parameters and Table 915 -1 Metals in Soils using standard methods appropriate for detecting target analytes in Table 915-1. Analytical results for the background soil samples are presented in Tables 3 and 5.

Additional background soil samples will be collected in the fall of 2024 once crops are harvested to further characterize arsenic concentrations in native soil.

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?

Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the remaining soil and groundwater impacts. Based on the remaining metal impacts in the separator excavation area, the temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of the ECMC Table 915-1 groundwater analytical suite, as well as dissolved arsenic, barium, and selenium.

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.

Between June 7, 2023 - October 5, 2023, approximately 1180 cubic yards of impacted material were excavated and transported to the Front Range Landfill in Erie, Colorado for disposal; approximately 843 barrels of impacted groundwater and approximately 324 cubic yards of impacted hydro-excavation soil slurry were removed from the separator excavation area via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility for recycling. Laboratory analytical results indicate that constituent concentrations in the confirmation soil samples collected from the final lateral and vertical extents of the excavation area were in compliance with ECMC Table 915-1 standards, with exception to the arsenic, barium, selenium, SAR, EC, and/or boron concentrations in multiple samples. However, due to the release location being on an active facility pad, Kerr-McGee is requesting the Director's approval to leave the remaining metal impacts in-place at this time, to be addressed through quarterly groundwater monitoring and collection of additional background soil samples to further characterize native soil conditions. The excavation areas will be backfilled and contoured to match pre-existing conditions.

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.

Laboratory analytical results indicate that constituent concentrations in the confirmation soil samples collected from the final lateral and vertical extents of the excavation area were in compliance with ECMC Table 915-1 standards, with exception to the arsenic, barium, selenium, SAR, EC, and/or boron concentrations in multiple samples. However, due to the release location being on an active facility pad, Kerr-McGee is requesting the Director's approval to leave the remaining metal impacts in-place at this time, to be addressed through quarterly groundwater monitoring and through collection of additional background soil samples to further characterize native soil conditions. Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the remaining soil and groundwater impacts. Based on the remaining metal impacts in the separator excavation area, the temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of the ECMC Table 915-1 groundwater analytical suite, as well as dissolved arsenic, barium, and selenium. Estimated time to attain NFA is TBD based on the groundwater concentrations, the extent of impacted groundwater, and the efficacy of the selected remedial technologies.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) _____ 1504

_____ Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or ECMC Facility ID # _____ 434766

_____ Natural Attenuation

_____ Excavate and onsite remediation

_____ Other _____

_____ 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.

Groundwater monitoring wells will be installed at the site to fully define the extent and magnitude of the remaining soil and groundwater impacts. Based on the remaining metal impacts to soil in the separator excavation area, the temporary groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of the ECMC Table 915-1 groundwater analytical suite, as well as dissolved arsenic, barium, and selenium. 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 _____

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 ECMC. The cost for remediation is a preliminary estimate only, costs may change upwards or downwards 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: \$ 14500 _____

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 843 barrels of impacted groundwater and approximately 324 cubic yards of impacted hydro-excavation soil slurry were removed from the separator excavation area via vacuum truck and transported to the Kerr-McGee Aggregate Recycle Facility for recycling.

Volume of E&P Waste (solid) in cubic yards _____ 1504

E&P waste (solid) description impacted soil

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: Front Range Landfill - Erie, Colorado

Volume of E&P Waste (liquid) in barrels _____ 843

E&P waste (liquid) description Impacted groundwater

ECMC Disposal Facility ID #, if applicable: _____ 434766

Non-ECMC 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 ECMC 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 ECMC 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. 06/07/2023

Actual Spill or Release date, or date of discovery. 06/07/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/07/2023

Proposed site investigation commencement. 06/07/2023

Proposed completion of site investigation. 12/31/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 06/07/2023

Proposed date of completion of Remediation. 10/31/2025

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

In response to the conditions of approval (COA) issued in the previous Form 27-Supplemental (Document No. 403772697), submitted to the ECMC on April 30, 2024, and approved on June 27, 2024, additional background soil samples will be collected in the fall of 2024 once crops are harvested to further characterize arsenic concentrations in native soil.

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

Signed: Erik Mickelson _____

Title: Environmental Lead _____

Submit Date: _____

Email: DJRemediation_Forms@oxy.com _____

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with ECMC Rules and applicable orders and is hereby approved.

ECMC Approved: _____

Date: _____

Remediation Project Number: 30488 _____

COA Type**Description**

COA Type	Description
0 COA	

ATTACHMENT 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**

403911385	PHOTO DOCUMENTATION
403911414	SITE MAP
403911423	SOIL SAMPLE LOCATION MAP
403911426	SOIL SAMPLE LOCATION MAP
403911432	ANALYTICAL RESULTS
403911560	ANALYTICAL RESULTS

Total Attach: 6 Files

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

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)