

State of Colorado
Energy & Carbon Management Commission

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Document Number:

404011937

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: (970) 515-1110
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Macy Kiel	Email: DJRemediation_Forms@oxy.com	Mobile: ()

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 27095 Initial Form 27 Document #: 403301119

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: PIT	Facility ID: 118064	API #: _____	County Name: WELD
Facility Name: STATE 2	Latitude: 40.221777	Longitude: -104.673267	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: CSW	Sec: 16	Twp: 3N	Range: 65W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION	Facility ID: 317677	API #: _____	County Name: WELD
Facility Name: STATE-63N65W 16CSW	Latitude: 40.221730	Longitude: -104.673030	
** correct Lat/Long if needed: Latitude: 40.222002		Longitude: -104.673219	
QtrQtr: CSW	Sec: 16	Twp: 3N	Range: 65W Meridian: 6 Sensitive Area? Yes

Facility Type: <u>SPILL OR RELEASE</u>		Facility ID: <u>484421</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Megan H 16-33 O SA Tank Battery</u>		Latitude: <u>40.222002</u>	Longitude: <u>-104.673219</u>	
** correct Lat/Long if needed: Latitude: _____ Longitude: _____				
QtrQtr: <u>CSW</u>	Sec: <u>16</u>	Twp: <u>3N</u>	Range: <u>65W</u>	Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications <u>SC</u>	Most Sensitive Adjacent Land Use <u>livestock</u>
Is domestic water well within 1/4 mile? <u>No</u>	Is surface water within 1/4 mile? <u>No</u>
Is groundwater less than 20 feet below ground surface? <u>Yes</u>	

Other Potential Receptors within 1/4 mile

Domestic water well: none
 Surface water: none
 Wetlands: none
 Spring: none
 Livestock: none
 Occupied Building: none
 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	TBD	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.

Facility decommissioning activities were completed at the Megan H 16-33 O SA production facility on April 18-26, 2023, as summarized in Form 27-Supplemental Document #403872384. Laboratory analytical results indicated that benzene, ethylbenzene, total xylenes, TPH, naph., TMBs, pH, SAR, 1 and 2 methylnaphthalene, arsenic, and barium concentrations in soil samples collected from beneath the former PWV exceeded the applicable ECMC Table 915-1 standards, and the ECMC issued Spill/Release Point ID 484421 for this release.

From 4/18/23-11/26/24 excavation activities were conducted and 276 soil samples have been collected from the base and sidewalls of the excavation ranging in depths of approximately 2.5' to 41.5' feet below ground surface (bgs). Based on the waste characterization results (PW-B01@5'), subsequent soil samples have been submitted for laboratory analysis of BTEX, TPH, naph., TMBs, pH, SAR, PAHs, arsenic, barium, cadmium, and selenium using ECMC-approved methods. On 11/26/24, 54 confirmation soil samples were collected from the current excavation extent and submitted for laboratory analysis of the full ECMC Table 915-1. Results from the samples collected from the current excavation extent on 11/26/24 are pending and will be summarized in the next Form 27-Supplemental. Initial analytical results for the samples still in place indicate that organic and inorganic impacts remain at the base of the excavation (PW-B35@41.5'), and inorganic concentrations exceeding Table 915-1 standards/background limits remain in multiple sidewall samples. Due to the presence of groundwater within the base of the excavation, deeper excavation activities are unable to safely continue.

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):

To delineate the remaining impacts, 14 soil borings were advanced around the outside of the current excavation extent to approximately 45' - 55' bgs. Temporary monitoring wells were installed in each soil boring location. Soil samples were collected based on the interval exhibiting the highest PID and/or from the interval above the observed water table. The soil samples were submitted for analysis of the full ECMC Table 915-1 analytical suite using ECMC-approved methods. Final analytical results for the delineation soil samples are pending and will be summarized in the next Form 27-Supplemental. Based on final analytical results, additional soil borings may be advanced to delineate any remaining impacts. Additional background soil samples will be collected to access native soil conditions and to address the remaining inorganic exceedances. Following receipt of final analytical data, a remedial path forward will be developed. Soil analytical results are summarized in Tables 2 - 5.

Proposed Groundwater Sampling

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

Depth to groundwater was observed at approximately 15' - 36' bgs within the 14 temporary monitoring wells and at approximately 42' within the excavation area. On 7/16/24 - 11/12/24, groundwater samples (GW-01, MW-01 - MW-12) were collected and submitted for laboratory analysis of Table 915-1 organic and inorganic compounds in groundwater. Analytical results indicate that 1,2,4-TMB, and 1,3,5-TMB concentrations in groundwater samples MW-02 and MW-04 exceeded the ECMC Table 915-1 standards. The groundwater elevation data is summarized in Table 6 and presented on Figure 23. The groundwater analytical results are summarized on Tables 7 and 8. Monitoring well locations are illustrated on Figure 22.

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 topographic Site Location Map showing the geographic setting of the site location is provided as Figure 1. The soil sample locations are illustrated on Figures 2 through 20. The laboratory analytical results are attached. The field notes and a photographic log are provided as Attachment A. The soil boring logs are provided as Attachment B.

On April 18 through 26, 2023, visual inspections and field screening of soils was conducted at the three former meter houses, three former ASTs, and one former ECD. Based on the inspection and screening results, hydrocarbon impacted soils were not observed at the soil screening locations. As a result, no soil samples were submitted for laboratory analysis from these areas in accordance with the ECMC Operator Guidance for Oil & Gas Facility Closure document.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 294

Number of soil samples exceeding 915-1 289

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

Approximate areal extent (square feet) 40000

NA / ND

-- Highest concentration of TPH (mg/kg) 5623

-- Highest concentration of SAR 23.9

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 42

Groundwater

Number of groundwater samples collected 13

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 15

Number of groundwater monitoring wells installed 14

Number of groundwater samples exceeding 915-1 5

-- Highest concentration of Benzene (µg/l) 1.08

ND Highest concentration of Toluene (µg/l)

-- Highest concentration of Ethylbenzene (µg/l) 23.4

-- Highest concentration of Xylene (µg/l) 104

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 PW-BG05 - PW-BG09 were collected from native material (Olney loamy sand) adjacent to the former PWV excavation at depths ranging from 8-20' bgs. Background soil samples from the Megan H 16-12 JI and UPRC H17-99HZ wellheads (located within approximately 0.25 miles) collected from similar soil type (Olney loamy sand/Vona loamy sand), depth, and land use have been included. The background soil samples were submitted for laboratory analysis of the Soil Suitability for Reclamation Parameters and metals using standard methods appropriate for detecting target analytes in Table 915-1. Additional background soil samples may be collected following source removal activities. Analytical results for the background soil samples are presented in Tables 3-5. Background soil sample locations are illustrated in Figures 2 and 3.

☐ 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?

Final analytical results for the delineation and confirmation soil samples are pending and will be summarized in the next Form 27-Supplemental. Based on final analytical results, additional soil borings may be advanced to delineate any remaining impacts. Additional background soil samples will be collected to access native soil conditions and to address the remaining inorganic exceedances. Following receipt of final analytical data, a remedial path forward will be developed. The groundwater monitoring wells will be sampled on a quarterly basis and submitted for laboratory analysis of the ECMC Table 915-1 groundwater analytical suite.

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.

Analytical results for the soil samples still in place indicate that organic and inorganic impacts remain at the base of the excavation (PW-B35@41.5'), and inorganic concentrations exceeding Table 915-1 standards/background limits remain in multiple sidewall samples. Due to the presence of groundwater within the base of the excavation, deeper excavation activities are unable to safely continue. Additional background soil samples will be collected to access native soil conditions and to address the remaining inorganic exceedances. Final analytical results for the delineation and confirmation soil samples are pending and will be summarized in the next Form 27-Supplemental. Based on final analytical results, additional soil borings may be advanced to delineate any remaining impacts. Following receipt of final analytical data, a remedial path forward will be developed.

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.

Analytical results for the soil samples still in place indicate that organic and inorganic impacts remain at the base of the excavation (PW-B35@41.5'), and inorganic concentrations exceeding Table 915-1 standards/background limits remain in multiple sidewall samples. Due to the presence of groundwater within the base of the excavation, deeper excavation activities are unable to safely continue. Additional background soil samples will be collected to access native soil conditions and to address the remaining inorganic exceedances. Final analytical results for the delineation and confirmation soil samples are pending and will be summarized in the next Form 27-Supplemental. Based on final analytical results, additional soil borings may be advanced to delineate any remaining impacts. Following receipt of final analytical data, a remedial path forward will be developed. Prior to backfilling COGACpH® activated carbon will be added to the groundwater within the excavation area, to mitigate remaining hydrocarbon impacts in groundwater. 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

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☐ Ex Situ

_____ Excavate and offsite disposal

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ Name of Licensed Disposal Facility or ECMC 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

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.

On 10/31/24 - 11/19/24, 14 temporary groundwater monitoring wells (MW-01 - MW-14) were installed at the site to delineate remaining soil impacts and to monitoring groundwater conditions. Analytical results indicated that 1,2,4-TMB, and 1,3,5-TMB concentrations in groundwater samples MW-02 and MW-04 exceeded the ECMC Table 915-1 standards. As such, additional step-out temporary groundwater monitoring wells (MW-11 - MW14) were installed to delineate point of compliance. Analytical results for MW-13 and MW-14 are pending and will be summarized in the next Form 27-Supplemental. The monitoring well locations are depicted on Figure 22 and the groundwater elevation data is depicted on Figure 23.

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 the ECMC. 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: \$ 20000

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? ☐

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

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility:

Volume of E&P Waste (liquid) in barrels

E&P waste (liquid) description

ECMC Disposal Facility ID #, if applicable:

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 Remediation 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. 01/03/2023

Actual Spill or Release date, or date of discovery. 04/26/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 04/18/2023

Proposed site investigation commencement. 04/18/2023

Proposed completion of site investigation. 03/31/2026

REMEDIAL ACTION DATES

Proposed start date of Remediation. 04/26/2023

Proposed date of completion of Remediation. 03/31/2026

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 COAs on the previous Form 27-Supplemental (Document #403872384):

-An additional soil sample has been collected from beneath the former separator area and submitted for the full Table 915-1. Analytical results are pending and will be included in the next Form 27-Supplemental update.

-All site and investigation and remediation activities to date for this remediation project have been included on this report. Figures 3 through 19 illustrate all former excavation limits and soil samples collected. Figure 20 illustrates a current excavation map, with the exception of soil samples collected on 11/26/24, which will be included on the next Form 27-Supplemental update. Boring logs, monitoring well locations, and a groundwater contour map have been attached.

-The Proposed dates of Site Investigation and Remediation Completion have been updated.

-Site characterization is ongoing. Soil borings have been advanced to delineate the horizontal and vertical extent of impacts and final analytical results are pending.

-Soil samples from the current excavation extent have been collected and submitted for laboratory analysis of the full Table 915-1, analytical results are pending and will be included in the next Form 27-Supplemental update.

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

Signed: Macy Kiel

Title: Environmental Engineer

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: 27095

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

404012437	PHOTO DOCUMENTATION
404012448	SITE MAP
404012460	SOIL SAMPLE LOCATION MAP
404012461	SOIL SAMPLE LOCATION MAP
404012462	SOIL SAMPLE LOCATION MAP
404012463	SOIL SAMPLE LOCATION MAP
404012465	SOIL SAMPLE LOCATION MAP
404012467	SOIL SAMPLE LOCATION MAP
404012468	ANALYTICAL RESULTS
404012469	LOGS
404012470	ANALYTICAL RESULTS
404012472	ANALYTICAL RESULTS
404012473	ANALYTICAL RESULTS
404012475	ANALYTICAL RESULTS
404012477	ANALYTICAL RESULTS
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404012534	ANALYTICAL RESULTS
404012536	ANALYTICAL RESULTS
404012537	ANALYTICAL RESULTS

Total Attach: 50 Files

General Comments

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

Total: 0 comment(s)