

State of Colorado
Energy & Carbon Management Commission

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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 ECOM 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		
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Erik Mickelson	Email: DJRemediation_Forms@oxy.com	Phone: (720) 929-4306
		Mobile: ()

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 36212 Initial Form 27 Document #: 403835660

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: TANK BATTERY Facility ID: 487124 API #: _____ County Name: WELD

Facility Name: MADRIGAL 02-22 Facility TB Latitude: 40.040340 Longitude: -104.768216

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

QtrQtr: CNW Sec: 22 Twp: 1N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 488427 API #: _____ County Name: WELD

Facility Name: Madrigal 02-22 Facility Latitude: 40.040451 Longitude: -104.768317

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

QtrQtr: NWNW Sec: 22 Twp: 1N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 489951 API #: _____ County Name: WELD
 Facility Name: Madrigal 02-22 Facility Latitude: 40.043784 Longitude: -104.771647
 ** correct Lat/Long if needed: Latitude: _____ Longitude: _____
 QtrQtr: NWNW Sec: 22 Twp: 1N Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Surface Water
 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

Pond 1,190 feet (ft) west. Irrigation Ditch 670 ft west. Water well 370 ft northwest. Occupied Buildings 880 ft northwest, 920 ft north, and 1,030 ft northeast. County Road 1,300 ft north. Agriculture. Groundwater at approximately 3 ft below ground surface (bgs).

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	TBD	Groundwater Samples/Laboratory Analytical Results
Yes	SOILS	See attached data.	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.

Decommissioning activities were completed at the Madrigal 02-22 facility on September 27, 2024. Groundwater was encountered at approximately 4 ft bgs. Visual inspection & field screening of soil at one aboveground storage tank (AST), one produced water vessel (PWV), one separator, one emission control device (ECD), & one pothole were conducted following removal activities. Soil samples (AST01@0.5', PWV-B01@4', PWV-N01@2', SEP01-INLET@3', & SEP01-OUTLET@3') were submitted for analysis of full list Table 915-1 constituents to determine if a release occurred. Portions of the sales line associated with the Madrigal 02-22 facility were removed on November 26, 2024. Samples were collected from the locations where the sales line was cut & capped [FL01(02-22)], the sales line crossed a ditch [FL02(02-22) & FL03(02-22)], & the sales line ended [FL04(02-22)]. The remainder of the sales line will be left in place due to proximity to the Brighton Lateral Ditch. Samples were submitted for full list Table 915-1 constituents to determine if a release occurred. Initial results indicated that pH impacts below the ECMC Table 915-1 acceptable range & background level were present at the AST location within lined containment. A verification sample was collected at the AST location & confirmed the initial result. As such, a Form 19 Initial/Supplemental Spill/Release Report (Document No. 403973239) was submitted on November 1, 2024, & the ECMC issued Spill/Release Point ID 488427. Results for all other samples were in compliance with the Table 915-1 allowable levels or within background levels x1.25 for Table 915-1 metals. The facility excavation & sales line are depicted on Figures 1 & 2. The PID readings and soil sample results are summarized in Tables 1 & 2, respectively.

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 February 14, 2025, excavation activities were conducted to address the remaining soil impacts at the former AST and one sample was collected from the base of the excavation beneath the removed liner at a depth of 2.5 ft bgs. The sample was submitted for analysis of the site-specific waste profile including pH and select Table 915-1 metals, using ECMC-approved methods. Laboratory analytical results indicate that the sample was within the ECMC Table 915-1 allowable levels or background levels x1.25 for Table 915-1 metals. The laboratory reports are attached.

Proposed Groundwater Sampling

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

On November 26, 2024, a groundwater sample [GW-FL03(02-22)@4'] was collected from the FL03 pothole at a depth of 4 ft bgs. The groundwater sample was submitted for analysis of full list Table 915-1 constituents in groundwater. On April 1, 2025, one background groundwater sample (GW-BG07@9') was collected for Table 915-1 inorganic constituents in groundwater. Laboratory analytical results indicate that levels of chloride ion exceeding the ECMC Table 915-1 allowable level and background level are present in groundwater. As such, a Form 19 Initial/Supplemental Spill/Release Report (Document No. 404169208) was submitted on April 18, 2025, & the ECMC issued Spill/Release Point ID 489951. Due to the presence of compliant organic detections in soil at FL03 and the chloride exceedance, monitoring wells will be installed to delineate the dissolved-phase plume. The groundwater sample location is depicted on Figure 2. The groundwater sample analytical results are summarized in Table 3.

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):

Between September 27 and November 26, 2024, visual inspection and field screening of soil were conducted at the hatch and loadout of the AST, three sidewall locations within the PWV excavation, one dumpline pothole, twelve sales line potholes, and the ECD. Based on the inspection and screening results, hydrocarbon-impacted soil was not observed at the screening locations, and no soil samples were submitted for laboratory analysis from these areas, in accordance with the ECMC Operator Guidance. A photographic log is attached.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 18

Number of soil samples exceeding 915-1 13

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet) 1061

NA / ND

ND Highest concentration of TPH (mg/kg)

-- Highest concentration of SAR 11

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 3

Groundwater

Number of groundwater samples collected 1

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 4

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 1

ND Highest concentration of Benzene (µg/l)

ND Highest concentration of Toluene (µg/l)

ND Highest concentration of Ethylbenzene (µg/l)

ND Highest concentration of Xylene (µg/l)

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?

One tank battery background sample (TB-BG01@0.5') was collected from the soil used to construct the tank battery but is no longer being applied. Twelve background soil samples were collected from native material outside of the facility excavations. Background samples were submitted for laboratory analysis of pH, electrical conductivity (EC), sodium adsorption ratio (SAR), boron, and Table 915-1 metals using ECMC-approved methods. Analytical results indicate that arsenic and hexavalent chromium are naturally high in the soil used to construct the tank battery, and EC, SAR, pH, boron, arsenic, barium, hexavalent chromium, and selenium are naturally high in the native soil. The background soil sample analytical results are summarized in Table 2.

One background groundwater sample (GW-BG07@9') was collected for Table 915-1 inorganic constituents in groundwater. The background groundwater sample results are summarized in Table 3.

The background sample locations are depicted on Figure 1.

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?

Due to the presence of compliant organic detections in soil at FL03 and the chloride exceedance, monitoring wells will be installed to delineate the dissolved-phase plume. The monitoring well installation scope of work will be submitted in a subsequent Form 27 Supplemental report following confirmation of the completion of soil assessment activities.

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.

Impacted soil from the AST excavation will be removed and transported to a licensed disposal facility. Final disposal information will be provided upon completion of assessment activities. Disposal records are kept on file and available upon request. 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 data indicate that pH impacts below the ECMC Table 915-1 allowable level and background level have been remediate at the AST excavation area. All other samples were within the ECMC Table 915-1 allowable levels or background levels x1.25 for Table 915-1 metals. Groundwater was encountered at approximately 4 ft bgs. Analytical results indicate that levels of chloride ion exceeding the ECMC Table 915-1 allowable level and background level are present at FL03. Due to the presence of compliant organic detections in soil at FL03 and the chloride exceedance, monitoring wells will be installed to delineate the dissolved-phase plume. The monitoring well installation scope of work will be submitted in a subsequent Form 27 Supplemental report following confirmation of the completion of soil assessment activities.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ Air sparge / Soil vapor extraction

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

_____ 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.

Due to the presence of compliant organic detections in soil at FL03 and the chloride exceedance, monitoring wells will be installed to delineate the dissolved-phase plume. The monitoring well installation scope of work will be submitted in a subsequent Form 27 Supplemental report following confirmation of the completion of soil assessment activities.

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

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. 10/29/2024

Actual Spill or Release date, or date of discovery. 10/29/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/27/2024

Proposed site investigation commencement. 09/27/2024

Proposed completion of site investigation. 10/22/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/27/2024

Proposed date of completion of Remediation. 10/22/2026

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

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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: 36212

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**

404174210	SOIL SAMPLE LOCATION MAP
404174215	PHOTO DOCUMENTATION
404174216	LABORATORY ANALYTICAL REPORT
404174221	LABORATORY ANALYTICAL REPORT
404174222	LABORATORY ANALYTICAL REPORT
404193160	SOIL SAMPLE LOCATION MAP
404193170	ANALYTICAL DATA SUMMARY TABLE(S)

Total Attach: 7 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)