

State of Colorado
Energy & Carbon Management Commission

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Document Number:
404483912
Receive Date:

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.

Report taken by:

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: Max Moran	Email: DJRemediation_Forms@oxy.com	Phone: (720) 929-4307
		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 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, as approved in the Form 27 Document No. 404173559, 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.

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 (GWBG07@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 1. The groundwater sample analytical results are summarized in Table 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):

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.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 26

Number of soil samples exceeding 915-1 17

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

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 7

Was extent of groundwater contaminated delineated? Yes

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

Number of groundwater monitoring wells installed 5

Number of groundwater samples exceeding 915-1 3

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 was collected but is no longer being applied. Twelve background soil samples were collected from native material outside of the facility excavations. Twelve background soil samples were collected as part of the Madrigal 2-22 wellhead decommissioning activities (Rem No. 35996), located 2,300 ft south, in the same land use, similar NRCS soil type (loam/sandy loam), from similar depths (3-6 ft). Samples were submitted for analysis of pH, electrical conductivity (EC), sodium adsorption ratio (SAR), boron, and Table 915-1 metals using ECMC-approved methods. Results indicate that EC, SAR, pH, boron, arsenic, barium, hexavalent chromium, and selenium are naturally high in the native soil. The background soil sample locations are depicted on Figure 3.

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 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?

Additional excavation activities are pending and will be summarized in a subsequent Form 27 Supplemental report.

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 and SB05 excavations 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 remediated at the AST excavation area. All other decommissioning soil 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.

Initial results indicate that levels of chloride ion exceeding the ECMC Table 915-1 allowable level and background level were present at FL03. Due to the presence of compliant organic detections in soil at FL03 and the initial chloride exceedance in groundwater, monitoring wells were installed on September 11, 2025. One soil sample was collected from each soil boring advanced outside of the backfill material. The samples were submitted for analysis of full list Table 915-1 constituents. Laboratory analytical results indicated that benzo(a)anthracene exceeding the Table 915-1 allowable level is present at the SB05/MW05 location. As such, Kerr-McGee suspended groundwater monitoring until the remaining soil impacts are addressed. Excavation activities are pending and will be summarized in a subsequent Form 27 Supplemental report. The boring logs were submitted in a previous Form 27 Supplemental report. The soil sample analytical results are summarized in Table 2 and the laboratory analytical report is attached.

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.

Groundwater monitoring of wells MW01 through MW05 was conducted on September 19, 2025 for full list Table 915-1 constituents in groundwater. Upgradient monitoring well MW04 was used to determine inorganic compliance. Laboratory analytical results indicate that organic constituents were below the laboratory reporting limits, but source well MW01 exceeded the Table 915-1 allowable levels and background levels for TDS and chloride. Point of compliance has been achieved at the site as the remaining wells were in compliance with Table 915-1 allowable levels or background levels. The monitoring well locations are depicted on Figure 1. A groundwater elevation contour map generated using the September 2025 gauging data is included as Figure 2. The groundwater analytical results are summarized in Table 3 and the laboratory analytical report from the September 2025 monitoring event is attached.

Soil analytical results indicated that benzo(a)anthracene exceeding the Table 915-1 allowable level is present at the SB05/MW05 location. As such, Kerr-McGee suspended groundwater monitoring until the remaining soil impacts are addressed.

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 Energy and Carbon Management 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: \$ 13500 _____

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? No

Does the previous reply indicate consideration of background concentrations? _____

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. 06/22/2026

REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/27/2024

Proposed date of completion of Remediation. 06/22/2027

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

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

Signed: Max Moran

Title: Environmental Advisor

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

<u>COA Type</u>	<u>Description</u>
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

404483957	ANALYTICAL DATA SUMMARY TABLE(S)
404483958	LABORATORY ANALYTICAL REPORT
404483962	LABORATORY ANALYTICAL REPORT
404486538	SOIL SAMPLE LOCATION MAP
404486539	SOIL SAMPLE LOCATION MAP
404486540	SOIL SAMPLE LOCATION MAP

Total Attach: 6 Files

General Comments

User Group

Comment

Comment Date

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

Total: 0 comment(s)