

State of Colorado  
Energy & Carbon Management Commission

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Document Number:  
404044487

Receive Date:

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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	<b>Phone Numbers</b>
Address: P O BOX 173779		Phone: (720) 929-4306
City: DENVER	State: CO	Zip: 80217-3779
Contact Person: Erik Mickelson	Email: Erik_Mickelson@oxy.com	Mobile: ( )

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 24892 Initial Form 27 Document #: 403143355

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: WELL Facility ID: \_\_\_\_\_ API #: 123-31125 County Name: WELD

Facility Name: SHERWOOD L 30-32D Latitude: 40.200810 Longitude: -104.827141

\*\* correct Lat/Long if needed: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

QtrQtr: NWNW Sec: 30 Twp: 3N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL Facility ID: \_\_\_\_\_ API #: 123-31126 County Name: WELD

Facility Name: SHERWOOD L FEDERAL 30-28D Latitude: 40.200800 Longitude: -104.827067

\*\* correct Lat/Long if needed: Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

QtrQtr: NWNW Sec: 30 Twp: 3N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 123-31127	County Name: WELD
Facility Name: SHERWOOD L 30-30D		Latitude: 40.200835	Longitude: -104.827352
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NWNW	Sec: 30	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 123-31131	County Name: WELD
Facility Name: SHERWOOD L 30-31D		Latitude: 40.200820	Longitude: -104.827214
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NWNW	Sec: 30	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL	Facility ID: _____	API #: 123-31135	County Name: WELD
Facility Name: SHERWOOD L FEDERAL 30-29D		Latitude: 40.200827	Longitude: -104.827284
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NWNW	Sec: 30	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE	Facility ID: 482838	API #: _____	County Name: WELD
Facility Name: Sherwood L30-30D		Latitude: 40.200835	Longitude: -104.827352
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NWNW	Sec: 30	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE	Facility ID: 487978	API #: _____	County Name: WELD
Facility Name: Sherwood L Fed 30-31D Wellhead		Latitude: 40.200820	Longitude: -104.827214
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NWNW	Sec: 30	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE	Facility ID: 487981	API #: _____	County Name: WELD
Facility Name: Sherwood L Fed 30-28D Wellhead		Latitude: 40.201678	Longitude: -104.827710
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: NWNW	Sec: 30	Twp: 3N	Range: 66W Meridian: 6 Sensitive Area? Yes

**SITE CONDITIONS**

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use High Priority Bald Eagle 1/2 Mile Nest Buffer HPH

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**

Water well 100 feet (ft) north. Surface water 580 ft west. Occupied buildings 280 ft southwest and 1,064 ft northeast. Wetland 340 ft west. Commercial building 1,190 ft east. State highway 1,070 ft east. Livestock 590 ft south and 890 ft northeast. Agriculture. This site is located within a Bald Eagle 1/2 mile nest buffer high priority habitat (HPH). Groundwater at approximately 5 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) Thermogenic Gas

**DESCRIPTION OF IMPACT**

Impacted?	Impacted Media	Extent of Impact	How Determined
UNDETERMINED	GROUNDWATER	TBD	Groundwater samples/lab analytical results
Yes	SOILS	TBD	Soil vapor samples/lab 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.

Cut and cap operations were completed at the Sherwood L Fed 30-29D wellhead on August 29, 2023. A soil sample (B01@6') was submitted for analysis of reduced list Table 915-1 constituents, as approved in the Form 27 Supplemental dated October 24, 2023 (Document No. 403565925), to determine if a release occurred. Cut and cap operations were completed at the Sherwood L30-28D,30D,31D,32D wellheads on August 27, 2024. Soil samples were collected from the base of the excavations and were submitted for analysis of full list Table 915-1 to determine if a release occurred. The flowlines associated with the wellheads were removed between August 29, 2023 and August 30, 2024. Soil samples were collected from the locations where the flowline risers were disconnected from the wellheads and from the flowlines and from the locations where the flowlines changed directions. The L Fed 30-29D riser samples were submitted for analysis of reduced list Table 915-1 constituents and the remaining samples were submitted for full list Table 915-1 constituents to determine if a release occurred. Laboratory analytical results indicated that impacts exceeding the ECMC Table 915-1 allowable levels or background levels were present at the FL03 and FL04 locations and the L30-30D, L30-31D, and L30-32D wellheads. As such, Form 19 reports (Doc #s 403906942 & 403906072 were submitted on August 30, 2024 and the ECMC issued Spill/Release IDs 487981 & 487978.

During routine testing activities at the L30-30D wellhead, 5 soil vapor points (SVPs) were installed near the wellhead. Methane was detected at 2 of the 5 points with a Landtec GEM™5000 (GEM) meter. Samples were submitted to Isotech Laboratories (Isotech) for gas composition analysis. Results were received on August 24, 2022 and indicated the presence of thermogenic gas. Please refer to the Form 19 Initial dated August 25, 2022 (Document No. 430146527) for more details. All current and former SVPs and soil vapor wells are depicted on Figure 3.

**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 ):

Between September 19 and November 20, 2024, excavation activities were conducted at the FL03/FL04 and former wellhead locations and confirmation soil samples were collected from the base and sidewalls of the final excavation extents at depths ranging between 2 ft bgs and 11 ft bgs. The samples were submitted for analysis of the excavation-specific waste profile, including polycyclic aromatic hydrocarbons (PAHs), pH, boron, and/or select Table 915-1 metals, using ECMC-approved methods. Analytical results for the confirmation soil samples collected on November 20, 2024 are pending. Once the final results have been received, they will be submitted in a subsequent Form 27 Supplemental report. The wellhead excavation and flowline excavation are depicted on Figures 1 and 2A. The PID readings and soil sample results are summarized in Table 1 and Table 2, respectively, and the laboratory reports are attached.

**Proposed Groundwater Sampling**

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

Groundwater was encountered in the FL03/FL04 excavation at approximately 5 ft bgs. Groundwater was in contact with impacted soil. One groundwater sample (GW-FL03/FL04@5') was submitted for analysis of full list Table 915-1 constituents. Laboratory analytical results indicate that groundwater is in compliance with Table 915-1 organic constituents in groundwater. Background groundwater samples are needed to determine inorganic compliance. Due to the presence of impacted soil in contact with groundwater, monitoring wells will be installed to verify that no dissolved-phase impacts are present. The groundwater analytical results are summarized in Table 3. The groundwater sample location is depicted on Figure 2A.

**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 ):

On August 29, 2023 and August 27, 2024, visual inspection and field screening of soils were conducted at 4 sidewall locations within each wellhead cut and cap excavation, 11 locations at the ground surface adjacent to the excavation, and 9 flowline potholes. Based on the results, impacted soil was not observed at the screening locations, and no samples were submitted, in accordance with the ECMC Operator Guidance. A photo log is attached.

The soil vapor investigation is ongoing. Additional SVPs were installed around the plugged and abandoned wellheads following additional cut and cap activities. The points were screened on September 3, 2024. Methane was not detected by the GEM. Samples were submitted to Isotech for gas chromatography and isotopic analysis from the points surrounding the former L30-30D wellhead. No thermogenic gases (C2-C5) were detected in any of the samples. Additional screening and sampling will be conducted following completion of excavation activities.

## SITE INVESTIGATION REPORT

### SAMPLE SUMMARY

#### Soil

Number of soil samples collected 85

Number of soil samples exceeding 915-1 62

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

Approximate areal extent (square feet) 2031

#### NA / ND

-- Highest concentration of TPH (mg/kg) 319.3

-- Highest concentration of SAR 2.81

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 11

#### Groundwater

Number of groundwater samples collected 1

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 5

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?

Eighteen background soil samples (Native-BG01@2.5' through Native-BG03@2.5', Native-BG01@5' through Native-BG03@5', Native-BG04@3' through Native-BG09@3' and Native-BG04@6' through Native-BG09@6') were collected from the native material adjacent to the wellhead cut and cap excavations. The background soil samples were submitted for laboratory analysis of electrical conductivity (EC), sodium adsorption ratio (SAR), pH, and/or boron using ECMC-approved methods. Laboratory analytical results indicate that levels of EC, pH, arsenic, barium, lead, and selenium are naturally high in the native soil. The background soil sample results are summarized in Table 2. The background soil 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?

Laboratory analytical results for the confirmation soil samples at the FL03/FL04 and wellhead excavation locations are pending. Once the final results have been received, they will be submitted in a subsequent Form 27 Supplemental report.

The soil vapor investigation is ongoing. Additional SVPs were installed around the plugged and abandoned wellheads following additional cut and cap activities. The points were screened on September 3, 2024, and methane was not detected by the GEM in any of the locations. Samples were submitted to Isotech for GC analysis from the points surrounding the former L30-30D wellhead. No thermogenic gases (C2-C5) were detected in any of the samples. Additional screening and sampling will be conducted following completion of excavation activities. The soil vapor field data and analytical data are summarized in Tables 3 and 4, respectively. The laboratory report is attached.

Due to the presence of impacted soil in contact with groundwater, monitoring wells will be installed to verify that no dissolved-phase impacts are present. The monitoring well installation scope of work will be submitted in a subsequent Form 27 Supplemental report following 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 will be removed and transported to a licensed disposal facility. Final disposal information will be provided upon completion of excavation activities. Disposal records will be 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 analytical results for the confirmation soil samples at the FL03/FL04 and wellhead excavation locations are pending. Once the final results have been received, they will be submitted in a subsequent Form 27 Supplemental report. Groundwater was encountered in the FL03/FL04 excavation at approximately 5 ft bgs. Laboratory analytical results indicate that groundwater is in compliance with Table 915-1 organic constituents in groundwater. Background groundwater samples are needed to determine inorganic compliance. Due to the presence of impacted soil in contact with groundwater, monitoring wells will be installed to verify that no dissolved-phase impacts are present.

The soil vapor investigation is ongoing. Additional SVPs were installed around the plugged and abandoned wellheads following additional cut and cap activities. The points were screened on September 3, 2024, and methane was not detected by the GEM in any of the locations. Samples were submitted to Isotech for GC analysis from the points surrounding the former L30-30D wellhead. No thermogenic gases (C2-C5) were detected in any of the samples. Additional screening and sampling will be conducted following completion of excavation activities. The soil vapor field data and analytical data are summarized in Tables 3 and 4, respectively. The laboratory report is attached.

**Soil Remediation Summary**

In Situ

Ex Situ

- \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )
- \_\_\_\_\_ Chemical oxidation
- \_\_\_\_\_ Air sparge / Soil vapor extraction
- \_\_\_\_\_ Natural Attenuation
- \_\_\_\_\_ Other \_\_\_\_\_

- \_\_\_\_\_ 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
- \_\_\_\_\_ 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 impacted soil in contact with groundwater, monitoring wells will be installed to verify that no dissolved-phase impacts are present. The monitoring well installation scope of work will be submitted in a subsequent Form 27 Supplemental report following completion of soil assessment activities.



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. 08/25/2022

Actual Spill or Release date, or date of discovery. 08/24/2022

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 08/17/2022

Proposed site investigation commencement. 08/17/2022

Proposed completion of site investigation. 11/30/2025

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 11/30/2022

Proposed date of completion of Remediation. 11/30/2026

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: Erik\_Mickelson@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: 24892 \_\_\_\_\_

**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**

404044510	CORRESPONDENCE
404044513	PHOTO DOCUMENTATION
404044514	ANALYTICAL RESULTS
404044515	ANALYTICAL RESULTS
404044517	ANALYTICAL RESULTS
404044518	ANALYTICAL RESULTS
404044519	ANALYTICAL RESULTS
404045056	ANALYTICAL RESULTS
404045095	SOIL SAMPLE LOCATION MAP
404045096	SOIL SAMPLE LOCATION MAP
404045097	SOIL SAMPLE LOCATION MAP
404045098	SOIL SAMPLE LOCATION MAP

Total Attach: 12 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)