

State of Colorado
Energy & Carbon Management Commission

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Report taken by:
Laurel Anderson

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: <u>KERR MCGEE OIL & GAS ONSHORE LP</u>	Operator No: <u>47120</u>	Phone Numbers
Address: <u>P O BOX 173779</u>		
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80217-3779</u>
Contact Person: <u>Gregory Hamilton</u>	Email: <u>Gregory_Hamilton@oxy.com</u>	
	Phone: <u>(970) 336-3500</u>	
	Mobile: <u>(970) 515-1698</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 29438 Initial Form 27 Document #: 403379355

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: <u>WELL</u>	Facility ID: _____	API #: <u>123-38234</u>	County Name: <u>WELD</u>
Facility Name: <u>HOWARD 9C-22HZ</u>	Latitude: <u>40.017137</u>	Longitude: <u>-104.870463</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SESE</u>	Sec: <u>27</u>	Twp: <u>1N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>483525</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Howard 9C-22 Wellhead</u>	Latitude: <u>40.017137</u>	Longitude: <u>-104.870463</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SESE</u>	Sec: <u>27</u>	Twp: <u>1N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications CL

Most Sensitive Adjacent Land Use residential

Is domestic water well within 1/4 mile? Yes

Is surface water within 1/4 mile? No

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

Water Well: 408'
Surface Water: none
Wetlands: none
Springs: none
Livestock: none
Occupied Building: 409'

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	SOILS	22' (E-W) x 18' (N-S) x 10' 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.

On December 20, 2022, a release of an unknown volume was discovered at the Howard 9C-22 wellhead location. Groundwater was not encountered in the excavation area around the wellhead. Visual inspection and field screening of soils around the wellhead was conducted, and a soil sample (Initial Waste Characterization@2.5') was submitted for laboratory analysis. Laboratory analytical results indicated that benzene, toluene, naphthalene, 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, 1-methylnaphthalene, 2-methylnaphthalene, arsenic, barium, and selenium were elevated in soil at the wellhead location (Initial Waste Characterization@2.5'). As such, a Form 19-Initial/Supplemental Spill/Release Report (ECMC Document No. 403275315) was submitted on December 30, 2022, and the ECMC issued Spill/Release Point ID 483525. 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 are presented in Table 1. The soil sample locations are illustrated on Figure 2.

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 December 20, 2022 through January 10, 2023, excavation activities were conducted to address soil impacts around the wellhead (Initial Waste Characterization@2.5') and 5 confirmation soil samples were collected from the base and sidewalls of the final excavation extent, at depths of approximately 10' and 6' bgs, respectively. The confirmation soil samples were submitted for laboratory analysis of site-specific contaminants of concern (COCs) using ECMC-approved methods. Analytical results indicated that constituent concentrations in the soil samples collected from the final excavation extents exceeded ECMC Table 915-1 standards. However, due to the proximity of the wellhead to surrounding surface and subsurface infrastructure, excavation could not safely continue. Assessment activities are ongoing. Soil sample analytical data is presented in Tables 2 through 5. The laboratory analytical reports are provided as Attachment A.

Proposed Groundwater Sampling

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

Groundwater was not encountered during initial wellhead excavation activities. If groundwater is encountered during ongoing assessment and remediation activities, a minimum of one grab sample will be collected as soon as practical. Groundwater samples will be submitted to an accredited laboratory for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-TMB, and 1,3,5-TMB, using standard methods appropriate for detecting the target analytes in ECMC Table 915-1.

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):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 11
Number of soil samples exceeding 915-1 8
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 288

NA / ND

-- Highest concentration of TPH (mg/kg) 148
-- Highest concentration of SAR 2.47
BTEX > 915-1 Yes
Vertical Extent > 915-1 (in feet) 10

Groundwater

Number of groundwater samples collected 0
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet)
Number of groundwater monitoring wells installed
Number of groundwater samples exceeding 915-1

Highest concentration of Benzene (µg/l)
Highest concentration of Toluene (µg/l)
Highest concentration of Ethylbenzene (µg/l)
Highest concentration of Xylene (µg/l)
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?

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 proximity of the wellhead to surrounding surface and subsurface infrastructure, excavation could not safely continue. Additional assessment activities will be completed at the site to vertically and laterally define impacts remaining at the site. Four soil vapor extraction (SVE) remedial wells will be installed around the wellhead excavation to address adsorbed phase hydrocarbon impacts remaining beneath the site. Mobile SVE remediation events will be completed at the four SVE remedial wells. Proposed SVE remedial well locations are illustrated in Figure 3. Installation of the SVE remedial wells will be completed in March 2024.

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 December 20, 2023 and January 10, 2023, approximately 38 cubic yards of impacted soil slurry was excavated via hydro excavation and transported to Aggregate State Fluid Recycling Facility in Fort Lupton, Colorado for disposal. Laboratory analytical results indicate that constituent concentrations in the confirmation soil samples collected from the final excavation extents exceeded ECMC Table 915-1 standards. However, Kerr-McGee is requesting the Director's approval to address remaining soil impacts via SVE remedial events on four permanent SVE remedial wells due to the excavation limitations caused by surface and subsurface infrastructure. Additional assessment activities will be completed during installation of the four SVE remedial wells. The excavation area 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 excavation extents exceeded ECMC Table 915-1 standards. However, Kerr-McGee is requesting the Director's approval to address remaining soil impacts via SVE remediation events on four permanent SVE remedial wells due to the excavation limitations caused by surface and subsurface infrastructure. Additional assessment activities will be completed during installation of the four SVE remedial wells. Following completion of SVE remedial events, additional assessment activities will be completed to assess impacts remaining beneath the site. Estimated time to attain NFA is TBD based on the efficacy of the SVE remedial technology and results of additional assessment activities.

Soil Remediation Summary

In Situ

Ex Situ

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

Yes _____ Excavate and offsite disposal
 If Yes: Estimated Volume (Cubic Yards) _____ 38
 Name of Licensed Disposal Facility or ECMC Facility ID # _____ 456644
 No _____ 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.

REMEDATION 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 Remediation progress update

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? Yes

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

NA

Volume of E&P Waste (solid) in cubic yards 38

E&P waste (solid) description impacted soil

ECMC Disposal Facility ID #, if applicable: 456644

Non-ECMC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels 0

E&P waste (liquid) description _____

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: _____

REMEDATION COMPLETION REPORT

REMEDATION 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. 12/20/2022

Actual Spill or Release date, or date of discovery. 12/20/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/20/2022

Proposed site investigation commencement. 12/20/2022

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/20/2022

Proposed date of completion of Remediation. _____

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: Gregory Hamilton

Title: Environmental Lead

Submit Date: 03/01/2024

Email: Gregory_Hamilton@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: Laurel Anderson

Date: 07/01/2024

Remediation Project Number: 29438

COA Type**Description**

	In accordance with 913.d.(1), Operator will investigate impacts to soil, Groundwater, and surface water as soon as the impacts are discovered.
	Operator must define the depth to water relative to the furthest extent of impacts. Operator has not properly characterized this spill (Operator has not analyzed soil samples for all analytes detected in the initial waste characterization sample, even if they are at a concentration below the allowable Table 915-1 SSLs), therefore Operator shall define the vertical and lateral extent of impacts over Protection of Groundwater Soil Screening Level Concentrations; Confirmation soil samples shall be analyzed for complete Table 915-1 Contaminants of Concern until Operator has submitted sufficient characterization data to request and receive Director Approval of reduced list of contaminants of concern.
	Impacts to soil above Table 915-1 Protection of Groundwater Soil Screening Level Concentrations remain insitu and undefined. Operator has indicated depth to water is <20' bgs. Operator shall comply with Table 915-1 Protection of Groundwater Soil Screening Level Concentrations and evaluate the potential for a pathway from the release point to groundwater as outlined in the Rule 915.a Soil Concentrations - Determination of Pathway to Groundwater guidance document.
	Operator shall provide boring logs in accordance with standard environmental practices. This includes at a minimum; lithology description, USCS classifications, PID readings, sample collection depths, depth to water, and well construction (including AS/SVE wells).
	Operator will include all SVE/AS data in the next Form 27-Supplemental and all following Form 27-Supplementals until no longer in use.
	Operator shall fully populate the implementation schedule in accordance with Rule 913.d on the subsequent Supplemental Form 27.
	Operator submitted this form outside of the approved reporting schedule (Quarterly). In accordance with Rule 913.e.(3), Operator will adopt a quarterly reporting schedule (every 90 days); additional violations may result in enforcement.
7 COAs	

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
403697342	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403698465	PHOTO DOCUMENTATION
403698466	SITE MAP
403698467	SOIL SAMPLE LOCATION MAP
403698468	OTHER
403698469	ANALYTICAL RESULTS

403698470	ANALYTICAL RESULTS
403841478	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 8 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	ECMC added Spill ID #483525 to the Site Information section.	07/01/2024

Total: 1 comment(s)