

State of Colorado
Energy & Carbon Management Commission

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Report taken by:
Alexander Ahmadian

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 COGCC 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>		Phone: <u>(970) 336-3500</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80217-3779</u>		Mobile: <u>(970) 515-1698</u>
Contact Person: <u>Gregory Hamilton</u>	Email: <u>Gregory_Hamilton@oxy.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 27883 Initial Form 27 Document #: 403319835

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>LOCATION</u>	Facility ID: <u>426666</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>LUDWIG H 06-31D</u>	Latitude: <u>40.260930</u>	Longitude: <u>-104.714910</u>	
	** correct Lat/Long if needed: Latitude: <u>40.261247</u>	Longitude: <u>-104.715530</u>	
QtrQtr: <u>NWNW</u> Sec: <u>6</u> Twp: <u>3N</u> Range: <u>65W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>			

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>483773</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Knaub 1-6, Ludwig H06-31D O SA AST</u>	Latitude: <u>40.261072</u>	Longitude: <u>-104.715610</u>	
	** correct Lat/Long if needed: Latitude: _____	Longitude: _____	
QtrQtr: <u>NENE</u> Sec: <u>1</u> Twp: <u>3N</u> Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>			

Facility Type: SPILL OR RELEASE Facility ID: 484642 API #: _____ County Name: WELD
Facility Name: Knaub 1-6, Ludwig H06-31D O SA SL Latitude: 40.258815 Longitude: -104.715753
** correct Lat/Long if needed: Latitude: _____ Longitude: _____
QtrQtr: NENE Sec: 1 Twp: 3N Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use Crop land

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

The nearest domestic water well is located approximately 700 feet northwest of the release location.
The nearest occupied building is located approximately 775 feet northwest of the release location.

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	70' (N-S) x 37' (E-W) x 0.5' 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 January 19, 2023, a release was discovered at the Knaub 1-6, Ludwig H06-31D O SA Production Facility location when approximately 26.6 barrels of crude oil were released within lined secondary containment from the AST. On January 20, 2023, the release became Reportable due to the verified quantity of released fluids. As such, a Form 19-Initial Spill/Release Report was submitted on January 20, 2023 (Document No. 403297112), and the ECMC issued Spill/Release Point 483773. On January 26, 2023, a waste characterization soil sample (SS01@3") was collected from the release area and submitted for laboratory analysis of the full Table 915-1 analytical suite. Analytical results for SS01@3" indicated that soil impacts were present due to BTEX, TPH, 1,2,4- and 1,3,5-TMB, and PAHs. Tank battery decommissioning activities were conducted on April 7 through 13, 2023, and all of the material within the tank battery liner was removed and the liner was verified to be in tact. Visual inspection and field screening of soils was conducted, and 5 soil samples were submitted for laboratory analysis. The sales line associated with this facility was removed on June 19 through July 13, 2023. Visual inspection and field screening of soils was conducted along the former sales line, and soil samples were collected from 7 pothole locations. Based on field observations and preliminary analytical results, samples SL-B04@3' and SL-B06@3' were selected for waste characterization and analyzed for the full Table 915-1 analytical suite. Analytical results indicated that soil impacts were present at sample locations SL-B04@3', SL-B06@3', and SL2-B05@4' due to 1,2,4- and 1,3,5-TMB, TPH, PAHs, and/or SAR. As such, a Form 19-Initial Spill/Release Report was submitted on June 22, 2023 (Document No. 403440524), and the ECMC issued Spill/Release Point 484642. Groundwater was not encountered during decommissioning or impacted soil removal activities. A topographic Site Location Map is provided as Figure 1.

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 April 13, 2023, confirmation soil samples were collected from the former AST, PWV, and SEP locations, as described in a previous Form 27-Supplemental update (Document No. 403403943). On June 22 and July 13, 2023, excavation activities were conducted to address remaining soil impacts along the former sales line, and 15 confirmation soil samples were collected. Based on the waste characterization results for samples SL-B04@3' and SL-B06@3', the soil samples from these excavation areas were submitted for laboratory analysis of BTEX, TPH, TMB, PAHs, As and Ba. Based on the analytical results for sample SL2-B05@4', the soil samples from this excavation area were submitted for laboratory analysis of BTEX, TPH, TMB, and SAR. Analytical results for the final confirmation soil samples collected during facility decommissioning and sales line excavation activities were in compliance with the applicable Table 915-1 standards and/or within the range of site-specific background levels.

Proposed Groundwater Sampling

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

Groundwater was not encountered during facility decommissioning, sales line removal, or impacted soil excavation activities.

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 April 13, 2023, visual inspection and field screening of soils was conducted at 4 locations during facility decommissioning activities, as described in a previous Form 27-Supplemental update (Document No. 403403943). On June 19 through July 13, 2023, visual inspection and field screening of soils was conducted at 19 locations during sales line removal activities. Based on the inspection and screening results, hydrocarbon-impacted soil was not observed at the soil screening locations, and no soil samples were submitted for laboratory analysis from these areas in accordance with the ECMC Operator Guidance document. Soil sample location and field screening data are presented in Table 1. Soil analytical results are presented in Tables 2 through 5. The soil sample and field screening locations are illustrated on Figures 2 and 3. The laboratory analytical reports are provided as Attachment A. The field notes and a photographic log are provided as Attachment B.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 28

Number of soil samples exceeding 915-1 4

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

Approximate areal extent (square feet) 1800

NA / ND

-- Highest concentration of TPH (mg/kg) 14440

-- Highest concentration of SAR 6.32

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 6

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? Yes

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?

Background soil samples BG01@3" - BG08@3" were collected from native material adjacent to the former production facility location, from comparable depth and material as the confirmation samples. Background samples SL-BG01@5' - SL-BG03@5' were collected from native material adjacent to the former sales line location, from comparable depth and material as the confirmation samples. The background soil samples were submitted for laboratory analysis of Table 915-1 metals and/or the Soil Suitability for Reclamation Parameters, using standard methods appropriate for detecting the target analytes in Table 915-1. Analytical results for the background soil samples are presented in Tables 4 and 5.

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?

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.

On April 7 and 13, 2023, approximately 27 cubic yards of impacted material were removed from within the tank battery secondary containment liner via vacuum truck hydro-excavation activities, and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. On June 22 and July 13, 2023, approximately 50 cubic yards of impacted material were removed from the flowline excavation areas and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling; approximately 18 cubic yards of impacted material were removed from the flowline excavation areas via vacuum truck hydro-excavation activities, and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. The excavation areas were subsequently backfilled and contoured to match pre-existing site 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.

Impacted material associated with the AST release was fully contained within the tank battery secondary containment liner, which was verified to be intact, and was completely removed prior to facility decommissioning activities. Laboratory results indicate that constituent concentrations in the 5 confirmation soil samples collected from the former AST, PWV, and SEP locations were in compliance with Table 915-1 standards and/or within the range of site-specific background levels. Hydrocarbon-impacted soil was not observed during field inspection and soil screening activities at the former production facility. Laboratory results indicate that impacted soils in the sales line excavation areas have been remediated to be in compliance with Table 915-1 standards and/or within the range of site-specific background levels. Groundwater was not encountered during facility decommissioning, sales line removal, or impacted soil excavation activities. Based on the analytical and soil screening data presented herein, assessment is complete at this site and no further activities are required. As such, Kerr- McGee is requesting a No Further Action (NFA) determination for this location.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____ 95

_____ Air sparge / Soil vapor extraction

_____ Name of Licensed Disposal Facility or COGCC Facility ID # _____ 149007

_____ Natural Attenuation

No _____ 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.

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 Colorado 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: \$ 0

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:

Approximately 45 cubic yards of impacted material were removed via vacuum truck hydro-excavation activities, and transported to the Kerr-McGee Aggregate Recycle Facility in Weld County, Colorado for recycling. Approximately 50 cubic yards of impacted material were excavated and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards 95

E&P waste (solid) description Impacted soil and hydro-excavation soil slurry

COGCC Disposal Facility ID #, if applicable: 149007

Non-COGCC Disposal Facility: _____

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

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? Yes

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? Yes

Does the previous reply indicate consideration of background concentrations? Yes

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted? _____

Operator shall comply with the COGCC 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. Timeliness of reclamation initiation and completion will be subject to NFA, surface owner discretion and land use, and suitable ground conditions which allow for execution of surface reclamation activities so as to not cause unwarranted damages.

Is the described reclamation complete? No

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? Yes

If YES, does the seed mix comply with local soil conservation district recommendations? Yes

Did the local soil conservation district provide the seed mix? No

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. 09/30/2023

Proposed date of completion of Reclamation. 10/31/2023

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. 01/20/2023

Actual Spill or Release date, or date of discovery. 01/19/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/19/2023

Proposed site investigation commencement. 01/26/2023

Proposed completion of site investigation. 07/13/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 04/07/2023

Proposed date of completion of Remediation. 07/13/2023

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 accordance with the COA that was issued for the previous Form 27-Supplemental (Document No. 403403943), the tank battery secondary containment liner was verified to be in tact, prior to its removal during facility decommissioning activities, and photo documentation of the liner integrity is provided in Attachment B. Confirmation soil samples were also collected from below the tank battery liner following its removal, as described in the previous Form 27-Supplemental (Document No. 403403943).

Analytical results indicate that constituent concentrations in the confirmation soil samples collected during facility decommissioning activities, and from the final sales line excavation extents, were in compliance with the applicable Table 915-1 soil standards and/or within the range of site-specific background levels. Based on the analytical and soil screening data presented herein, assessment is complete at this site and no further activities are required at this time. As such, Kerr-McGee is requesting an NFA determination for this location

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: 08/15/2023

Email: Gregory_Hamilton@oxy.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: Alexander Ahmadian

Date: 09/14/2023

Remediation Project Number: 27883

COA Type

Description

	<p>Based on the information presented, it appears that no further remedial action is necessary at this time and the ECMC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding ECMC standards or if groundwater is found to be impacted, then further investigation and/or remediation activities may be required. This no further action determination is limited to environmental remediation. Operator is required to comply with ECMC 1100 Series Rules for Flowline Regulations for all Flowline Abandonment activities and ECMC 400 Series Rules for Wellhead Plugging and Abandonment.</p> <p>The surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. For locations with active ongoing oil and gas operations, comply with Rule 1003 interim reclamation requirements and for locations that will no longer have active oil and gas operations, comply with Rule 1004 Final Reclamation requirements.</p>
1 COA	

Attachment Check 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.

<u>Att Doc Num</u>	<u>Name</u>
403491504	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403491683	PHOTO DOCUMENTATION
403491684	SITE MAP
403491689	SOIL SAMPLE LOCATION MAP
403491690	SOIL SAMPLE LOCATION MAP
403491693	ANALYTICAL RESULTS
403491694	ANALYTICAL RESULTS
403529652	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 8 Files

General Comments

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

Total: 0 comment(s)