

State of Colorado Oil and Gas Conservation 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) 515-1698</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>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 22664 Initial Form 27 Document #: 402997195

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

No ☐ Multiple Facilities ☐

Facility Type: <u>LOCATION</u>	Facility ID: <u>462450</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>HUNT-TANK 5NENE</u>		Latitude: <u>40.258720</u>	Longitude: <u>-104.792698</u>
		** correct Lat/Long if needed: Latitude: <u>40.258735</u>	Longitude: <u>-104.792225</u>
QtrQtr: <u>NENE</u>	Sec: <u>5</u>	Twp: <u>3N</u>	Range: <u>66W</u>
		Meridian: <u>6</u>	Sensitive Area? <u>Yes</u>

SITE CONDITIONS

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

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

Residential Buildings

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
UNDETERMINED	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.

On May 4, 2022, historically impacted soil in contact with groundwater was discovered during site decommissioning activities associated with the Kern UPRR 41-2 1 O SA Facility. The volume of the release is unknown. The impacted soil was excavated. The general site layout and extent of the excavation 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):

Between May 3 and September 19, 2022, soil samples were collected from the AST, PWV, ECD, meter house, separator and ancillary piping (see Figure 1). The samples were screened for total volatile organic compounds using a photoionization detector (PID). Select soil samples were submitted for analysis in accordance with Rule 911.a. Impacts exceeding Table 915-1 allowable levels were identified at the AST (AST01@6"-WP), PWV (PWV-B01@4'-WP and PWV-N01@2.5') and two potholes (FL01@4' and FL02@4'). The impacted soil was excavated and confirmation samples were submitted for analysis. Results indicated soil was in compliance with Table 915-1 standards or within the analytical variability of background at the extents of the excavation except for arsenic, barium and selenium which will be addressed during groundwater monitoring. The PID readings and soil sample results are summarized in Tables 1 and 2. Please refer to the Form 27 dated December 21, 2022 (Document No. 403216118) for more details.

Proposed Groundwater Sampling

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

On May 25 and June 13, 2022, three groundwater samples were collected from the wellhead excavation for Table 915-1 analyses. Based on the laboratory analytical results, groundwater concentrations for all samples were in full compliance with COGCC Table 915-1 allowable levels for organic constituents. Background groundwater samples have not yet been collected to confirm inorganic compliance. The excavation groundwater sample locations are depicted on Figure 1. 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):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 65

Number of soil samples exceeding 915-1 56

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

Approximate areal extent (square feet) 900

Groundwater

Number of groundwater samples collected 3

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 0

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.

NA / ND

-- Highest concentration of TPH (mg/kg) 658

-- Highest concentration of SAR 3.5

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 11

ND Highest concentration of Benzene (µg/l)

ND Highest concentration of Toluene (µg/l)

ND Highest concentration of Ethylbenzene (µg/l)

-- Highest concentration of Xylene (µg/l) 54.4

NA Highest concentration of Methane (mg/l)

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 soil sample (TB-BG0@6") and eight native soil background soil samples were collected for laboratory analysis of specific conductivity (EC), sodium adsorption ratio (SAR), pH, boron, and metals. Laboratory analytical results indicated arsenic and barium are naturally high in the soil used to construct the tank battery and pH and arsenic are naturally high in the native soil.

☐ 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?

Groundwater monitoring wells will be installed to assess the extent and magnitude of any impacts to groundwater. Subsequent to installation, the temporary groundwater monitoring wells will be sampled for four consecutive quarters and samples will be submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, total dissolved solids, chloride ion, and sulfate ion per COGCC Rule 912.a. Due to the metal exceedances in the proposed soil to be left in place (as discussed in the Proposed Soil Sampling section), the groundwater samples will also be analyzed for dissolved arsenic, barium, and selenium in accordance with the Water Quality Control Commission (WQCC) Regulation 41. If the four consecutive quarters of sampling results are within COGCC and WQCC allowable levels, a no further action request will be submitted at that time.

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.

Approximately 5,627 bbls of water were removed from the site and transported to the Aggregate Recycle Facility in Weld County, Colorado for recycling. Approximately 34 bbls of water were removed from the site and transported to the Buffalo Ridge Landfill in Keenesburg, Colorado for disposal. Approximately 3000 cubic yards of impacted soil were removed from the site and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling. Approximately 20 cubic yards of impacted soil were removed from the site and transported to the Front Range Landfill in Erie, Colorado for disposal. Disposal records are kept on file and available upon request.

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.

The impacted soil has been excavated and transported to a licensed disposal facility.

In order to determine the extent and magnitude of any dissolved-phase impacts, a minimum of eight groundwater monitoring wells will be installed in the source areas, cross-gradient, and downgradient of the excavation footprints. The proposed well locations are depicted on Figure 1. Groundwater monitoring will be conducted on a quarterly basis.

Soil Remediation Summary

<input type="checkbox"/> In Situ	<input checked="" type="checkbox"/> Ex Situ
<input type="checkbox"/> Bioremediation (or enhanced bioremediation)	Yes Excavate and offsite disposal
<input type="checkbox"/> Chemical oxidation	If Yes: Estimated Volume (Cubic Yards) 3020
<input type="checkbox"/> Air sparge / Soil vapor extraction	Name of Licensed Disposal Facility or COGCC Facility ID # 149007
<input type="checkbox"/> Natural Attenuation	No Excavate and onsite remediation
<input type="checkbox"/> 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 wells will be installed to assess the extent and magnitude of any impacts to groundwater. Groundwater samples will be collected from the monitoring wells for four consecutive quarters and will be submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, total dissolved solids, chloride ion, and sulfate ion per COGCC Rule 912.a. Due to the metal exceedances in the proposed soil to be left in place (as discussed in the Proposed Soil Sampling section), the groundwater samples will also be analyzed for dissolved arsenic, barium, and selenium in accordance with the WQCC Regulation 41. If the four consecutive quarters of sampling results are within COGCC and WQCC allowable levels, a no further action request will be submitted at that time. The laboratory analytical and assessment results will be summarized in a supplemental Form 27. The proposed groundwater monitoring well locations are depicted on Figure 1.

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

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 Oil and Gas Conservation 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: \$ 30000

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 5,627 bbls of water were removed from the site and transported to the Aggregate Recycle Facility in Weld County, Colorado for recycling. Approximately 3000 cubic yards of impacted soil were removed from the site and transported to the Kerr-McGee Land Treatment Facility in Weld County, Colorado for recycling.

Volume of E&P Waste (solid) in cubic yards 3020

E&P waste (solid) description Impacted Soil

COGCC Disposal Facility ID #, if applicable: 149007

Non-COGCC Disposal Facility: Front Range Landfill in Erie, CO (20 CY)

Volume of E&P Waste (liquid) in barrels 5661

E&P waste (liquid) description Water

COGCC Disposal Facility ID #, if applicable: 434766

Non-COGCC Disposal Facility: Buffalo Ridge Landfill in Keenesburg, CO (34 bbls)

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 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 COGCC 1000 Series Reclamation Rules. Timeliness of reclamation initiation and completion will be subject to 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. 04/20/2024

Proposed date of completion of Reclamation. 04/20/2024

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. 05/04/2022

Actual Spill or Release date, or date of discovery. 05/04/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/03/2022

Proposed site investigation commencement. 05/03/2022

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/03/2022

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

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

Signed: Gregory Hamilton

Title: Sr. Env. Consultant

Submit Date: 05/09/2023

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: 06/05/2023

Remediation Project Number: 22664

COA Type**Description**

	In accordance with Rule 914, if impacts are observed during monitoring well installation a step out monitoring well(s) shall be installed to define the horizontal extent of impacts to soil and groundwater and the monitoring wells shall be installed within 45 days of observations.
	Operator shall field log soil borings during monitoring well installation and provide boring logs/well construction diagrams with the next monitoring report. 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.
	Operator will submit a minimum of one soil sample for the proposed laboratory analysis from each soil boring advanced during monitoring well installation.
3 COAs	

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.

Att Doc Num**Name**

403340792	FORM 27-SUPPLEMENTAL-SUBMITTED
403348270	ANALYTICAL RESULTS
403348769	SITE MAP

Total Attach: 3 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)