

State of Colorado
Energy & Carbon Management Commission

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10/10/2025

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 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>		Phone: <u>(713) 350-4906</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80217-3779</u>		Mobile: <u>()</u>
Contact Person: <u>Ariana Ochoa</u>	Email: <u>DJRemediation_Forms@oxy.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 36732 Initial Form 27 Document #: 403788401

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: Request Director's Approval to establish site-specific waste profile

SITE INFORMATION

Yes Multiple Facilities

Facility Type: <u>TANK BATTERY</u>	Facility ID: <u>487142</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>HIGHUM/NORDEN/CLARK FACILITY TB</u>	Latitude: <u>40.045385</u>	Longitude: <u>-104.854014</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWSE</u>	Sec: <u>14</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>487769</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Highum, Norden, Clark</u>	Latitude: <u>40.045444</u>	Longitude: <u>-104.854575</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWSE</u>	Sec: <u>14</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 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

Irrigation Ditch 280 feet (ft) southeast. Water well 580 ft south. Occupied buildings 910 ft south, 1,260 ft southwest, and 1,300 ft northeast. Livestock 1,100 ft southwest. County Road 610 ft south. Agriculture. Groundwater was encountered at approximately 10 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
UNDETERMINED	GROUNDWATER	TBD	Groundwater Samples/Laboratory Analytical Results
Yes	SOILS	TBD	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 Highum, Norden, Clark Facility on 9/4/2024. Groundwater was encountered in the facility excavations at a depth of 10 ft bgs. Visual inspection and field screening of soil at one above ground storage tank (AST), one produced water vessel (PWV), one separator, one emission control device (ECD), one meter house (MH), one scrub pot (SP), three dumphine locations, and one flowline location were conducted following removal activities. Soil samples [AST01@0.5', PWV-B01@0.5', PWV-N01@0.5', SEP-INLET(15-14A)@3', SEP-OUTLET(15-14A)@3', and FL01@6'] were submitted for analysis of full list Table 915-1 constituents to determine if a release occurred. Initial laboratory analytical results indicated that total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), pH, arsenic, barium, cadmium, lead, and selenium impacts exceeding the Table 915-1 allowable levels and background levels were present at the AST, PWV, separator, and FL01 locations. As such, a Form 19 Initial/Supplemental Spill/Release Report (Document No. 403911503) was submitted on 9/6/2024 and the ECMC issued Spill/Release Point ID 487769. Verification samples were collected at the AST and SEP-INLET locations to confirm the initial results. Final analytical results were within the ECMC Table 915-1 allowable levels. The facility is depicted on Figures 1A and 1B. The PID readings and soil sample results are summarized in Tables 1 and 2, respectively.

Excavation activities are ongoing and details will be provided in a subsequent Form 27 supplemental report.

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 9/4/2024 and 1/15/2025, excavation activities were conducted to address remaining soil impacts at the tank battery location and forty-five confirmation soil samples were collected from the base and sidewalls of the final excavation extents at depths of approximately 12 ft bgs and 5 to 8 ft bgs, respectively. The confirmation soil samples were submitted for laboratory analysis of the excavation specific waste profile, including TPH, benzene, toluene, ethylbenzene, total xylenes (BTEX), 1,2,4- and 1,3,5-trimethylbenzene (TMBs), PAHs, sodium adsorption ratio (SAR), pH, boron, and select Table 915-1 metals using ECMC-approved methods. Laboratory analytical results indicate that TPH, PAH, arsenic, and barium impacts exceeding the ECMC Table 915-1 allowable levels remain in the excavation. Additional background samples will be collected to determine compliance for inorganic constituents. Excavation activities are ongoing. The laboratory reports are attached.

Proposed Groundwater Sampling

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

On 12/13/2024, one groundwater sample (GW-FL01-B01@10') was collected from the FL01 excavation at a depth of 10 ft bgs. The groundwater sample was submitted for analysis of full list Table 915-1 constituents in groundwater. Groundwater was in contact with impacted soil. Laboratory analytical results indicate that groundwater is in compliance with Table 915-1 allowable levels and all organic constituents were below the lab reporting limits. Background groundwater samples are needed to assess compliance of Total Dissolved Solids (TDS). Based on compliant groundwater in contact with impacted soil, groundwater monitoring wells will be installed to verify that no dissolved-phase impacts are present. Following installation, the wells will be sampled for full list Table 915-1 constituents in groundwater.

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 9/4/2024, visual inspection and field screening of soil were conducted at the footprint and drain of the AST, three sidewall locations within the PWV excavation, one ECD, one NH, one SP, and three dumpline potholes. 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.

During excavation activities, unknown abandoned lines were discovered and removed. On 12/18/2024, soil samples (FL01-B01@12', FL01-N01@6', FL01-E01@6', and SS01@4' to SS05@4') were submitted for analysis of full list Table 915-1 constituents to determine if a release occurred. Analytical results indicate that TPH, PAHs, BTEX, TMBs, SAR, arsenic, barium, cadmium, lead, and/or selenium impacts exceeding the Table 915-1 allowable levels were present at the FL01-B01, FL01-N01, FL01-E01, SS01, SS02, SS03, SS04, and SS05 locations.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected	<u>77</u>	--	Highest concentration of TPH (mg/kg)	<u>2856</u>
Number of soil samples exceeding 915-1	<u>60</u>	--	Highest concentration of SAR	<u>7.74</u>
Was the areal and vertical extent of soil contamination delineated?	<u>No</u>		BTEX > 915-1	<u>Yes</u>
Approximate areal extent (square feet)	<u>22012</u>		Vertical Extent > 915-1 (in feet)	<u>12</u>

NA / ND

Groundwater

Number of groundwater samples collected	<u>1</u>	ND	Highest concentration of Benzene (µg/l)	<u> </u>
Was extent of groundwater contaminated delineated?	<u>No</u>	ND	Highest concentration of Toluene (µg/l)	<u> </u>
Depth to groundwater (below ground surface, in feet)	<u>10</u>	ND	Highest concentration of Ethylbenzene (µg/l)	<u> </u>
Number of groundwater monitoring wells installed	<u>0</u>	ND	Highest concentration of Xylene (µg/l)	<u> </u>
Number of groundwater samples exceeding 915-1	<u>0</u>	NA	Highest concentration of Methane (mg/l)	<u> </u>

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?

The tank battery background sample and the native background samples have been removed, due to the excavation consuming the background sample locations. Additional background samples will be collected and submitted for laboratory analysis of pH, electrical conductivity (EC), SAR, boron, and Table 915-1 metals using ECMC-approved methods to determine compliance.

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?

Excavation activities are ongoing and details will be provided 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 facility excavation 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 area will be backfilled and contoured to match pre-existing conditions.

REMEDICATION 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 TPH, PAH, arsenic, and barium impacts exceeding the ECMC Table 915-1 allowable levels remain in the excavation. Additional background samples will be collected to determine compliance for inorganic constituents. Groundwater was encountered at approximately 10 ft bgs. Laboratory analytical results indicate that groundwater is in compliance with Table 915-1 allowable levels and all organic constituents were below the lab reporting limits. Background groundwater samples are needed to assess compliance of TDS. Based on compliant groundwater in contact with impacted soil, groundwater monitoring wells will be installed to verify that no dissolved-phase impacts are present. Following installation, the wells will be sampled for full list Table 915-1 constituents in groundwater. Excavation activities are ongoing and details will be provided in a subsequent Form 27 supplemental report.

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.

Based on compliant groundwater in contact with impacted soil, groundwater monitoring wells will be installed to verify that no dissolved-phase impacts are present. Following installation, the wells will be sampled for full list Table 915-1 constituents in groundwater.

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? _____

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. 09/06/2024

Actual Spill or Release date, or date of discovery. 09/05/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/04/2024

Proposed site investigation commencement. 09/04/2024

Proposed completion of site investigation. 04/03/2026

REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/04/2024

Proposed date of completion of Remediation. 04/03/2026

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

Per Rule 915.e.(2).C, discrete grab samples [FL01@6', PWV-B01@0.5', SS01@4', SS02@4', SS03@4', and SS04@4'] were collected from the most impacted material available in the source areas on 9/4/2024 and 12/18/2024. The laboratory report and results summary table are attached. Based on these results, KMOG requests approval to amend confirmation sampling and analysis to only include hydrocarbon and metal analytes detected above laboratory reporting limits and reclamation parameters exceeding Table 915-1 allowable levels, specifically: total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, total xylenes (BTEX), 1,2,5- and 1,3,5- trimethylbenzenes (TMBs), polycyclic aromatic hydrocarbons (PAHs), sodium adsorption ratio (SAR), pH, boron, arsenic, barium, cadmium, copper, lead, nickel, selenium, silver, and zinc.

No additional work has been done since the previous Form 27. The implementation schedule has been updated.

All verifications samples were previously approved in the Form 27 supplemental dated 2/7/2025 (Document No. 404052351).

Per the conditions of approval issued by the ECMC for Document No. 404184969:

KMOG has included the verification sampling and rerun results from SEP-INLET(15-14A)@3' and AST01@0.5' for further assessment of the inorganic ECMC Table 915-1 exceedances (pH, cadmium, lead, and selenium). The scientific justification for the inclusion of these verification samples is the absence of other release indicators. Analytical results were compliant for all Table 915-1 organic constituents and within Table 915-1 and/or established site-specific background limits for soil suitability for reclamation analytes.

All other verification sample results have been omitted from the summary table due to updated ECMC instructions. All verification sample results are included in the attached laboratory analytical reports.

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

Signed: Ariana Ochoa

Title: Sr. HSE Advisor

Submit Date: 10/10/2025

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: Alexander Ahmadian

Date: 12/01/2025

Remediation Project Number: 36732

COA Type

Description

	ECMC agrees to the reduced analyte list based on the data presented herein. However, if during subsequent site investigation/remediation soil that appears to be more impacted (based on PID readings, visual and/or olfactory indicators) is discovered, Operator shall collect a sample(s) from that location (those locations) for laboratory analysis of full ECMC Table 915-1 contaminants of concern. If analytes beyond those proposed in the above amended sampling plan are detected, those compounds will be added to the sampling plan and additional confirmation samples may be required.
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1 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

404379095	FORM 27-SUPPLEMENTAL-SUBMITTED
404379592	LABORATORY ANALYTICAL REPORT
404379597	LABORATORY ANALYTICAL REPORT
404385831	ANALYTICAL DATA SUMMARY TABLE(S)

Total Attach: 4 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)