

State of Colorado
Energy & Carbon Management Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203
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Document Number:

403711094

Receive Date:

03/15/2024

Report taken by:

Steven Arauza

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: CAERUS PICEANCE LLC	Operator No: 10456	Phone Numbers
Address: 1001 17TH STREET #1600		Phone: (970) 285-2925
City: DENVER	State: CO	Zip: 80202
Contact Person: Blair Rollins	Email: brollins@caerusoilandgas.com	Mobile: (970) 640-6919

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 19200 Initial Form 27 Document #: 402614523

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: PIT	Facility ID: 277362	API #: _____	County Name: GARFIELD
Facility Name: UNOCAL 16-11D	Latitude: 39.526128	Longitude: -108.124417	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SENE	Sec: 17	Twp: 6S	Range: 96W Meridian: 6 Sensitive Area? No

Facility Type: LOCATION	Facility ID: 335825	API #: _____	County Name: GARFIELD
Facility Name: N. Parachute MF H17 696	Latitude: 39.527149	Longitude: -108.123650	
** correct Lat/Long if needed: Latitude: 39.527343		Longitude: -108.123475	
QtrQtr: Lot 7	Sec: 17	Twp: 6S	Range: 96W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Riparian

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? No

Other Potential Receptors within 1/4 mile

A domestic water well is located approximately 750 feet to the west and Parachute Creek is located approximately 920 feet to the west.

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	To be determined	Soil sampling and laboratory analysis

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 June 3, 2011, a transducer failed during frac operations allowing pressure to spike. The water was sent to an emergency tank; however, the pump was not shut off quickly enough causing 15 barrels (bbls) of produced water to be released. The release was confined to the Location's working surface and 10 bbls of water were recovered via hydrovacuum truck. The release was reported in Energy & Carbon Management Commission (ECMC) Form 19 Document 2214280. Form 27 Document 402614523 was later submitted to open Remediation Project 19200. Form 27 Document 402949362 approved a reduced analyte list of total petroleum hydrocarbons (TPH), pH, electrical conductivity (EC), sodium adsorption ratio (SAR), boron, and hexavalent chromium. See Document 403120535 and the attached Report of Work Completed (ROWC) for site investigation details to date.

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):

Analytical results of soil sampling to date indicate values of electrical conductivity (EC) and sodium adsorption ratio (SAR) exceeding ECMC Table 915-1 Residential Soil Screening Levels (RSSLS) remain undelineated vertically and horizontally in all directions while pH and TPH remain horizontally undelineated to the east. Caerus will advance two approved soil borings to the east of the historic pit to complete delineation. See attached ROWC for site investigation details to date.

Proposed Groundwater Sampling

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

Groundwater is not expected to be encountered. If groundwater is encountered, Caerus will attempt to collect a representative groundwater sample for laboratory analysis.

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):

Caerus will collect five to seven background soil samples to further characterize native levels of inorganic constituents of concern.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

NA / ND

Number of soil samples collected 37

-- Highest concentration of TPH (mg/kg) 5540

Number of soil samples exceeding 915-1 37

-- Highest concentration of SAR 53.9

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

BTEX > 915-1 No

Approximate areal extent (square feet) 2500

Vertical Extent > 915-1 (in feet) 21

Groundwater

Number of groundwater samples collected 0

Highest concentration of Benzene (µg/l)

Was extent of groundwater contaminated delineated? Yes

Highest concentration of Toluene (µg/l)

Depth to groundwater (below ground surface, in feet)

Highest concentration of Ethylbenzene (µg/l)

Number of groundwater monitoring wells installed

Highest concentration of Xylene (µg/l)

Number of groundwater samples exceeding 915-1

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?

In July 2021, four background soil samples were collected to characterize native levels of soil suitability for reclamation (SSR) constituents of concern at the Location. Caerus will collect an additional five to seven background samples to characterize SSR and metal constituents of concern.

☐ 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?

Additional site investigation is required and is outlined in the attached report of work completed for the project.

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? Yes

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Additional excavation efforts will be required to remove the source associated with this remediation project. Prior to excavation activities, Caerus proposes additional soil borings to delineate the extent of impacts associated with the historic pit. Once delineation is complete, Caerus proposes excavation of remaining impacts up to the delineation points. Caerus proposes the advancement of eight soil borings to fully delineate the historic pit. Additional soil borings may be advanced if field screening and observations indicate impacted soil. See the attached ROWC for additional details.

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.

Initial spill investigation was performed July 28, 2021. Analytical results of collected soil samples exceeded Table 915-1 RSSLs for metals and soil suitability for reclamation (SSR) constituents. Excavation efforts to remove impacted material were completed September 2021 but were unsuccessful in removing all soil impacts. Soil samples collected after excavation efforts indicate exceedances of metals, SSR constituents, and TPH.

On March 21, 2022, additional investigation activities were completed to delineate soil impacts associated with the historical produced water release at the Location. Using a drill rig, nine soil borings (SB01-SB09) were advanced within the spill investigation area. A total of 11 soil samples were collected from SB01, SB02, SB03, SB04, and SB06. Impacts associated with the historical produced water release were discovered to have migrated into an active pit on Location. Laboratory results of soil samples collected from the delineation activities indicate values of TPH, EC, SAR, pH, and hexavalent chromium exceeding Table 915-1 RSSLs.

According to ECMC Form 15 Document 1417952, a pit constructed to contain well completions and frac fluid was completed when the pad was initially drilled in 2005. Facility ID 277362 was issued to the lined pit which measures approximately 125 feet long, by 75 feet wide, by 12 feet bgs with a capacity of 20,037 barrels (bbls) of fluid.

Between January 15 and 17, 2024, additional investigation activities associated with the pit were completed. Using a track mounted solid stem drill rig, six soil borings (SB10-SB15) were advanced to a total depth ranging between 20.5 to 21.5 feet bgs to delineate soil impacts. One sample was collected from the most impacted interval, and one was collected from the terminus of the boring. Laboratory results of soil samples collected from the delineation activities indicate values of TPH, EC, SAR, and pH exceeding Table 915-1 RSSLs. See the attached ROWC for details.

Soil Remediation Summary

☐ In Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☐ Ex Situ

_____ Excavate and offsite disposal

_____ If Yes: Estimated Volume (Cubic Yards) _____ 14

_____ Name of Licensed Disposal Facility or COGCC 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.

Groundwater is not anticipated to be encountered as part of this investigation. In the event that groundwater is encountered, Caerus will attempt to collect a representative sample for analysis of ECMC Table 915-1 standards.

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 Q1 2024 REM Status 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.

Per Rule 705.b, and in line with guidance laid out in the SBAP, Caerus has general liability insurance in the amount of \$1M, and Caerus has umbrella insurance, which sits over the general liability insurance in the amount of \$75M. The umbrella and general liability insurance covers property damage, bodily injury to third parties, and sudden or accidental pollution under a combined \$76M.

Operator anticipates the remaining cost for this project to be: \$ 250000

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:

No beneficial use.

Volume of E&P Waste (solid) in cubic yards 14

E&P waste (solid) description Hydrocarbon impacted soil

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Greenleaf Environmental Services

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

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.

Any disturbance will be returned to the active working surface of the well pad for continued operation. When the site is decommissioned at a later date, it will be reclaimed in accordance with 1000 Series regulations.

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? _____

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. _____

Actual Spill or Release date, or date of discovery. 06/03/2011

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/03/2011

Proposed site investigation commencement. 07/28/2021

Proposed completion of site investigation. 05/01/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 07/28/2021

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

This form has been submitted to provide a 1st Quarter 2024 Status Update to Remediation Project 19200. Caerus proposes to continue approved site investigation to distinguish between impacts associated with Remediation Project 19200 and the historic pit (Facility ID 277362). See the attached ROWC for details.

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

Signed: Blair Rollins

Title: Environmental Specialist

Submit Date: 03/15/2024

Email: brollins@caerusoilandgas.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: Steven Arauza

Date: 03/28/2024

Remediation Project Number: 19200

COA Type**Description**

	Attached report (doc #403720951) indicates that "Values of EC and SAR remain undelineated vertically and horizontally in all directions while pH and TPH remain horizontally undelineated to the east." Additional site investigation is required to determine horizontal and vertical extent of EC and SAR impacts in addition to pH and TPH impacts.
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.

Att Doc Num**Name**

403711094	FORM 27-SUPPLEMENTAL-SUBMITTED
403720951	SITE INVESTIGATION REPORT

Total Attach: 2 Files

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

Environmental	Comply with outstanding COAs.	03/28/2024
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Total: 1 comment(s)