

State of Colorado
Energy & Carbon Management Commission

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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 ECMC 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) 778-2314
City: DENVER State: CO Zip: 80202		Mobile: (970) 778-2314
Contact Person: Jake Janicek	Email: jjanicek@caerusoilandgas.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 24102 Initial Form 27 Document #: 403085558

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: SPILL OR RELEASE	Facility ID: 482178	API #: _____	County Name: GARFIELD
Facility Name: 34F tank 9395	Latitude: 39.397288	Longitude: -107.983817	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: senw	Sec: 34	Twp: 7s	Range: 95w Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications CL Most Sensitive Adjacent Land Use Rangeland
Is domestic water well within 1/4 mile? No 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

Seasonal springs and unnamed tributaries to Dry Creek are located within 200 feet.

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 May 6, 2022, a leak was discovered from the base of a tank within the secondary containment. Initial actions following the tank failure were reported in Energy & Carbon Management Commission (ECMC) Form 19 Document 403048941. Initial investigation results were reported in Form 27 Document 403085558. Subsequent investigation and spring monitoring results were reported in Form 27 Documents 403152959 and 403415532.

On September 20 and 21, 2023, following removal of the tank battery, excavation of impacted soil was completed. An areal extent of 45 feet by 35 feet was removed to a depth of 3 feet below ground surface (bgs) and approximately 456 cubic yards of material were transported to a licensed facility for disposal. Ten confirmation soil samples were collected from the excavation: two samples were collected from each sidewall at 2 feet bgs and two samples were collected from the base of the excavation at 3 feet bgs. Analytical results are compliant with ECMC Table 915-1 Protection of Groundwater Soil Screening Levels (PGSSLs) for all analyzed constituents except arsenic, barium, and hexavalent chromium in all samples.

On June 28, 2024, additional background soil and source water sampling was conducted. Four background soil samples were collected from comparable, nearby, non-impacted soil to further establish native levels of inorganics in soil, and one source water sample was collected from the produced water tank onsite to further characterize inorganics in the production fluids at the Location. Analytical results for background samples indicate native levels of arsenic, barium, cadmium, nickel, and selenium above Table 915-1 PGSSLs. Notable analytical results of the produced water characterization sample indicate a hexavalent chromium value below the laboratory reporting detection limit (RDL) and an arsenic value of 0.00107 milligrams per liter (mg/L). See the attached Report of Work Completed (ROWC) for additional details.

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):

Proposed Groundwater Sampling

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

Proposed Surface Water Sampling

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

Prior to additional soil investigation, Caerus proposes to collect spring water samples up-gradient and down-gradient adjacent to the Location, and from the French Drain outlet located in the investigation area. Samples will be submitted for the approved reduced analyte list of barium only. Two sampling events are proposed: one before winter months as a baseline of current conditions, and one in the spring following seasonal snow melt to evaluate conditions during high groundwater table months.

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 23

Number of soil samples exceeding 915-1 23

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

Approximate areal extent (square feet) 1575

NA / ND

-- Highest concentration of TPH (mg/kg) 4081

-- Highest concentration of SAR 20.8

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 3

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

26 Number of surface water samples collected

0 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?

Seven background samples have been collected from comparable, nearby, non-impacted soil to establish native levels of inorganics at the Location. Analytical results of background samples indicate arsenic, barium, cadmium, nickel, and selenium concentrations exceeding Table 915-1 PGSSLs. See the attached ROWC for additional details.

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?

See Proposed Sampling and Remediation Summary sections for details.

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.

The failed tank was removed from service.

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.

On February 29, 2024, the ECMC approved Form 27 Document 403632800, which granted alternative allowable limits for arsenic and barium of 13.63 and 263.75 mg/kg, respectively, per Footnote 11, and 0.255 mg/kg for hexavalent chromium per Footnote 9.

Although hexavalent chromium values above Table 915-1 RSSLs remain within the investigation area, produced water characterization data demonstrates that produced water at the Location does not contain hexavalent chromium concentrations above the laboratory detection limit. Based on this information, it is reasonable to conclude that the elevated hexavalent chromium results are not attributed to oil and gas operations at this Location. Caerus requests consideration of Rule 915.e.(2).C to remove hexavalent chromium as a constituent of concern for this remediation project.

Based on investigative results to date, Caerus is requesting a reduced analyte list of barium only to address remaining impacts at the southwest sidewall. See the Excavation Samples diagram associated with the attached ROWC for proposed sample locations.

Additionally, Caerus proposes to discontinue quarterly surface water sampling as analytical results from five consecutive sampling events have been compliant with Table 915-1 screening levels for groundwater constituents of concern. Furthermore, TPH impacts have been removed from the investigation area and results of water samples have consistently indicated non-detect organic compounds in the surrounding surface water. Therefore, it is Caerus's belief that surface water sampling is no longer necessary.

Continued in Operator Comments:

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____ 456

_____ 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.

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 Q2 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 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: \$ 10000

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:

None

Volume of E&P Waste (solid) in cubic yards 456

E&P waste (solid) description soil impacted by tank release

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: Greenleaf Environmental Services

Volume of E&P Waste (liquid) in barrels 25

E&P waste (liquid) description hydrovac rinsate mixed with soil impacted by E&P waste

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: Greenleaf Environmental Services

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? No

Does the previous reply indicate consideration of background concentrations? _____

Does Groundwater meet Table 915-1 standards? Yes

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? _____

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. 05/06/2022

Actual Spill or Release date, or date of discovery. 05/06/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/06/2022

Proposed site investigation commencement. 10/01/2024

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/20/2023

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

Continued from Remediation Summary:

Prior to additional soil investigation, Caerus proposes to conduct water sampling and analysis to determine if barium concentrations at the Location pose a risk to groundwater. Caerus will collect additional spring water samples up-gradient, down-gradient, and from the French Drain outlet for laboratory analysis of barium. Two sampling events are proposed: one before winter months as a baseline of current conditions, and one in the spring following seasonal snow melt for evaluation during high groundwater table months. Sample locations that were selected to monitor for Table 915-1 groundwater contaminants of concern will be utilized. Pursuant to Table 915-1, Footnote 7, if the actual measured concentration of barium in the water samples demonstrates there is not a pathway to groundwater, Caerus may request the application of Residential Soil Screening Level cleanup concentrations.

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

Signed: Jake Janicek

Title: EHS Specialist

Submit Date: 08/21/2024

Email: jjanicek@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: 09/06/2024

Remediation Project Number: 24102

COA Type

Description

0 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

403865492	FORM 27-SUPPLEMENTAL-SUBMITTED
403895430	SITE INVESTIGATION REPORT

Total Attach: 2 Files

General Comments

User Group

Comment

Comment Date

Environmental	Comply with outstanding COAs.	09/06/2024
Environmental	Based on the information provided for compliant surface water samples, the Operator's proposal to discontinue quarterly surface water sampling is conditionally approved.	09/06/2024
Environmental	Based on the information provided for soil samples (doc #403895430), the Operator's request for a reduced analyte suite of barium-only is conditionally approved.	09/06/2024

Total: 3 comment(s)