FORM 27 Rev 5/22

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 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 INFORMATON

Name of Operator: CAERUS PICEANCE LLC Operator No: 10456
Address: 1001 17TH STREET #1600
City: DENVER State: CO Zip: 80202
Contact Person: Jake Janicek Email: jjanicek@caerusoilandgas.com

Phone Numbers
Phone: (970) 778-2314
Mobile: (970) 778-2314

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.
- [X] 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 OL
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:

- [X] **E&P Waste**
  - [X] Produced Water
  - [ ] Oil
  - [X] Condensate
  - [ ] Drilling Fluids
  - [ ] Drill Cuttings
- [ ] **Other E&P Waste**
  - [ ] Workover Fluids
  - [ ] Tank Bottoms
  - [ ] Pigging Waste
  - [ ] Rig Wash
  - [ ] Spent Filters
  - [ ] Pit Bottoms
  - [ ] Other (as described by EPA) _____
- [ ] **Non-E&P Waste** _____

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. See attached Report of Work Completed (ROWC) for additional details.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

[X] Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Caerus proposes additional investigation to delineate horizontal extents of remaining barium and hexavalent chromium impacts. Using a hydro-vacuum truck, two potholes will be advanced south of the barium exceedance represented by sample 20230920-BM 34F-(SW01)@2 and two additional potholes will be advanced west of the hexavalent chromium exceedance represented by sample 20230921-BM 34F-(WW02)@2. Soil samples will be collected from each pothole at approximately 2 feet bgs and submitted for laboratory analysis of barium and hexavalent chromium. See Remediation Summary and the attached ROWC for additional details and proposed sample locations.

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):

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 exceeeding 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

21 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?

On September 20, 2023, three background soil samples were collected from nearby, non-impacted native soil and submitted for laboratory analysis of ECMC Table 915-1 inorganic constituents. See 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.

Upon discovery of the failed tank, it was emptied and removed from service. The tank battery was relocated to facilitate excavation of impacted soil. Following the completion of additional investigation and delineation of remaining impacts, a Supplemental Form 27 will be submitted with a remediation plan.

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.

In order to address arsenic exceedances detected in the investigation area, and in consideration of background soil analytical data, Caerus requests an alternative allowable limit of 13.63 mg/kg per Table 915-1 Footnote 11. Assuming the proposed request is approved, all confirmation samples are compliant with the proposed alternative limit.

In order to address barium exceedances detected in the investigation area, and in consideration of background soil analytical data, Caerus requests an alternative allowable limit of 263.75 mg/kg per Table 915-1 Footnote 11. Assuming the proposed request is approved, all confirmation samples are compliant with the alternative limit except the southwest sidewall sample represented by 20230920-BM 34F-(SW01)@2. Caerus proposes to advance two potholes south of this location to delineate horizontal extents and will collect soil samples to be submitted for laboratory analysis.

In order to address hexavalent chromium exceedances detected in the investigation area, Caerus requests consideration of Table 915-1 Footnote 9 to substitute the laboratory reporting detection limit (RDL), or practical quantitation limit (PQL), of 1.0 mg/kg as alternative screening level for hexavalent chromium. Assuming the proposed request is approved, all confirmation samples are compliant with the alternative screening levels except the northwest sidewall sample represented by 20230921-BM 34F-(WW02)@2. Caerus proposes to advance two potholes west of this location to delineate horizontal extents and will collect soil samples to be submitted for laboratory analysis.

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

Soil Remediation Summary

☐ **In Situ**

- ____ Bioremediation (or enhanced bioremediation)
- ____ Chemical oxidation
- ____ Air sparge / Soil vapor extraction
- ____ Natural Attenuation
- ____ Other ____

☒ **Ex Situ**

- Yes Excavate and offsite disposal
  - If Yes: Estimated Volume (Cubic Yards) 456
  - 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.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

[X] Quarterly [ ] Semi-Annually [ ] Annually [ ] Other

[X] **Request Alternative Reporting Schedule:**

[X] 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

[X] Other Q3 and Q4 status updates

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

COGCC Disposal Facility ID #, if applicable:

Non-COGCC 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

COGCC Disposal Facility ID #, if applicable:

Non-COGCC 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 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.

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. 05/19/2022

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

Based on investigative results to date, Caerus concludes groundwater was not impacted at the location and no additional surface water sampling is planned.

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: 02/08/2024 Email: jjanicek@caerusoilandgas.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: Steven Arauza Date: 02/29/2024

Remediation Project Number: 24102

COA Type	Description
	Under Remediation Summary, Operator includes a request for a reduced analyte suite of barium only at the southwest sidewall and hexavalent chromium only at the northwest sidewall. This request is NOT approved. Hexavalent chromium remains a contaminant of concern throughout the excavation area. Operator will continue to analyze all soil samples for barium and hexavalent chromium.
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
403632800	FORM 27-SUPPLEMENTAL-SUBMITTED
403670630	SITE INVESTIGATION REPORT

Total Attach: 2 Files

General Comments

User Group	Comment	Comment Date
Environmental	Comply with outstanding COAs.	02/29/2024
Environmental	The Operator's request to utilize the laboratory RDL (1.0 mg/kg) instead of the Table 915-1 Protection of Groundwater value (0.00067 mg/kg) for hexavalent chromium under Table 915-1, footnote 9 is NOT approved due to the facts that each of the soil samples collected on 9/21/2023 exceed Table 915-1 for hexavalent chromium and that background concentrations are not established for hexavalent chromium. However, based on the analytical reports provided (doc #403670630) the Operator may use the laboratory MDL (0.255 mg/kg) as a substitute for the concentration listed in Table 915-1, per Footnote 9. See COAs above. The Operator may consider establishing native background concentrations for barium and hexavalent chromium.	02/29/2024

Total: 2 comment(s)