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 (Initial 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 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
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PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 35092 Initial Form 27 Document #: 403721015

PURPOSE INFORMATION

- [ ] Rule 913.c.(1): Pit or Cuttings Trench closure.
- [X] 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: LOCATION Facility ID: 324333 API #: County Name: GARFIELD
Facility Name: PUCKETT-66S97W 36NENW Latitude: 39.485940 Longitude: -108.170780
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NENW Sec: 36 Twp: 6S Range: 97W Meridian: 6 Sensitive Area? No

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? No
Is groundwater less than 20 feet below ground surface? No

Other Potential Receptors within 1/4 mile

Unnamed seasonal drainage is located 0.28 miles southeast.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [X] **E&P Waste**
  - [X] Produced Water
  - [ ] Oil
  - [ ] 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	Undetermined	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 August 8, 2023, following the removal of the partially buried vessel (PBV), an initial investigation was completed. One soil sample was collected from the base of the associated excavation at 8 feet below ground surface (bgs) and four samples were collected from the sidewalls of the excavation at 4 to 5 feet bgs. The soil samples were characterized using visual and olfactory observations and field screened using a photoionization detector (PID). All soil samples were submitted for laboratory analysis of Energy & Carbon Management Commission (ECMC) Table 915-1 soil constituents of concern. Analytical results of excavation soil samples indicate compliance with Table 915-1 Residential Soil Screening Levels (RSSLs) except for pH, arsenic, and hexavalent chromium. Exceedances of pH range from 8.33 to 8.69, arsenic exceedances range from 9.22 to 51.1 milligrams per kilogram (mg/kg), and hexavalent chromium exceedances range from 0.963 to 2.55 mg/kg.

As part of the investigation, a produced water sample was referenced for source characterization from the Starkey 7 (Location ID 335092) well pad, located 1.13 miles southeast of the Location. At the time the produced water sample was collected, there were four actively producing wells at the Starkey 7 well pad. All four wells produce from the same formation as the Location (Williams Fork) and were producing concurrently with the Location since 2006. Analytical results indicate a near-neutral pH level of 6.99 and did not detect arsenic above the laboratory Reporting Detection Limit (RDL). See the 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):

Based on results outlined in the attached ROWC, Caerus requests a reduced analyte suite to include hexavalent chromium only. Caerus proposes a site investigation using a hydro-vacuum truck to delineate horizontal and vertical extents by advancing five soil borings with sample collection at multiple intervals within each soil boring. See proposed sample locations on the Site Investigation diagram associated with the attached ROWC. Once impacts have been delineated, a remediation plan will be submitted via Supplemental Form 27. Additionally, Caerus plans to conduct a background soil investigation to characterize metals in native soils for comparison to the Location.

Please see the Remediation Summary section of this form for details on how Caerus plans to address pH and arsenic exceedances.

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: 5

Number of soil samples exceeeding 915-1: 5

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

Approximate areal extent (square feet): 225

NA / ND

-- Highest concentration of TPH (mg/kg): 63.5

-- Highest concentration of SAR: 1.28

BTEX > 915-1: No

Vertical Extent > 915-1 (in feet): 8

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

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?

☐ 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 section of this form and attached ROWC for details.

REMEDIAL ACTION PLAN

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

The PBV was decommissioned and removed from the Location.

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.

Although levels of pH and arsenic exceeding Table 915-1 RSSLs are present in the investigation area, produced water characterization data demonstrates these exceedances are not attributed to oil and gas production activities. Based on the common production zone and close proximity to the Location, it is reasonable to conclude that produced water from the Starkey 7 wells have similar chemical composition and the analytical results are representative of source characterization at the Location. Therefore, Caerus requests consideration of Rule 915.e.(2).C to remove pH and arsenic as constituents of concern.

Assuming the process knowledge and request for consideration of Rule 915.e.(2).C are approved, hexavalent chromium is the only constituent of concern detected in the investigation area exceeding Table 915-1 RSSLs and remains undelineated vertically and horizontally. Caerus proposes additional investigation with soil sampling and laboratory analysis to delineate the extents of hexavalent chromium impacts. Prior to additional investigation, Caerus requests a reduced analyte list of hexavalent chromium for this remediation project. See Proposed Sampling section and the attached ROWC for additional 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) _____
  - Name of Licensed Disposal Facility or ECMC 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 Request to open a Remediation Project and to report results of PBV removal investigation

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: $ 10000

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? No

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:

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.

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 08/08/2023

Proposed site investigation commencement. 08/08/2023

Proposed completion of site investigation.

REMEDIAL ACTION DATES

Proposed start date of Remediation.

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

Initial notification was not submitted to the ECMC prior to PBV removal due to a miscommunication between Caerus departments regarding which locations were planned for PBV decommissioning. This form is being submitted to open a new Remediation Project for the Puckett 241-36 and report results of the initial investigation.

Division of Water Resources well permit 271289, located approximately 0.25 miles southeast of the Location, lists depth to groundwater as 234 feet bgs. The well sits at approximately 140 feet lower in elevation than the Location. Based on this information, it is estimated that depth to groundwater at the Location is greater than 234 feet bgs. Caerus requests to compare analytical results for the site investigation to Table 915-1 RSSLs as no reasonable pathway to groundwater appears to exist.

Due to winter conditions that are expected to last through the first and second quarters of 2024, Caerus requests a reduced reporting frequency to semi-annual and plans to conduct additional investigation during Q3 2024.

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: 04/16/2024 Email: jjanicek@caerusoiladgas.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: 04/22/2024

Remediation Project Number: 35092

COA Type	Description
	Operator shall collect sample(s) from comparable, nearby non-impacted native soil for purposes of establishing background soil conditions for the remaining contaminants of concern.
	Operator shall collect soil samples from areas most likely to be impacted and shall collect an appropriate number of representative soil samples to delineate the horizontal and vertical extents of contamination, per Rule 915.e.(2).B.
	Per Rule 913.b.(2), the Operator will conduct sampling and analysis of soil, and groundwater--if encountered, to determine the horizontal and vertical extent of any contamination in excess of the cleanup concentrations in Table 915-1 for soil and groundwater. The Operator shall analyze samples for the approved analyte list and shall compare analytical results for site investigation samples to the Table 915-1 Residential Soil Screening Level Concentrations.
	Based on the information provided, the Operator's request for a reduced analyte suite of hexavalent chromium-only is approved under the following condition: Operator will continue to analyze soil samples for arsenic.
4 COAs	

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
403721015	INVESTIGATION/REMEDIATION WORKPLAN (INITIAL)
403721878	SITE INVESTIGATION REPORT
403764065	FORM 27-INITIAL-SUBMITTED

Total Attach: 3 Files

General Comments

User Group	Comment	Comment Date
Environmental	Given the magnitude of the arsenic concentration in soil sample WW@4 and the absence of background concentrations for arsenic, arsenic remains a contaminant of concern for this project. See COAs above.	04/22/2024

Environmental	Based on the information provided under Operator Comment for winter conditions, the Operator's request for a semi-annual reporting schedule is conditionally approved.	04/22/2024
Environmental	Based on the information provided under Operator Comment for estimated depth to groundwater, the Operator's request to use the Table 915-1 Residential Soil Screening Level concentrations is conditionally approved.	04/22/2024

Total: 3 comment(s)