



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 INFORMATION

Name of Operator: <u>CAERUS PICEANCE LLC</u>	Operator No: <u>10456</u>	Phone Numbers
Address: <u>1001 17TH STREET #1600</u>		Phone: <u>(970) 778-2314</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80202</u>		Mobile: <u>(970) 778-2314</u>
Contact Person: <u>Jake Janicek</u>	Email: <u>jjanicek@caerusoilandgas.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 25004 Initial Form 27 Document #: 403131596

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: <u>SPILL OR RELEASE</u>	Facility ID: <u>482197</u>	API #: _____	County Name: <u>GARFIELD</u>
Facility Name: <u>Starkey 7 Dump Line</u>	Latitude: <u>39.478155</u>	Longitude: <u>-108.151106</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NESW</u>	Sec: <u>31</u>	Twps: <u>6S</u>	Range: <u>96W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications OH 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? No

Other Potential Receptors within 1/4 mile

Starkey Gulch is located 1.8 miles southeast of the Location.

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 sample 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.

On May 10, 2022, a failure point was discovered along the dumphine after a pressure test indicated a potential release. An unknown volume of produced water was released from the dumphine. The release was reported via ECMC Form 19 Document 403048976 to open Spill/Release Point ID 482197. ECMC Form 27 Document 403131596 was later submitted and Remediation Project 25004 was assigned.

On August 7, 2023, drilling activities to delineate vertical and horizontal extents of soil impacts were completed. Four soil borings were completed. SB06 through SB08 were advanced to a depth of 26 feet bgs, while SB09 was completed to a depth of 50 feet bgs. Soil samples were field screened using a photoionization detector (PID). Analytical results of soil boring samples indicate compliance with ECMC Table 915-1 RSSLs except for TPH, xylenes, SAR, pH, and hexavalent chromium.

On August 8, 2023 and November 11, 2023, Confluence completed 3rd and 4th quarter 2023 spring sampling, respectively. Analytical results of inorganic compounds are compliant with ECMC Table 915-1 Groundwater Standards except for sulfates.

On December 4, 2023, Confluence returned to the Location to collect a characterization sample of the produced water on Location. Analytical results of the produced water characterization sample were below laboratory detection limits for arsenic, cadmium, hexavalent chromium, copper, lead, nickel, selenium, and silver. Other notable analytical results include a pH value of 6.99.

See the attached ROWC for 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):

Additional soil samples will be collected as needed to delineate the horizontal and vertical extent of soil impacts. Proposed soil borings for additional delineation are detailed within a site diagram attached to this form. All soil samples will be submitted for laboratory analysis of TPH, BTEX, naphthalene, SAR, and EC as approved in ECMC Document ID 403144342.

A plan for how Caerus plans to address hexavalent chromium and pH exceedances is presented in the "Remediation Summary" Section of this form.

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):

Per COAs, a spring sample will be collected on a quarterly basis to continue monitoring GW conditions.

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 30
Number of soil samples exceeding 915-1 28
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 3700

NA / ND

-- Highest concentration of TPH (mg/kg) 10072
-- Highest concentration of SAR 54.4
BTEX > 915-1 Yes
Vertical Extent > 915-1 (in feet) 50

Groundwater

Number of groundwater samples collected 6
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 480
Number of groundwater monitoring wells installed 0
Number of groundwater samples exceeding 915-1 4

ND Highest concentration of Benzene (µg/l) _____
ND Highest concentration of Toluene (µg/l) _____
ND Highest concentration of Ethylbenzene (µg/l) _____
ND Highest concentration of Xylene (µg/l) _____
NA Highest concentration of Methane (mg/l) _____

Surface Water

0 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?

Four background samples were collected at varying depths and analyzed for ECMC Table 915-1 soil inorganic constituents. See the attached ROWC for 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 Plan and the attached ROWC.

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 source was a failed dumpline which was replaced.

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.

Once the impacts have been delineated, a remediation plan will be presented via a Future Form 27.

In order to address hexavalent chromium exceedances in soil samples 20230807-STARKEY 7-(SB09)@25-26 and 20220927-STARKY7(SB05)@25', Caerus requests use of ECMC Table 915-1 Footnote 9 to substitute the analytical laboratory's Reported Detection Limit (RDL) of 1.0 mg/kg as an alternative screening level for hexavalent chromium. Although hexavalent chromium concentrations exceeding ECMC Table 915-1 RSSLs are present in the investigation area, they are below the laboratory RDL or Practical Quantitation Limit (PQL) of 1.0 mg/kg for hexavalent chromium.

In order to address pH and arsenic exceedances in soil samples collected throughout the site assessment phase of this project, Caerus requests consideration of Rule 915.e.(2).C to remove pH and arsenic as constituents of concern. A sample of produced fluids from the tank battery connected to the failed dumpline on the Starkey 7 well pad was utilized for comparison of pH and arsenic values. Fluids obtained from the tank exhibited pH levels of 6.99. and arsenic results which were below detection limits. Caerus believes that a release of fluids from this failed dumpline would not lead to elevated pH or arsenic values exhibited in the confirmation samples associated with this project thus pH and arsenic should not be used to evaluate this project.

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 COGCC 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.

Sampling of the nearby spring will continue to be conducted on a quarterly basis. In the event that groundwater is encountered during remedial activities, Caerus will immediately notify the ECMC and attempt to collect a representative sample for analysis.

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 Q3 & Q4 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: \$ 50000

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 0

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

Volume of E&P Waste (liquid) in barrels 20

E&P waste (liquid) description hydrovac rinsate mixed with soils 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? _____

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 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.

No reclamation is planned at this time.

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. 05/10/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/10/2022

Proposed site investigation commencement. 05/10/2022

Proposed completion of site investigation. 08/30/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/10/2022

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

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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: 01/17/2024

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: 02/12/2024

Remediation Project Number: 25004

COA Type**Description**

0 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**

403610615	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403657019	SITE INVESTIGATION REPORT
403683596	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 3 Files

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

Environmental	Comply with outstanding COAs.	02/12/2024
Environmental	Based on the information provided, the Operator's request for a reduced analyte suite of TPH, benzene, toluene, ethylbenzene, xylenes, naphthalene, SAR, and EC is conditionally approved.	02/12/2024

Total: 2 comment(s)