

State of Colorado  
Oil and Gas Conservation Commission

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403166691  
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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 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: CAERUS PICEANCE LLC	Operator No: 10456	<b>Phone Numbers</b>
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 #: 25322 Initial Form 27 Document #: 403166691

**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: Initial Status Update to Dumpline Release Investigation Activities

**SITE INFORMATION**

No Multiple Facilities

Facility Type: SPILL OR RELEASE	Facility ID: 482591	API #: _____	County Name: GARFIELD
Facility Name: RD11 Dumpline failure	Latitude: 39.457614	Longitude: -107.858681	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWNW	Sec: 11	Twp: 7S	Range: 94W Meridian: 6 Sensitive Area? Yes

**SITE CONDITIONS**

General soil type - USCS Classifications GM Most Sensitive Adjacent Land Use Rangeland- BLM  
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**

Porcupine Creek

# 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	TBD	Soil Analytical
No	SURFACE WATER	None	Surface Water Analytical

## INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

For initial response measures taken please reference Form 19 Spill/Release Point ID: 482591. From August 5 through 12, 2022, two point of release (POR) characterization soil samples were collected from depths of 5.5 to 6 feet and 10 feet below ground surface, respectively. Two surface water samples were collected from Porcupine Creek, one upgradient and downgradient of the pad location. One groundwater sample was collected from a seep observed to be flowing out of the ground along the bank of Porcupine Creek.

Please see the attached report of work completed (ROWC) for additional investigative 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 ):

Caerus will attempt to remove all impacts through mechanical excavation. Based on the subsequent POR soil sample collected on August 12, 2022, vertical delineation has been obtained at 10 feet below ground surface (bgs). To confirm removal of the impacts to soil, a representative number of confirmation soil samples will be collected from the base and sidewalls of the open excavation footprint. All soil will be characterized through visual and olfactory observations and field screening soil samples for volatile organic compounds using a photoionization detector (PID). See the attached ROWC for additional details regarding the proposed additional investigation and characterization activities.

Caerus requests the COGGC Director to sample under a reduced analytical suite to include for all future soil samples of BTEX, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, and SAR.

### 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 ):

Please see "Proposed Soil Sampling" section of this form for details.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 2

Number of soil samples exceeding 915-1 2

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

Approximate areal extent (square feet) 1000

### NA / ND

-- Highest concentration of TPH (mg/kg) 1582.2

-- Highest concentration of SAR 16.1

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 6

### Groundwater

Number of groundwater samples collected 1

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 23

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 0

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

2 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?

Six site-specific background soil samples were collected from non-impacted native soil for the purpose of establishing background soil concentrations for Table 915-1 analytes. The background sampling activities can be referenced in the attached ROWC.

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?

Please see "Proposed Soil Sampling" section of this form for details.

## REMEDIAL ACTION PLAN

### SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

The source was a failed section of dumpline pipe which was shut in and will be replaced.

### 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.

Caerus will attempt to remove all soil impacts through mechanical excavation. Based on the subsequent POR soil sample collected on August 12, 2022, vertical delineation has been obtained at 10 feet bgs. To confirm removal of the impacts to soil, a representative number of confirmation soil samples will be collected from the base and sidewalls of the open excavation footprint. All soil will be characterized through visual and olfactory observations and field screening soil samples for volatile organic compounds using a PID. See the attached ROWC for additional details regarding the proposed additional investigation and characterization activities.

To address the elevated arsenic, barium, and cadmium concentrations exceeded by COGCC Table 915-1 PGSSLCs, Caerus requests the Director that the two POR confirmation soil samples with observed exceedances of arsenic, barium, and cadmium be considered within site specific background arsenic, barium, and cadmium concentrations observed in site specific background soil sample 20220812-RD11(BGN)@3-4' per COGCC Table 915-1 footnote 11. Caerus requests that all arsenic, barium, and cadmium exceedances below site specific background levels be considered naturally occurring.

## 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 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.

If groundwater is observed during future investigation activities, a representative sample will be collected and submitted for COGCC Table 915-1.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

### Approved Reporting Schedule:

Quarterly    Semi-Annually    Annually    Other

Initial Status Update to Dumpline Release Investigation  
Activities - Q3

### 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 \_\_\_\_\_

## 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: \$ 20000 \_\_\_\_\_

## 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 \_\_\_\_\_ 69

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

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: Greenleaf Environmental Services \_\_\_\_\_

# 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 disturbances associated with the remediation of the dumphline release with be returned to grade with suitable material pursuant to the COGCC 1000 Series rules.

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. 07/20/2022

Actual Spill or Release date, or date of discovery. 07/20/2022

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 08/05/2022

Proposed site investigation commencement. 08/05/2022

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**

In order to address relief concerning assessment of a potential pathways to groundwater, a discussion of Caerus' assessment of potential pathways to groundwater is detailed below. Caerus believes that a pathway to groundwater from soil identified beneath the POR location does not exist due to the following reasons:

1) The vertical distance between the POR location and the anticipated static water table depth. The static water table depth is estimated to be 70 feet below pad surface based on documents associated with a domestic water well approximately 1,404 feet to the northeast and identified by DWR Permit #177190-A. The vertical distance between the assumed static water level and the POR location is approximately 94 feet associated with this remediation project.

2) No groundwater was/has been observed infiltrating the existing excavation during site investigation activities.

3) The nearest sensitive receptor (737 feet east) is Porcupine Creek which the United States Geological Survey (USGS) map symbol detailed on the topo map provided on COGCC GISOnline indicates it is an perennial stream. Although this stream flows year around, there is no observable standing water within the immediate release area and any resulting appreciable groundwater elevation increase would have been observed in the open excavation associated with this remediation project. Any impacts to surface and/or groundwater would have been observed during the initial release investigation sampling.

Given these observations and facts concerning groundwater in the immediate vicinity of the project site, Caerus requests that the Director make a determination to continue evaluating remediation success of this project using Residential Soil Screening Level Concentrations listed in Table 915-1.

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

Signed: Dustin Held

Title: Sr. Consultant, Geologist

Submit Date: 10/04/2022

Email: dustin.held@wsp.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: 10/07/2022

Remediation Project Number: 25322

**COA Type****Description**

	<p>Based on the information provided for POR samples, the Operator's request for a reduced analyte suite of BTEX, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, and SAR is approved under the condition below:</p> <p>Operator will also continue to analyze soil samples for TPH.</p>
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**

403166691	FORM 27-INITIAL-SUBMITTED
403185658	SITE INVESTIGATION REPORT

Total Attach: 2 Files

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

Environmental	Based on the information provided under Operator Comment, the Operator's request to proceed under the Table 915-1 RSSLs is conditionally approved.	10/07/2022
Environmental	Based on the information provided for background samples, the Operator's request for consideration of site-specific background concentrations of arsenic, barium, and cadmium is conditionally approved.	10/07/2022

Total: 2 comment(s)