FORM
27
Rev 5/22

# State of Colorado
# Energy & Carbon Management Commission

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Document Number: 403470573
Receive Date: 07/31/2023
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) 788-2314
Mobile: (970) 788-2314

## PROJECT, PURPOSE & SITE INFORMATION

### PROJECT INFORMATION

Remediation Project #: 27775 Initial Form 27 Document #: 403326528

### 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.
- [X] 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.
- [X] Other: Q2 Status Update to Remediation Project Number (RPN) 27775

### SITE INFORMATION

Yes Multiple Facilities

Facility Type: PIT Facility ID: 117251 API #: County Name: RIO BLANCO
Facility Name: PICEANCE CREEK UNIT 68-11 Latitude: 39.886142 Longitude: -108.245544
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SWSE Sec: 11 Twp: 2S Range: 97W Meridian: 6 Sensitive Area? Yes

Facility Type: UIC DISPOSAL Facility ID: 159173 API #: County Name: RIO BLANCO
Facility Name: PCU T68X-11G Latitude: 39.885470 Longitude: -108.244510
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SWSE Sec: 11 Twp: 2S Range: 97W Meridian: 6 Sensitive Area? Yes

Facility Type: WELL Facility ID: API #: 103-05185 County Name: RIO BLANCO

Facility Name: PICEANCE CREEK UNIT T68X-11G Latitude: 39.885470 Longitude: -108.244510

** correct Lat/Long if needed: Latitude: Longitude:

QtrQtr: SWSE Sec: 11 Twp: 2S Range: 97W Meridian: 6 Sensitive Area? Yes

Facility Type: LOCATION Facility ID: 314334 API #: County Name: RIO BLANCO

Facility Name: PICEANCE CREEK UNIT-62S97W 11SWSE Latitude: 39.885542 Longitude: -108.244494

** correct Lat/Long if needed: Latitude: Longitude:

QtrQtr: SWSE Sec: 11 Twp: 2S Range: 97W Meridian: 6 Sensitive Area? Yes

Facility Type: NONFACILITY Facility ID: 431140 API #: County Name: RIO BLANCO

Facility Name: PCU 68-11 injection line 431140 Latitude: 39.890623 Longitude: -108.251488

** correct Lat/Long if needed: Latitude: Longitude:

QtrQtr: SWSE Sec: 11 Twp: 2S Range: 97W Meridian: 6 Sensitive Area? Yes

## 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**

It appears as if the permitted water wells populated within a quarter mile of the project area on the COGIS database, including the one on the PCU T68X-11G pad, are gas wells that were permitted by a previous operator through the DWR to allow them to use production water in a variety of ways. The submittal of this form includes the determination by the submitter that they are not domestic water wells.

# 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) | Historic impacts associated with oil & gas production have been confirmed |

## DESCRIPTION OF IMPACT

| Impacted? | Impacted Media | Extent of Impact | How Determined |
|---|---|---|---|
| Yes | SOILS | To be determined | Field investigation and soil sampling |

## 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, 2023, five investigative potholes were advanced using a hydro-vacuum truck (hydro-vac) immediately adjacent to or beneath the former production equipment. The first pothole location [20230510-PCU T68X-11G SWD (FC-WH-01)@7] was advanced as close to the wellhead as possible while avoiding underground utilities and terminated at approximately 7 feet below ground surface (bgs). Three potholes [20230510-PCU T68X-11G SWD (FC-PIT-E)@4], [20230510-PCU T68X-11G SWD (FC-PIT-S)@4], and [20230510-PCU T68X-11G SWD (FC-PIT-W)@4 were advanced at each historic pit location to 4 feet bgs. Two additional potholes [20230510-PCU T68X-11G SWD (FC-PL-01)@6] and [20230510-PCU T68X-11G SWD (FC-PL-02)@5] were advanced at each flowline valve can location to depths of 5 feet and 6 feet bgs, respectively.

On June 7, 2023, two hand augered two soil borings were advanced beneath the former separator/dehydration footprint, one located at the north end and the other at the south. As each boring location was advanced the soil was field screened at 1-foot intervals to terminus (4 feet bgs). Two confirmation soil samples were submitted from each boring, the most impacted based on field screening and the boring terminus [20230607-PCU T68X-11G SWD-(FC-SEP-N)@3], [20230607-PCU T68X-11G SWD-(FC-SEP-N)@4], [20230607-PCU T68X-11G SWD-(FC-SEP-S)@3], and [20230607-PCU T68X-11G SWD-(FC-SEP-S)@4].

Please 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 ):

Once the production well PCU T68X-11G (API# 103-05185) is plugged additional confirmation soil samples will be collected to confirm the removal of impacted soils immediately surrounding the production well footprint. One base and four sidewall confirmation soil samples will be collected form the plugged well excavation footprint.

Once the associated PCU 68-11 injection line 431140 (Facility ID: 431140) and flowline are exposed for decommissioning soil field screening will be completed beneath the former line where the line transitions from below ground to above ground (90-degree bend). All confirmation soil samples will be inspected for the presence or absence of petroleum hydrocarbons odors/staining and field screened using a photoionization detector (PID) to monitor for the presence or absence of volatile organic vapors (VOCs).

See "Remediation Summary" for additional details and request for reduced analytical suite for soils analysis.

### 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 the "Proposed Soil Sampling" and "Remediation Summary" sections of this form for additional details.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

**Soil**

Number of soil samples collected: 10

Number of soil samples exceeeding 915-1: 10

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

Approximate areal extent (square feet): 2500

**NA / ND**

-- Highest concentration of TPH (mg/kg): 4117.8

-- Highest concentration of SAR: 8.82

BTEX > 915-1: Yes

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

**Groundwater**

Number of groundwater samples collected: 0

Was extent of groundwater contaminated delineated? No

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?

[X] Were background samples collected as part of this site investigation?

May 8, 2023, eight site-specific background soil samples were collected from four hand auger locations to the north, east, west, and south of the pad location from comparable, nearby, non-impacted, native soil per COGCC Rule 915.e.(2). D. The site-specific background sample depths ranged from 1 foot bgs to 4 feet bgs.

Please 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):

[X] Is further site investigation required?

Please see the "Proposed Soil Sampling" and "Remediation Summary" sections of this form for additional 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.

Since the impacts are considered historical, no source can be identified.

## 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.

A remediation plan will be submitted once all impacts have been delineated.

Carry over from Proposed Soil Sampling section.
Source removal of impacted soils will occur beneath the former separator/dehydration footprint in tandem with production well source removal (once well is confirmed plugged). All impacts will be removed vertical and horizontally until field soil screening confirms compliance. Representative base and sidewall samples will be collected to confirm removal of impacted material. To address the SAR exceedances at historic pit west location (20230510-PCU-T68X-11G SWD-( FC-PIT-W)@4 additional site-specific background samples will be collected.

Caerus requests to the Director for approval to sample all future confirmation soil samples associated with all future decommissioning investigation for lead, total petroleum hydrocarbons (TPH), benzene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnapthalene, 2-methylnapthalene, fluorene, naphthalene, and sodium adsorption ratio (SAR).

Per COGCC Rule 915 e.(2)C. Caerus requests the director relief of contaminants of concern (COC) which include arsenic, barium, and selenium. Although these COC are documented as exceedances in initial decommissioning confirmation soil samples collected at the Site, they are within site-specific background soil concentrations documented in previously collected background soil samples located at the Site. Analytical results can be referenced in Table 1 of the attached ROWC.

Please see the attached ROWC for further justification and supporting analytical data.

## 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 investigation activities, a representative sample will be collected and summitted for COGCC Table 915-1 for water.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

**Approved Reporting Schedule:**

[X] Quarterly [ ] Semi-Annually [ ] Annually [ ] Other Q2 Status Update to RPN 27775

[ ] **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

[X] Other Oil and Gas Facility Decommissioning Notification per COGCC Rule 911.a.(4) and 913.c.(9)

## 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: $ 40000

## 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 5

E&P waste (liquid) description Hydrovac rinseate mixed with impacted soils

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.

Any excavations will be backfilled to the existing grade of the pad surface.

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. _____

Actual Spill or Release date, or date of discovery. _____

## SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/01/2023

Proposed site investigation commencement. 05/01/2023

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

Per COGCC Rule 915 e.(2)C. Caerus requests the Director relief of pH values observed in previously collected soil samples collected on May 10 and June 7, 2023. Although these five compliance sample's pH values range from 8.31 standard unit (SU) and 9.17 SU and are elevated with respect to the COGCC Table 915-1 Cleanup Concentrations criteria of 8.3 SU, these elevated values should not be considered elevated as a result of the byproduct of oil and gas production activities associated with the former production well PICEANCE CREEK UNIT #PCU T68X-11G and associated production equipment. Based on the pH values from produced water samples collected from nearby production well locations PICEANCE CREEK UNIT #T48-2G (Facility ID: 259446) (5.30 SU) and PICEANCE CREEK UNIT#T14X-13G (Facility ID: 259787) (5.86 SU) which produce from the same geologic formation (Wasatch) as former production well PICEANCE CREEK UNIT #PCU T68X-11G (Facility ID: 228348), the soil pH values of all decommissioning samples are greater than the produced water pH values generated from the nearby production well locations. Based on the pH values of the produced water samples collected from the nearby production well locations, Caerus believes the elevated pH values in the five decommissioning compliance soil samples are not associated with the former production well or associated production equipment and are not a result of oil and gas production activities but rather are naturally occurring background concentrations within the area per Rule 915.e.(2)C. (site-specific waste characterization).

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: 07/31/2023 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: 09/13/2023

Remediation Project Number: 27775

| COA Type | Description |
|---|---|
| | Submit complete documentation of produced water sampling referenced under Operator Comment on a Supplemental Form 27. |
| | Per Rule 915.e.(1).C, Operator will ensure that laboratory methods selected will have detection limits less than or equal to the cleanup concentrations in Table 915-1. |
| | Based on the information provided for confirmation soil samples (doc #403473224), the Operator's request for a reduced analyte suite of lead, TPH (ORO/DRO/GRO), benzene, ethylbenzene, total xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnapthalene, 2-methylnapthalene, fluorene, napthalene, and sodium adsoption ratio (SAR) is approved under the following condition:<br><br>The Operator will continue to analyze confirmation soil samples for hexavalent chromium. |
| 3 COAs | |

## 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 |
|---|---|
| 403470573 | FORM 27-SUPPLEMENTAL-SUBMITTED |
| 403473224 | SITE INVESTIGATION REPORT |

Total Attach: 2 Files

## General Comments

| User Group | Comment | Comment Date |
|---|---|---|
| Environmental | Comply with outstanding COAs. | 09/13/2023 |
| Environmental | Based on the information provided for site-specific waste characterization (produced water) samples (doc #403473224 and Operator Comment), the Operator's request for relief of pH as a contaminant of concern is conditionally approved per Rule 915.e.(2).C. | 09/13/2023 |

| | | |
|---|---|---|
| Environmental | Based on the information provided for confirmation soil samples (doc #403473224), the Operator's request for consideration of background concentrations of arsenic, barium, and selenium in exceedance of Table 915-1 is conditionally approved per Rule 915.e.(2).C and Table 915-1 Footnotes 1 and 11. | 09/13/2023 |

Total: 3 comment(s)