FORM 27 Rev 3/16

State of Colorado
Oil and Gas Conservation 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.
Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATON

Name of Operator: CAERUS PICEANCE LLC Operator No: 10456
Address: 1001 17TH STREET #1600
City: DENVER State: CO Zip: 80202
Contact Person: Blair Rollins

Phone Numbers
Phone: (970) 285-2925
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Email: brollins@caerusoilandgas.com

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 15973 Initial Form 27 Document #: 402490446

PURPOSE INFORMATION

- [ ] 901.e. Sensitive Area Determination
- [ ] 909.c.(1), Rule 905: Pit or PW vessel closure
- [x] 909.c.(2), Rule 906: Spill/Release Remediation
- [ ] 909.c.(3), Rule 907.e.: Land treatment of oily waste
- [ ] 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure
- [ ] 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water
- [ ] Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b.
- [ ] Rule 909.e.(2)B.: Closure of remediation project
- [ ] Rule 906.c.: Director request
- [ ] Other

SITE INFORMATION

N Multiple Facilites (in accordance with Rule 909.c.)

Facility Type: SPILL OR RELEASE Facility ID: 477097 API #: County Name: GARFIELD
Facility Name: Unocal 1 dumpline release Latitude: 39.519440 Longitude: -108.122330
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NWSW Sec: 16 Twp: 6S Range: 96W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC
Most Sensitive Adjacent Land Use Non-crop land
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

The nearest dry drainage is located adjacent to the well pad to the north. The nearest surface water is approximately 2,320 feet west of the site. Nearest downgradient groundwater well is located approximately 5,830 feet south of the site.

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	TBD	Laboratory 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.

Upon discovery of the spill, Caerus shut in the wells to stop the release. Caerus utilized manual excavation to determine if the extents of contamination could be identified for the release. Soil samples were collected to verify compliance with COGCC Table 910-1 standards for the project.

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):

Additional sampling activities will be conducted as grab samples during vertical and horizontal delineation of the site. Based on teh results from samples collected on the attached laboratory analytical spreadsheet, Caerus requests a reduced analyte suite for the project to include TPH (GRO and DRO), BTEX, SAR, and pH.

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

- [x] Additional alternative investigative actions described in attached Site Investigation Plan (summary):

In the event that groundwater is encountered during the spill impact delineation process, Caerus will attempt to collect a representative groundwater sample for COGCC Table 910-1 analysis.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 23

Number of soil samples exceeeding 910-1: 23

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

Approximate areal extent (square feet): 1500

NA / ND

-- Highest concentration of TPH (mg/kg): 4560

-- Highest concentration of SAR: 14.8

BTEX > 910-1: Yes

Vertical Extent > 910-1 (in feet): 60

Groundwater

Number of groundwater samples collected: 0

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet): 100`

Number of groundwater monitoring wells installed: 0

Number of groundwater samples exceeding 910-1: 0

NA Highest concentration of Benzene (µg/l):

NA Highest concentration of Toluene (µg/l):

NA Highest concentration of Ethylbenzene (µg/l):

NA 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 910-1

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?

Caerus will conduct additional site investigation to determine effectiveness of a selected and implemented remediation strategy.

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? Yes

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

The attached report of work completed outlines activities conducted to delineate the impacts associated with this spill. Once weather and road conditions are favorable, Caerus will utilize a powered SVE trailer to determine the radius of influence associated with the SVE wells installed at the site. Once SVE ROI can be determined, Caerus will select a remediation strategy to be utilized at the site.

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.

The attached report of work completed outlines activities conducted to delineate the impacts associated with this spill. Once weather and road conditions are favorable, Caerus will utilize a powered SVE trailer to determine the radius of influence associated with the SVE wells installed at the site. Once SVE ROI can be determined, Caerus will select a remediation strategy to be utilized at the site.

Soil Remediation Summary

☒ In Situ

- Yes — Bioremediation (or enhanced bioremediation)
- No — Chemical oxidation
- Yes — Air sparge / Soil vapor extraction
- Yes — Natural Attenuation
- No — 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

- No — Bioremediation (or enhanced bioremediation)
- No — Chemical oxidation
- No — Air sparge / Soil vapor extraction
- No — Natural Attenuation
- No — 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.

Groundwater has not been encountered at the site during investigation activities. If groundwater is encountered, Caerus will attempt to collect a representative sample for COGCC Table 910-1 analysis.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☒ Quarterly ☐ Semi-Annually ☐ Annually ☐ Other _____

Report Type: ☐ Groundwater Monitoring ☐ Land Treatment Progress Report ☐ O&M Report

☒ Other Report of Work Completed

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 _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

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

E&P waste (liquid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No

Do all soils meet Table 910-1 standards? _____

Does the previous reply indicate consideration of background concentrations? _____

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? _____

Does Groundwater meet Table 910-1 standards? _____

Is additional groundwater monitoring to be conducted? _____

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.

Caerus anticipates the extent of contamination will be contained to the active well pad surface. Caerus plans to backfill the excavation to the active working surface of the well pad for continued operation.

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 approve the seed mix? Yes

If NO, does the seed mix comply with local soil conservation district recommendations? Yes

IMPLEMENTATION SCHEDULE

PRIOR DATES

Date of Surface Owner notification/consultation, if required.

Actual Spill or Release date, if known.

SITE INVESTIGATION DATES

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

Date of commencement of Site Investigation. 07/22/2020

Date of completion of Site Investigation. 11/17/2020

REMEDIAL ACTION DATES

Date of commencement of Remediation.

Date of completion of Remediation.

SITE RECLAMATION DATES

Date of commencement of Reclamation.

Date of completion of Reclamation.

OPERATOR COMMENT

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

Signed:` Blair Rollins

Title: EHS Specialist

Submit Date:` 01/21/2021

Email: brollins@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: 02/22/2021

Remediation Project Number: 15973

COA Type	Description
	Operator shall collect sample(s) from comparable, nearby non-impacted native soil for purposes of establishing background soil conditions including pH, electrical conductivity (EC) and sodium adsorption ratio (SAR), per Rule 915.e.(2).D.
	This Form 27 and the attached report (doc #402569783) include references to compliance with Table 910-1. Operator shall submit a formal request to proceed under Table 910-1 per Rule 915.f. The Operator's request shall include specific implementation and anticipated completion dates.
	Operator shall comply with Rule 915.e.(2).B by collecting an appropriate number of samples to determine the horizontal and vertical extents of impacts for the approved analyte suite.
	Operator shall provide SVE evaluation and radius-of-influence data via a Supplemental eForm 27 within Q2 of 2021.
	Under Recommendations and Analysis, the attached report (doc #402569783) indicates that "Confluence recommends securing a smaller drilling rig or alternative approach to collect further vertical data within the spill/excavation area." Operator shall submit a Supplemental eForm 27 to address this recommendation and a path forward for defining the horizontal and vertical extent of impacts.

	In addition to comparisons to Table 910-1, the Operator shall include comparisons of soil sample analytical results to Table 915-1 Residential Soil Screening Level Concentrations and Protection of Groundwater Soil Screening Level Concentrations on future Supplemental Reports. Operator's Supplemental Report shall also include an assessment of potential pathways for communication with groundwater.

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
402569761	FORM 27-SUPPLEMENTAL-SUBMITTED
402569783	MONITORING REPORT

Total Attach: 2 Files

General Comments

User Group	Comment	Comment Date
Environmental	The COGCC does not concur with the following assertion from the Recommendations and Analysis section of the attached report (doc #402569783): "Though inorganic constitutents (SAR, pH) are above allowable limits in all advanced SB, the lack of corroborating data to demonstrate an environmental release is a strong indicator that these levels are naturally occurring. As these constituents are a specific threat to revegetation and reclamation objectives, and these samples were collected at least 15 feet bgs, no additional actions are recommended in response to these results at this time." Note: the attached analytical report documents exceedances for EC in addition to pH and SAR for samples collected from SB02, SB03, and SB04 at multiple depths. EC was not analyzed for samples collected from SB01. EC, SAR, and pH remain contaminants of concern in addition to organic compounds. See COAs above.	02/18/2021

Total: 1 comment(s)