

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 INFORMATION

Name of Operator: CAERUS PICEANCE LLC	Operator No: 10456	Phone Numbers
Address: 1001 17TH STREET #1600		Phone: (970) 6406919
City: DENVER State: CO Zip: 80202		Mobile: (970) 6406919
Contact Person: Blair Rollins	Email: brollins@caerusoilandgas.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION
Remediation Project #: 5169 Initial Form 27 Document #: 2608642

PURPOSE INFORMATION

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

SITE INFORMATION N Multiple Facilities (in accordance with Rule 909.c.)

Facility Type: LOCATION	Facility ID: 334900	API #: _____	County Name: GARFIELD
Facility Name: PITMAN-67S93W 13SWNW	Latitude: 39.448610	Longitude: -107.731460	
	** correct Lat/Long if needed: Latitude: 39.450064	Longitude: -107.731053	
QtrQtr: SWNW	Sec: 13	Twp: 7S	Range: 93W Meridian: 6 Sensitive Area? No

SITE CONDITIONS

General soil type - USCS Classifications GC Most Sensitive Adjacent Land Use RANGELAND

Is domestic water well within 1/4 mile? Yes 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

2 PERMITTED WATER WELLS WITHIN 1/4 MILE. 2 UNNAMED INTERMITTENT TRIBUTARIES TO MAMM CREEK.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	1554 CU YDS	FIELD INSTRUMENTATION, LAB RESULTS
Yes	VEGETATION	1554 SQ YDS	VISUALLY

INITIAL ACTION SUMMARY

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

THIS REVISED FORM 27 IS BEING SUBMITTED WITH CAHNGES AND ADDITIONS REQUESTED BY THE COGCC DURING A DISCUSSION WITH ENCANA OIL & GAS (USA) INC. (ENCANA) PERSONNEL ABOUT A PREVIOUS VERSION SUBMITTED FOR THIS INCIDENT IN AUGUST OF 2009. THIS REVISED VERSION INCLUDES THE ORIGINAL SITE INVESTIGATION, BUT INCLUDES MODIFICATIONS TO THE PROPOSED MONITORING AND REMEDIATION PLAN. THIS FORM 27 WAS PREPARED TO DOCUMENT A SITE INVESTIGATION CONDUCTED IN RESPONSE TO A LANDOWNER COMPLAINT FILED WITH THE COGCC. THE COMPLAINT ALLEGED A SPILL, BASED ON THE APPEARANCE OF STRESSED VEGETATION, OUTSIDE THE PAD FOOTPRINT NORTH AND EAST OF THE E13 WELL PAD. IN RESPONSE TO THE COMPLAINT, ENCANA SAMPLED THE IDENTIFIED AREA OF CONCERN. THOSE RESULTS WERE COMPARED TO BACKGROUND SAMPLES TAKEN IN THE AREA, AND CONFIRMED ELEVATED LEVELS OF SAR, EC, PH, ARSENIC AND BORON. ATTACHED IS A FIGURE ILLUSTRATING SAMPLE LOCATIONS. SUBSEQUENT SITE INVESTIGATIONS UTILIZED FIELD VERIFICATION TECHNIQUES TO CONFIRM ELEVATED LEVELS TO A DEPTH OF 3 FEET. THIS FORM 27 ALSO PROVIDES A SITE REMEDIATION WORKPLAN FOR RETURNING VEGETATION IN THE AREAS OF CONCERN TO COMPOSITION SIMILAR TO ADJACENT PLANT COMMUNITIES. A FORM 19 WAS ALSO SUBMITTED TO DOCUMENT A POTENTIAL RELEASE AT THIS LOCATION.

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 collected to document soils for inorganics. See attached diagram. Additional sampling will commence after pilot test to determine treatment of inorganics. Caerus requests continuation of previously approved reduced suite of pH, SAR, and EC for project. Caerus requests continuance of REM 5169 to remain under COGCC Table 910-1 per COGCC Rule 915.f.

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):

Inorganics present at site. Caerus and contractor are in the process of conducting a small scale pilot test off facility/site to introduce treatment options to determine if inorganics can be lowered without source removal. Pilot test data will be provided on supplemental Form 27 to determine effectiveness and strategy for remediation approach.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 32
Number of soil samples exceeding 910-1 14
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 13000

NA / ND

NA Highest concentration of TPH (mg/kg) _____
-- Highest concentration of SAR 59
BTEX > 910-1 No
Vertical Extent > 910-1 (in feet) 2

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 910-1 _____

_____ 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
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?

Release areas are approximately North east of pad (gps coordinates of main release: 39.450064 / -107.731053). Confined to dry drainage.

Were background samples collected as part of this site investigation?

18 background samples were collected. See attached data and map.

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?

Soil treatment pilot test to determine if inorganics can be cleared without source removal is being conducted off facility/site. Data on pilot test will be provided in supplemental Form 27.

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.

Pilot test of source material will determine next remediation approach. Supplemental form 27(s) will be submitted when pilot test is complete and approach is selected.

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.

Treatment of inorganics in place is main objective to eliminate impacts associated with large area source removal. Caerus plans to have pilot test completed by end of spring 2021, and will provide information to COGCC for review and approval. Caerus requests to have project remain under previously approved reduced analyte suite of EC, SAR, and pH following COGCC Rule 915.f.

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.

No groundwater impacts have been identified.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: Quarterly Semi-Annually Annually Other TBD - After pilot test

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

Other Rem progress report

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.

THE RECLAMATION PLAN WILL BE IDENTIFIED IN THE PROPOSED REMEDIATION PLAN TO BE SUBMITTED FOLLOWING COMPLETION OF SITE MONITORING AT THE END OF THE 2021 GROWING SEASON.

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 approve the seed mix? _____

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

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). 07/06/2009

Date of commencement of Site Investigation. 07/06/2009

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 07/06/2009

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

Caerus is requesting REM 5169 to remain with the previously approved reduced analyte suite of pH, SAR, and EC for remainder of project. Project commenced prior to Table 915-1 and Caerus is requesting REM 5169 to remain under COGCC Table 910-1 per COGCC Rule 915.f. with the goal to close prior to Jan 15, 2022.

Matt Kasten on behalf of Blair Rollins.

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: 04/01/2021

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: 05/28/2021

Remediation Project Number: 5169

Condition of Approval

COA Type

Description

	<p>The Operator's request for a reduced analyte suite (EC, SAR, pH) cannot be approved at this time. The Operator's Form 27 indicates that this reduced analyte suite had been previously approved, but approval of a reduced analyte suite and/or compliance for Table 910-1 analytes not included in the Operator's request are not documented in the remediation project file.</p> <p>Within 45 days of approval of this report (by July 12, 2021), the Operator shall submit a Supplemental Form 27 to reference specific document numbers corresponding to previous COGCC approval of a reduced analyte suite. The Operator's Supplemental Form 27 shall also address documented Table 910-1/915-1 exceedances for arsenic and boron (see doc #2608642) as well as compliance of previous samples with Table 910-1 for organic compounds.</p>
	<p>The COGCC does not concur with the Operator's request to comply with Table 910-1 rather than 915-1 based on the fact that the Table 915-1 maximum ratio of 6 is more consistent with the documented background concentrations (0.16-2.72) and is therefore a more appropriate cleanup concentration than 12.</p> <p>The Operator shall comply with Table 915-1 Cleanup Concentrations.</p>

	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 complete Table 915-1 list and shall delineate the extent of impacts using the Table 915-1 Protection of Groundwater Soil Screening Level Concentrations.
	Assess nature and extent of contamination with confirmation soil samples. The operator shall comply with Rule 915.e.(2) for collection of soil samples. The operator shall notify the COGCC and comply with Rule 915.e.(3) if groundwater is encountered during cleanup operations.
4 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.

<u>Att Doc Num</u>	<u>Name</u>
402646392	FORM 27-SUPPLEMENTAL-SUBMITTED
402646439	SITE INVESTIGATION REPORT

Total Attach: 2 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	Updated correct lat/long to correspond to gps coordinates of main release, as indicated under Other Investigation Information.	05/28/2021

Total: 1 comment(s)