

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



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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) 285-2925
City: DENVER State: CO Zip: 80202		Mobile: (970) 640-6919
Contact Person: Blair Rollins	Email: brollins@caerusoilandgas.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION
Remediation Project #: 7966 Initial Form 27 Document #: 2146043

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 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 checked="" type="checkbox"/> Other LINED EARTHEN PIT CLOSURE

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

Facility Type: PIT	Facility ID: 433716	API #:	County Name: GARFIELD
Facility Name: H29A 433716	Latitude: 39.588380	Longitude: -108.070600	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: SENE	Sec: 29	Twp: 5S	Range: 95W 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? Yes Is surface water within 1/4 mile? Yes
Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

THERE ARE TWO STREAMS, AND ONE WATER WELL WITHIN 1/4 MILE OF THE WELL PAD.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input type="checkbox"/> E&P Waste | <input checked="" type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input 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 checked="" 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	IMPACTS DETAILED IN FORM 19	IMPACTS DETAILED IN FORM 19

INITIAL ACTION SUMMARY

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

All activities conducted in support of this pit closure project will be carried out in accordance with COGCC Rules 905, 907, and 909 for conducting a site investigation in support of this pit closure. The following discussion was prepared to present general procedures for Encana's approach to pit closures and any associated remediation and documentation. All subsequent data gathered in support of this project will be submitted to the COGCC as required in a Form 19 (Spill/Release Report), Notification of Completion and Form 4 (Sundry Notice), and will reference the COGCC assigned Remediation Project number. The following activities have, or will be carried out in support of pit closure activities conducted in support of this project: 905.b(2) & 905.b(4) ? All above-liner fluids and solids will be removed from the pit and will be reused or disposed of at a permitted disposal facility under manifest. 905.b(3) ? Liner will be removed, and reused/recycled or disposed of at a permitted disposal facility under manifest. 905.b(4) ? Representative samples will be collected from the pit bottom following removal of the pit liner and will be analyzed for compliance with COGCC Table 910-1. Sample results will be provided to the COGCC in supplementary submission(s) for this

remediation project. 905.c ? In the event of the constituents of concern found below the liner are in excess of Table 910-1

allowable concentrations and above background concentrations, Form 19 (Spill/Release Report) will be submitted to document the failure of the pit liner and subsequent release of fluids. If below-liner concentrations identified in Table 910-1 allowable concentrations, but below

background no Form 19 will be submitted. However, a Form 4 (Sundry Notice) and Notification of Completion will be submitted to document the onsite disposal of material in excess of the allowable concentrations identified in Table 910-1.

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):

please see attached

Proposed Groundwater Sampling

Will groundwater samples be collected as part of this investigation? (Number, analyses, and locations of samples):

ground water was not encountered

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 attached

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 0
Number of soil samples exceeding 910-1 0
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 10000

NA / ND

NA Highest concentration of TPH (mg/kg) _____
NA Highest concentration of SAR _____
BTEX > 910-1 Yes
Vertical Extent > 910-1 (in feet) 37

Groundwater

Number of groundwater samples collected 0
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 0'
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?

Confirmation soil samples will be collected to demonstrate remediation and compliance with COGCC Table 915-1.

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.

Caerus has installed bio-vent wells with augmented quarterly powered SVE events at the site to remediate existing impacts associated with the previously existing pit. Please reference the attached 2017 report of work completed which does not appear to be uploaded to the COGCC server. Attached please find the tabulated data for the quarterly SVE events conducted at the site demonstrating continued remediation and reduction of impacts below ground surface through trailer exhaust monitoring during each powered SVE event.

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.

Caerus has installed bio-vent wells with augmented quarterly powered SVE events at the site to remediate existing impacts associated with the previously existing pit. Please reference the attached 2017 report of work completed which does not appear to be uploaded to the COGCC server. Attached please find the tabulated data for the quarterly SVE events conducted at the site demonstrating continued remediation and reduction of impacts below ground surface through trailer exhaust monitoring during each powered SVE event.

Soil Remediation Summary

In Situ

Ex Situ

Yes _____ Bioremediation (or enhanced bioremediation)

Excavate and offsite disposal

No _____ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) _____

Yes _____ Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or COGCC Facility ID # _____

Yes _____ Natural Attenuation

Excavate and onsite remediation

Other _____

No _____ Land Treatment

No _____ Bioremediation (or enhanced bioremediation)

No _____ Chemical oxidation

No _____ 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.

In the event that impacts to groundwater are identified, a vertical and lateral extent would be determined by a third party contractor and an appropriate insitu remediation and monitoring plan would be prepared and submitted to the COGCC for prior approval.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: Quarterly Semi-Annually Annually Other _____

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

Other _____

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 footprint for the backfill pit occurs within the pad boundary for this location. During reclamation the backfill pit may be part of the pad's working surface and/or covered by recontoured and reseeded sloped installed to meet reclamation objectives. Interim and final reclamation activities will be carried out in accordance with COGCC 1000 Series requirements, and will be documented accordingly.

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). 02/04/2013

Date of commencement of Site Investigation. 10/22/2012

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 02/04/2013

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

Caerus has noticed an increase in available air flow (SCFM) and subsequent PID readings from the remediation wells, demonstrating an increase in remediation effectiveness at the site. Caerus will continue quarterly SVE events at the site in 2021 and monitor the potential for increased frequency of SVE events based on increased air flow and volatile organic compound removal from the remediation system.

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: 01/26/2021 _____

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: 02/25/2021 _____

Remediation Project Number: 7966 _____

COA Type**Description**

	Operator shall submit a Supplemental eForm 27 to present a comprehensive assessment of horizontal and vertical delineation of soil impacts for contaminants of concern listed on Table 915-1. The Operator's comprehensive report shall also address the potential for groundwater impacts and shall include as an attachments a soil analytical summary table, groundwater sample analytical summary table, and site diagram depicting soil and groundwater sample locations. Operator's analytical summary tables shall include comparisons of sample analytical results to Table 915-1 using the Protection of Groundwater Screening Level Concentrations.
	Under Site Conditions, Operator indicated the presence of groundwater within 20 feet bgs. Operator shall collect soil samples for the complete Table 915-1 list using the Protection of Groundwater Soil Screening Level Concentrations. The Operator may request a modified list of contaminants concern through a Supplemental eForm 27, per Rule 915.e.(2).C.

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**

402583267	FORM 27-SUPPLEMENTAL-SUBMITTED
402583300	REMEDATION PROGRESS REPORT
402583302	REMEDATION PROGRESS REPORT

Total Attach: 3 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)