

# 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	<b>Phone Numbers</b>
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 #: 15947

Initial Form 27 Document #: 402475596

#### 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: SPILL OR RELEASE	Facility ID: 477096	API #: _____	County Name: GARFIELD
Facility Name: Unocal 4 K04 dumlaine release	Latitude: 39.555477	Longitude: -108.114527	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SENW	Sec: 4	Twp: 6S	Range: 96W Meridian: 6 Sensitive Area? Yes

#### SITE CONDITIONS

General soil type - USCS Classifications GP

Most Sensitive Adjacent Land Use Non-crop land

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

Parachute Creek is located 0.18 miles to the west.

# 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	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

☒ Will soil samples be collected as part of this investigation? ( Number, type (grab/composite), analyses, and locations of samples ):

Additional sampling activities will be grab samples to determine spill compliance, and composite samples for spoils pile characterization.

### 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 ):

If groundwater is encountered during the drilling process, Caerus will collect attempt to collect a sample for analysis of COGCC Table 910-1 groundwater analytes.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 18

Number of soil samples exceeding 910-1 5

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet) 1800

### NA / ND

-- Highest concentration of TPH (mg/kg) 5540

-- Highest concentration of SAR 37.7

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 install at least one soil boring at a later date to determine remediation effectiveness and demonstrate 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.

Attached please find the report of work completed demonstrating vertical and horizontal delineation of the spill area. Based on 1) the localized impacts found in the 30 - 55 foot depth of the point of release (SB01), and 2) the adequate radius of influence and communication between the soil borings installed at the site; Caerus plans to utilize soil vapor extraction (SVE) to complete remediation of the site. Caerus proposes to utilize a solar powered SVE trailer with gasoline powered trailer SVE events on a quarterly basis to augment remediation of the site. Caerus will monitor the exhaust coming from the SVE wells to indicate remediation progress. Once SVE exhaust demonstrates reduction of hydrocarbons in the exhaust, Caerus will install a soil boring in the area of the spill to demonstrate compliance with all exceedances found within SB01 of the attached report.

## 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.

Attached please find the report of work completed demonstrating vertical and horizontal delineation of the spill area. Based on 1. the localized impacts found in the 30 - 55 foot depth of the point of release (SB01), and 2. the adequate radius of influence and communication between the soil borings installed at the site; Caerus plans to utilize soil vapor extraction (SVE) to complete remediation of the site. Caerus proposes to utilize a solar powered SVE trailer with gasoline powered trailer SVE events on a quarterly basis to augment remediation of the site. Caerus will monitor the exhaust coming from the SVE wells to indicate remediation progress. Once SVE exhaust demonstrates reduction of hydrocarbons in the exhaust, Caerus will install a soil boring in the area of the spill to demonstrate compliance with all exceedances found within SB01 of the attached report.

## 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 was not encountered during soil boring installation at the site.

## 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 Report and SVE ROI results \_\_\_\_\_

### 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). 07/15/2020

Date of commencement of Site Investigation. 07/20/2020

Date of completion of Site Investigation. 12/16/2020

### REMEDIAL ACTION DATES

Date of commencement of Remediation. 01/12/2021

Date of completion of Remediation. \_\_\_\_\_

### SITE RECLAMATION DATES

Date of commencement of Reclamation. \_\_\_\_\_

Date of completion of Reclamation. \_\_\_\_\_

### OPERATOR COMMENT

The attached report outlines the results from the delineation of impacts associated with this spill. Also included is a figure depicting the radius of influence associated with the soil vapor extraction wells. Caerus installed a solar powered SVE trailer on January 12, 2021 to begin remediation of the impacts associated with the spill. Caerus will also conduct powered SVE activities at the site on a quarterly basis to aid in remediation of the site.

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: 01/25/2021

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: 15947

### COA Type

### Description

	Comply with Rule 913.e quarterly reporting requirement for this Remediation Project. Per Rule 913.e, an alternative reporting schedule may be requested by the Operator for approval by the Director.
	Based on the information provided, impacts resulting in Table 910-1 and Table 915-1 exceedances for EC and SAR are documented at depths of 6-10 feet bgs and 30-60 feet bgs at the location of SB01(SVE01). The Table 910-1 and Table 915-1 exceedance for SAR (24.3) at the TD for SB01 (55-60 feet bgs) indicates that vertical delineation has not been defined in this location.  Operator shall submit a Supplemental eForm 27 to address documented Table 910-1 and Table 915-1 exceedances and vertical delineation of EC and SAR at depth, per Rule 913.b.  If the Operator seeks to request COGCC approval to leave materials with elevated concentrations of EC or SAR in situ, the Operator will provide a detailed Reclamation plan via a Supplemental eForm 27 as outlined in Rule 915.b.
	Operator indicates that a single soil boring will be advanced to demonstrate compliance with Table 915-1. Per Rule 915.e.(2).B, the number and location of samples will be appropriate to determine the horizontal and vertical extent of impact.

### 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>
402569737	FORM 27-SUPPLEMENTAL-SUBMITTED
402569757	MONITORING REPORT
402569759	MAP

Total Attach: 3 Files

### General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	<p>Under Recommendations and Analysis, the attached report (doc #402569757) states that SAR and EC exceedances "present specific risk to revegetation efforts when present in the top three feet of soil and pose no environmental risk at this depth. With that consideration, Confluence always recommends Caerus comply with the standard reclamation practice of ensuring all working surface be buried beneath at least three feet of clean native fill and topsoil during final reclamation."</p> <p>The COGCC does not concur with this assessment and approval of this eForm 27 does not constitute approval to proceed with the recommendation from Confluence.</p> <p>For purposes of this remediation project, exceedances of Table 915-1 for inorganic constituents (EC and SAR) at depths of 6-10 feet bgs and 30-60+ feet bgs remain contaminants of concern. See COAs above.</p>	02/22/2021
Environmental	<p>Under Recommendations and Analysis, the attached report (doc #402569757) states that "based on that information and the results of the drilling assessment detailed here, vertical and horizontal definition have been achieved at the Location for this remediation project."</p> <p>The COGCC does not concur with this assessment. Based on the analytical results provided in the attached report, vertical delineation has not been achieved for SAR in the vicinity of SB01. See COAs above.</p>	02/22/2021
Environmental	Comply with Spill/Release closure COA listed on doc #402475596.	02/22/2021

Total: 3 comment(s)