

# State of Colorado Oil and Gas Conservation Commission

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401996869

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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) 285-2739
City: DENVER	State: CO Zip: 80202	Mobile: (970) 987-4650
Contact Person: Brett Middleton	Email: bmiddleton@caerusoilandgas.com	

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 12401

Initial Form 27 Document #: 401908998

#### 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: 460722	API #: _____	County Name: GARFIELD
Facility Name: Basin Pipeline WC-4 Vault Release	Latitude: 39.403993	Longitude: -108.099484	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SESW	Sec: 27	Twp: 7S	Range: 96W Meridian: 6 Sensitive Area? Yes

#### SITE CONDITIONS

General soil type - USCS Classifications ML

Most Sensitive Adjacent Land Use Gravel  
Pit/Riparian Area

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

## 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	Undetermined	Laboratory Analysis
Yes	SURFACE WATER	Isolated to Quarry Pond	Laboratory Analysis

### INITIAL ACTION SUMMARY

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

Please see attached narrative.

### 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 ):

Pending soil conditions associated with winter conditions, soil samples will be collected from within Section 1 (Please see attached Figure 2) to further delineate the spill path and to assess background levels of EC, SAR, and pH. The sampling plan which details the sampling locations is attached.

#### Proposed Groundwater Sampling

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

The COGCC has issued a COA stating that Caerus must install two temporary monitoring wells South and Southwest of the Quarry Pond. This will be to verify that groundwater has not been impacted from the low-level hydrocarbons in the bottom three feet of the pond and to determine groundwater flow direction. Pending landowner and quarry operator approval, it is estimated the wells would be installed the week of March 18th, 2019 and sampled for analytes listed in COGCC Table 910-1. If all data is in compliance with COGCC Table 910-1 Concentration Levels, the wells would be pulled and backfilled or plugged per state regulations. Please see Figure 1 for the placement of these monitoring wells.

#### Proposed Surface Water Sampling

- ☒ Will surface water samples be collected as part of this investigation? ( Number, analyses, and locations of samples ):

Once remediation activities (Please reference the "Remediation Summary" portion of this form) associated with addressing impacts to the Quarry Pond have initiated, weekly samples will be collected from the Quarry Pond and submitted for analytes listed in COGCC Table 910-1. Please see Figure 1 for this sampling point (identified by "Pond Sample"). This sample may be collected from a port set up on the pump being utilized to circulate the pond water if the pond conditions are considered unsafe for sampling from the center of the pond.

### Additional Investigative Actions

- ☒ Additional alternative investigative actions described in attached Site Investigation Plan ( summary ):

Two piezometer wells will be installed northwest and northeast of the Quarry Pond to assist in the determination of groundwater flow. Please see Figure 1 for the placement of these piezometer wells.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 48

Number of soil samples exceeding 910-1 39

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

Approximate areal extent (square feet) 1300

### NA / ND

-- Highest concentration of TPH (mg/kg) 653.7

-- Highest concentration of SAR 40

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 0

### Groundwater

Number of groundwater samples collected 3

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 25

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 910-1 0

ND Highest concentration of Benzene (µg/l)

ND Highest concentration of Toluene (µg/l)

ND Highest concentration of Ethylbenzene (µg/l)

ND Highest concentration of Xylene (µg/l)

-- Highest concentration of Methane (mg/l) 0.0145

### Surface Water

37 Number of surface water samples collected

27 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?

Please refer to COGCC Document 401924462 for offsite impacts to soil.

Laboratory analytical results from surface water samples collected throughout the project area have indicated that surface water down gradient of the Basin Pipeline WC-4 Vault Release has been impacted. Please refer to the attached laboratory analytical results, summary table, and Figure 1 for details on offsite impacts.

☒ Were background samples collected as part of this site investigation?

Four background water samples have been collected. They are sample locations Quarry Spring, Basin Vault River Up, Strong water well and MW1. Please reference Figure 1 for their locations.

☒ Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards) 484

Volume of liquid waste (barrels) 8700

☒ Is further site investigation required?

Extent of impact will continue to be delineated.

## 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.

Please refer to COGCC Document 401924462 for this information.

### **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.

Please see attached narrative.

### **Soil Remediation Summary**

☐ In Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

\_\_\_\_\_ Chemical oxidation

\_\_\_\_\_ Air sparge / Soil vapor extraction

\_\_\_\_\_ Natural Attenuation

\_\_\_\_\_ Other \_\_\_\_\_

☒ Ex Situ

Yes \_\_\_\_\_ Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 484

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.

2 monitoring wells were installed south and southwest of the Basin Quarry Pond

## REMEDATION PROGRESS UPDATE

### PERIODIC REPORTING

**Frequency:** ☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other Remediation update

**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? Yes \_\_\_\_\_

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

Potentially contaminated stormwater runoff continued to be recovered from down gradient sediment traps and disposed of at the High Mesa Water Treatment Facility (COGCC ID 149013) to ensure contaminants didn't migrate down gradient of these control points. The volume of liquid E&P Waste listed below is as of February 7, 2019. No fluid was available to be recovered from February 8, 2019 through February 13, 2019. On February 13, 2019, we ceased recovery operations of stormwater runoff and allowed it migrate through the project area and downgradient.

All soil represented by sample Basin PL Stock E identified as being impacted on COGCC Document 401924462 was transported to Greenleaf Environmental Services. Waste Manifests are attached.

Volume of E&P Waste (solid) in cubic yards \_\_\_\_\_ 484

E&P waste (solid) description \_\_\_\_\_ Soil impacted by produced water

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-COGCC Disposal Facility: \_\_\_\_\_ Greenleaf Environmental Services

Volume of E&P Waste (liquid) in barrels \_\_\_\_\_ 8700

E&P waste (liquid) description \_\_\_\_\_ Produced Water/Stormwater runoff

COGCC Disposal Facility ID #, if applicable: \_\_\_\_\_ 149013

Non-COGCC Disposal Facility: \_\_\_\_\_

## REMEDATION COMPLETION REPORT

### REMEDATION 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.

Following remedial activities, any areas excavated will be backfilled to match preexisting grade and re-seeded if vegetation was disturbed.

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? \_\_\_\_\_

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. 01/16/2019

Actual Spill or Release date, if known. \_\_\_\_\_

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/14/2019

Date of commencement of Site Investigation. 01/14/2019

Date of completion of Site Investigation. \_\_\_\_\_

### REMEDIAL ACTION DATES

Date of commencement of Remediation. 02/27/2019

Date of completion of Remediation. 03/27/2019

### SITE RECLAMATION DATES

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

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

### OPERATOR COMMENT

attn: Steven Arauza

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

Signed: Brett Middleton

Title: Sr EHS Specialist

Submit Date: 05/17/2019

Email: bmiddleton@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: 05/28/2019

Remediation Project Number: 12401

### COA Type

### Description

	Operator shall provide summary discussions of Table 910-1 exceedances for surface water samples, groundwater samples, surface soil samples (i.e., flow path samples vs background compressor station samples), and exceedances for Basin PL - MW1&2 soil samples via a Supplemental eForm 27.
	Laboratory analytical reports for 4/25/2019 water samples (Basin - MW1, Basin - MW2, and West Quarry Pond) are missing from attachments. Laboratory analytical reports are also missing for 3/19/2019 soil samples Basin PL - MW1 (20') and Basin PL MW2 (19').  Operator shall submit complete laboratory reports for 4/25/2019 water samples and 3/29/2019 soil samples via Supplemental eForm 27. Operator shall also provide a corrected analytical summary table for water samples (see comments below).

### 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

401996869	FORM 27-SUPPLEMENTAL-SUBMITTED
402047526	LOGS
402047529	ANALYTICAL RESULTS
402047530	ANALYTICAL RESULTS
402047532	ANALYTICAL RESULTS
402047534	ANALYTICAL RESULTS
402047537	ANALYTICAL RESULTS

402047538	ANALYTICAL RESULTS
402047539	ANALYTICAL RESULTS
402047542	ANALYTICAL RESULTS
402047548	ANALYTICAL RESULTS
402047556	REMEDIATION PROGRESS REPORT
402047563	SOIL SAMPLE LOCATION MAP
402047568	GROUND WATER SAMPLE LOCATION
402047573	GROUND WATER ELEVATION MAP
402047589	MONITORING REPORT
402047615	ANALYTICAL RESULTS
402047616	ANALYTICAL RESULTS
402047618	ANALYTICAL RESULTS

Total Attach: 19 Files

### **General Comments**

<b><u>User Group</u></b>	<b><u>Comment</u></b>	<b><u>Comment Date</u></b>
Environmental	Attached narrative (doc #402047589) describes remediation of impacted quarry pond, installation/sampling of monitoring wells and piezometers, and additional soil sampling at the POR vault in addition to background sampling inside of the compressor station.	05/28/2019
Environmental	Attached Table 2 (doc #402047615) reports Quarry Pond W Bottom (3/28/2019) results for TDS, chloride, and sulfate under "West Quarry Pond" sample collected 4/25/2019. See attached lab report (doc #402047548).  Attached Table 3 (doc #402047616) reports that conductivity for sample OCS (SS35) 0-6' was Not Analyzed. Attached lab report (doc #402047534) indicates that actual EC value was 1.07.	05/28/2019

Total: 2 comment(s)