

State of Colorado
Energy & Carbon Management Commission

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Report taken by:

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 ECMC 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.

Closure request is not available for an Initial Site Investigation and Remediation Workplan.

OPERATOR INFORMATION

Name of Operator: CAERUS PICEANCE LLC	Operator No: 10456	Phone Numbers
Address: 1001 17TH STREET #1600		Phone: (970) 640-6919
City: DENVER	State: CO	Zip: 80202
Contact Person: Blair Rollins	Email: brollins@qb-energy.com	Mobile: (970) 640-6919

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 24488 Initial Form 27 Document #: 403106734

PURPOSE INFORMATION

- ☐ Rule 913.c.(1): Pit or Cuttings Trench closure.
- ☐ Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- ☒ Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912.
- ☐ Rule 913.c.(4): Land treatment of Oily Waste pursuant to Rule 905.e.
- ☐ Rule 913.c.(5): Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h.
- ☒ Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.
- ☐ Rule 913.c.(7): Investigation and remediation of natural gas in soil or Groundwater.
- ☐ Rule 913.c.(8): When requested by the Director due to any potential risk to soil, Groundwater, or surface water.
- ☐ Rule 913.c.(9): Decommissioning of Oil and Gas Facilities.
- ☐ Rule 913.g: Changes of Operator.
- ☐ Rule 915.b: Request to leave elevated inorganics in situ.
- ☐ Other: _____

SITE INFORMATION

No Multiple Facilities

Facility Type: SPILL OR RELEASE	Facility ID: 481814	API #: _____	County Name: GARFIELD
Facility Name: Garden Gulch 8 inch to Latham	Latitude: 39.566968	Longitude: -108.183634	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SWSE	Sec: 32	Twp: 5S	Range: 96W
Meridian: 6	Sensitive Area? Yes		

SITE CONDITIONS

General soil type - USCS Classifications SC Most Sensitive Adjacent Land Use Non-cropland rangeland

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

House Log Gulch is located approximately 250 feet to the east of the Location. Groundwater is located at approximately 27 feet below ground surface at the point of release.

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	GROUNDWATER	To be determined	Water sampling and laboratory analysis
Yes	SOILS	To be determined	Soil sampling and laboratory analysis
No	SURFACE WATER	None	Water sampling and 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.

On March 22, 2022, produced water was observed surfacing at the adjacent Latham Laydown yard. Approximately 30 barrels of produced water were released due to the flowline failure. The failed portion of flowline was exposed and standing fluids were recovered. The release was reported via Energy & Carbon Management Commission (ECMC) Form 19 Document 402993777. Subsequently, Form 27 Document 403106734 was submitted and Remediation Project 24488 was issued.

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):

Soil samples will be collected as necessary to delineate the vertical and horizontal extent of soil impacts. Soil samples will be analyzed for the approved reduced analyte list of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, xylenes (BTEX), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, electrical conductivity (EC), sodium adsorption ratio (SAR), pH, hot water soluble boron, arsenic, barium, cadmium, copper, lead, nickel, selenium, and hexavalent chromium.

Proposed Groundwater Sampling

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

QB will continue quarterly groundwater monitoring of the four installed groundwater monitoring wells to maintain delineation of groundwater impacts at the Location. Groundwater samples will be analyzed for the approved reduced analyte list of BTEX, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and total dissolved solids (TDS).

Proposed Surface Water Sampling

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

QB will continue to monitor House Log Gulch located south of the point of release (POR) on a quarterly basis. Surface water samples will be analyzed for the approved reduced analyte list of BTEX, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and TDS.

Additional Investigative

Actions

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

See Remedial Action Plan and the attached Report of Work Completed (ROWC).

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 0

Number of soil samples exceeding 915-1

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

Approximate areal extent (square feet) 2500

NA / ND

Highest concentration of TPH (mg/kg)

Highest concentration of SAR

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 20

Groundwater

Number of groundwater samples collected 4

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 16

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 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)

NA Highest concentration of Methane (mg/l)

Surface Water

3 Number of surface water samples collected

0 Number of surface water samples exceeding 915-1

If surface water is impacted, other agency notification may be required.

OTHER INVESTIGATION INFORMATION

☒ Were impacts to adjacent property or offsite impacts identified?

On June 6, 2023, benzene impacts were observed in two monitoring wells (MW02 & MW03) on either side of the pipeline corridor. As of November 13, 2023, benzene levels previously exceeding ECMC Table 915-1 allowable groundwater limits have decreased to compliant concentrations. However, MW02 again exhibited an exceedance of benzene during Q2 2024 sampling. See the attached ROWC for details.

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

Background soil samples were collected in support of this project, and are outlined in the ROWC associated with Document 403315942.

☐ 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?

QB is in the process of delineating soil impacts vertically and horizontally. QB will continue to conduct quarterly surface and groundwater monitoring at the site and provide results to the ECMC on Supplemental Form 27s.

REMEDIATION 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.

QB is in the process of determining the extent of contamination associated with the project. Once impacts are delineated, QB will prepare a remediation plan to remove the source material within the release area.

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.

See the attached ROWC for remediation details prior to Q4 2023.

In accordance with Form 27 Document 403471242, once treatment activities had ceased, water sampling was conducted on a weekly basis for a period of one month. Water samples representing 4th quarter 2023 were collected during this period. Groundwater samples were collected from MW01-MW04, surface water samples were collected upgradient and downgradient on House Log Gulch, and one spring sample was collected from the unnamed spring downgradient of the release area. Based on the analytical results and approved allowable limits, benzene levels in MW02 and MW03, which previously exceeded Table 915-1 allowable groundwater limits, had decreased to concentrations below allowable limits.

On March 21, 2024, 1st quarter 2024 water samples were collected. Groundwater samples were collected from MW01-MW04, a downgradient surface water sample and spring sample were collected. An upgradient sample could not be collected due to ice and snow coverage. Analytical results of groundwater samples were compliant with Table 915-1 Groundwater Standards, with the exception of a TDS value of 559 milligrams per liter (mg/L) in MW01.

On May 28, 2024, 2nd quarter 2024 water samples were collected. Groundwater samples were collected from MW01-MW04 and three surface water samples were collected from the previously identified locations. Analytical results of groundwater samples are compliant with Table 915-1 Groundwater Standards, with the exception of benzene in MW02 with a result of 16.0 micrograms per liter (µg/L). Analytical results of surface water samples are compliant with Table 915-1 Groundwater Standards for all constituents.

On November 14, 2024, fourth quarter 2024 water samples were collected from the above mentioned locations. Analytical results comply with Table 915-1 Groundwater Standards. See the attached ROWC for additional details.

Soil Remediation Summary

☒ In Situ

Yes Bioremediation (or enhanced bioremediation)

Chemical oxidation

Air sparge / Soil vapor extraction

Yes Natural Attenuation

Other

☐ Ex Situ

Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards)

Name of Licensed Disposal Facility or ECMC Facility ID #

No Excavate and onsite remediation

Land Treatment

Bioremediation (or enhanced bioremediation)

Chemical oxidation

Other

Groundwater Remediation Summary

Yes Bioremediation (or enhanced bioremediation)

Chemical oxidation

Air sparge / Soil vapor extraction

Yes 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.

QB will continue to monitoring the four groundwater monitoring wells, unnamed spring, and two surface water sample locations on a quarterly basis to maintain delineation of groundwater impacts. All water samples collected will be compared to ECMC Table 915-1 Groundwater Standards for the project and reported to the ECMC on Supplemental Form 27 documentation.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

☒ Quarterly ☐ Semi-Annually ☐ Annually ☐ Other

☐ Request Alternative Reporting Schedule:

☐ Semi-Annually ☐ Annually ☐ Other

Rule 913.e:

After initial approval of a Form 27, the Operator will provide quarterly update reports in a Supplemental Form 27 to document progress of site investigation and remediation, unless an alternative reporting schedule has been requested by the Operator and approved by the Director. The Director may request a more frequent reporting schedule based on site-specific conditions.

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

☒ Other Q4 2024 Status Update

Adequacy of Operator's General Liability Insurance and Financial Assurance

Describe the adequacy of the Operator's general liability insurance and Financial Assurance to fully address the anticipated costs of Remediation, including the estimated remaining cost for this project (below).

If this information has been provided on a Form 27 within the last 12 months, provide the Document Number of that form.

Per Rule 705.b, and in line with guidance laid out in the SBAP, QB Energy has general liability insurance in the amount of \$5M, and QB Energy has umbrella insurance, which sits over the general liability insurance in the amount of \$65M. The umbrella and general liability insurance covers property damage, bodily injury to third parties, and sudden or accidental pollution under a combined \$70M.

Operator anticipates the remaining cost for this project to be: \$ 100000

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:

None

Volume of E&P Waste (solid) in cubic yards 40

E&P waste (solid) description Hydrocarbon impacted soil

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Greenleaf Environmental Services, DeBeque, Colorado

Volume of E&P Waste (liquid) in barrels 0

E&P waste (liquid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility:

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

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

If YES:

☐ Compliant with Rule 913.h.(1).

☐ Compliant with Rule 913.h.(2).

☐ Compliant with Rule 913.h.(3).

Do all soils meet Table 915-1 standards?

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? _____

Is additional groundwater monitoring to be conducted? _____

Operator shall comply with the ECMC 1000-Series Reclamation Requirements for all impacted and disturbed areas.

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.

QB will return the spill area to the active working surface of the roadway 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 provide the seed mix? _____

If YES, does the seed mix comply with local soil conservation district recommendations? _____

Did the local soil conservation district provide the seed mix? _____

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. _____

Proposed date of completion of Reclamation. _____

IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

PRIOR DATES

Date of Surface Owner notification/consultation, if required. _____

Actual Spill or Release date, or date of discovery. 03/22/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/23/2022

Proposed site investigation commencement. 03/23/2022

Proposed completion of site investigation. 08/01/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 09/22/2022

Proposed date of completion of Remediation. 08/01/2025

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

☐ Change from approved implementation schedule per Rule 913.d.(2).

Basis for change in implementation schedule:

OPERATOR COMMENT

This form is being submitted to provide a Q4 2024 update for Remediation Project 24488. QB plans to continue quarterly surface water and groundwater sampling to monitor the effects of the colloidal carbon treatment. QB also plans to advance a soil boring in the previous location of the POR and collect one or more soil samples to re-characterize soil after colloidal carbon application. Additionally, QB plans to remediate SAR impacts using a biological extract derived from yucca. The intent of extract treatment is to increase water intake in soil and accelerate the natural attenuation process. The biological extract will be applied via treatment wells to the subsurface, and the treatment will be allowed to infiltrate the area of concern. After treatment, QB will advance soil borings in the locations of previously identified SAR exceedances and collect soil samples to confirm SAR levels are within ECMC allowable limits. See the attached ROWC for details.

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

Signed: Blair Rollins

Title: Environmental Specialist

Submit Date: _____

Email: brollins@qb-energy.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with ECMC Rules and applicable orders and is hereby approved.

ECMC Approved: _____

Date: _____

Remediation Project Number: 24488

COA Type**Description**

0 COA	

ATTACHMENT 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**

404018751	ANALYTICAL RESULTS
404018752	ANALYTICAL RESULTS
404039454	MONITORING REPORT

Total Attach: 3 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)