

**State of Colorado
Energy & Carbon Management Commission**

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Document Number:

404258744

Receive Date:

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: <u>QB ENERGY OPERATING LLC</u>	Operator No: <u>10844</u>	Phone Numbers
Address: <u>1001 17TH STREET SUITE 1600</u>		Phone: <u>(970) 640-6919</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80202</u>
Contact Person: <u>Blair Rollins</u>	Email: <u>brollins@qb-energy.com</u>	Mobile: <u>(970) 640-6919</u>

PROJECT, PURPOSE & SITE INFORMATION**PROJECT INFORMATION**Remediation Project #: 31518 Initial Form 27 Document #: 403479868**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: <u>SPILL OR RELEASE</u>	Facility ID: <u>484391</u>	API #: _____	County Name: <u>RIO BLANCO</u>
Facility Name: <u>LOVE RANCH 8 Off-Location Flowline</u>	Latitude: <u>39.891270</u>	Longitude: <u>-108.292690</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWNW</u>	Sec: <u>9</u>	Twp: <u>2S</u>	Range: <u>97W</u>
Meridian: <u>6</u>	Sensitive Area? <u>Yes</u>		

SITE CONDITIONS

General soil type - USCS Classifications GC

Most Sensitive Adjacent Land Use Cropland

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? Yes

Other Potential Receptors within 1/4 mile

All wells within the area are associated with this remediation project or are registered water wells associated with oil and gas development activities.

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	Determined	Laboratory analysis
Yes	SOILS	Determined	Laboratory analysis
Yes	SURFACE WATER	Determined	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.

Initial response activities can be found on EPMC Form 19 documents 403391282 and 403398312. Additional initial investigation activities can be found within the attached report of work completed included in this submittal document.

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):

Remediation effectiveness and status soil samples will be collected at the site and results will be provided to the EPMC on supplemental documentation.

Proposed Groundwater Sampling

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

Continued groundwater monitoring will continue to be conducted on a quarterly basis at the approved locations, and results will be provided to the EPMC on supplemental documentation.

Proposed Surface Water Sampling

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

Continued surface water samples will be collected on a quarterly basis at the approved locations, and results will be provided to the EPMC on supplemental documentation.

**Additional Investigative
Actions**

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

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? Yes

Approximate areal extent (square feet) 1500

NA / ND

Highest concentration of TPH (mg/kg)

Highest concentration of SAR

BTEX > 915-1

Vertical Extent > 915-1 (in feet) 18

Groundwater

Number of groundwater samples collected 24

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 5

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 3

-- Highest concentration of Benzene (µg/l) 16.59

-- Highest concentration of Toluene (µg/l) 5.58

ND Highest concentration of Ethylbenzene (µg/l)

ND Highest concentration of Xylene (µg/l)

NA Highest concentration of Methane (mg/l)

Surface Water

2 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?

☐ 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?

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.

Based on site conditions QB Energy has selected in-situ injection of a carbon based remediation agent to trap and degrade hydrocarbon impacts in place at the point of release and in a downgradient permeable reactive barrier wall, see the attached Love Ranch 8 Injection Diagram 2024 Q4 (Figure 5) in the previously submitted report of work completed (Approved Document number 404033800). Upon UIC Permit approval, Caerus started the injections in November 2024. The injectate is a mixture of primarily powdered activated carbon, nitrogen, calcium sulfate, bacteria, and other minor nutrient additives, according to the MSDS, all of which is mixed with potable water. The injectate will also include magnesium sulfate. Information from the supplier indicates that, based on site-specific geochemistry, there is a potential for temporary exceedances for nitrate (around 90 to 120 days) and sulfate (around 18 to 24 months) as they are introduced as part of electron-receptor compounds to be used in the remediation process. These electron-receptor compounds eventually get utilized by the bacteria in the biological degradation process.

REMEDATION 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.

Based on site conditions QB Energy has selected in-situ injection of a carbon based remediation agent to trap and degrade hydrocarbon impacts in place at the point of release and in a downgradient permeable reactive barrier wall, see the attached Love Ranch 8 Injection Diagram 2024 Q4 (Figure 5) in the previously submitted report of work completed (Approved Document number 404033800). Upon UIC Permit approval, Caerus started the injections in November 2024. The injectate is a mixture of primarily powdered activated carbon, nitrogen, calcium sulfate, bacteria, and other minor nutrient additives, according to the MSDS, all of which is mixed with potable water. The injectate will also include magnesium sulfate. Information from the supplier indicates that, based on site-specific geochemistry, there is a potential for temporary exceedances for nitrate (around 90 to 120 days) and sulfate (around 18 to 24 months) as they are introduced as part of electron-receptor compounds to be used in the remediation process. These electron-receptor compounds eventually get utilized by the bacteria in the biological degradation process.

The existing groundwater monitoring network will continue to be sampled post injection events and the locations of the wells allow for the detection of movement of the dissolved phase plume. Additionally, there have been no detections of LNAPL within any of the wells. At all times, the flow rates and pressures of the injectate were monitored and adjusted so that daylighting or surfacing of the injectate is minimized and the injection sequence will be from exterior areas of low concentration impacts towards interior high concentration areas of impact to minimize contaminant plume migration.

Soil Remediation Summary

☒ In Situ

☐ Ex Situ

Yes Bioremediation (or enhanced bioremediation)

Excavate and offsite disposal

Chemical oxidation

If Yes: Estimated Volume (Cubic Yards)

Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or ECMC Facility ID #

Natural Attenuation

Excavate and onsite remediation

Other

Land Treatment

Bioremediation (or enhanced bioremediation)

Chemical oxidation

Other

Groundwater Remediation Summary

Yes 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.

QB Energy will continue to conduct surface water monitoring at the approved monitoring stations found on the attached report of work completed, and will report these results to the CECMC on a quarterly basis. Groundwater monitoring will continue to be conducted throughout the site and will be reported to the CECMC on a quarterly basis.

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 2025 Q2 REM Project 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: \$ 300000

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation?

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

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility:

Volume of E&P Waste (liquid) in barrels

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 Energy will reclaim all impacted areas in accordance with the COGCC 1000 series regulations

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. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/02/2023

Proposed site investigation commencement. 05/02/2023

Proposed completion of site investigation. 12/19/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 08/30/2023

Proposed date of completion of Remediation. 12/30/2025

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

To meet the current expectation submittal timeline ECMC has requested, this Supplemental Form 27 is being submitted as a Q2 2025 submittal to comply with ECMC Rule 913.e. QB Energy completed remediation injection between Q4 2024 and Q2 2025 and results are included in the attached report prepared by Vista GeoScience. Groundwater monitoring results and findings are included in the attached lab report and report of work completed. QB Energy will continue to conduct quarterly groundwater monitoring and will provide results on supplemental documentation.

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: 31518

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**

404258790	MONITORING REPORT
404258792	ANALYTICAL RESULTS
404258794	ANALYTICAL RESULTS
404260689	REMEDATION PROGRESS REPORT

Total Attach: 4 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)