

State of Colorado
Energy & Carbon Management Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109

Document Number:

403812613

Receive Date:

06/11/2024

Report taken by:

Taylor Robinson

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: CUB CREEK ENERGY LLC	Operator No: 10542	Phone Numbers
Address: 200 PLAZA DRIVE SUITE 100		Phone: (303) 881-1530
City: HIGHLANDS RANCH	State: CO	Zip: 80129
Contact Person: Christian Combs	Email: christian.combs@1876resources.com	Mobile: (303) 881-1530

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 34478 Initial Form 27 Document #: 403711249

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: TANK BATTERY	Facility ID: 481785	API #: _____	County Name: WELD
Facility Name: Knight Pad Tank Battery	Latitude: 40.197030	Longitude: -105.041390	
	** correct Lat/Long if needed: Latitude: 40.197140	Longitude: -105.042170	
QtrQtr: SWNE	Sec: 30	Twp: 3N	Range: 6W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SP Most Sensitive Adjacent Land Use Occupied building

Is domestic water well within 1/4 mile? No Is surface water within 1/4 mile? No

Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

Five water well permits were identified within a 1/2-mile radius of the release; however, three of these five well permits were listed as expired and the other two were listed as application denied. The closest constructed water well (Permit #12985) is a stock well located approximately 2,735 feet northeast of the release. The nearest surface water body and wetland were identified to be Union Reservoir located approximately 2,115 feet south of the release. High priority habitat identified by Colorado Parks and Wildlife is located approximately 1,700 feet south of the release. The nearest occupied building is located approximately 600 feet west of the release. Site Location map attached as Figure 1.

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
UNDETERMINED	SOILS	Unknown	Soil sample collection

INITIAL ACTION SUMMARY

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

@0850 (5/9/23) the lease operator on location noticed condensate daylighting at surface. Within 10 mins, impacted flowline identified & shut in. The spilled condensate was contained on location. On 5/10/23, ~1bbl of free condensate was removed via a hydrovac. ~1 cubic yard of impacted soil was also excavated at that time and transported to Pawnee Waste, LLC, for offsite disposal.

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):

Further excavation required north, east, and west. Further excavation to the south no longer feasible due to safety and infrastructure as separators (see attached photo log) would be threatened by unstable soil due shallow groundwater. Once laboratory analytical results indicate soil on the sidewalls of the excavation extent are no longer impacted (organics, soil suitability, & metals), a groundwater sample will be collected from the excavation to be submitted for full ECMC Table 915-1 analytes (BTEX, Naph, TMBs, TDS, chloride, & sulfate).

Proposed Groundwater Sampling

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

Further excavation required north, east, and west. Further excavation to the south no longer feasible due to safety and infrastructure as separators (photo log) would be threatened by unstable soil due shallow GW. Once laboratory analytical results indicate soil from the sidewalls of the excavation extent are no longer impacted (organics, soil suitability, & metals), a GW sample will be collected from the excavation to be submitted for full ECMC Table 915-1 analytes (BTEX, Naph, TMBs, TDS, chloride, & sulfate). If laboratory analytical results indicate soil leaching to GW pathway is complete, a GW monitoring well will be installed at the release point once the excavation is backfilled and in each cardinal direction to evaluate the lateral extent of GW impacts. GW samples would be collected from the monitoring wells on a quarterly basis until four consecutive quarters indicated compliance with ECMC Table 915-1 standards post excavation backfill.

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):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 5

Number of soil samples exceeding 915-1 0

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

Approximate areal extent (square feet) 170

NA / ND

-- Highest concentration of TPH (mg/kg) 9.56

-- Highest concentration of SAR 8.56

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 6

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet)

Number of groundwater monitoring wells installed

Number of groundwater samples exceeding 915-1

Highest concentration of Benzene (µg/l)

Highest concentration of Toluene (µg/l)

Highest concentration of Ethylbenzene (µg/l)

Highest concentration of Xylene (µg/l)

Highest concentration of Methane (mg/l)

Surface Water

0 Number of surface water samples collected

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?

Background samples were collected from three sample locations (BG01, BG02, & BG03). See attached Figure 2.

☐ 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.

On 5/10/2023, approximately 1 bbl of free condensate was removed via hyrovac. An estimated 1 cubic yard of impacted soil was also excavated at that same time and transported to Pawnee Waste, LLC, for offsite disposal.

On 5/6/24, the excavation reached an extent of approximately 15'x6' with a depth of 8' bgs with sloping due to unstable soil/sidewalls, with a smaller trench in the middle. The excavation has encroached on process equipment (separators, see attached photo log & Figure 2) located on the southern portion of the production pad. Soil assessment activities indicate elevated VOCs utilizing a PID in all directions. Contaminated soil (21.23 tons) was transported to Pawnee Waste, LLC (see attached waste manifest).

Cub Creek (1876 Resources) is proposing addition excavation to the north, east, and west. Further excavation to the south is no longer feasible due to safety and infrastructure as the separators would be threatened by unstable soil due to shallow groundwater. Cub Creek (1876 Resources) is proposing that the excavation be stepped out to the north, east, and west until samples are in compliance with Table 915-1 requirements. At that time, a soil amendment (BOS 200) be applied to the open excavation soil and GW prior to backfilling with clean soil to address soil impacts left in place on the southern sidewall.

Impacted soil is currently being staged onsite in disposable bins and will be hauled offsite for disposal.

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.

On 4/3/2024, soil assessment activities were conducted, including potholing to 6' bgs using a hydrovac (Figure 3, photo log). Soil samples were collected utilizing a hand auger at the release point (SS01@6') and by stepping out approximately 3 feet in each cardinal direction (SS02@6' through SS05@6'). Field observation indicated that the samples collected from the source area (SS01), east (SS04), and west (SS05) were impacted; and therefore were not submitted for analysis as further excavation is required. Field observation indicated that soil samples collected to the north (SS02) and south (SS03) may not be impacted and were submitted for laboratory analysis for the full ECMC Table 915-1. Due to the shallow depth to groundwater at the site, the samples are being compared to the ECMC Table 915-1 Protective of Groundwater Standards and are summarized in the attached tables. Site-specific background screening levels were established for Arsenic, Barium, Selenium, Boron, SAR, and EC. Approximately 19 bbls of hydrovaced material was transported to Pawnee Waste, LLC (see attached waste manifest [38 bbls, ~19 bbls for Remediation Project #34478, ~19 bbls for Remediation Project #34474]).

Cub Creek (1876 Resources) is proposing addition excavation to the north, east, and west. Further excavation to the south is no longer feasible due to safety and infrastructure as the separators would be threatened by unstable soil due to shallow groundwater. Cub Creek (1876 Resources) is proposing that the excavation be stepped out to the north, east, and west until samples are in compliance with Table 915-1 requirements. At that time, an activated carbon amendment designed to degrade petroleum hydrocarbons will be applied to soil & GW within the open excavation prior to backfilling with clean soil to address soil impacts left in place on the southern sidewall. Specific remedial amendment details will be provided in a future Form 27.

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) _____ 22

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

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.

Further excavation required north, east, and west. Further excavation to the south no longer feasible due to safety and infrastructure as separators (see attached photo log) would be threatened by unstable soil due shallow groundwater. Once laboratory analytical results indicate soil from the sidewalls of the excavation extent are no longer impacted (organics, soil suitability, & metals), a groundwater sample (BTEX, Napth, TMBs, TDS, chloride, & sulfate) will be collected from the excavation to be submitted for full ECMC Table 915-1 analytes. If laboratory analytical results indicate the soil leaching to groundwater pathway is complete, a groundwater monitoring well will be installed at the release point once the excavation is backfilled and in each cardinal direction to evaluate the lateral extent of groundwater impacts. Groundwater samples would be collected from the monitoring wells on a quarterly basis until four consecutive quarters indicated compliance with ECMC Table 915-1 standards post excavation backfill.

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 Propose soil assessment results

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.

Cub Creek (1876 Resources) has sufficient insurance and bonding to fully address the anticipated costs of Remediation, including the remaining estimated costs for this project. Cub Creek (1876 Resources) has general liability insurance and financial assurance in-compliance with ECMC rules. The cost for remediation is a preliminary estimate only, costs may change upwards or downward based on site-specific information. Cub Creek (1876 Resources) makes no representation or guarantees as to the accuracy of the preliminary estimate.

Operator anticipates the remaining cost for this project to be: \$ 20000

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:

NA

Volume of E&P Waste (solid) in cubic yards 22

E&P waste (solid) description Contaminated soil

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Pawnee Waste, LLC

Volume of E&P Waste (liquid) in barrels 19

E&P waste (liquid) description Contaminated soil

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Pawnee Waste, LLC

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.

Impacted soil to be excavated and transported offsite for disposal. Once impacted soil removed, excavation will be backfilled with clean fill and returned to pad grade.

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? No _____

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

Did the local soil conservation district provide the seed mix? No _____

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. 07/31/2024

Proposed date of completion of Reclamation. 08/30/2024

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. 05/10/2023

Actual Spill or Release date, or date of discovery. 05/09/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/09/2023

Proposed site investigation commencement. 04/15/2024

Proposed completion of site investigation. 06/28/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 06/28/2024

Proposed date of completion of Remediation. 08/30/2024

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:

Site investigation and remediation completion dates revised to allow for the completion of the site investigation.

OPERATOR COMMENT

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

Signed: Michael A. Wicker, P.G.

Title: Senior Geologist

Submit Date: 06/11/2024

Email: mwicker@cdhconsult.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: Taylor Robinson

Date: 07/29/2024

Remediation Project Number: 34478

COA Type**Description**

	Operator to provide all groundwater grab sample data in the next Form 27-Supplemental.
	Operator to provide all analytical data for all metals in the next Form 27-Supplemental.
2 COAs	

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**

403812613	FORM 27-SUPPLEMENTAL-SUBMITTED
403821207	ANALYTICAL RESULTS
403821215	MAP
403821220	SITE MAP
403821223	SOIL SAMPLE LOCATION MAP
403821229	DISPOSAL MANIFESTS
403821238	DISPOSAL MANIFESTS
403821239	PHOTO DOCUMENTATION
403821240	ANALYTICAL RESULTS

Total Attach: 9 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)