

State of Colorado Oil and Gas Conservation Commission

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Document Number:

402868328

Receive Date:

11/22/2021

Report taken by:

CHRIS CANFIELD

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.

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

OPERATOR INFORMATION

Name of Operator: CRESTONE PEAK RESOURCES OPERATING LLC	Operator No: 10633	Phone Numbers
Address: 1801 CALIFORNIA STREET #2500		Phone: (303) 7744017
City: DENVER State: CO Zip: 80202		Mobile: (720) 9251820
Contact Person: Schuyler Hamilton	Email: SHamilton@CiviResources.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 13348 Initial Form 27 Document #: 402015162

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

Yes Multiple Facilities

Facility Type: LOCATION	Facility ID: 329863	API #: _____	County Name: WELD
Facility Name: MATHEWS 'B' UNIT-61N66W 14SWSE	Latitude: 40.047219	Longitude: -104.740268	
** correct Lat/Long if needed: Latitude: 40.046578		Longitude: -104.740144	
QtrQtr: SWSE	Sec: 14	Twp: 1N	Range: 66W Meridian: 6 Sensitive Area? Yes
Facility Type: SPILL OR RELEASE	Facility ID: 467044	API #: _____	County Name: WELD
Facility Name: Mathews B Unit 1	Latitude: 40.046578	Longitude: -104.740144	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: SWSE	Sec: 14	Twp: 1N	Range: 66W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Idle field

Is domestic water well within 1/4 mile? Yes

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

Occupied structures 1/4 mile to South

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	100' x 50'	Monitoring wells
Yes	SOILS	76' x 123' x 32' bgs	Excavation

INITIAL ACTION SUMMARY

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

The partially buried produced water vessel at the Mathews B Unit 1 location was removed and the area was backfilled prior to soil sampling. On July 19, 2019, a soil boring (SB-01) was advanced to 10 feet below ground surface (bgs) in the former location of the partially buried produced water vessel in accordance with the approved Form 27 (doc #402015162) to characterize the soils beneath the previously removed vessel. The soil sample collected from SB-01 at 7.5 to 10 feet bgs identified soil impacts exceeding Table 910-1 allowable limits for benzene, TPH, and SAR. A Form 19is (doc #402125356) was submitted to report soil impacts to the state. The vertical and horizontal extents of soil impacts were delineated according to Table 910-1 standards by excavation with final extents measuring 76 feet x 123 feet x 32 feet bgs. Impacted soil was excavated, stockpiled on site, and treated with oxidizers. Composite samples were collected from all treated soil and from within the footprint of contaminated and treatment stockpiles to verify compliance with Table 910-1 standards for TPH and BTEX. During excavation efforts, impacted groundwater was encountered at approximately 31 feet bgs. Prior to backfilling treated soil into the excavation as approved by doc # 402651465, impacted groundwater was treated with COGAC and persulfate oxidizers. After backfilling, groundwater monitoring wells were installed to delineate the extent of groundwater contamination. Organic groundwater impacts have been delineated, and the site is being monitored on a quarterly basis.

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):

Crestone does not propose any additional soil sampling.

Proposed Groundwater Sampling

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

Groundwater samples will be collected and analyzed for Table 915-1 groundwater constituents of concern on a quarterly basis until results are within Table 915-1 allowable limits for four consecutive quarters.

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 124
Number of soil samples exceeding 915-1 7
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 9300

NA / ND

-- Highest concentration of TPH (mg/kg) 15170
-- Highest concentration of SAR 26.85
BTEX > 915-1 Yes
Vertical Extent > 915-1 (in feet) 32

Groundwater

Number of groundwater samples collected 42
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 30'
Number of groundwater monitoring wells installed 23
Number of groundwater samples exceeding 915-1 30

-- Highest concentration of Benzene (µg/l) 3390
-- Highest concentration of Toluene (µg/l) 6610
-- Highest concentration of Ethylbenzene (µg/l) 775
-- Highest concentration of Xylene (µg/l) 10100
NA 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?

Groundwater impacts extended past the facility boundaries on the east and south perimeters.

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

Groundwater sample BK-1 was collected May 14, 2021 to establish native levels of total dissolved solids, chloride ions, and sulfate ions in groundwater.

☐ 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?

Groundwater samples will be collected on a quarterly basis and submitted for Table 915-1 constituents of concern until results remain within allowable limits for four consecutive quarters.

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.

No soil has been removed from the site. Approximately 1600 cubic yards of impacted soil was treated onsite with oxidizers and backfilled into the excavation.

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.

See Initial Action Summary for a review of remediation project initiation and progress.

On August 18, 31 composite soil samples were collected within the footprints of all former contaminated and treatment stockpiles to verify compliance with Table 910-1 standards for TPH and BTEX. In July and August 2021, 12 additional monitoring wells were installed to delineate groundwater impacts to the southeast of the site. Monitoring well locations are demonstrated in Figure 2. 3rd quarter 2021 groundwater samples were collected July 28 and August 31. Groundwater analytical results indicate that organic constituents of concern are delineated. Due to COGAC and oxidizer treatments, sulfate and total dissolved solids (TDS) levels are elevated above Table 915-1 allowable limits and remain undelineated to the southeast of the site. See Table 3 and Figure 3 for groundwater analytical results. Groundwater will continue to be monitored on a quarterly basis until analytical results are within Table 915-1 allowable limits for four consecutive quarters. In-situ treatments, such as COGAC, may be implemented to continue groundwater remediation. Because organic groundwater impacts are delineated, Crestone proposes to adjust the reporting schedule from quarterly to annually and to remove superfluous upgradient wells from the sampling scope. Crestone proposes to remove six wells (B-9, B-15, B-16, B-17, B-18, and B-19) from the quarterly sampling scope as these wells fall upgradient and crossgradient of the upgradient delineation wells. If organic impact delineation is lost, the site will return to a quarterly reporting schedule.

Soil Remediation Summary

☐ In Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☒ Ex Situ

_____ Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) _____

Name of Licensed Disposal Facility or COGCC Facility ID # _____

Yes _____ Excavate and onsite remediation

No _____ Land Treatment

No _____ Bioremediation (or enhanced bioremediation)

Yes _____ Chemical oxidation

No _____ Other _____

Groundwater Remediation Summary

No _____ Bioremediation (or enhanced bioremediation)

Yes _____ Chemical oxidation

No _____ Air sparge / Soil vapor extraction

Yes _____ Natural Attenuation

Yes _____ Other _____ Activated carbon (COGAC)

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.

A total of 23 groundwater monitoring wells have been installed to monitor groundwater quality. Groundwater samples will be collected and submitted for Table 915-1 groundwater constituents of concern. Groundwater will continue to be monitored on a quarterly basis until all constituents of concern are within Table 915-1 allowable limits for four consecutive quarters. Crestone proposes to remove B-9, B-15, B-16, B-17, B-18, and B-19 from the quarterly sampling scope as these wells fall upgradient and crossgradient of the upgradient delineation wells. See Figure 3 for delineation details and points of compliance.

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

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

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

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 COGCC 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.

Reclamation will be completed per the 1000 series rules.

Is the described reclamation complete? _____

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. 07/30/2019

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 04/29/2019

Proposed site investigation commencement. 04/29/2019

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 01/20/2021

Proposed date of completion of Remediation. _____

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 has been submitted to provide the COGCC with monitoring well installation data, Q3 2021 groundwater monitoring data, stockpile footprint clearance samples, to propose the removal of six monitoring wells from the quarterly sampling scope, and to propose an annual reporting schedule. Q4 2021 groundwater samples have been collected and data will be reported in the next update. Please find site diagrams, groundwater contour maps, lab data summary tables, boring logs, and lab reports attached.

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

Signed: ` Chris Rice

Title: Environmental Technician

Submit Date: ` 11/22/2021

Email: CRice@CiviResources.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: CHRIS CANFIELD

Date: 12/07/2021

Remediation Project Number: 13348

Condition of Approval**COA Type****Description**

0 COA	

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**

402868328	FORM 27-SUPPLEMENTAL-SUBMITTED
402877371	REMEDIATION PROGRESS REPORT

Total Attach: 2 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)