

State of Colorado Oil and Gas Conservation Commission

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10/29/2021

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) 774-4017
City: DENVER State: CO Zip: 80202		Mobile: (720) 925-1820
Contact Person: Schuyler Hamilton	Email: Schuyler.Hamilton@CrestonePR.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 15751 Initial Form 27 Document #: 402444966

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: 321533	API #:	County Name: BROOMFIELD
Facility Name: ALAUX F UNIT-61N68W 26NWNW	Latitude: 40.026688	Longitude: -104.976525	
** correct Lat/Long if needed: Latitude: 40.026733		Longitude: -104.976917	
QtrQtr: NWNW	Sec: 26	Twp: 1N	Range: 68W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE	Facility ID: 477251	API #:	County Name: BROOMFIELD
Facility Name: ALAUX F UNIT-61N68W 26NWNW	Latitude: 40.026733	Longitude: -104.976917	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NWNW	Sec: 26	Twp: 1N	Range: 68W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use Cropland

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? No

Other Potential Receptors within 1/4 mile

Occupied structures

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	As defined by TMW-1 through TMW-7	Laboratory analysis
Yes	SOILS	24' x 29' x 4' bgs	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.

This form has been prepared to support removal of the partially-buried produced-water vessel associated with this location. In accordance with COGCC Rule 905.b, soil samples, and groundwater samples if present, will be collected during closure of the buried or partially-buried produced-water vessel to assure compliance with COGCC Table 910-1 allowable limits. The initial investigation will be conducted using excavation equipment. Field screening of disturbed soils will be conducted during equipment removal, and samples will be collected for laboratory analysis. A reportable release has been documented at this location and is reported via a Form19is (Document # 402444937).

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):

One discrete grab soil sample will be collected from directly beneath the produced-water vessel and one discrete grab soil sample will be collected from one of the sidewalls of the excavation upon removal. These samples will be submitted for laboratory analysis of organic constituents (TPH and BTEX) and at least one sample will be submitted for laboratory analysis of inorganics (SAR, EC and pH). If concentrations above COGCC Table 910-1 allowable limits are confirmed or suspected through soil screening and/or laboratory analysis, and/or groundwater is encountered during removal activities, additional excavations may be conducted to further delineate horizontally and vertically. If the extent of impacts is reached and/or remaining impact analytical results are needed for future remediation activities, discrete soil samples will be collected from the sidewalls and base (if groundwater is not present) and analyzed for organic (TPH and BTEX) and inorganic (SAR, EC and pH) constituents.

Proposed Groundwater Sampling

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

If groundwater is encountered during excavation activities, one sample will be collected and analyzed for BTEX.

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 8
Number of soil samples exceeding 915-1 4
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 696

NA / ND

-- Highest concentration of TPH (mg/kg) 314
-- Highest concentration of SAR 17
BTEX > 915-1 Yes
Vertical Extent > 915-1 (in feet) 2

Groundwater

Number of groundwater samples collected 37
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 4'
Number of groundwater monitoring wells installed 7
Number of groundwater samples exceeding 915-1 3

-- Highest concentration of Benzene (µg/l) 5200
-- Highest concentration of Toluene (µg/l) 840
-- Highest concentration of Ethylbenzene (µg/l) 180
-- Highest concentration of Xylene (µg/l) 1200
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?

☐ 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?

Due to this most recent PWV release discovery, groundwater quality will now be monitored on a quarterly basis until the results are below the COGCC Table 915-1 concentration levels for four consecutive quarters, and analysis for Table 910 parameters only will be discontinued

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.

Once soil impacts were confirmed following discovery of the initial release on 7/15/2020, additional excavations were conducted, and impacted soil and groundwater were removed and transported to a disposal facility. Approximately 70 cubic yards of soil were disposed of at the Front Range Landfill in Erie, Colorado. Transport and disposal records will be kept on file under usual and customary practice and are available upon request. Groundwater samples were analyzed for BTEX. Soil samples were collected and analyzed for organic (TPH and BTEX) and inorganic (pH, EC, and SAR) constituents. Excavation continued until the horizontal and vertical extents of the excavation were within COGCC Table 910-1 allowable limits for TPH and BTEX. Minor EC exceedances remain at 2-feet below ground surface on the North and East sidewalls at 4.85 and 5.55 mmhos/cm, respectively. Once a secondary release was discovered during the third quarter 2021 sampling event, investigation of soils surrounding the PWV was conducted to determine a source area. The PWV will be removed from service and repaired. Additional excavations will be conducted, and impacted soil and groundwater will be removed and transported to a disposal facility. Soil samples will be collected and analyzed for Table 915-1 constituents until the horizontal and vertical extents of the excavation are within COGCC Table 915-1 allowable limits.

REMEDIAL ACTION 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.

Following the initial release and excavation, high nitrogen fertilizer was distributed into the excavation to promote groundwater hydrocarbon bioremediation and natural attenuation prior to backfilling. On August 25, 2020 Remington Technologies installed seven semi-permanent groundwater monitoring wells at the Alaux/Sears site and will conduct quarterly groundwater sampling events. Following discovery of a secondary release on 10/8/21, additional excavations will be conducted, and impacted soil and groundwater will be removed and transported to a disposal facility. Soil samples will be collected and analyzed for Table 915-1 constituents until the horizontal and vertical extents of the excavation are within COGCC Table 915-1 allowable limits. Groundwater quality will continue to be monitored on a quarterly basis until the results are below the Colorado Oil and Gas Conservation Commission (COGCC) Table 915-1 concentration levels for four consecutive quarters.

Soil Remediation Summary

<input type="checkbox"/> In Situ	<input checked="" type="checkbox"/> Ex Situ
_____ Bioremediation (or enhanced bioremediation)	Yes _____ Excavate and offsite disposal
_____ Chemical oxidation	_____ If Yes: Estimated Volume (Cubic Yards) _____ 70
_____ Air sparge / Soil vapor extraction	_____ Name of Licensed Disposal Facility or COGCC 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
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.

Due to this most recent PWV release discovery, groundwater quality will now be monitored on a quarterly basis until the results are below the COGCC Table 915-1 concentration levels for four consecutive quarters, and Table 910 parameters only will be discontinued. 2020 third quarter samples were collected between September 1 and October 1, 2020. No sample was collected from TMW-1 because the well was found to be dry. 2020 Q4 samples were collected on October 29, 2020 and November 2, 2020, all wells were successfully sampled. 2021 Q1 samples were collected on January 14, 2021, all wells were successfully sampled. 2021 Q2 samples were collected on May 26, 2021, all wells were successfully sampled. 2021 Q3 samples were collected on August 11, 2021. A benzene exceedance was detected at TMW-4 during this sampling event, to rule out the possibility of cross-contamination, a resample was collected on August, 25 2021.

REMEDATION 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:

REMEDATION COMPLETION REPORT

REMEDATION 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? No

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

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.

No reclamation will be performed on the site unless the entire facility is removed from service or the activities migrate outside the original facility footprint. If these occur, the disturbance will be reclaimed in accordance with 1000 Series Rules, in collaboration with the landowner, and reported in a Form 4 (Sundry Notice) with proper documentation to demonstrate compliance with requirements for final reclamation. Remaining EC exceedances will be managed when the reclamation process is initiated.

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. 07/16/2020

Actual Spill or Release date, or date of discovery. 10/08/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 07/16/2020

Proposed site investigation commencement. 07/28/2020

Proposed completion of site investigation. _____

REMEDIAL ACTION DATES

Proposed start date of Remediation. 07/28/2020

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 is being submitted as a quarterly update for groundwater monitoring at this location. A recent release was discovered at the produced-water vessel, and a Form 19 Spill/Release Report (402837245) was submitted on October 11, 2021. Groundwater monitoring will continue under Table 915-1 constituents until four consecutive quarters of samples results are within allowable limits. Please find the attached Site Diagram, Topographic Map, Lab Results Summary Table, and a copy of the laboratory results. COAs issued during the COGCC inspection on 10/14/21 (Document Number: 690102658) are still being determined and will be provided in the next Form 27 Supplemental deliverables

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

Signed: Maggie Graham

Title: Senior Project Manager

Submit Date: 10/29/2021

Email: Maggie.Graham@apexc.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: 11/05/2021

Remediation Project Number: 15751

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**

402847636	FORM 27-SUPPLEMENTAL-SUBMITTED
402857982	OTHER

Total Attach: 2 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)