

State of Colorado
Oil and Gas Conservation Commission

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Report taken by:
PETER GINTAUTAS

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: <u>CRESTONE PEAK RESOURCES OPERATING LLC</u>	Operator No: <u>10633</u>	Phone Numbers Phone: <u>(720) 774385</u> Mobile: <u>(303) 2365525</u>
Address: <u>1801 CALIFORNIA STREET #2500</u>		
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80202</u>		
Contact Person: <u>David Tewkesbury</u> Email: <u>David.Tewkesbury@CrestonePR.com</u>		

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 17330 Initial Form 27 Document #: 402635948

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: <u>LOCATION</u>	Facility ID: <u>336477</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>DIER-62N67W 8NWSW</u>	Latitude: <u>40.149717</u>	Longitude: <u>-104.921124</u>	
	** correct Lat/Long if needed: Latitude: <u>40.149532</u>	Longitude: <u>-104.920377</u>	
QtrQtr: <u>SWSW</u> Sec: <u>8</u> Twp: <u>2N</u> Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>			

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>479631</u>	API #: _____	County Name: _____
Facility Name: _____	Latitude: _____	Longitude: _____	
	** correct Lat/Long if needed: Latitude: <u>40.149532</u>	Longitude: <u>-104.920377</u>	
QtrQtr: <u>SWSW</u> Sec: <u>8</u> Twp: <u>2N</u> Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>			

SITE CONDITIONS

General soil type - USCS Classifications SC

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

Residential areas and occupied structures

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste | <input type="checkbox"/> Other E&P Waste | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids | _____ |
| <input type="checkbox"/> Oil | <input type="checkbox"/> Tank Bottoms | |
| <input type="checkbox"/> Condensate | <input type="checkbox"/> Pigging Waste | |
| <input type="checkbox"/> Drilling Fluids | <input type="checkbox"/> Rig Wash | |
| <input type="checkbox"/> Drill Cuttings | <input type="checkbox"/> Spent Filters | |
| | <input type="checkbox"/> Pit Bottoms | |
| | <input type="checkbox"/> Other (as described by EPA) | _____ |

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	50' x >45' x 12' bgs	Laboratory analytical results

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 21, 2021, an equipment failure was identified that resulted in a release of 13 barrels of produced water from a subsurface dump line. To characterize the release and to determine the extent of potential impacts, the line responsible for the subsurface release was exposed, the spill point was identified, and soil samples were collected from the base and sidewalls around the spill point. Initial site investigation confirmed pH exceedances in the base, south sidewall, and east sidewall of the excavation. Potholes were subsequently utilized to delineate soil pH impacts. Soil impacts were delineated vertically prior to encountering groundwater, to the north, south, and west. pH impacts extend at least to the eastern edge of the pad surface. Inorganic impacts are proposed for clearance under rule 915.b (Soil Suitability for Reclamation) which allows operators to propose clearance of soil impacts which are unlikely to effect revegetation efforts during reclamation.

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 was not encountered during investigation activities; therefore, no groundwater sample was collected.

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 20

Number of soil samples exceeding 915-1 10

NA / ND

ND Highest concentration of TPH (mg/kg) _____

-- Highest concentration of SAR 0.334

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

BTEX > 915-1 No

Approximate areal extent (square feet) 2000

Vertical Extent > 915-1 (in feet) 12

Groundwater

Number of groundwater samples collected 0

Highest concentration of Benzene (µg/l) _____

Was extent of groundwater contaminated delineated? Yes

Highest concentration of Toluene (µg/l) _____

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

Highest concentration of Ethylbenzene (µg/l) _____

Number of groundwater monitoring wells installed _____

Highest concentration of Xylene (µg/l) _____

Number of groundwater samples exceeding 915-1 _____

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?

pH exceedances were not delineated horizontally past the east side of the pad. Based on confirmed pH impacts at 6-8' bgs on the eastern edge of the pad, it is assumed that elevated pH is present at approximately 6-8' bgs in the bordering property.

Were background samples collected as part of this site investigation?

Five background soil samples were collected from undisturbed soil near the site to characterize native levels of arsenic, selenium, and pH. Laboratory results of background samples collected in the area indicate arsenic concentrations up to 2.57 milligrams per kilogram (mg/kg), selenium to 0.435 mg/kg, and pH values up to 7.38. A map depicting background sample locations is attached along with laboratory results summary table and associated lab reports.

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.

Prior to sampling, approximately 32 cubic yards of soil were removed via vacuum truck. No organic impacts to soil were identified during the remedial investigation. pH impacts will be left in place with proposed clearance through Rule 915.b. See Remediation Summary section for reclamation management details.

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 spill details and initial remediation actions. After initial site investigation, five potholes were utilized to characterize subsurface soil impacts to the east and south of the produced water release location. pH impacts were delineated vertically at the source point by soil sample SB01@15 which registered within Table 915-1 allowable limits at 7.91. pH impacts were delineated horizontally to the north, west, and south; however, soil pH impacts remain undelineated to the east with impacts documented at the edge of the pad between 6' and 8' bgs. See Soil Sample Location Map and Laboratory Results Summary Table for details. Groundwater was not encountered during site investigation activities. pH soil impacts are proposed to be left in place and managed with reclamation. When the site is decommissioned and reclaimed, Crestone proposes to seed the reclaim area with the attached seed mix. The seed mix was selected for its ability to withstand elevated salts, withstand basic soil conditions, and to be representative of the surrounding vegetation. A copy of the seed mix is attached along with a Quantitative Vegetation Survey for an adjacent Crestone reclamation site. After seeding, the reclaim will be monitored in compliance with 1000 Series regulations. Soil amendments may be applied if deemed necessary for proper vegetation growth and coverage. Adverse effects to existing vegetation east of the pad surface are not anticipated as many of the salt and pH tolerant species outlined in the proposed reclamation seed mix are present in the existing vegetated area. Based on species composition in adjacent undisturbed surface and the consistent depth of recorded soil impacts in the investigation area, further delineation of pH impacts will cause unnecessary disturbance to topsoil and vegetation with low likelihood of additional information to change the scope of the proposed reclamation-based clearance presented here.

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 # _____
- _____ Excavate and onsite remediation
- _____ Land Treatment
- _____ Bioremediation (or enhanced bioremediation)
- _____ Chemical oxidation
- _____ Other _____

Groundwater Remediation Summary

- _____ 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.

Groundwater was not encountered during site investigation activities.

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.

This facility remains in production; reclamation is not scheduled at this time. When the facility is decommissioned at a later date, reclamation activities will be completed in accordance with 1000 Series Rules and the reclamation plan described herein. pH soil impacts are proposed to be left in place and managed with a salt and pH tolerant seed mix when the site is reclaimed at a later, undetermined date. Vegetation quality and quantity will be monitored in compliance with 1000 Series regulations once the site is reclaimed. Soil amendments may be applied if deemed necessary for proper vegetation growth and coverage.

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. 03/22/2021

Actual Spill or Release date, or date of discovery. 03/21/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/24/2021

Proposed site investigation commencement. 04/05/2021

Proposed completion of site investigation. 07/08/2021

REMEDIAL ACTION DATES

Proposed start date of Remediation. 04/02/2021

Proposed date of completion of Remediation. 04/05/2021

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 site investigation information to the COGCC, to propose that soil pH impacts be left in place and managed with reclamation, and to request a no further action status for this remediation project. Please find site investigation information attached including Soil Sample Location Map, Lab Results Summary Table, Seed Mix Table, lab reports, and Quantitative Vegetation Survey. Leaving elevated pH in place is unlikely to pose a threat to public health or the environment as groundwater is not present in the affected soil interval and existing vegetation surrounding the site is composed of salt and pH hearty grasses.

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: 10/22/2021

Email: Christopher.Rice@CrestonePR.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: _____

Date: 11/04/2021

Remediation Project Number: 17330

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

0 COA	
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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**

402825278	FORM 27-SUPPLEMENTAL-SUBMITTED
402850896	REMEDICATION PROGRESS REPORT

Total Attach: 2 Files

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

Reclamation Specialist	Soil sample analytical results indicate that the pH of soil from 4.5'-12' bgs in the excavated area is above the Table 915-1 Soil Suitability Level of 8.3. The impacted area has been backfilled and is part of active facility and reclamation is not scheduled at this time. COGCC will not require further action at this time. When the facility is decommissioned at a later date, reclamation activities will be completed in accordance with 1000 Series Rules. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if groundwater is found to be impacted, then further investigation and/or remediation/reclamation activities may be required.	11/04/2021
Environmental	added reclamation specialist to reviewers	10/25/2021

Total: 2 comment(s)