

State of Colorado Oil and Gas Conservation Commission

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Receive Date:

12/07/2022

Report taken by:

ALEX FISCHER

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>OLD OPERATORS - STATUS UNKNOWN</u>	Operator No: <u>99999</u>	Phone Numbers Phone: <u>(970) 946-3761</u> Mobile: <u>()</u>
Address: <u>SEE COMMENT LINE IN WELL</u>		
City: <u>XXXXXXX</u>	State: <u>XX</u> Zip: <u></u>	
Contact Person: <u>Jacob Harter</u>	Email: <u>jharter@cottonwoodconsulting.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 20498 Initial Form 27 Document #: 402704039

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: Plug and abandon well and decommission on site production equipment and flow line (s).

SITE INFORMATION

No Multiple Facilities

Facility Type: <u>WELL</u>	Facility ID: <u></u>	API #: <u>007-40033</u>	County Name: <u>ARCHULETA</u>
Facility Name: <u>Underwood Ditch (OWP) 1</u>		Latitude: <u>37.043990</u>	Longitude: <u>-106.840660</u>
		** correct Lat/Long if needed: Latitude: <u></u>	Longitude: <u></u>
QtrQtr: <u>SENE</u>	Sec: <u>4</u>	Twp: <u>32N</u>	Range: <u>1E</u> Meridian: <u>N</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications ML Most Sensitive Adjacent Land Use Grazing

Is domestic water well within 1/4 mile? Yes 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

Little Navajo River

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	Unknown	Analytical results
No	SOILS	None	Field screening, 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.

The COGCC Orphan Well Program plugged the Underwood Ditch (OWP) #1 well and decommissioned the well site during the fall of 2021. Soil, groundwater, surface water, wellbore gas, and wellbore fluid samples were collected in accordance with the Initial Form 27 for the project and COGCC Rule 915.e(2)B. No production equipment was located on the wellsite at the time of plugging and site decommissioning.

Two soil samples, including one background sample, were collected from the site; one was collected from the wellhead excavation and one was collected from nearby, non-impacted native soil. All soil samples were submitted for laboratory analysis of Table 915-1 constituents.

One groundwater sample was collected from within the wellhead excavation. The groundwater sample was submitted for laboratory analysis of Table 915-1 constituents.

Baseline surface water samples were collected from the Little Navajo River upstream and downstream of the Underwood Ditch (OWP) #1. The surface water samples were submitted for laboratory analysis of Table 915-1 constituents.

A baseline groundwater sample was collected from the landowner's (Rempel) water well located approx. 350 feet southeast of the of the Underwood Ditch (OWP) #1. The water sample was submitted for laboratory analysis of Table 915-1 constituents.

Per the conditions of approval (COAs) noted in the Initial Form 27, a wellbore gas sample and a wellbore fluid sample were collected. The wellbore gas sample was submitted for laboratory analysis of gas composition and stable isotopes and the wellbore fluid sample was submitted for laboratory analysis of major anions, cations, TDS, BTEX, DRO, GRO, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and dissolved gasses (RSK 175).

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):

All areas suspected of having potential impacts, including the wellhead, were visually inspected and field screened with a PID. Using these observations and field screening results, soil samples were collected from areas most likely to be impacted.

One discrete soil sample was collected from the wellhead excavation. No production equipment was located on the well site at the time of plugging and site decommissioning. Soil samples were submitted for laboratory analysis of Table 915-1 constituents. The attached project map provides the location of all samples.

Proposed Groundwater Sampling

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

Groundwater was encountered within the wellhead excavation. A water sample was collected from the available groundwater. Water samples were analyzed for Table 915-1 constituents.

Proposed Surface Water Sampling

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

Baseline surface water samples were collected from the Little Navajo upstream and downstream of the Underwood Ditch (OWP) #1 well head prior to initial site disturbance. Water samples were analyzed for Table 915-1 constituents.

Additional Investigative Actions

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

Per the conditions of approval (COAs) noted in the Initial Form 27, a wellbore gas sample and a wellbore fluid sample were collected. The wellbore gas sample was submitted for laboratory analysis of gas composition and stable isotopes and the wellbore fluid sample was submitted for laboratory analysis of major anions, cations, TDS, BTEX, DRO, GRO, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and dissolved gasses (RSK 175).

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 2

Number of soil samples exceeding 915-1 0

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

Approximate areal extent (square feet) 0

NA / ND

ND Highest concentration of TPH (mg/kg)

-- Highest concentration of SAR 6.14

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 0

Groundwater

Number of groundwater samples collected 1

Was extent of groundwater contaminated delineated? No

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

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 915-1 1

ND Highest concentration of Benzene (µg/l)

ND Highest concentration of Toluene (µg/l)

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?

One representative background soil sample was collected for the project from nearby, non-impacted native soil. Laboratory results indicate that the arsenic concentration exceeded the COGCC standard.

Two baseline surface water samples were collected from the Little Navajo upstream and downstream of the Underwood Ditch (OWP) #1 wellhead prior to initial site disturbance. Both samples did not exceed the COGCC standard for any constituents.

A baseline groundwater sample was collected from the landowner's (Rempel) water well located approx. 350 feet southeast of the of the Underwood Ditch (OWP) #1. The sample did not exceed the COGCC standard for any constituents.

☐ 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? No

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

The well was plugged and the wellsite decommissioned during the fall of 2021. Soil, groundwater, surface water, wellbore gas, and wellbore fluid samples were collected in accordance with the Initial Form 27. Soil sample SS01, collected at a depth of 5 feet below ground surface (bgs) from the wellhead excavation, had SAR values that slightly exceeded the COGCC Table 915 standards. Assuming the baseline groundwater sample collected from the landowner's (Remple) water well is representative of background groundwater conditions, the groundwater sample WS01 collected from within the wellhead excavation at a depth of 4.5 feet, had TDS values that exceeded COGCC Table 915 standards (assuming 1.25 x background).

Arsenic also exceeded the COGCC Table 915 standard in all soil samples, but was relatively consistent with background concentrations.

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.

Based on the results of soil sampling conducted at the well site, no additional remediation is needed.

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.

Assuming the baseline groundwater sample collected from the landowner's (Remple) water well is representative of background groundwater conditions, the groundwater sample WS01 collected from within the wellhead excavation at a depth of 4.5 feet, had TDS values that exceeded COGCC Table 915 standards (assuming 1.25 x background). Groundwater sample WS01 collected from the wellhead excavation at a depth of 4.5 feet, had a TDS value of 800 mg/L. The landowner's water well had a TDS value of 195 mg/L. The landowner's water well is not permitted with the Colorado Division of Water Resources, but according to the landowner the water well is hand dug with a depth of <20 feet. Prior to plugging the Underwood Ditch (OWP) #1, the well was observed leaking water and gas from the wellhead/casing. It was assumed the Underwood Ditch (OWP) #1 had been leaking water and gas for a extended period of time prior to it's plugging in 2021. This could account for the increased TDS concentrations observed in the groundwater sample collected from within the wellhead excavation.

Based on a aerial review of the area, the Little Navajo River lies between the Underwood Ditch (OWP) #1 and the landowner's water well making it unlikely that these two areas are hydrologically connected. Additionally, given the amount of time that Underwood Ditch (OWP) #1 is assumed to have leaked and the relatively low TDS concentrations in the landowner's water well it appears the Underwood Ditch (OWP) #1 has not affected the landowner's water well. No other groundwater features (water wells) are within the vicinity of this project. Water well sample results are included in the attachments.

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 Facility closure

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.

The scope of work described in the in this Form 27 will be completed by the COGCC's orphan well program. the COGCC is not an operator and is performing remediation work on behalf the former operator.

Operator anticipates the remaining cost for this project to be: \$ 0

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? No

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? Yes

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? Yes

Does the previous reply indicate consideration of background concentrations? Yes

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? No

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 in accordance with COGCC 1000 Series Rules.

Inorganics (SAR = 6.14) in the soil sample collected at a depth of 5 feet below ground surface from soils around the wellhead slightly exceeded the COGCC Table 915 SAR standard of 6.0. It is assumed that slightly elevated inorganics at depths below the normal rooting zone should not affect overall reclamation success of the site.

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. 06/01/2022

Proposed date of completion of Reclamation. 09/30/2022

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). 07/05/2021

Proposed site investigation commencement. 09/01/2021

Proposed completion of site investigation. 12/01/2021

REMEDIAL ACTION DATES

Proposed start date of Remediation. _____

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

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

Signed: Jacob Harter

Title: Consultant

Submit Date: 12/07/2022

Email: jharter@cottonwoodconsulting.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: ALEX FISCHER

Date: 12/08/2022

Remediation Project Number: 20498

COA Type**Description**

	Submit wellbore fluid and gas samples via Form 43.
	Background is assumed the Landowner's water well. TDS value of 195 mg/L x1.25= 243.75. TDS in groundwater exceeds 1.25 x background. However, based on review of the information provided, it appears that no further action is necessary at this time and COGCC approves the closure request. Should conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards, or, if groundwater is found to be significantly impacted, further investigation and/or remediation activities may be required at the site.
2 COAs	

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**

402933414	FORM 27-SUPPLEMENTAL-SUBMITTED
402933527	SITE MAP
402933530	SITE MAP
402933531	ANALYTICAL RESULTS
402933533	ANALYTICAL RESULTS
402933535	ANALYTICAL RESULTS
402933537	PHOTO DOCUMENTATION
402933539	ANALYTICAL RESULTS
402933541	ANALYTICAL RESULTS
402933542	ANALYTICAL RESULTS
402933544	ANALYTICAL RESULTS
402933545	ANALYTICAL RESULTS
402933797	ANALYTICAL RESULTS
403253410	ANALYTICAL RESULTS
403253414	ANALYTICAL RESULTS

Total Attach: 15 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
Environmental	<p>Wellbore fluid TDS = 960 Methane 17.100 mg/L Ethane 0.0264 mg/L</p> <p>Navajo River samples TDS 480 and 440</p> <p>Groundwater sample TDS = 800</p> <p>Wellhead soil sample SAR = 6.02 Arsenic = 5.65</p> <p>Background is assumed the Landowner's water well. TDS value of 195 mg/L x1.25= 243.75</p> <p>Background soil sample SAR = 0.13 Arsenic = 7.84</p>	11/30/2022
Environmental	<p>Attachment Doc #402933531 = Surface water samples Attachment Doc #402933533 = fluid and soil samples Attachment Doc #402933535 = groundwater sample Attachment Doc #402933539 = Table 1, soil samples Attachment Doc #402933541 = Table 2, groundwater sample Attachment Doc #402933542 = Table 3, wellbore gas sample Attachment Doc #402933544 = Table 4 wellbore fluid sample Attachment Doc #402933545 = Table 5 baseline surface water results Navajo River Attachment Doc #402933797 = DIG gas analysis</p>	11/30/2022
Environmental	On the Remediation Completion Report tab, the "Compliant with Rule 913.h.(2)." and "Compliant with Rule 913.h.(3)." boxes have been unchecked by COGCC EPS staff, after review of the documentation submitted.	01/31/2022

Total: 3 comment(s)