

State of Colorado
Energy & Carbon Management Commission1120 Lincoln Street, Suite 801, Denver, Colorado 80203
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403752613

Receive Date:

04/12/2024

Report taken by:

Krystal Heibel

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: STRACHAN EXPLORATION INC	Operator No: 83130	Phone Numbers Phone: (303) 330-1921 Mobile: ()
Address: 992 S 4TH AVE SUITE 100-461		
City: BRIGHTON State: CO Zip: 80601		
Contact Person: Jason Harms	Email: jason@strachanexploration.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 20368 Initial Form 27 Document #: 402823368

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: Investigation and remediation summary

SITE INFORMATION

Yes Multiple Facilities

Facility Type: PIT	Facility ID: 273446	API #:	County Name: WELD
Facility Name: STATE 36-16	Latitude: 40.611835	Longitude: -104.034734	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: SESE	Sec: 36	Twp: 8N	Range: 60W Meridian: 6 Sensitive Area? No

Facility Type: SPILL OR RELEASE	Facility ID: 481630	API #:	County Name: WELD
Facility Name: State 36-16	Latitude: 40.611835	Longitude: -104.034734	
** correct Lat/Long if needed: Latitude:		Longitude:	
QtrQtr: SESE	Sec: 36	Twp: 8N	Range: 60W Meridian: 6 Sensitive Area? No

SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Private land,
agriculture

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? No

Other Potential Receptors within 1/4 mile

The State 36-16 Pit is located on BLM managed property within the Pawnee National Grasslands, surrounded by rangeland to the north and agricultural land south. There are no residences within over a mile of the Site. There are no water well permits mapped within a quarter mile of the Site. Groundwater depth is unknown, but Groundwater permit 120874, approximately 0.60 miles northeast of the wellhead, reported a static water level of 120 feet below ground surface (ft-bgs). Additionally abandoned groundwater permit 35315-A mapped 0.60 miles southwest reported a static water level of 107 ft-bgs. There is no surface water or wetlands mapped within a mile of the Site. The Site is not mapped within any High Priority Habitat (effective Nov. 30, 2023), however there is Rule 1202.d Density Habitat Pronghorn Winter Concentration area mapped 100 feet south of the Site. There are no additional sensitive areas or wildlife habitats identified within a quarter mile of the pit.

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	SOILS	Undetermined	Analytical samples

INITIAL ACTION SUMMARY

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

An initial Form 27 remediation work plan (COGCC Doc. #402823368) was approved for this Site and assigned remediation #20368, submitted by Foundation Energy Management, LLC (FEM). FEM performed an initial investigation at the associated pit for site closure. Details of that investigation were reported in a Form 27 Supplemental (COGCC Doc. #402863634). Additionally, a Form 19-I/S (COGCC Doc. #402949677) was submitted by FEM based on discovery of greater than 10 cubic yards of impacted material. On May 17, 2022, approximately 247 cubic yards of impacted soil was excavated for offsite disposal from the pit and skim tank areas. Based on analytical results for confirmation soil samples reporting pH, SAR, boron and arsenic concentrations above Table 915-1 standards, additional investigation is warranted.

Strachan Exploration, Inc. (Strachan) transferred ownership of this Pit Facility and Remediation Project on July 14, 2023. Strachan's Proposed Soil Sampling plan is discussed below.

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):

At least 3 background samples will be collected from 7 ft-bgs, 10 ft-bgs and/or 12 ft-bgs from areas undisturbed by oil and gas activities and will be submitted to an accredited laboratory for analysis of pH, EC, SAR, boron, and Table 915-1 metals by ECMC approved methods. At least five soil borings will be conducted in the area of the former pit and skim tanks. One soil boring will be placed at the center of the former production pit excavation and advanced to at least 13 ft-bgs to delineate the vertical extent of soil impacts. At least four soil borings will be conducted in the cardinal directions from the former pit and skim tank to delineate the horizontal extents of soil impacts at 7 ft-bgs and 10 ft-bgs. Delineation soil samples will be submitted for full Table 915-1 analysis, or, if approved, the reduced analyte list requested in Additional Investigation Actions below. See the attached Figure 2 Proposed Soil Sampling Location Diagram.

Proposed Groundwater Sampling

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

If groundwater is encountered during decommissioning and/or abandonment activities, a grab sample will be collected as soon as practical. Groundwater samples will be submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260.

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):

Based on the results of investigations and analytical reports of sampling conducted by FEM, Strachan proposes to conduct additional investigation to determine the background soil conditions for Table 915-1 inorganic constituents, as well as to delineate the vertical and horizontal extent of soil impacts related to the former production pit and skim tank. See Proposed Soil Sampling above for further details.

Based on analytical result detections reported previously by FEM (see attached), Strachan respectfully requests future confirmation soil samples be analyzed for chrysene, pH, EC, SAR, boron and Table 915-1 metals only. Chrysene was the only organic constituent detected in previous waste characterization sample laboratory analytical results. 915-1 metals analysis were not sufficiently analyzed in previous samples to request reduced analytes at this time.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 7

Number of soil samples exceeding 915-1 7

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

Approximate areal extent (square feet) 725

NA / ND

ND Highest concentration of TPH (mg/kg)

-- Highest concentration of SAR 12.5

BTEX > 915-1 No

Vertical Extent > 915-1 (in feet) 12

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?

A background sample (Background @1') was collected and analyzed for Table 915-1 soil suitability for reclamation constituents, arsenic, barium, and selenium. Analytical results are presented on Table 3. Additional background samples at intervals representative of the excavation depth will be collected during subsequent investigations and analyzed for Table 915-1 soil suitability for reclamation constituents and arsenic.

☐ 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?

Based on the results of investigations and analytical reports of sampling conducted by FEM, Strachan proposes to conduct additional investigation to determine the background soil conditions for Table 915-1 inorganic constituents, as well as to delineate the vertical and horizontal extent of soil impacts related to the former production pit and skim tank. See Proposed Soil Sampling above for further details.

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.

On May 17, 2022, Foundation Energy Management, LLC. (FEM) conducted remedial excavation to remove approximately 247 cubic yards of impacted soil for offsite disposal at Pawnee Waste, LLC. In Grover, Colorado. Based on analytical results for confirmation soil samples reporting pH, SAR, boron and arsenic concentrations above Table 915-1 standards, additional investigation is warranted.

Supplemental investigation and remedial actions will be conducted by Strachan Exploration, Inc. (Strachan) as discussed in the Proposed Soil Sampling section above, and the Remediation Summary section below.

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 the investigation efforts discussed in Proposed Soil Sampling section above, Strachan will either excavate any remaining soil impacts above Table 915-1 and background levels for disposal, or will propose alternative remediation strategies in a subsequent Form 27 Supplemental. Confirmation soil samples will be collected from the floor and sidewalls of any excavation efforts at a frequency that meets or exceeds the recommendations in Guidance Document for Rule 915.E.(2) - Table 1.

Soil Remediation Summary

☐ In Situ

☒ Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____ 247

_____ Air sparge / Soil vapor extraction

_____ Name of Licensed Disposal Facility or ECMC Facility ID # _____

_____ Natural Attenuation

_____ Excavate and onsite remediation

_____ Other _____

_____ 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.

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 Tank Battery Pit Investigation and Remediation Summary

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.

Operator does not have site-specific financial assurance for this project; however, Operator has inactive well, blanket, and surface bonding including Surety IDs 20170089, 20170088, 20160134, 20160133 and 20150065, as well as commercial general liability and/or umbrella/excess insurance meeting the requirements of Rule 705.b. Operator does not anticipate making an insurance claim for this project.

- Assessment activities as outlined herein are proposed.

Costs included herein are estimates only and may change over time based on numerous factors. Accordingly, Operator makes no guarantees as to the accuracy of such cost estimates, thus providing an estimate for the next year below.

Operator anticipates the remaining cost for this project to be: \$ 10000

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:

none

Volume of E&P Waste (solid) in cubic yards 247

E&P waste (solid) description Impacted soil for offsite disposal

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Pawnee Waste

Volume of E&P Waste (liquid) in barrels 0

E&P waste (liquid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC 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 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.

Reclamation will be conducted in accordance with COGCC 1004 Series Rules.

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. _____

Actual Spill or Release date, or date of discovery. 11/03/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 09/30/2021

Proposed site investigation commencement. 09/30/2021

Proposed completion of site investigation. 05/01/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/01/2024

Proposed date of completion of Remediation. 12/31/2024

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:

Strachan Exploration, Inc. (Strachan) transferred ownership of this Pit Facility and Remediation Project on July 14, 2023. Strachan's proposed plan to complete remediation efforts have been updated in this Form 27 Supplemental.

OPERATOR COMMENT

This Form 27 Supplemental is being submitted as a quarterly update of activities at the State 36-16 pit remediation, as well as to update the project with the new ownership of the location under Strachan Exploration, Inc.

The Proposed Soil Sampling and Remediation Summary sections have been updated with Strachan proposed remedial strategy towards final closure of this spill/release Remediation Project. Proposed actions are scheduled to begin May 1, 2024.

Based on analytical result detections reported previously by FEM (see attached), Strachan respectfully requests future confirmation soil samples be analyzed for chrysene, pH, EC, SAR, boron and Table 915-1 metals only. Chrysene was the only organic constituent detected in previous laboratory analytical results. 915-1 metals analysis were not sufficiently analyzed in previous samples to request reduced analytes at this time.

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

Signed: Ryan Finley

Title: Senior Project Geologist

Submit Date: 04/12/2024

Email: rfinley@entradainc.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: Krystal Heibel

Date: 04/29/2024

Remediation Project Number: 20368

COA Type

Description

	Operator shall fully populate the implementation schedule in accordance with Rule 913.d on the subsequent Supplemental Form 27. The "Date of Surface Owner Notification/consultation, if required." information is missing.
	If groundwater is encountered, Operator will analyze groundwater samples for Table 915-1 Groundwater Inorganic Parameters (total dissolved solids, sulfate, chloride) and organic compounds in groundwater.
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

403752613	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
403752696	MAP
403752698	SITE INVESTIGATION PLAN
403752701	REMEDIATION PROGRESS REPORT
403771844	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 5 Files

General Comments

User Group

Comment

Comment Date

Environmental	ECMC agrees to the reduced analyte list of chrysene, pH, EC, SAR, boron and Table 915-1 metals only. Please reference this document number when addressing the reduced analyte suite.	04/29/2024
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Total: 1 comment(s)