

State of Colorado Energy & Carbon Management Commission

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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 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>FOUNDATION ENERGY MANAGEMENT LLC</u>	Operator No: <u>10112</u>	Phone Numbers
Address: <u>5057 KELLER SPRINGS RD STE 650</u>		Phone: <u>(972) 707-2523</u>
City: <u>ADDISON</u>	State: <u>TX</u>	Zip: <u>75001</u>
Contact Person: <u>Afton Iiams</u>	Email: <u>aiiams@foundationenergy.com</u>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 18036 Initial Form 27 Document #: 402672046

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

No Multiple Facilities

Facility Type: <u>LOCATION</u>	Facility ID: <u>304536</u>	API #: _____	County Name: <u>YUMA</u>
Facility Name: <u>EBELER-64S43W 32NWSW</u>		Latitude: <u>39.664773</u>	Longitude: <u>-102.211207</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>NWSW</u>	Sec: <u>32</u>	Twp: <u>4S</u>	Range: <u>43W</u>
		Meridian: <u>6</u>	Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Cropland

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? Yes

Other Potential Receptors within 1/4 mile

The Site lies within a Designated Groundwater Management Area and a Designated Basin

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
UNDETERMINED	SOILS	TBD	Field screening and sampling

INITIAL ACTION SUMMARY

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

Following the removal of equipment on Site, Foundation Energy Management (FEM) conducted initial soil sampling during the Summer 2021. After EC and SAR were observed to be above ECOM standards, clean topsoil was tilled in when the former well pad was recontoured and prepped for reseeding.

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):

A total of 10 soil samples were taken at 5 locations on 6/29/2023 (Figure 2 & Appendix D). Samples were taken at multiple depths to delineate the affected area. Five samples were analyzed for a full Table 915-1 analysis, and 2 samples placed on hold were subsequently analyzed for soil suitability parameters. The 6/29/2023 analytical results are attached in Tables 1-3 and shown in Figure 2, and the historical soil sampling analytical results are attached in Appendix A. The laboratory report is attached as Appendix C. FEM proposes to complete further soil sampling for EC, SAR, pH, Boron at the Wellhead and HA-3 locations, and step out locations to the north, east, and south of HA-3, to delineate the affected area. Based on site conditions, FEM is evaluating other remedial approaches that may include, but not limited to further gypsum treatment, reclamation plan, and / or excavation with approved backfill (organic rich) material and details will be provided in a subsequent F27-S report.

Proposed Groundwater Sampling

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

Groundwater was not encountered onsite and is believed to be deeper than 20 feet below ground surface.

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 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) 350

NA / ND

ND Highest concentration of TPH (mg/kg) _____
-- Highest concentration of SAR 11.9
BTEX > 915-1 No
Vertical Extent > 915-1 (in feet) 3

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?

One background sample (HA-2) was collected from outside the presumed impacted area.

All samples were above the ECMC 915 Residential standard for arsenic, including the background sample (0.994 mg/kg). The arsenic levels ranged from 0.994-1.29 mg/kg and less than the CDPHE's lower range of background concentrations for native grassland, rangeland, or agriculture (3-14 mg/kg). Barium was below the ECMC Residential standard but above the protection of groundwater soil standard in four samples and one sample was above the Protection of Groundwater for cadmium but below the Residential standard.

In addition to groundwater not being encountered and the metal results, FEM believes that the naturally occurring metals (specifically arsenic, cadmium and barium) are representative of native conditions and requests that metals and VOCs be removed from the future analysis plan at this Site since they do not pose a risk to the environment.

☐ 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 analytical results of the June 29, 2023 sampling event, FEM is proposing additional soil sampling at up to five locations in order to fully delineate soil suitability constituents within the affected area. Once the area is defined, FEM may propose to leave elevated inorganic material (EC, pH, SAR, and boron and arsenic) in situ and will provide a Reclamation plan in a subsequent F27-S for ECMC review.

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.

Initial soil sampling conducted in Summer 2021 showed EC and SAR were above ECMC standards within the top foot of soil in the Wellhead sample. When the former well pad was recontoured and prepped for reseeding, clean topsoil was worked in. Based on site conditions, FEM is evaluating other remedial approaches that may include, but not limited to a reclamation plan, and / or excavation with approved backfill (organic rich) material tilled into the soil. Details will be provided in a subsequent F27-S report.

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.

The initial soil sampling conducted in Summer 2021 showed EC and SAR were above ECMC standards within the top foot of soil in the Wellhead sample. Clean topsoil was tilled when the former well pad was recontoured and prepped for reseeded. If warranted, FEM would consider continuing to apply organic rich soil amendment until the analytical results conform to the ECMC's standards. However, FEM may also consider natural attenuation for the soil suitability constituents with ECMC approval and/or evaluating alternative remediation approaches. Details will be provided in a subsequent F27-S report.

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 onsite.

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

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.

Foundation carries both pollution liability insurance and an umbrella policy over that for a total of \$11,000,000. The cost provided below is an estimate and may be adjusted based on Site observations.

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

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? No ☐

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? Yes

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.

In accordance with the ECMC 1000 series rules, the former well pad and access road were previously reseeded with a seed mix approved by the surface owner. If necessary, further reseeding and weed spraying for weed prevention will be utilized until final reclamation has been achieved. Further details will be provided in a subsequent F27-S report.

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. 12/01/2021

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

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). _____

Proposed site investigation commencement. 05/19/2021

Proposed completion of site investigation. 10/01/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/20/2021

Proposed date of completion of Remediation. 10/01/2023

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 Supplemental Form 27 is being submitted to provide a project update for REM #18036. Attached to this Form 27 in Tables 1-3 are the analytical results for initial soil samples collected in June 2023, as well as historical analytical results in Appendix A. Site photographs from the four cardinal directions are attached in Appendix B, and sampling location coordinates are attached in Appendix D.

Based on the results showing that Table 915 organics were not detected onsite, FEM proposes to conduct additional soil sampling at up to five locations on site in order to fully delineate the affected area for soil suitability parameters and evaluate the data for leaving the material in-situ with ECMC approval. In addition to groundwater not being encountered onsite and the current site conditions, FEM believes that the naturally occurring metals are representative of native conditions and requests that metals and organics be removed from the future sampling analysis plan at this Site since they do not appear to pose a risk to the environment. FEM will provide the onsite progress to the ECMC in subsequent Supplemental Form 27 reports.

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

Signed: Afton Iiams

Title: HSE/Regulatory Specialist

Submit Date: 09/05/2023

Email: aiiams@foundationenergy.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: Krystal Heibel

Date: 09/29/2023

Remediation Project Number: 18036

COA Type

Description

	If a spill/release of produced fluids or E&P waste causes an impact to soil, the operator should perform sampling and analysis to fully delineate the lateral and vertical extent of those impacts.
	Operator shall indicate if the flowlines at this location will be abandoned-in-place or removed. Additional soil sampling and documentation may be required depending on the Operators plan with the flowlines. Operators will collect and submit for laboratory analysis a soil sample collected from the areas most likely to have been impacted during the operational life of the flowline. These areas include, but are not limited to: where Flowlines connect to the wellhead, surface equipment, risers, valves, or manifolds; where Flowlines bend or were repaired in the past and at joints and hammer unions; where Flowlines connect to Flowlines or equipment of different material; and where Flowlines crossed drainages or surface water or are in contact with shallow groundwater.
	Operator shall provide justification for use of Residential SSL including but not limited to depth to groundwater and the local lithology.
	Operator shall sample and provide the analytical results for the tank location within the next Form 27 submittal. ECMC denies the operators request to reduce the sampling plan since analytics results indicate metal exceedances (arsenic, barium, and cadmium), the analytics from the produced water tank are not included, and the background sample "HA-5" is not sufficiently away from the impacted area to represent native, non-impacted soil.
	Operator shall mark "Rule 913.c.(9): Decommissioning of Oil and Gas Facilities." for Purpose Information within the next Form 27 submittal.
	Per Doc# 402746957, a reduced sampling plan of BTEX, TPH, pH, SAR, EC, boron, naphthalene, 1,2,3 and 1,2,4 trimethylbenzene was approved if no evidence of a release was discovered. If a release was discovered, then full Table 915-1 would be analyzed. Analytical results show evidence of a release, so sample shall be collected and analyzed for Full Table 915-1. Operator shall submit a summary table of analytics (historic and new) within the next Form 27 submission.

6 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.

<u>Att Doc Num</u>	<u>Name</u>
403510407	FORM 27-SUPPLEMENTAL-SUBMITTED
403517814	OTHER

Total Attach: 2 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)