

State of Colorado  
Oil and Gas Conservation Commission

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ROB YOUNG

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: FOUNDATION ENERGY MANAGEMENT LLC	Operator No: 10112	<b>Phone Numbers</b>
Address: 5057 KELLER SPRINGS RD STE 650		Phone: (303) 244-8114
City: ADDISON State: TX Zip: 75001		Mobile: (720) 257-2302
Contact Person: Alyssa Beard	Email: abeard@foundationenergy.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 results and remediation work plan

SITE INFORMATION

No 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? Yes

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

## 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 checked="" 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
UNDETERMINED	SOILS	Undetermined	Undetermined

### 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 (#402823368) was approved for this site and assigned remediation # 20368. FEM performed initial investigation on the unlined pit to confirm soil impacts as a first step toward closing the pit at this facility. The associated well was recently converted to an injection well. FEM collected one (1) soil sample from the area in the center of the tank battery pit and four (4) soil samples from the extents of the tank battery pit. Samples were collected via hand auger at approximately 0.5- 1 foot depth from the center and sidewalls of the pit. Additionally, one (1) background sample was collected from approximately 6" from a nearby unimpacted area for source area comparison. All six (6) soil samples were analyzed for Table 915-1 organic constituents, and two (2) samples were analyzed for the full suite of Table 915-1 constituents, except for metals which were inadvertently not analyzed and will be analyzed during remediation confirmation sampling. Laboratory results are presented within this Form 27S.

### 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 ):

Per the approved F271 (#402823368), a soil sample was collected from the center of the pit, one from near the berm in each cardinal direction, and one background sample from an undisturbed area. Each sample was analyzed for Table 915-1 VOCs and soil suitability parameters, with two samples also analyzed for Table 915-1 PAHs. Locations and VOC results for each sample are presented on Figure 2, and lab results are presented on Tables 1 - 3. The final lab report from Summit Scientific is included with this Form 27S as Attachment A. VOCs, PAHs, and soil suitability parameters were observed at concentrations greater than the Table 915-1 protection of groundwater standards. Additionally, all of the non-background samples exhibited soil suitability parameters that fell outside of the acceptable residential soil screening ranges. Subsequent to excavation of the pit, full Table 915-1 confirmation soil sampling will be performed.

#### Proposed Groundwater Sampling

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

N/A – Groundwater was not encountered.

#### 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 data presented in this report from the initial investigation, FEM proposes remediation of the tank battery pit through dig and haul excavation and offsite disposal.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 6  
Number of soil samples exceeding 915-1 4  
Was the areal and vertical extent of soil contamination delineated? No  
Approximate areal extent (square feet) 900

### NA / ND

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

### 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 @0.5-1') was collected and analyzed for Table 915-1 soil suitability parameters. The results of this background sample are presented on Table 3.

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 data presented in this report from the initial investigation, FEM proposes remediation of the tank battery pit through dig and haul excavation and offsite disposal. Additional confirmation sampling at the extents of the removed material will be presented in a subsequent Form 27-S.

## 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.

Impacted soil will be delineated based on visual observations, field screening, and laboratory analysis. Samples will be analyzed for Table 915-1 VOCs, TPH, PAHs, metals, and soil suitability parameters. The footprint of the pit is approximately 30 feet x 30 feet and the vertical extent of contamination is not yet delineated but is known to be at least 1 foot deep confirming a minimum of 33 cubic yards of impacted soil. Impacted soil will be excavated and transported to Pawnee Waste disposal facility. Once the results indicate the excavation can be backfilled to match pre-existing conditions, the results will be presented to the COGCC for approval.

### 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.

Impacted soil will be delineated based on visual observations, field screening, and laboratory analysis. Samples will be analyzed for the full suite of Table 915-1 constituents. Clean backfill will be backhauled from Pawnee Waste and will be used to return the ground level to original grade. Laboratory data and a remediation summary will be provided in a subsequent Form 27-S.

## 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) \_\_\_\_\_ 33  
\_\_\_\_\_ 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.

# REMEDATION PROGRESS UPDATE

## PERIODIC REPORTING

### Approved Reporting Schedule:

Quarterly     Semi-Annually     Annually     Other

A remediation summary and confirmation results will be submitted in a subsequent Form 27.

### 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 Summary and Remediation Workplan

## 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: \_\_\_\_\_

# 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?    \_\_\_\_\_

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 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.

Based on the investigation results, there are currently soil impacts and final reclamation will be performed in accordance with 1000 series rules. Foundation proposes to reseed the pit area with a seed mix approved by the landowner during the next favorable season after remediation, and weed spraying will be utilized for weed prevention until final reclamation has been achieved.

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. \_\_\_\_\_

### 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. 09/30/2021

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/09/2022

Proposed date of completion of Remediation. 05/20/2022

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 investigation was approved in an initial Form 27 (document #402823368). This Form 27S is being provided to the COGCC as a project status update for remediation project #20368. Based on the results of this investigation, FEM proposes excavation of impacted soil from the pit for disposal at an off-site facility (Pawnee Waste). Once the results indicate the excavation can be backfilled to match pre-existing conditions, the results will be presented to the COGCC for approval. Confirmation sampling will be performed by Tasman Geosciences.

The State 36-16 location is within a CPW Pronghorn Winter Concentration area, which is in effect through April 30th. The remediation implementation dates reflect this consideration.

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

Signed: Alyssa Beard \_\_\_\_\_

Title: EHSR Manager \_\_\_\_\_

Submit Date: 02/17/2022 \_\_\_\_\_

Email: regulatory@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: ROB YOUNG \_\_\_\_\_

Date: 02/17/2022 \_\_\_\_\_

Remediation Project Number: 20368 \_\_\_\_\_

**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**

402863634	FORM 27-SUPPLEMENTAL-SUBMITTED
402863673	ANALYTICAL RESULTS

Total Attach: 2 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)