

State of Colorado  
Oil and Gas Conservation Commission

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Report taken by:

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.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATION

Name of Operator: FOUNDATION ENERGY MANAGEMENT LLC	Operator No: 10112	<b>Phone Numbers</b>
Address: 16000 DALLAS PARKWAY #875		Phone: (918) 526-5592
City: DALLAS	State: TX	Zip: 75248-6607
Contact Person: Rachel Grant	Email: regulatory@foundationenergy.com	
		Mobile: (918) 638-1153

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9864 Initial Form 27 Document #: 2526999

PURPOSE INFORMATION

- 901.e. Sensitive Area Determination
- 909.c.(1), Rule 905: Pit or PW vessel closure
- 909.c.(2), Rule 906: Spill/Release Remediation
- 909.c.(3), Rule 907.e.: Land treatment of oily waste
- 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure
- 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water
- Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b.
- Rule 909.e.(2)B.: Closure of remediation project
- Rule 906.c.: Director request
- Other

SITE INFORMATION

Multiple Facilities ( in accordance with Rule 909.c. )

Facility Type: PIT	Facility ID: 112105	API #:	County Name: GARFIELD
Facility Name: GOVERNMENT 1-5		Latitude: 39.391199	Longitude: -109.005638
** correct Lat/Long if needed: Latitude: Longitude:			
QtrQtr: SESE	Sec: 5	Twp: 8S	Range: 104W Meridian: 6 Sensitive Area? Yes
Facility Type: PIT	Facility ID: 119463	API #:	County Name: GARFIELD
Facility Name: 3-9		Latitude: 39.380353	Longitude: -108.995788
** correct Lat/Long if needed: Latitude: Longitude:			
QtrQtr: NESW	Sec: 9	Twp: 8S	Range: 104W Meridian: 6 Sensitive Area? Yes
Facility Type: PIT	Facility ID: 119475	API #:	County Name: GARFIELD
Facility Name: FEDERAL 22-9		Latitude: 39.384106	Longitude: -108.996595
** correct Lat/Long if needed: Latitude: Longitude:			
QtrQtr: SENW	Sec: 9	Twp: 8S	Range: 104W Meridian: 6 Sensitive Area? Yes

Facility Type: <u>PIT</u>	Facility ID: <u>119478</u>	API #: _____	County Name: <u>GARFIELD</u>
Facility Name: <u>FEDERAL 12-3</u>		Latitude: <u>39.395901</u>	Longitude: <u>-108.996066</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>SWNW</u>	Sec: <u>3</u>	Twp: <u>8S</u>	Range: <u>104W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>PIT</u>	Facility ID: <u>119483</u>	API #: _____	County Name: <u>GARFIELD</u>
Facility Name: <u>FEDERAL 43-4</u>		Latitude: <u>39.394291</u>	Longitude: <u>-108.987031</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>NESW</u>	Sec: <u>4</u>	Twp: <u>8S</u>	Range: <u>104W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>PIT</u>	Facility ID: <u>119489</u>	API #: _____	County Name: <u>GARFIELD</u>
Facility Name: <u>FEDERAL 1-34</u>		Latitude: <u>39.415292</u>	Longitude: <u>-108.973740</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>NWNW</u>	Sec: <u>34</u>	Twp: <u>7S</u>	Range: <u>104W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>PIT</u>	Facility ID: <u>119490</u>	API #: _____	County Name: <u>GARFIELD</u>
Facility Name: <u>FEDERAL 1-35</u>		Latitude: <u>39.408850</u>	Longitude: <u>-108.964033</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>NWSW</u>	Sec: <u>35</u>	Twp: <u>7S</u>	Range: <u>104W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>PIT</u>	Facility ID: <u>119492</u>	API #: _____	County Name: <u>GARFIELD</u>
Facility Name: <u>FEDERAL 2-34</u>		Latitude: <u>39.407040</u>	Longitude: <u>-108.978356</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>SESW</u>	Sec: <u>34</u>	Twp: <u>7S</u>	Range: <u>104W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>PIT</u>	Facility ID: <u>119494</u>	API #: _____	County Name: <u>GARFIELD</u>
Facility Name: <u>FEDERAL 2-11</u>		Latitude: <u>39.385110</u>	Longitude: <u>-108.950586</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>SENE</u>	Sec: <u>11</u>	Twp: <u>8S</u>	Range: <u>104W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>PIT</u>	Facility ID: <u>119496</u>	API #: _____	County Name: <u>GARFIELD</u>
Facility Name: <u>FEDERAL 3-11</u>		Latitude: <u>39.380805</u>	Longitude: <u>-108.954361</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>NWSE</u>	Sec: <u>11</u>	Twp: <u>8S</u>	Range: <u>104W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

**SITE CONDITIONS**

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

No receptors have been identified within 1/4-mile of the subject facilities

# 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 checked="" 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	To be determined	Soil 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.

In September 2016, Foundation Energy Management, LLC (Foundation) completed the transfer of multiple assets from National Fuel Corporation to Foundation. This asset transfer included 10 locations with inactive pits, which were determined to serve no current or future purpose related to the operation of the associated wells (Figure 1 and 2). The subject pit Facility IDs, associated wells and associated well API numbers were provided in Exhibit E of the Form 10; this Exhibit, with the pit legal descriptions appended, is included as Attachment A.

Site inspections were conducted by the COGCC in June 2016. Foundation is proposing to assess the pits, in preparation for development of remediation plans for each location, in order to begin formally closing the pits pursuant to COGCC regulations. Proposed assessment and remediation activities are described in the following sections.

## 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 ):

### Proposed Groundwater Sampling

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

### 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 ):

A proposed plan will be submitted for the closure of pits that had samples in exceedance of Table 910-1 standards.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 50  
Number of soil samples exceeding 910-1 15  
Was the areal and vertical extent of soil contamination delineated? No  
Approximate areal extent (square feet) 3200

### NA / ND

-- Highest concentration of TPH (mg/kg) 13000  
-- Highest concentration of SAR 26.6  
BTEX > 910-1 Yes  
Vertical Extent > 910-1 (in feet) 8

### 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 910-1   

NA Highest concentration of Benzene (µg/l)     
NA Highest concentration of Toluene (µg/l)     
NA Highest concentration of Ethylbenzene (µg/l)     
NA Highest concentration of Xylene (µg/l)     
NA Highest concentration of Methane (mg/l)   

### Surface Water

0 Number of surface water samples collected  
   Number of surface water samples exceeding 910-1  
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?

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?

Proposed assessment activities are described on the previous page.

# 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.

Foundation will conduct assessment activities at each subject pit location to determine if soil impacts are present. If impacts are detected, horizontal and vertical soil impact delineation

activities will be conducted, utilizing industry-standard methodologies (i.e., advancement of exploratory excavations, etc.). Based on discussions with the COGCC, pit soil sampling and analysis will be conducted as follows:

- One base sample from each pit: full Table 910-1 soil analytical suite;
- Four sidewall samples from each pit: BTEX, TPH-GRO, TPH-DRO, EC, and pH;
- Three composite background samples (one each) from the northern, southeastern, and southwestern groups of sites: arsenic.

Assessment activities are anticipated to be completed by December 31, 2016. Subsequent to the completion of assessment activities, Foundation will prepare and submit remediation plans to address any impacts discovered and close the pits pursuant to applicable COGCC regulations.

## 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.

A proposal is being developed to evaluate what kind of remediation will be used.

## Soil Remediation Summary

In Situ

No \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

No \_\_\_\_\_ Chemical oxidation

No \_\_\_\_\_ Air sparge / Soil vapor extraction

No \_\_\_\_\_ Natural Attenuation

Yes \_\_\_\_\_ Other \_\_\_\_\_ To be decided \_\_\_\_\_

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

No \_\_\_\_\_ Land Treatment

No \_\_\_\_\_ Bioremediation (or enhanced bioremediation)

No \_\_\_\_\_ Chemical oxidation

No \_\_\_\_\_ Other \_\_\_\_\_

## Groundwater Remediation Summary

No \_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

No \_\_\_\_\_ Chemical oxidation

No \_\_\_\_\_ Air sparge / Soil vapor extraction

No \_\_\_\_\_ Natural Attenuation

No \_\_\_\_\_ 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 has not been encountered in any of the subject pits. Groundwater impacts are not anticipated to be encountered during assessment, remediation or closure activities.

# REMEDATION PROGRESS UPDATE

## PERIODIC REPORTING

Frequency:  Quarterly  Semi-Annually  Annually  Other \_\_\_\_\_

Report Type:  Groundwater Monitoring  Land Treatment Progress Report  O&M Report

Other \_\_\_\_\_

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

## REMEDATION COMPLETION REPORT

### REMEDATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No \_\_\_\_\_

Do all soils meet Table 910-1 standards? \_\_\_\_\_

Does the previous reply indicate consideration of background concentrations? \_\_\_\_\_

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface? \_\_\_\_\_

Does Groundwater meet Table 910-1 standards? \_\_\_\_\_

Is additional groundwater monitoring to be conducted? \_\_\_\_\_

## 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.

Exploratory excavations will be backfilled with non-impacted native materials or imported clean fill. Future reclamation activities at the subject facilities will be compliant with applicable COGCC regulations.

Is the described reclamation complete? \_\_\_\_\_

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

Interim?  Final?

Did the Surface Owner approve the seed mix? \_\_\_\_\_

If NO, does the seed mix comply with local soil conservation district recommendations? \_\_\_\_\_

# IMPLEMENTATION SCHEDULE

## PRIOR DATES

Date of Surface Owner notification/consultation, if required. \_\_\_\_\_

Actual Spill or Release date, if known. \_\_\_\_\_

## SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/01/2016

Date of commencement of Site Investigation. \_\_\_\_\_

Date of completion of Site Investigation. \_\_\_\_\_

## REMEDIAL ACTION DATES

Date of commencement of Remediation. \_\_\_\_\_

Date of completion of Remediation. \_\_\_\_\_

## SITE RECLAMATION DATES

Date of commencement of Reclamation. \_\_\_\_\_

Date of completion of Reclamation. \_\_\_\_\_

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

Signed: Rachel Grant

Title: HSE/Regulatory Manager

Submit Date: \_\_\_\_\_

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: \_\_\_\_\_

Date: \_\_\_\_\_

Remediation Project Number: 9864

## COA Type

## Description

<u>COA Type</u>	<u>Description</u>

## Attachment Check List

### Att Doc Num

### Name

<u>Att Doc Num</u>	<u>Name</u>
401199113	ANALYTICAL RESULTS

Total Attach: 1 Files

## General Comments

### User Group

### Comment

### Comment Date

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

Total: 0 comment(s)