

State of Colorado  
Oil and Gas Conservation Commission

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401479423  
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12/15/2017

Report taken by:  
RICK ALLISON

Site Investigation and Remediation Workplan (Initial 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 INFORMATON

Name of Operator: <u>FOUNDATION ENERGY MANAGEMENT LLC</u>	Operator No: <u>10112</u>	<b>Phone Numbers</b>
Address: <u>5057 KELLER SPRINGS RD STE 650</u>		
City: <u>ADDISON</u>	State: <u>TX</u>	Zip: <u>75001</u>
Contact Person: <u>Alyssa Beard</u>	Email: <u>abeard@foundationenergy.com</u>	Phone: <u>(303) 2448114</u>
		Mobile: <u>(720) 2572302</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 10837 Initial Form 27 Document #: 401479423

PURPOSE INFORMATION

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

SITE INFORMATION

N Multiple Facilites ( in accordance with Rule 909.c. )

Facility Type: <u>PIT</u>	Facility ID: <u>274750</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>SOS 4-4</u>	Latitude: <u>40.609426</u>	Longitude: <u>-103.989969</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NWNW</u>	Sec: <u>4</u>	Twp: <u>7N</u>	Range: <u>59W</u> Meridian: <u>6</u> Sensitive Area? <u>No</u>

SITE CONDITIONS

General soil type - USCS Classifications ML Most Sensitive Adjacent Land Use Cropland  
 Is domestic water well within 1/4 mile? Yes 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

One home located north of County Road 86

# 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 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
No	SOILS	NOne	Soil samples collected for BTEX, EC, SAR, pH

## INITIAL ACTION SUMMARY

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

Soil samples were collected from the former SOS 4-4 produced water pit area and 8/16/17 and 8/31/17.

## 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 ):

Samples were collected from the sidewalls and base of the pit and analyzed for BTEX, TPH, EC, SAR, and pH.

### Proposed Groundwater Sampling

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

Groundwater is not present at this location.

### Proposed Surface Water Sampling

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

Surface water is not present at this location.

## 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 5  
Number of soil samples exceeding 910-1 0  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 0

### NA / ND

ND Highest concentration of TPH (mg/kg) \_\_\_\_\_  
-- Highest concentration of SAR 58.1  
BTEX > 910-1 No  
Vertical Extent > 910-1 (in feet) 0

### Groundwater

Number of groundwater samples collected 0  
Was extent of groundwater contaminated delineated? No  
Depth to groundwater (below ground surface, in feet) 20'  
Number of groundwater monitoring wells installed 0  
Number of groundwater samples exceeding 910-1 0

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  
0 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?

# REMEDIAL ACTION PLAN

## SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Source material with inorganic components that exceed that Table 910 standard will be kept at a depth greater than three feet bgs.

## 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.

Soil at depth impacted with inorganic constituents will be covered with clean topsoil to mitigate any issues that pH, EC, or SAR over the Table 910-1 standard might present for reclamation to succeed. Foundation will plan that the top 3 feet in the reclaimed pit area will be below the Table 910 standard for inorganic constituents so that seeding will have the greatest chance for success.

## 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.

# REMEDIATION 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? 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: \_\_\_\_\_

## 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.

The pit berms will be pushed to the bottom of the pit. Clean backfill will be procured from a local source to bring the pit to grade after compaction. Compaction will be done using the equipment brought in to backfill the pit. The pit and remaining gravel on the location will be reclaimed. Due to inorganic laboratory results that exceeded the Table 910 standard, clean fill will complete the top three feet of the pit reclamation. Impacted soil will be removed as necessary to ensure this is the case.

Unless Foundation is directed differently by the landowner, the pit area and former well location will be seeded with Sharp's Dryland Pasture Mix, which is comprised of wildrye, brome, wheatgrass, orchard grass, and rye grass species. Noxious weeds do spring up in this area and will be sprayed by a contractor as necessary, with Foundation monitoring the progress of the reclamation to gauge the success of the seed mix and presence of weeds. Foundation has left a message for the landowner and anticipates speaking to him shortly.

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 approve the seed mix? No

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

## 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). 08/17/2017

Date of commencement of Site Investigation. 08/17/2017

Date of completion of Site Investigation. 08/31/2017

### REMEDIAL ACTION DATES

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

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

### SITE RECLAMATION DATES

Date of commencement of Reclamation. 12/20/2017

Date of completion of Reclamation. 01/31/2018

### OPERATOR COMMENT

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

Signed: Alyssa Beard

Title: EHS Specialist

Submit Date: 12/15/2017

Email: abeard@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: RICK ALLISON

Date: 01/04/2018

Remediation Project Number: 10837

### COA Type

### Description

	Determine lateral extent of soil impacted by SAR, EC and pH in the south, east and north directions of the pit.
	Provide Lat/Lon for southeast corner of pit on Form 27 Supplemental Report.

### 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

401479423	FORM 27-INITIAL-SUBMITTED
401479451	ANALYTICAL RESULTS
401479452	MAP
401479921	ANALYTICAL RESULTS
401487614	RECLAMATION FIGURE
401487620	ANALYTICAL RESULTS

Total Attach: 6 Files

### General Comments

#### User Group

#### Comment

#### Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)