FORM 27 Rev 3/16

State of Colorado
Oil and Gas Conservation Commission

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Report taken by: RICK ALLISON

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 INFORMATON

Name of Operator: FOUNDATION ENERGY MANAGEMENT LLC Operator No: 10112
Address: 5057 KELLER SPRINGS RD STE 650
City: ADDISON State: TX Zip: 75001
Contact Person: Alyssa Beard

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PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9287 Initial Form 27 Document #: 2615072

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
- [x] Other Pit Investigation in support of pit closure

SITE INFORMATION

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

Facility Type: PIT Facility ID: 273442 API #: County Name: WELD
Facility Name: HOFFMAN 34-7& 34-10 PIT 1 Latitude: 40.621210 Longitude: -104.075049
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SWNE Sec: 34 Twp: 8N Range: 60W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications ML
Most Sensitive Adjacent Land Use CROP LAND
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

None-verified through COGCC e-GIS website tool

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [x] **E&P Waste**
  - [x] Produced Water
  - [ ] Oil
  - [ ] Condensate
  - [ ] Drilling Fluids
  - [ ] Drill Cuttings
- [ ] **Other E&P Waste**
  - [ ] Workover Fluids
  - [ ] Tank Bottoms
  - [ ] Pigging Waste
  - [ ] Rig Wash
  - [ ] Spent Filters
  - [ ] Pit Bottoms
  - [ ] Other (as described by EPA) _____
- [ ] **Non-E&P Waste** _____

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	possible contamination	sampling taken on 7/17 to determin

INITIAL ACTION SUMMARY

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

This form is being submitted as follow up to inspection #667400504 that identified potential seeping from the pit's eastern sidewall. Sampling was conducted on 7/17/2015 to see if impacts need to be addressed.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

- [x] Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Updated 12/15/17 - soil samples will be collected at locations approved by COGCC in support of closing Rem#9287 and the pit itself.

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):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 15

Number of soil samples exceeeding 910-1: 0

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet): 0

NA / ND

NA — Highest concentration of TPH (mg/kg)

NA — Highest concentration of SAR

BTEX > 910-1

Vertical Extent > 910-1 (in feet): 0

Groundwater

Number of groundwater samples collected: 0

Was extent of groundwater contaminated delineated? Yes

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?

Sample results will be returned the week of Jul 27th and further determination will be made what steps need to be taken to address this site.
Updated 12/15/17 : sample results will determine this.

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.

Soil will be excavated using a trackhoe while using a PID meter to direct digging to contaminated areas.

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.

Update, 12/15/17 - Foundation has decided to go ahead and close the Hoffman pit. Foundation is submitting a proposed sample collection location map for approval by COGCC. The samples will be run for BTEX, TPH, pH, EC, and SAR.

Update, 2/9/18 - A soil sample collected from the base of the South pit contained TPH concentrations over the Table 910 standard. A revised remediation/pit closure plan includes the following:
Day 1, Collect soil samples from the north pit using the excavator bucket due to the steepness and depth of the pit. The samples will be run overnight for GBTEX and DRO. If the samples are below the Table 910 standard, the berms will be pushed into the pit base to start the closure process of the north pit. If a sample is above the standard, soil will be removed. Soil that is impacted and excavated will be hauled to the Waste Management, Ault location. Once clean samples are taken, the pit berms will be pushed into the base. A sample will also be collected from the surface of the crop area east of the north pit per Rick Allison to close out prior remediation number. Samples run for EC, pH and SAR will be run at a standard TAT due to the depth of sample collection.
Addition of top soil, compaction, and contouring will occur in Spring 2018.
The south pit has known hydrocarbon impacts. Foundation assumes that the pit base is impacted and will need to be removed to Waste Management. On Day 1 of pit closure activities, test pits will be dug in order to better determine impacted volume adjacent to the south pit. These samples will also be run overnight in order to guide activities on Day 2. Once impacted material has been removed, the goal is to collect clean sidewall and base samples from the south pit.
The excavation activities and sampling will be overseen by Tasman Geosciences.
A soil sample was collected in the crop area northeast of the south pit, as a follow-up to the open remediation number at this location, shown in Table 2.

Soil Remediation Summary

☐ **In Situ**

- ____ Bioremediation (or enhanced bioremediation)
- ____ Chemical oxidation
- ____ Air sparge / Soil vapor extraction
- ____ Natural Attenuation
- ____ Other _____

☒ **Ex Situ**

- Yes Excavate and offsite disposal
  - If Yes: Estimated Volume (Cubic Yards) 250
  - 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 is not expected to be encountered, but if it is encountered, the remediation plan will be re-evaluated.

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? _____

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? Yes

Do all soils meet Table 910-1 standards? Yes

Does the previous reply indicate consideration of background concentrations? No

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? Yes

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.

If reseeding does need to take place, the seed mix will be discussed with the landowners and stormwater controls put in place when the location is reseeded.
* Updated 11/26/18 - Foundation believes the landowner will seed the former pit area in the spring to match adjacent crop. If that is not the case, Foundation will seed.

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). 12/29/2017

Date of commencement of Site Investigation. 02/19/2018

Date of completion of Site Investigation. 03/16/2018

REMEDIAL ACTION DATES

Date of commencement of Remediation. 02/19/2018

Date of completion of Remediation. 03/16/2018

SITE RECLAMATION DATES

Date of commencement of Reclamation. 03/31/2018

Date of completion of Reclamation. 04/30/2018

OPERATOR COMMENT

Foundation removed approximately 570 cubic yards of impacted material from the South pit at the Hoffman CTB (the North pit did not have impacts identified during sampling). The impacted material in the South pit was taken to the Waste Management Ault facility and clean backfill brought onsite. Excavation oversight and sampling was provided by Tasman Geosciences.
Sample collected from north of NW corner of pit as required by COA. Sample collected from crop area west of north pit per COA.

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 Manager

Submit Date:` 01/17/2019 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: 01/23/2019

Remediation Project Number: 9287

COA Type	Description
	Based on the information presented, it appears that no further action is necessary at this time and the COGCC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if groundwater is found to be impacted, then further investigation and/or remediation activities may be required. In addition, the surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. Pit Facility IDs 273442 and 273443 have been resolved in COGIS.

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
401844343	FORM 27-SUPPLEMENTAL-SUBMITTED
401849134	ANALYTICAL RESULTS
401849135	ANALYTICAL RESULTS
401849136	ANALYTICAL RESULTS
401849137	SOIL SAMPLE LOCATION MAP
401849138	MAP
401849140	ANALYTICAL RESULTS
401849141	ANALYTICAL RESULTS
401849802	DISPOSAL MANIFESTS
401849804	DISPOSAL MANIFESTS
401849806	DISPOSAL MANIFESTS

Total Attach: 11 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)