

State of Colorado Oil and Gas Conservation Commission

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Report taken by:

John Heil

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: <u>FOUNDATION ENERGY MANAGEMENT LLC</u> | Operator No: <u>10112</u> | Phone Numbers |
| Address: <u>5057 KELLER SPRINGS RD STE 650</u> | | Phone: <u>(303) 2448114</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> | Mobile: <u>()</u> |

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 13412 Initial Form 27 Document #: 401962562

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 checked="" type="checkbox"/> 909.c.(2), Rule 906: Spill/Release Remediation | <input type="checkbox"/> Rule 909.e.(2)B.: Closure of remediation project |
| <input checked="" 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 Facilities (in accordance with Rule 909.c.)

| | | | |
|--|----------------------------|----------------------------|-------------------------------|
| Facility Type: <u>PIT</u> | Facility ID: <u>119479</u> | API #: _____ | County Name: <u>GARFIELD</u> |
| Facility Name: <u>Federal #21-4X 119479</u> | | Latitude: <u>39.401548</u> | Longitude: <u>-108.994838</u> |
| ** correct Lat/Long if needed: Latitude: _____ | | Longitude: _____ | |
| QtrQtr: <u>NENW</u> | Sec: <u>4</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? No 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

Two (2) unnamed (ephemeral) surface water features are located within 1/4 mile of the pit facility. The nearest is located approx. 190' west of the pit facility and the other (ephemeral) surface water feature is located approx. 840' east of the pit facility.

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 |
|-----------|----------------|------------------|----------------|
| Yes | SOILS | Pit base | 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.

Foundation is planning to collect soil samples at the Federal 21-4x pit location from the proposed sample locations in the attached map, with a hand auger decontaminated between each sample.

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):

Foundation proposes to collect 5 samples by hand auger for the pit closure investigation- (1) one base sample, and 4 sidewall samples. The sidewall sample will be collected and analyzed from pH, EC and SAR assuming they are collected within 3' of the natural ground level. All samples collected will be analyzed for GBTEX and DRO. The samples will be preserved on ice and delivered to Summit Scientific in Golden, CO.

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 6

Number of soil samples exceeding 910-1 4

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet) 81

NA / ND

-- Highest concentration of TPH (mg/kg) 18090

-- Highest concentration of SAR 6.3

BTEX > 910-1 Yes

Vertical Extent > 910-1 (in feet) 5

Groundwater

Number of groundwater samples collected 0

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet) 0'

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?

Three (3) background soil samples were collected on 3/2/20 at a nearby location (Federal 28-9) which is approximately 1.35 miles to the north. The background samples collected were analyzed for pH, Arsenic, EC and SAR. Results of the samples show consistency with the arsenic exceedances observed at the Federal 21-4X location and are typical for the region.

☐ 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?

Soils from the base of the pit currently exceed Table 910-1 standards, therefore, additional excavation and remediation is required. During the excavation process, soils within the pit bottom will be field screened in 1-2 foot intervals utilizing a Photo-Ionizing Detection (PID) unit and PetroFlag unit and results recorded. Vertical delineation of soils will continue until field screening methods determine compliance with Table 910-1 standards, at which point a confirmation sample will be collected to be analyzed for Full COGCC Table 910-1 analysis.

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.

An excavator and related heavy equipment will be used to excavate, stockpile, and landfarm any contamination soils.

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.

The extent of contamination will be determined through excavation and sampling until COGCC cleanup standards are achieved. Impacts to ground water resources are not expected at this time, but will be assessed during remedial activities. Contaminated soils, depending on volume, will be land-farmed and treated onsite with a microbial agent to enhance the bio-degradation of hydrocarbons in soil. Treatment will begin immediately and would continue until such a time that subsequent sampling shows that the soils can meet COGCC cleanup standards. After all contaminated soils have been excavated, confirmation samples and data will be collected to verify and document that 910-1 clean-up standards have been achieved. Specific details of the landfarming process are included in the attachments within the landfarming operations plan.

Soil Remediation Summary

☐ In Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Chemical oxidation

_____ Air sparge / Soil vapor extraction

_____ Natural Attenuation

_____ Other _____

☒ Ex Situ

No _____ Excavate and offsite disposal

If Yes: Estimated Volume (Cubic Yards) _____

Name of Licensed Disposal Facility or COGCC Facility ID # _____

Yes _____ Excavate and onsite remediation

Yes _____ Land Treatment

Yes _____ 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.

Not anticipated at this time but will be assessed during remedial 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? 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 _____

Do all soils meet Table 910-1 standards? No _____

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? No _____

Does Groundwater meet Table 910-1 standards? Yes _____

Is additional groundwater monitoring to be conducted? No _____

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 will be reclaimed to the present grade of the location or to the approximate original contour of the landscape and consistent with the 1000-series Rule. Seeding of the disturbed area will be performed in accordance with its' intended use. The seed mix will be prescribed by the landowner. There are no known noxious weeds in the immediate area of the disturbance.

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? Yes _____

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). 04/08/2019

Date of commencement of Site Investigation. 04/08/2019

Date of completion of Site Investigation. 09/13/2019

REMEDIAL ACTION DATES

Date of commencement of Remediation. 05/04/2020

Date of completion of Remediation. 10/01/2020

SITE RECLAMATION DATES

Date of commencement of Reclamation. 10/01/2020

Date of completion of Reclamation. 10/01/2020

OPERATOR COMMENT

Please forward to John Heil

Attached are the analytical results, data tracking spreadsheet, sample location map, landfarming operations plan and approved BLM Sundry for land treatment for the Federal 21-4X location. Analytical results collected from sampling activities on (9.13.19) indicate multiple hydrocarbon exceedances within the Base sample collected at 5ft, most notably, a GRO and DRO concentration of 11,200 mg/kg and 6,890 mg/kg, respectively. Therefore, remediation of the Facility ID: 119479 is necessary to achieve cleanup standards.

Foundation proposes utilizing heavy equipment to excavate impacted soils from 5ft bgs until field screening methods indicate compliance. Once field screenings show compliance, confirmation samples will be collected from the base of the pit and submitted for analysis for Full Table 910-1 constituents.

As outlined in the attached landfarming operations plan, impacted soils will be treated onsite until cleanup standards are achieved. Once analytical data shows compliance within the pit and landfarmed soils, then the treated soils will be used to backfill the excavation and closure of pit facility ID: 119479 will be requested.

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: 04/13/2020

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: John Heil

Date: 05/13/2020

Remediation Project Number: 13412

COA Type**Description**

| | |
|--|--|
| | At a minimum, collect soil samples from the proposed treatment areas at a frequency to establish a rate of biodegradation. Samples shall be collected consistently from the same approximate locations during each sampling event. |
|--|--|

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**

| | |
|-----------|--------------------------------|
| 402359722 | FORM 27-SUPPLEMENTAL-SUBMITTED |
| 402359884 | SURFACE USE AGREEMENT |
| 402359892 | ANALYTICAL RESULTS |
| 402359896 | ANALYTICAL RESULTS |
| 402359897 | ANALYTICAL RESULTS |
| 402359965 | SITE MAP |
| 402360442 | REMEDIAL ACTION PLAN |
| 402368964 | MAP |

Total Attach: 8 Files

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

| | | |
|--|--|---------------------|
| | | Stamp Upon Approval |
|--|--|---------------------|

Total: 0 comment(s)