FORM 27 Rev 3/16

State of Colorado
Oil and Gas Conservation Commission

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Report taken by: Steven Arauza

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: LARAMIE ENERGY LLC Operator No: 10433
Address: 1401 17TH STREET SUITE #1400
City: DENVER State: CO Zip: 80202
Contact Person: Joan Proulx

Phone Numbers
Phone: (970) 263-3641
Mobile: ( )
Email: jproulx@laramie-energy.com

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 4812 Initial Form 27 Document #: 1630699

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.
- [x] Rule 909.e.(2)B.: Closure of remediation project
- [ ] Rule 906.c.: Director request
- [ ] Other

SITE INFORMATION

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

Facility Type: LOCATION Facility ID: 334490 API #: County Name: MESA
Facility Name: Vega 11 Pad Latitude: 39.206450 Longitude: -107.767460
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SENE Sec: 9 Twp: 10S Range: 93W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications: OH
Most Sensitive Adjacent Land Use: PASTURE
Is domestic water well within 1/4 mile? No
Is surface water within 1/4 mile? Yes
Is groundwater less than 20 feet below ground surface? No

Other Potential Receptors within 1/4 mile

Plateau Creek is 1,092' to the East of the location.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [x] **E&P Waste**
  - [ ] Produced Water
  - [ ] Oil
  - [ ] Condensate
  - [x] 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	SEE FORM 19	VISUAL/ODOR
Yes	VEGETATION	MINIMAL ALONG EXTENT OF SPILL	VISUAL/ODOR

INITIAL ACTION SUMMARY

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

RELEASE CONTAINED WITH EARTHEN DIKES AND ABSORBANT BOOMS. RECOVERED 5 BBLS FROM GROUND SURFACE, 4 BBLS REMAINED IN-LINE (TOTAL RECOVERED=9BBLS). EXCAVATION HAS ALREADY BEGUN IN MEADOW ON EAST SIDE OF ACCESS ROAD AND WILL CONTINUE UP TO CULVERT (A TOTAL LENGTH OF APPROX. 105 FT AND AT A DEPTH OF APPROX. 1 FT). BARDITCH EXCAVATION ON THE WEST SIDE OF THE ACCESS ROAD WILL BEGIN WHEN FRAC OPERATIONS ARE COMPLETE ON PAD #1 AND FLOWLINES ARE REMOVED.

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):

Four grab samples were obtained as outlined on the hand-drawn sketch (doc #1981426).

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

- [x] Additional alternative investigative actions described in attached Site Investigation Plan (summary):

Additional grab soil samples were collected in Dec. 2020 from point of release to end of release, along with 3 background samples.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 11

Number of soil samples exceeeding 910-1: 4

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

Approximate areal extent (square feet): 1162

NA / ND

-- Highest concentration of TPH (mg/kg): 73

-- Highest concentration of SAR: 14

BTEX > 910-1: No

Vertical Extent > 910-1 (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 910-1:

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 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?

The transfer line spill impacted the east side of the access road, entered a culvert, and ended in a barditch on the west side of the access road.

☒ Were background samples collected as part of this site investigation?

A grab background sample was collected on 7/23/07. Three additional background samples were collected in Dec. 2020. The Dec. 2020 samples indicate elevated levels of Arsenic for two of the sampling locations; however, these Arsenic levels are less than the background Arsenic levels collected in Dec. 2020.

☐ 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

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 OVEREXCAVATED UNTIL COGCC CLEANUP LEVELS ARE ACHIEVED.

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.

Final disposition of the impacted soil will likely be disposal or treatment for reuse. No evidence could be located that indicated either option was utilized.

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.

NA

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? Yes

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

There was no beneficial use of the E&P waste derived from this project.

Volume of E&P Waste (solid) in cubic yards 0

E&P waste (solid) description

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility:

Volume of E&P Waste (liquid) in barrels 9

E&P waste (liquid) description Flowback water; 9 bbls recovered.

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: Unknown

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? Yes

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? 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.

CLEAN FILL WILL BE USED TO RECONTOUR THE EXCAVATED AREAS TO EXISTING GRADE. ONCE COMPLETED THE AREA WILL BE RESEEDED USING AN APPROPRIATE NRCS (OR EQUIVALENT) SEED MIX.

Is the described reclamation complete? Yes

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. 07/22/2007

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 07/22/2007

Date of commencement of Site Investigation. 07/22/2007

Date of completion of Site Investigation. 12/03/2020

REMEDIAL ACTION DATES

Date of commencement of Remediation. 07/22/2007

Date of completion of Remediation. 10/09/2007

SITE RECLAMATION DATES

Date of commencement of Reclamation.

Date of completion of Reclamation.

OPERATOR COMMENT

The analytical samples are identified on the "Vega 11 Pad Sampling Table" with a Sample ID which corresponds to the points on the hand-drawn map attached to Form 19 #1630698.

"Remediation Progress Update" tab: It is unknown the amount of impacted soil was excavated; no evidence of the amount of impacted soil or the outcome of the impacted soil (disposed of or treatment for reuse) could be located.

Attached are two sampling reports, a sampling summary table, and a sampling location map for the Dec. 2020 sampling.

Please delete the FAQ 32 request previously submitted; operator is unable to delete it. It is no longer needed as the Dec. 2020 samples indicate no elevated readings for SAR or EC.

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

Signed:` Joan Proulx

Title: Regulatory Analyst

Submit Date:` 01/12/2021

Email: jproulx@laramie-energy.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: Steven Arauza

Date: 02/03/2021

Remediation Project Number: 4812

COA Type	Description
	Based on review of information presented it appears that no further action is necessary at this time, and COGCC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards or if surface and/or ground water is found to be impacted, then further investigation and/or remediation activities will be required at the site. In addition, the non-working surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules including the establishment of vegetative cover on non-cropland and successful growth on cropland. Landowner must approve reclamation of cropland.

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
402514031	FORM 27-SUPPLEMENTAL-SUBMITTED
402514032	ANALYTICAL RESULTS
402514033	OTHER

402514034	ANALYTICAL RESULTS
402572607	SOIL SAMPLE LOCATION MAP
402572608	ANALYTICAL RESULTS
402572830	ANALYTICAL RESULTS
402572832	ANALYTICAL RESULTS

Total Attach: 8 Files

General Comments

User Group	Comment	Comment Date
Environmental	Attached analytical table (doc #402572608) establishes arsenic background concentrations (2.39 - 4.66 mg/kg) in exceedance of Table 910-1. Analytical results for soil samples SS1-SS5 demonstrate that arsenic concentrations are within background levels.	02/03/2021
Environmental	Attached FAQ 32 request (doc #402514033) is invalid, per Operator Comments.	02/03/2021
Environmental	Composite sample, P11-CSS1, collected from end of release had exceedances for EC (11) and SAR (14) at 2' on 7/23/2007. It appears that two more composite samples were collected on 8/2/2007 and 10/9/2007 from 2.5 and 3' depth, both were compliant with EC and SAR per doc #402514032. Sketch (doc #1981426) attached to Spill Report indicates that the area was excavated. Subsequent sampling conducted 12/3/2020 (docs #402572608 and #402572607) demonstrate compliance of areas along flowpath represented by soil samples SS1 through SS5.	11/13/2020
Environmental	Laboratory reports missing for samples collected on 8/2/2007 and 10/9/2007. The area represented by these samples was resampled with 12/3/2020 samples Pad 11-SS4 and Pad 11-SS5 (doc #402572607).	11/13/2020

Total: 4 comment(s)