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: Matt Kasten Email: mkasten@laramie-energy.com

Phone Numbers
Phone: (970) 9019007
Mobile: (970) 9019007

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 14690 Initial Form 27 Document #: 402246241

PURPOSE INFORMATION

- [ ] 901.e. Sensitive Area Determination
- [ ] 909.c.(1), Rule 905: Pit or PW vessel closure
- [x] 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 — Deliniate, excavate impacted soils, remove gravel from tank battery, inspect liner for compromise

SITE INFORMATION

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

Facility Type: SPILL OR RELEASE Facility ID: 469032 API #: County Name: MESA
Facility Name: Alkali Creek Compression Station Latitude: 39.357588 Longitude: -107.644467
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SESE Sec: 15 Twp: 8S Range: 92W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications GC
Most Sensitive Adjacent Land Use Ranching
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

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
UNDETERMINED	SOILS	Area beneath secondary containment	Liner will be removed, collect soil samples

INITIAL ACTION SUMMARY

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

After fluid was discovered inside containment 130 bbls of fluid was pumped out and disposed of. Recovered fluid was a mixture of produced water release and frozen precip. A saturated area outside the containment was noted and dug out, approx 1.5ft x 1.5ft. The liner was pulled back from the steel containment ring and frozen fluid was discovered. The frozen materials were removed along with soils (using a Supersucker/pressure washer). Samples were collected from soils to confirm delineation and compliance with Table 910-1. After this effort was completed, Laramie removed the remaining gravel from the remiaing lined containment and discovered additional compromises (holes). To fully examine the area for potential impacts from fluids, Laramie will remove all the tanks and the remaining secondary containment. Delineation, excavation and sampling according to Table 910-1 was conducted subsequent to the spill remediation.

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):

pH exceedance from initial sampling (SS5 @ 9.36) will be resampled for pH.

Sampling and analysis of the area impacted by the spill/release has been completed. No exceedances for TPH, BTEX, SAR. After the tanks and liner are removed, the soils beneath the liner will be examined for staining/impacts and samples will be collected to confirm no additional impacts.

Proposed Groundwater Sampling

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

No groundwater is present or impacted as a result of the release, gw depth is estimated at 30 feet or more according to the BLM hydologist. Laramie is coordinating with the landowner (BLM) for the installation of a monitoring well (MW) near this location. Final approval and installation of the MW is antcipated for Spring 2020. Soil boring and ground water data will be provided to the COGCC at that time.

Proposed Surface Water Sampling

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

There is no evidence of impacts to surface waters (Alkali Creek), fluids have been contained within the secondary containment and Laramie's current assessment is minimal impacts to soils. Confirmed via the attached lab data for impacted soils.

Additional Investigative Actions

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

Installation of a monitoring well, Spring 2020.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 8

Number of soil samples exceeeding 910-1: 0

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

Approximate areal extent (square feet): 120

NA / ND

NA — Highest concentration of TPH (mg/kg):

NA — Highest concentration of SAR:

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): 30`

Number of groundwater monitoring wells installed: 0

Number of groundwater samples exceeding 910-1: 0

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

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): 2

Volume of liquid waste (barrels): 2

☒ Is further site investigation required?

After the tanks and liner are removed, the soils beneath th eliner will be examined for staining/impacts and samples will be collected to determine if any as yet undiscovered impacts exist..

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.

Soils will be examined for staining/odor. Material were excavated using heavy equipment, vac trucks and shovels. Materials determined to have been impacted and potentiallt exceeding Table 910-1 hauled to a disposal facility (Greenleaf).

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.

No impacts to groundwater have been identiifed or are anticipated at this time. Impacted soils were removed and hauled away for disposal. Soils will be replaced with clean fill prior to the regrading the location. Determination of the horizontal and vertical extent of contamination was performed using field screening devices and olafactory assessment.

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) 10
  - Name of Licensed Disposal Facility or COGCC Facility ID # ____
- No Excavate and onsite remediation
  - ____ Land Treatment
  - ____ Bioremediation (or enhanced bioremediation)
  - ____ Chemical oxidation
  - ____ 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.

MW planned installation, Spring 2020.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other Final

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

☒ Other Soils assessment

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:

None

Volume of E&P Waste (solid) in cubic yards 10

E&P waste (solid) description Soils combined with water used to melt ice, hauled away via vac truck.

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: Greenleaf

Volume of E&P Waste (liquid) in barrels 3

E&P waste (liquid) description Soils combined with water used to melt ice, hauled away via vac truck.

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: Greenleaf

REMEDIATION COMPLETION REPORT

REMEDIATION 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? Yes

Is additional groundwater monitoring to be conducted? Yes

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.

This location will continue to be used for storage and transport of fluids via tanks within secondary containment.

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). 11/01/2019

Date of commencement of Site Investigation. 11/01/2019

Date of completion of Site Investigation. 11/30/2019

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. _____

OPERATOR COMMENT

Laramie is requesting consideration of background elevated arsenic within area. Documents attached to supplemental form 27.
Monitoring well install report attached to supplemental form 27. (One sample collected since install - 06/30/2020). Quarter 3 2020 - Quarter 1 2021 Dry during sampling events. (4 quarters of investigative events completed)
pH exceedance @ SS5 (9.36) will be resampled. Laramie is requesting a reduced analyte suite of only pH for remainder of project.

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

Signed:` Matt Kasten Title: Project Manager

Submit Date:` 03/31/2021 Email: mkasten@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: 04/29/2021

Remediation Project Number: 14690

Condition of Approval

COA Type	Description
	If the Operator intends to proceed under Table 910-1, the Operator shall include a request to proceed under Table 910-1 per Rule 915.f.
1 COA	

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
402644594	FORM 27-SUPPLEMENTAL-SUBMITTED
402644603	ANALYTICAL RESULTS
402644604	SITE INVESTIGATION PLAN
402644605	CORRESPONDENCE
402644606	ANALYTICAL RESULTS
402644607	ANALYTICAL RESULTS
402644609	ANALYTICAL RESULTS
402644610	ANALYTICAL RESULTS
402644621	ANALYTICAL RESULTS

Total Attach: 9 Files

General Comments

User Group	Comment	Comment Date
Environmental	Note: The attached report (doc #402644604) includes a request for No Further Action (NFA) designation, yet this Form 27 does not include an NFA request, but indicates that additional sampling is required for pH.	04/29/2021
Environmental	Complete lab reports for attached analytical summary have been provided previously (doc #402644621), sample location map was submitted previously under doc #402285841.	04/29/2021
Environmental	Based on the information provided, the Operator's request for a reduced analyte suite of pH only is conditionally approved.	04/29/2021
Environmental	Based on the information provided for a site-specific background sample (docs #402644609, #402644607, and #402644603), the Operator's request for consideration of arsenic background concentrations in exceedance of Table 915-1 per Table 915-1 footnotes 1 and 11 is conditionally approved.	04/29/2021

Total: 4 comment(s)