FORM
27
Rev 3/16

State of Colorado
Oil and Gas Conservation Commission

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Report taken by: Jason Kosola

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: RITCHIE EXPLORATION INC Operator No: 74770
Address: P O BOX 783188
City: WICHITA State: KS Zip: 67278-3188
Contact Person: Peter Fiorini Email: pfiorini@ritchie-exp.com

Phone Numbers
Phone: (316) 6919518
Mobile: (785) 6231506

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 4320 Initial Form 27 Document #: 1984289

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
- [x] 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
- [ ] Other

SITE INFORMATION

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

Facility Type: WELL Facility ID: API #: 073-06196 County Name: LINCOLN
Facility Name: STATE 1-18 Latitude: 39.260330 Longitude: -103.707690
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SESW Sec: 18 Twp: 9S Range: 56W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications GM Most Sensitive Adjacent Land Use INDUSTRIAL

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

SEVERAL WATER WELLS ARE LOCATED WITHING 1/4 MILE INCLCUDING THREE TOWN OF LIMON WELLS.

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	GROUNDWATER	WITHIN 200 OF DOWNGRADIENT PIT	GROUNDWATER SAMPLING
Yes	SOILS	32000 FT	VISUAL INSPECTION
Yes	VEGETATION	32000 FT	VISUAL INSPECTION

INITIAL ACTION SUMMARY

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

MATERIALS BENEATH THE EVAPORATION PIT LINER WERE SAMPLED ON 08/01/08 TO EVALUATE DISPOSAL OPTIONS. THE PUMPJACK AND PROCESS BUILDING HAVE BEEN REMOVED FROM THE SITE.

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):

soil samples were collected in 2007 as part of the iinitial investigation

Proposed Groundwater Sampling

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

Semi-annual groundwater sampling of three wells is currently conducted

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 27

Number of soil samples exceeeding 910-1 6

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

Approximate areal extent (square feet) 100000

NA / ND

-- Highest concentration of TPH (mg/kg) 14000

-- Highest concentration of SAR 220

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 10

Groundwater

Number of groundwater samples collected 12

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 10`

Number of groundwater monitoring wells installed 11

Number of groundwater samples exceeding 910-1 2

-- Highest concentration of Benzene (µg/l) 18.7

ND Highest concentration of Toluene (µg/l)

ND Highest concentration of Ethylbenzene (µg/l)

ND 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) _____ Volume of liquid waste (barrels) _____

☒ Is further site investigation required?

ADDITIONAL GROUND WELLS WILL BE INSTALLED TO EVALUATE BACKGROUND GROUNDWATER CONDITIONS AND PROVIDE COMPLIANCE WELLS DOWNGRADIENT OF CURRENT GROUNDWATER IMPACTS.

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.

THE EVAPORATION PIT WILL BE CLOSED. ALL PETROLEUM-CONTAMINATED SOILS ENCOUNTERED WILL BE SENT TO THE BFI TOWER LANDFILL FOR DISPOSAL. SALT CONTAMINATED SOILS WILL BE SENT TO TOWER OR THE LINCOLN CO LANDFILL. EXCAVATION WILL BE CONDUCTED TO THE WATER TABLE ABOUT 9 FT DOWN. THE PIT AREA WILL BE BACKFILLED WITH CLEAN FILL. PETROLEUM CONTAMINATED SOILS NEAR THE TANK BATTERY WILL ALSO BE EXCAVATED AND SENT TO TOWER. ALL SURFACE FACILITIES AND TRASH WILL BE REMOVED FROM THIS SITE.

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 pit was closed in 2008; the salt-impacted soils were revegetated

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) 4284
  - 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

- No Bioremediation (or enhanced bioremediation)
- No Chemical oxidation
- No Air sparge / Soil vapor extraction
- Yes 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.

SEVEN DOWNGRADIENT AND ONE UPGRADIENT MONITORING WELLS WERE INSTALLED DURING THE FALL OF 2007. ONE ADDITIONAL UPGRADIENT MONITORING WELL AND TWO ADDITIONAL DOWNGRADIENT WELLS WILL BE INSTALLED. ALL WELLS WILL BE SAMPLED DURING THE FALL OF 2008 FOR BTEX, CHLORIDE, SULFATE, AND TDS.

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:

Petroleum contaminated soil

Volume of E&P Waste (solid) in cubic yards 4284

E&P waste (solid) description Petroleum contaminated soil

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Tower Landfill

Volume of E&P Waste (liquid) in barrels 0

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? 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? _____

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.

IMPACTED SOIL BENEATH THE EVAPORATION PIT AND TANK BATTERY AREA WILL BE EXCAVATED AND DISPOSED OF OFF SITE AT COMMERCIAL LANDFILLS. THE EXCAVATED AREAS WILL BE BACKFILLED WITH CLEAN FILL AND COMPACTED. ALL SURFACE FACILITIES AND TRASH WILL BE REMOVED FROM THE SITE. THE DISTURBED AREA WILL BE GRADED AND RESEEDED USING AN APPROPRIATE SEED MIX PRIOR TO WINTER. THE LANDOWNER WILL BE CONTACTED FOR INPUT CONCERNING SEED MIX TO BE USED.

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? 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). _____

Date of commencement of Site Investigation. 07/24/2007

Date of completion of Site Investigation. _____

REMEDIAL ACTION DATES

Date of commencement of Remediation. 09/01/2008

Date of completion of Remediation. 11/01/2008

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

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

Signed:` David K Nicholson Title: Consultant to Ritchie Exp

Submit Date:` 06/18/2017 Email: dknicholson@q.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: Jason Kosola Date: 06/23/2017

Remediation Project Number: 4320

COA Type	Description
	Operator shall continue to monitor constituents as recommended in annual report but monitoring schedule can be reduced to an annual basis.

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
2100013	MONITORING REPORT
401311582	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 2 Files

General Comments

User Group	Comment	Comment Date
Environmental	Changed reclamation status from "final" to "interim". Final reclamation of this remediation will not be complete until monitoring wells and electrical equipment on location are removed. Corrected dates from April 24, 2016 to April 24, 2017.	06/20/2017

Total: 1 comment(s)