FORM 27 Rev 4/21

State of Colorado
Oil and Gas Conservation Commission

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Document Number: 402806064
Receive Date: 10/22/2021
Report taken by: CHRIS CANFIELD

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.
Closure request is not available for an Initial Site Investigation and Remediation Workplan.

OPERATOR INFORMATON

Name of Operator: EXTRACTION OIL & GAS INC Operator No: 10459
Address: 370 17TH STREET SUITE 5200
City: DENVER State: CO Zip: 80202
Contact Person: Nathan Bennett Email: nbennett@extractionog.com

Phone Numbers
Phone: (720) 354-4616
Mobile: (570) 932-0776

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 17346 Initial Form 27 Document #: 402631543

PURPOSE INFORMATION

- [ ] Rule 913.c.(1): Pit or Cuttings Trench closure.
- [ ] Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- [X] Rule 913.c.(3): Remediation of Spill and Releases pursuant to Rule 912.
- [ ] Rule 913.c.(4): Land treatment of Oily Waste pursuant to Rule 905.e.
- [ ] Rule 913.c.(5): Closure of Centralized E&P Waste Management Facilities pursuant to Rule 907.h.
- [ ] Rule 913.c.(6): Remediation of impacted Groundwater pursuant to Rule 915.e.(3).D, and the contaminant concentrations in Table 915-1.
- [ ] Rule 913.c.(7): Investigation and remediation of natural gas in soil or Groundwater.
- [ ] Rule 913.c.(8): When requested by the Director due to any potential risk to soil, Groundwater, or surface water.
- [X] Rule 913.c.(9): Decommissioning of Oil and Gas Facilities.
- [ ] Rule 913.g: Changes of Operator.
- [ ] Rule 915.b: Request to leave elevated inorganics in situ.
- [X] Other: NFA Request

SITE INFORMATION

No Multiple Facilities

Facility Type: LOCATION Facility ID: 462729 API #: County Name: ADAMS
Facility Name: Wellhead Line 20NWSE Latitude: 39.949246 Longitude: -104.910433
** correct Lat/Long if needed: Latitude: 39.949216 Longitude: -104.910142
QtrQtr: NWSE Sec: 20 Twp: 1S Range: 67W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

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

Residential neighborhood approximately .17 miles cross-gradient to the W.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

[X] **E&P Waste**	[ ] **Other E&P Waste**	[ ] **Non-E&P Waste**
[X] Produced Water	[ ] Workover Fluids	_____
[X] 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	77 feet x 88 feet	Laboratory Analysis

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 has been prepared to support removal of the production equipment associated with this location. In accordance with COGCC Rule 911 and Rule 915, initial representative soil samples will be collected beneath the following equipment, if present onsite: wellheads, separators, above ground surface tanks, and produced water vessels. Initial laboratory soil analysis will include only BTEX, 1,2,4 and 1,3,5 Trimethylbenzene, naphthalene, TPH, pH, EC, SAR and boron. Other equipment such as the ECDs, meter sheds, or other qualifying equipment will be field screened, and a lab analysis submitted if impacts are identified. Groundwater, if present, will also be collected and analyzed. Identified impacts will be reported as required for each discovery, and a Form 19 will be submitted, and remedial investigation will be conducted with excavation equipment.

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):

In accordance with COGCC Rule 911 and Rule 915 soil samples will be collected during closure of each qualifying equipment type and/or field screened as described in the Initial Action Summary. Initial laboratory analysis will include only BTEX, 1,2,4 and 1,3,5 Trimethylbenzene, naphthalene, TPH, pH, EC, SAR and boron. If impacts are confirmed, the full Table 915-1 list of analysis will be tested for and additional excavation effort may be conducted to delineate horizontal and vertical extents. Overburden stockpiles, if present, will be sampled prior to use as backfill with a frequency of 1 composite sample per 500 cubic yards of material and submitted for analysis of VOCs.

Proposed Groundwater Sampling

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

If groundwater is encountered during excavation activities, one sample will be collected and analyzed for Table 915-1 groundwater constituents.

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: 28
Number of soil samples exceeeding 915-1: 8
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet): 6776

NA / ND

-- Highest concentration of TPH (mg/kg): 3
-- Highest concentration of SAR: 19.1
BTEX > 915-1: No
Vertical Extent > 915-1 (in feet): 9

Groundwater

Number of groundwater samples collected: 0
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet): `
Number of groundwater monitoring wells installed:
Number of groundwater samples exceeding 915-1:

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
Number of surface water samples exceeding 915-1
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 background samples were collected from various depths from areas within native soils undisturbed by oil and gas activities. Sample BKG@10' was composite soil sample from sample locations BKG02@10', BKG03@10', BKG04@10' and BKG05@10' shown on the attached Site Diagram. Background samples were analyzed for soil suitability and 915-1 Metals and the highest result was utilized for baseline levels for native soil conditions. These results show that native soil conditions vary across the site.

☐ 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.

Once a release was discovered during the closure of the facility, additional excavations were conducted, and impacted soil was removed and transported to a disposal facility. Approximately 860 cubic yards of soil was disposed of at the Front Range Landfill in Erie, Colorado. Transport and disposal records will be kept on file under usual and customary practice and are available upon request. Soil samples were collected and analyzed for Table 915-1 constituents until the horizontal and vertical extents of the excavation were within COGCC Table 915-1 allowable limits.

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.

In accordance with COGCC Rule 911 and Rule 915, representative surface soil samples were collected beneath the above-ground storage tanks (AST) at this location. Background sample (BKG01@6") was reported with arsenic concentrations exceeding Table 915-1 allowable limits at 6.03mg/kg. Sample B04@9.5 exceeded background levels for arsenic and additional excavation was conducted to remove this exceedance. Background and excavation samples were also reported with EC, SAR and pH concentrations exceeding Table 915-1. Composite background sample (BKG@10') was reported with concentrations of SAR exceeding COGCC Table 915-1 allowable limits at 13.60. This limit was used as a baseline for native conditions for SAR. Composite background sample (BKG@10') also exceeded COGCC Table 915-1 allowable limits at 6.51mmhos/cm. This limit was used as a baseline for native conditions of EC. Sample E07@9' from the final extents of excavation exceeded background limits for EC at 6.9mmhos/cm. The remaining shallow soil suitability will be addressed during future site reclamation. Per guidance document 911.A.(4) samples will be collected from underneath the pad fill in native soil for completion of reclamation activities, and any remaining shallow elevated EC will be addressed accordingly at that time. Because groundwater is estimated to be >30ft bgs, those samples which exceed the protection of groundwater soil screening level concentrations risk based (R) or MCL based (M), are naturally occurring concentrations, and are not a threat to groundwater.

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) 860
  - 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.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

[ ] Quarterly [ ] Semi-Annually [ ] Annually [X] Other Final Report

[ ] **Request Alternative Reporting Schedule:**

[ ] Semi-Annually [ ] Annually [ ] Other

Rule 913.e:
After initial approval of a Form 27, the Operator will provide quarterly update reports in a Supplemental Form 27 to document progress of site investigation and remediation, unless an alternative reporting schedule has been requested by the Operator and approved by the Director. The Director may request a more frequent reporting schedule based on site-specific conditions.

Report Type: [ ] Groundwater Monitoring [ ] Land Treatment Progress Report [ ] O&M Report

[X] Other NFA Request

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

If YES:

[X] Compliant with Rule 913.h.(1).

[ ] Compliant with Rule 913.h.(2).

[ ] Compliant with Rule 913.h.(3).

Do all soils meet Table 915-1 standards? No

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted?

Operator shall comply with the COGCC 1000-Series Reclamation Requirements for all impacted and disturbed areas.

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.

Reclamation activities will be completed in accordance with 1000 Series Rules, in collaboration with the landowner, and reported in a Form 4 (Sundry Notice) with proper documentation to demonstrate compliance with requirements for final reclamation. After all road base or other material is removed for reclamation, Operator may submit samples for laboratory analysis for soil suitability in compliance with 915.b if impacts from inorganic constituents are indicated.

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 provide the seed mix?

If YES, does the seed mix comply with local soil conservation district recommendations?

Did the local soil conservation district provide the seed mix?

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation.

Proposed date of completion of Reclamation.

IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

PRIOR DATES

Date of Surface Owner notification/consultation, if required. 03/08/2021

Actual Spill or Release date, or date of discovery. 04/12/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/16/2021

Proposed site investigation commencement. 05/14/2021

Proposed completion of site investigation. 08/23/2021

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/14/2021

Proposed date of completion of Remediation. 06/17/2021

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

☐ Change from approved implementation schedule per Rule 913.d.(2).

Basis for change in implementation schedule:

OPERATOR COMMENT

This form has been prepared to document successful decommissioning of qualifying production equipment at this location and completion of remediation investigation related to Spill/Release Point ID 17346. Residential screening levels were utilized at this location based on nearby groundwater monitoring wells registering static water levels deeper than 30 feet below ground surface (bgs). Background sample (BKG01@6") was reported with arsenic concentrations exceeding Table 915-1 allowable limits at 6.03mg/kg. Sample B04@9.5 exceeded background levels for arsenic and additional excavation was conducted to remove this exceedance. Background and excavation samples were also reported with EC and SAR concentrations exceeding Table 915-1. Composite background sample (BKG@10') was reported with concentrations of SAR exceeding COGCC Table 915-1 allowable limits at 13.60. This limit was used as a baseline for native conditions for SAR. Composite background sample (BKG@10') exceeded COGCC Table 915-1 allowable limits at 6.51mmhos/cm. This limit was used as a baseline for native conditions of EC. Sample E07@9' from the final extents of excavation exceeded background limits for EC at 6.9mmhos/cm. The shallow soil suitability will be addressed during future site reclamation. Per guidance document 911.A.(4) samples will be collected from underneath the pad fill in native soil for completion of reclamation activities, and any remaining shallow elevated EC will be addressed accordingly at that time. Please find the attached Topographic Map, Site Diagram, Lab Results Summary Table, a copy of the laboratory results, and photolog.

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

Signed:` Maggie Graham Title: Senior Project Manager

Submit Date:` 10/22/2021 Email: Maggie.Graham@apexcos.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: CHRIS CANFIELD Date: 11/05/2021

Remediation Project Number: 17346

Condition of Approval

COA Type	Description
	The surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. For locations with active ongoing oil and gas operations, comply with Rule 1003 interim reclamation requirements and for locations that will no longer have active oil and gas operations, comply with Rule 1004 Final Reclamation requirements.
	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.
2 COAs	

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
402806064	FORM 27-SUPPLEMENTAL-SUBMITTED
402850709	OTHER

Total Attach: 2 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)