

State of Colorado Oil and Gas Conservation Commission

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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>XTO ENERGY INC</u>	Operator No: <u>100264</u>	Phone Numbers
Address: <u>110 W 7TH STREET</u>		Phone: <u>(970) 675-4089</u>
City: <u>FORTH WORTH</u> State: <u>TX</u> Zip: <u>76102</u>		Mobile: <u>(970) 250-4867</u>
Contact Person: <u>Natalie Steiner</u>	Email: <u>natalie_steiner@xtoenergy.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 9186 Initial Form 27 Document #: 2495192

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 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 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 checked="" type="checkbox"/> Other <u>SPILL DOC#400767949</u> |

SITE INFORMATION

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

Facility Type: <u>WELL</u>	Facility ID: _____	API #: <u>103-08340</u>	County Name: <u>RIO BLANCO</u>
Facility Name: <u>PICEANCE CREEK UNIT F23-18G</u>	Latitude: <u>39.876360</u>	Longitude: <u>-108.212270</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NESW</u>	Sec: <u>18</u>	Twp: <u>2S</u>	Range: <u>96W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use NON CROP LAND

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

NEAREST SURFACE WATER IS > 1/4 MILE, NEAREST WATER WELL > 1/2 MILE

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	TPH, BTEX	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.

INITIAL SPILL WAS REPORTED ON JANUARY 9, 2015 VIA FORM 19 DOC #400767949. A LINE MALFUNCTION WAS ISOLATED AND THE LINE REMOVED FROM SERVICE. INITIAL SAMPLES WERE COLLECTED TO ASSESS LEVEL OF IMPACTS AND TO IDENTIFY CONSTITUENTS OF CONCERN; PLEASE REFER TO ATTACHMENT I, TABLE 1 AND FIGURES 1-4 (4 TOTAL).

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):

Using a truck-mounted drill rig equipped with hollow stem auger, up to three (3) soil borings will be advanced within the release area to assess remediation progress. The soil borings will be logged by a geologist who will inspect the soil for the presence or absence of petroleum hydrocarbon odor and/or staining. The soil will be characterized by visually inspecting the soil samples and field screening the soil headspace using a photo-ionization detector (PID) to monitor for the presence of volatile organic vapors. One soil sample believed to be the most impacted based on feed screening results will be collected from each soil boring. Soil samples will be submitted for laboratory analysis of TPH and BTEX. A Site Map depicting proposed soil boring locations is included as an attachment.

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 66

Number of soil samples exceeding 910-1 7

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

Approximate areal extent (square feet) 0

NA / ND

-- Highest concentration of TPH (mg/kg) 15920

-- Highest concentration of SAR 48.3

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 12

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

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) 75

Volume of liquid waste (barrels) 0

☒ Is further site investigation required?

INITIAL VERTICAL AND LATERAL SOIL ASSESSMENT HAS BEEN COMPLETED AND IMPACTS HAVE BEEN IDENTIFIED. ADDITIONAL ASSESSMENT ACTIVITIES ARE PROPOSED TO FURTHER DELINEATE LATERAL AND VERTICAL IMPACTS. SOIL REMEDIATION ACTIVITIES WILL PROCEED FOLLOWING WORKPLAN APPROVAL. IMPACTED SOILS NOT MEETING TABLE 910-1 CONCENTRATION LEVELS WILL BE TREATED BY INSITU BIOREMEDIATION USING A SOIL VAPOR EXTRACTION (SVE) SYSTEM. CONFIRMATION SAMPLING WILL BE COMPLETED AT THE END OF THE PROJECT TO ASSURE TABLE 910-1 CONCENTRATION LEVELS HAVE BEEN MET.

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 SOILS ABOVE TABLE 910-1 CONCENTRATION LEVELS WILL BE TREATED IN-SITU USING A SOIL VAPOR EXTRACTION (SVE) SYSTEM. AT THE COMPLETION OF THE PROJECT, APPROPRIATE CONFIRMATION SAMPLING WILL BE CONDUCTED TO ASSURE IMPACTED SOILS ARE BELOW TABLE 910-1 CONCENTRATION LEVELS.

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.

Since system startup on 9/26/2016, the SVE system has been running 24 hours per day with the exception of a shutdown in the winter of 2016 due to condensation in the SVE lines. The lines were cleaned out and additional knockout pots were added to the system.

As part of system O&M activities, VOC measurements have been collected per document 2495192. Over the course of these remediation activities, both VOC measurements have been steadily decreasing, indicating the removal of hydrocarbons from the impacted subsurface. Since the initial startup phase PID measurements have been reduced from 536 ppm to 235 ppm and FID measurements have been reduced from 7,620 ppm to 755 ppm. XTO believes that these data do not indicate COGCC Table 910-1 compliance; and therefore, will continue to operate the SVE system, removing hydrocarbons from the subsurface, until VOC measurements indicate COGCC Table 910-1 compliance. At that time, soil confirmation samples will be collected from the release area to confirm remedial activities.

Soil Remediation Summary

☒ In Situ

_____ Bioremediation (or enhanced bioremediation)
_____ Chemical oxidation
Yes _____ Air sparge / Soil vapor extraction
_____ Natural Attenuation
_____ Other _____

☒ Ex Situ

Yes _____ Excavate and offsite disposal
_____ If Yes: Estimated Volume (Cubic Yards) _____ 75
_____ Name of Licensed Disposal Facility or COGCC Facility ID # _____
_____ Excavate and onsite remediation
No _____ Land Treatment
No _____ Bioremediation (or enhanced bioremediation)
No _____ 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.

AVAILABLE INFORMATION INDICATES THAT THE UPPERMOST GROUNDWATER BEARING ZONE IS GREATER THAN 150 FEET BELOW THE GROUND SURFACE. THE VERTICAL EXTENT OF IMPACTED SOILS IS NOT KNOWN AT THIS TIME. SOIL SAMPLES WILL BE COLLECTED DURING THE PROPOSED DELINEATION AND REMEDIATION ACTIVITIES FROM THE BENEATH THE SPILL AREA TO CONFIRM NO GROUNDWATER IMPACT POTENTIAL EXISTS (SEE TABLE 1 AND ATTACHMENT I).

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

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

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

☒ Other Soil Vapor Extraction _____

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:

NA

Volume of E&P Waste (solid) in cubic yards _____ 75

E&P waste (solid) description _____ Produced water impacted soil

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____ WRay Gulch 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: _____

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? _____

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.

As part of system O&M activities, VOC measurements have been collected per document 2495192. Over the course of these remediation activities, both VOC measurements have been steadily decreasing, indicating the removal of hydrocarbons from the impacted subsurface. Since the initial startup phase PID measurements have been reduced from 536 ppm to 235 ppm and FID measurements have been reduced from 7,620 ppm to 755 ppm. XTO believes that these data do not indicate COGCC Table 910-1 compliance; and therefore, will continue to operate the SVE system, removing hydrocarbons from the subsurface, until VOC measurements indicate COGCC Table 910-1 compliance. At that time, soil confirmation samples will be collected from the release area to confirm remedial activities.

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? _____

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. 01/09/2015

Actual Spill or Release date, if known. 01/08/2015

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/15/2015

Date of commencement of Site Investigation. 08/14/2015

Date of completion of Site Investigation. 08/24/2016

REMEDIAL ACTION DATES

Date of commencement of Remediation. 09/26/2016

Date of completion of Remediation. _____

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

For Review by Alex Fisher

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

Signed: Natalie Steiner

Title: Sr.Environmental Tech

Submit Date: _____

Email: natalie_steiner@xtoenergy.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: _____

Date: _____

Remediation Project Number: 9186

COA Type

Description

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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

402088310	SITE MAP
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Total Attach: 1 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)