

State of Colorado Oil and Gas Conservation Commission

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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.

Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATION

Name of Operator: GREAT WESTERN OPERATING COMPANY LLC	Operator No: 10110	Phone Numbers
Address: 1001 17TH STREET #2000		Phone: (720) 595-2132
City: DENVER	State: CO	Zip: 80202
Contact Person: Jason Davidson	Email: jdavidson@gwp.com	Mobile: ()

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 14768 Initial Form 27 Document #:

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 checked="" 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 checked="" 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 type="checkbox"/> Other |

SITE INFORMATION

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

Facility Type: LOCATION	Facility ID: 320314	API #:	County Name: ADAMS
Facility Name: N COLORADO 44-13-61S68W 13SESE		Latitude: 39.960103	Longitude: -104.944481
** correct Lat/Long if needed: Latitude: 39.960395		Longitude: -104.941561	
QtrQtr: SESE	Sec: 13	Twp: 1S	Range: 68W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use

Residence is located 150 feet to the north. Other homes are located within 250 foot radius of TB.

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

A pond is located 100 feet to the south of tank battery.

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
No	GROUNDWATER	Not impacted	Grab groundwater sampling
No	SOILS	Excavated - Not impacted	Confirmation soil sampling

INITIAL ACTION SUMMARY

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

Five discreet confirmation soil samples were collected on 12/6/19 (4 wall and 1 base) from the produced water tank excavation, which measured approximately 8 feet by 10 feet by 6 feet deep. The base and wall sample from the north wall were analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, total petroleum hydrocarbons (TPH) gasoline range organics (GRO), and TPH-diesel range organics (DRO). In addition, the base sample was analyzed for pH, Electrical Conductivity (EC), and Sodium Absorption Ratio (SAR). Concentrations of BTEX, naphthalene, TPH-GRO, and TPH-DRO were either not detected at or above laboratory reporting limits or were reported below their respective Table 910-1 concentration levels, with the exception of benzene concentrations in the north wall sample, reported at 0.945 milligrams per kilogram (mg/kg), which is above the Table 910-1 concentration level of 0.17 mg/kg. Concentrations of TPH-GRO and TPH-DRO were added to calculate TPH. TPH concentrations were reported at 9.85 mg/kg in the base sample and 179 mg/kg in the wall sample, which are below the Table 910-1 concentration level of 500 mg/kg. The results for pH, EC, and SAR associated with the base sample were reported within their respective Table 910-1 concentration ranges. In addition, a test pit investigation was conducted on 12/6/19. Three test pits were excavated ranging from 6 feet to 7 feet below ground surface (bgs) to define the vertical and horizontal extent of suspect petroleum impacted soil. Three samples were submitted for laboratory analysis based on the highest field screening readings using a photoionization detector (PID) and were analyzed for TPH-GRO and TPH-DRO. Concentrations of TPH-GRO and TPH-DRO were either not detected at or above laboratory reporting limits or were reported below Table 910-1 standards. Groundwater was not encountered during this test pit investigation. See the attached laboratory report, analytical summary tables, and Figure 2.

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):

Excavation activities are planned to commence on December 9, 2019. Confirmation soil samples will be collected from the walls and base of the produced water tank excavation and analyzed for BTEX, TPH-GRO, and TPH-DRO. The number and location of soil samples shall be appropriate to confirm remediation.

Proposed Groundwater Sampling

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

If groundwater is encountered in the base of the excavation, grab groundwater samples will be collected and analyzed for BTEX. The number and location of the samples shall be appropriate to confirm whether groundwater has been impacted. Chemically Oxygenated Granular Activated Carbon (COGAC™) may be applied and thoroughly mixed in prior to backfill with clean overburden and imported material.

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 7

Number of soil samples exceeding 910-1 0

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

Approximate areal extent (square feet) 1575

Groundwater

Number of groundwater samples collected 2

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet) 7'

Number of groundwater monitoring wells installed 0

Number of groundwater samples exceeding 910-1 0

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.

NA / ND

-- Highest concentration of TPH (mg/kg) 131.9

NA Highest concentration of SAR

BTEX > 910-1 No

Vertical Extent > 910-1 (in feet) 6

ND Highest concentration of Benzene (µg/l)

ND Highest concentration of Toluene (µg/l)

-- Highest concentration of Ethylbenzene (µg/l) 38.8

ND Highest concentration of Xylene (µg/l)

NA Highest concentration of Methane (mg/l)

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?

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.

On December 9-11, 2019, Great Western excavated and transported approximately 216 cubic yards of impacted soil offsite to Waste Management's Buffalo Ridge Landfill (a licensed disposal facility) located in Keenesburg, Colorado. Copies of the waste manifests are attached.

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.

On December 9-11, 2019, Great Western conducted excavation activities to remediate hydrocarbon impacted soil at the produced water tank excavation. During excavation activities, visual and olfactory observations were made to assess the vertical and lateral extent of impacted soil. To further assess soil impacts, field screening with a PID was conducted. Impacted soil was encountered at approximately 4 feet bgs and extended to 6.5 feet bgs. Three base and four sidewall confirmation soil samples were collected during excavation activities and submitted for laboratory analysis of BTEX, TPH-GRO, and TPH-DRO. Concentrations of BTEX, TPH-GRO, and TPH-DRO in the soil samples were either not detected at or above laboratory reporting limits or were reported below Table 910-1 standards. Groundwater was encountered at 7 feet bgs and two grab samples were collected from the base of the excavation using a new polyethylene bailer and analyzed for BTEX. Concentrations of BTEX in the groundwater samples were either not detected at or above laboratory reporting limits or were reported below Table 910-1 standards. Based on laboratory results and because impacted soil was not observed to extend to groundwater, application of COGAC™ was not deemed necessary. See the attached Figure 3 for the confirmation soil and grab groundwater sample locations and Tables 2 and 3 for a summary of the analytical results.

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) _____ 216

_____ 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.

Groundwater has not been impacted.

REMEDATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other Remediation Progress Report

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:

None

Volume of E&P Waste (solid) in cubic yards _____ 216

E&P waste (solid) description _____ Hydrocarbon impacted soil

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: Waste Management's Buffalo Ridge
Landfill, Keenesburg, CO

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? 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.

If necessary, the site will be reclaimed in accordance with COGCC 1000 series rules.

Is the described reclamation complete? _____

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. 12/09/2019

Actual Spill or Release date, if known. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/06/2019

Date of commencement of Site Investigation. 12/06/2019

Date of completion of Site Investigation. 12/06/2019

REMEDIAL ACTION DATES

Date of commencement of Remediation. 12/09/2019

Date of completion of Remediation. 12/11/2019

SITE RECLAMATION DATES

Date of commencement of Reclamation. _____

Date of completion of Reclamation. _____

OPERATOR COMMENT

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

Signed: Jason Davidson

Title: Senior EHS Specialist

Submit Date: 01/07/2020

Email: jdavidson@gwp.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: 01/07/2020

Remediation Project Number: 14768

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**

402258734	FORM 27-SUPPLEMENTAL-SUBMITTED
402278821	SOIL SAMPLE LOCATION MAP
402278822	SOIL SAMPLE LOCATION MAP
402278823	ANALYTICAL RESULTS
402278829	ANALYTICAL RESULTS
402278830	DISPOSAL MANIFESTS

Total Attach: 6 Files

General Comments**User Group****Comment****Comment Date**

Environmental	<p>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. In addition, the surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules.</p> <p>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.</p>	01/07/2020
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Total: 1 comment(s)