

State of Colorado Oil and Gas Conservation Commission

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Document Number:

403283263

Receive Date:

Report taken by:

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 INFORMATION

Name of Operator: <u>PDC ENERGY INC</u>	Operator No: <u>69175</u>	Phone Numbers
Address: <u>1775 SHERMAN STREET - STE 3000</u>		Phone: <u>(303) 860-5800</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80203</u>
Contact Person: <u>Karen Olson</u>	Email: <u>tasfillremediationcontractor@pdce.com</u>	Mobile: <u>()</u>

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 20864 Initial Form 27 Document #: 402851152

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.
- ☐ 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.
- ☒ 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.
- ☐ Other: _____

SITE INFORMATION

No Multiple Facilities

Facility Type: <u>WELL</u>	Facility ID: _____	API #: <u>123-14859</u>	County Name: <u>WELD</u>
Facility Name: <u>GERRY 3</u>		Latitude: <u>40.471950</u>	Longitude: <u>-104.722350</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>NWSE</u>	Sec: <u>24</u>	Twp: <u>6N</u>	Range: <u>66W</u>
		Meridian: <u>6</u>	Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Agriculture

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

Nearest Well: Domestic - 1,010 feet NW, Surface Water: Irrigation Ditch - 300 feet E, Occupied Buildings: 1,250 feet SSE, Livestock: 1,105 feet ENE, FWS
Wetlands: Freshwater Emergent Wetland (PEM1C) - 1,485 feet SW

Flowline conflict as flowline crosses irrigation ditch ~300' east of wellhead

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	Refer to Tables 1-4 & Figures 1 & 2	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.

On January 20, 2022, field screening and confirmation soil sampling was conducted in accordance with the COGCC Rule 911 during the decommissioning and closure of the former Gerry 3 Wellhead (Figure 1) and associated flowline (Figure 2). Based on analytical results, it was determined that a historic release was discovered at the former wellhead. Following the discovery and landowner approval, mitigation activities were initiated to delineate and remove remaining hydrocarbon impacts. On December 15, 2022, supplemental source mass removal activities were initiated and approximately 20 cubic yards (CY) of impacted material were removed and transported to the North Weld Waste Management Facility for disposal under PDC manifests.

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):

On January 20, 2022, one (1) soil sample (WH01) was collected adjacent to the cut and capped wellhead from the impacted source material at approximately 6 feet bgs and submitted for laboratory analysis of the full Table 915-1 analytical suite. Analytical results indicated contaminants of concern (COC) include BTEX, 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, naphthalene, TPH (C6-C36), arsenic, barium, lead, & selenium. On December 15, 2022, seven (7) soil samples (SS01, SS02, SS04, SS06, SS08, & SS10) were collected during source mass removal activities at depths ranging between 4 feet and 9 feet bgs and submitted for analysis for the above mentioned COCs. Soil sample SS01 was collected as a second source material characterization sample and submitted for analysis of the full Table 915-1 analytical suite. Additionally, soil sample (SS09) was collected from approximately 2.5 feet bgs and submitted for laboratory analysis of pH, EC, SAR, & boron.

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):

During initial closure activities conducted on January 20, 2021, soil encountered on site and below production equipment was visually inspected and field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). Per the approved proposed soil sampling plan, one soil sample (FLR01) was collected below the flowline riser at approximately 4 feet bgs and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, TPH (C6-C36), PAHs, pH, EC, SAR, and boron. Additionally, two samples (FL01-01 & FL01-02) were collected below the flowline on either side of an irrigation ditch crossing and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, and TPH (C6-C36). Field screened soil sample locations are illustrated on Figures 1.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 11

Number of soil samples exceeding 915-1 7

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet) 60

NA / ND

-- Highest concentration of TPH (mg/kg) 784

-- Highest concentration of SAR 0.649

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 9

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 915-1

Highest concentration of Benzene (µg/l)

Highest concentration of Toluene (µg/l)

Highest concentration of Ethylbenzene (µg/l)

Highest concentration of Xylene (µg/l)

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?

On January 20, 2022, two (2) background soil samples (BKG01) were collected at approximately 4 feet and 6 feet bgs from native material topographically up-gradient of the wellhead and submitted for analysis of COGCC Table 915-1 metals. Analytical results indicated that arsenic and selenium were in exceedance of the applicable regulatory standards in native soil.

On December 15, 2022, four (4) additional background soil borings (BKG02-BKG05) were advanced in native material topographically up-gradient of the wellhead with soil samples collected at 2.5 feet, 6 feet, and 9 feet bgs, and submitted for analysis of COGCC Table 915-1 metals. Analytical results indicated that arsenic, barium, and selenium were in exceedance of the applicable regulatory standards in native soil.

☒ Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards) 20

Volume of liquid waste (barrels) 0

☒ Is further site investigation required?

Up to nine (9) soil borings will be advanced to define the horizontal and vertical extents of the arsenic, barium, lead, and selenium exceedances recorded in soil samples SS02, SS04, SS06, SS08, and SS10 during supplemental source mass removal activities. Soil samples will be collected from each soil boring at 6 feet, 9 feet, and 10 feet bgs and submitted for laboratory analysis of arsenic, barium, lead, and selenium. The proposed soil boring locations are illustrated on Figure 3. Confirmation sampling is expected to be conducted pending landowner approval.

Additionally, two (2) background soil borings will be advanced adjacent to the former excavation extent to evaluate Table 915-1 metals in native material. Pending landowner approval, supplemental site investigation activities will be conducted by the end of the second quarter 2023. The proposed soil boring locations are illustrated on Figure 3.

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 15, 2022, approximately 20 cubic yards of impacted material were excavated adjacent to and below the former wellhead and transported to the North Weld Waste Management Facility for disposal under PDC waste manifests.

REMEDATION 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.

Following the evaluation of the analytical results for the confirmation soil samples collected from the final excavation extent, the below referenced soil samples exhibited concentrations in exceedance of the COGCC Table 915-1 Protection of Groundwater SSLs:

- Arsenic: SS02
- Barium: SS02, SS06, SS08, & SS10
- Lead: SS04
- Selenium: SS02, SS03, & SS04

Based on the analytical results collected during supplemental source mass removal activities, organic compounds were in compliance of applicable COGCC Table 915-1 standards in the soil samples collected from the final excavation extent. However, PDC will conduct a supplemental site investigation to delineate arsenic, barium, lead, and selenium concentrations in the former excavation extent and evaluate metals in native material.

Soil analytical results are summarized in Tables 1-4. GPS coordinates & PID readings are summarized in Table 5. Excavation extent and sample locations are illustrated on Figures 1 & 2. Proposed background soil boring locations are illustrated on Figure 3. Laboratory analytical results are included as Attachment A. Field notes & photo log are included as Attachment B.

A remediation strategy will be selected following the evaluation of soil and groundwater analytical results from the supplemental site investigation.

Soil Remediation Summary

☐ In Situ

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

☐ Ex Situ

- _____ Excavate and offsite disposal
- _____ If Yes: Estimated Volume (Cubic Yards) _____
- _____ 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 was not encountered during decommissioning or supplemental source mass removal activities conducted between January 20 and December 15, 2022, at the Gerry 3 wellhead.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

☐ Quarterly☐ Semi-Annually☐ Annually☒ Other

Timeline Update, Confirmation Sample Summary, & Supplemental Site Investigation Proposal

☐ 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

☒ Other Timeline Update, Confirmation Sample Summary, & Supplemental Site Investigation Proposal

Adequacy of Operator's General Liability Insurance and Financial Assurance

Describe the adequacy of the Operator's general liability insurance and Financial Assurance to fully address the anticipated costs of Remediation, including the estimated remaining cost for this project (below).

If this information has been provided on a Form 27 within the last 12 months, provide the Document Number of that form.

Operator does not have site-specific financial assurance for this project; however, Operator has inactive well, blanket, and surface bonding including Surety IDs 106077122, 106473808, and 106473820, as well as commercial general liability and/or umbrella/excess insurance meeting the requirements of Rule 705.b. Operator does not anticipate making an insurance claim for this project.

- Source mass removal has been completed.
- Facility and infrastructure were decommissioned and the location will be reclaimed in accordance with the COGCC 1000 Series.
- Investigation and delineation is complete for organics in soil.
- Investigation and delineation of arsenic, barium, lead, and selenium is ongoing.

Costs included herein are estimates only and may change over time based on numerous factors. Accordingly, Operator makes no guarantees as to the accuracy of such cost estimates, thus providing an estimate for the next year below.

Operator anticipates the remaining cost for this project to be: \$ 15000

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:

No beneficial use.

Volume of E&P Waste (solid) in cubic yards 20

E&P waste (solid) description Hydrocarbon impacted soils

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: North Weld Waste Management Facility

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

If YES:

☐ 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? _____

Does the previous reply indicate consideration of background concentrations? _____

Does Groundwater meet Table 915-1 standards? _____

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.

Following wellhead and flowline decommissioning and supplemental source mass removal activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The location will be reclaimed in accordance with the COGCC 1000 series.

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 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. 01/20/2022

Proposed date of completion of Reclamation. 01/09/2028

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. 07/29/2021

Actual Spill or Release date, or date of discovery. 02/03/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/20/2022

Proposed site investigation commencement. 04/01/2023

Proposed completion of site investigation. 06/30/2023

REMEDIAL ACTION DATES

Proposed start date of Remediation. 01/20/2022

Proposed date of completion of Remediation. 01/09/2028

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:

PDC will conduct a supplemental site investigation to vertically and horizontally delineate metal exceedances in the former Gerry 3 wellhead excavation extent and assess metal concentrations in native material. Proposed site investigation will be completed by the end of the second quarter 2023, pending approval of this form and landowner approval.

OPERATOR COMMENT

This form is being submitted as a first quarter 2023 timeline update, confirmation soil sample summary, and supplemental site investigation proposal for the former Gerry 3 wellhead. A Supplemental Form 27 submitted on October 27, 2022, under Document No. 403209863 is still pending review.

Following the approval of this form and landowner approval, PDC will conduct a supplemental site investigation to evaluate arsenic, barium, lead, and selenium in native material adjacent to the former wellhead excavation extent. Proposed site investigation will be completed pending approval document of 403209863 and landowner approval.

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

Signed: Karen Olson

Title: Senior Program Manager

Submit Date: _____

Email: taspillremediationcontractor@pdce.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: 20864

COA Type

Description

0 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

403283342	SOIL SAMPLE LOCATION MAP
403283346	SOIL SAMPLE LOCATION MAP
403283349	PHOTO DOCUMENTATION
403293953	SITE INVESTIGATION PLAN
403293955	ANALYTICAL RESULTS

Total Attach: 5 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)