

**State of Colorado**  
**Energy & Carbon Management Commission**

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Document Number:  
403684505

Receive Date:  
02/27/2024

Report taken by:  
RICK ALLISON

**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 ECOM 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>	<b>Phone Numbers</b>
Address: <u>1099 18TH STREET SUITE 1500</u>		Phone: <u>(303) 860-5800</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80202</u>		Mobile: <u>( )</u>
Contact Person: <u>Karen Olson</u>	Email: <u>taspillremediationcontractor@pdce.com</u>	

**PROJECT, PURPOSE & SITE INFORMATION**

**PROJECT INFORMATION**

Remediation Project #: 27511 Initial Form 27 Document #: 403316448

**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>SPILL OR RELEASE</u>	Facility ID: <u>483385</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Pierce - GW Walker 1</u>	Latitude: <u>40.627487</u>	Longitude: <u>-104.774131</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SESE</u>	Sec: <u>28</u>	Twps: <u>8n</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 Agricultural

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 / Stock - 392' W; Surface Water: Irrigation Ditch - 238' E; Occupied Building: 469' SSE; Livestock: 429' SSW; FWS Wetlands: 1,141' WSW Freshwater Emergent Wetland (PEM1A); HPH Sensitive Wildlife Habitat: Rule 1202.d: Wellhead & Flowline Within Mule Deer Winter Concentration Area; Rule 1202.d: Wellhead & Flowline Within Mule Deer Severe Winter Range; Rule 1202.d: Wellhead & Flowline Within Pronghorn Winter Concentration.

Flowline Conflict: Rule 1202.d: Wellhead & Flowline Within Mule Deer Winter Concentration Area; Rule 1202.d: Wellhead & Flowline Within Mule Deer Severe Winter Range; Rule 1202.d: Wellhead & Flowline Within Pronghorn Winter Concentration.

**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 Document No. 403515800	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 December 1, 2022, PDC conducted a flowline pressure test and collected a confirmation soil sample. On December 2, 2022, following the return of confirmation soil sampling analytical results, a historic release was discovered at the Walker 1 Flowline. Following the discovery of the release, mitigation activities were initiated and to date, approximately 30 cubic yards of impacted material were removed and transported to the North Weld Waste Management Facility for disposal under PDC waste 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 December 1, 2022, one soil samples (FL-01) was collected from a depth of approximately 1 ft bgs from potentially impacted material where water from the flowline was daylighting on the surface during a pressure test of the abandoned flowline. The soil sample was submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB and TPH. Analytical results indicated compound concentrations were in exceedance of applicable standards. On December 27, 2022, six soil samples (SS01-SS06) were collected adjacent to the flowline leak area from the base and sidewalls of the excavation at depths between 2.5 ft and 7 ft bgs and were submitted for laboratory analysis of the full ECMC Table 915-1 analytical suite. Analytical results indicated that compound concentrations were observed below the ECMC Table 915-1 standards in soil samples collected from the final excavation extent with the exception of pH, arsenic, barium, and/or selenium exceedances observed in soil samples SS01-SS06.

**Proposed Groundwater Sampling**

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

[Empty box for groundwater sampling details]

**Proposed Surface Water Sampling**

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

[Empty box for surface water sampling details]

**Additional Investigative Actions**

Additional alternative investigative actions described in attached Site Investigation Plan ( summary ):

One five-point composite soil sample (SP01) was collected from a spoil pile on-site and submitted for analysis of the full ECMC Table 915-1 analytical suite. Analytical results indicated that compound concentrations were observed below the ECMC Table 915-1 standards with the exception of selenium.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 23

Number of soil samples exceeding 915-1 8

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

Approximate areal extent (square feet) 261

### NA / ND

-- Highest concentration of TPH (mg/kg) 50

-- Highest concentration of SAR 5.71

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 10

### 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 December 27, 2022, one background soil boring (BKG01) was advanced in native material up-gradient of the flowline and three soil samples were collected between depths of approximately 2.5 feet and 7 feet bgs and submitted for laboratory analysis of ECMC Table 915-1 metals, pH, EC, and SAR. Analytical results indicated that arsenic was in exceedance of the applicable regulatory standards in native soil.

On June 20, 2023, four (4) background soil borings (BKG02-BKG05) were advanced in native material up-gradient of the flowline and six soil samples were collected between depths of approximately 2.5 feet and 10 feet bgs and submitted for laboratory analysis of arsenic, barium, selenium, and pH. Analytical results indicated that arsenic and barium were observed 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) 30

Volume of liquid waste (barrels) 0

Is further site investigation required?

Up to nine (9) soil borings will be advanced to vertically and horizontally delineate pH and/or arsenic exceedances observed in soil samples SS01 @ 7', SS03 @ 2.5', SB01 @ 8', SB01 @ 10', SB03 @ 2.5', SB03 @ 10', SB04 @ 2.5', SB04 @ 7', SB04 @ 10', SB05 @ 2.5', SB05 @ 7', SB05 @ 8', SB05 @ 10' and collected within and adjacent to the flowline excavation extent. Soil samples will be collected at depths ranging from 2.5 feet and 15 feet bgs, as appropriate for delineation. All confirmation soil samples will be submitted for laboratory analysis of pH and/or arsenic as necessary.

Additionally, up to two (2) background soil borings will be advanced up-gradient of the flowline excavation to 15 feet bgs and will be submitted to the laboratory for analysis of pH and arsenic. Soil samples will be collected at depths ranging from 2.5 feet and 15 feet bgs.

Volatile organic compound (VOC) concentrations using a photoionization detector (PID) and lithologic descriptions will be recorded for each borehole.

## 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 27, 2022, approximately 30 cubic yards of impacted material were excavated adjacent to and below the flowline and transported to the North Weld Waste Management Facility for disposal under PDC waste manifests.

### REMEDICATION 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 June 20, 2023, five (5) soil borings (SB01-SB05) were advanced via hand auger to delineate the vertical & horizontal extents of arsenic, selenium, and pH exceedances observed in the final excavation extent. Two soil samples were collected from soil boring SB01 at 8 feet and 10 feet bgs, from soil adjacent to & below SS01@7' and submitted for laboratory analysis of pH, selenium, and/or arsenic as applicable for delineation. Sixteen (16) soil samples were collected from the the four cardinal direction soil borings (SB02-SB05) at depths between 2.5 feet and 10 feet bgs and were submitted for laboratory analysis of arsenic, selenium, and/or pH as applicable for delineation. Analytical results indicated that arsenic levels were in exceedance of the applicable ECMC Table 915-1 standards in soil samples SB03 @ 2.5', SB04 @ 2.5', SB04 @ 7', SB05 @ 2.5', and SB05 @ 7'. In addition, pH was observed in exceedance of the applicable standards in soil samples SB01 @ 8', SB01 @ 10', SB03 @ 10', SB04 @ 10', SB05 @ 8', and SB05 @ 10'. Analytical results indicated selenium was observed below the applicable standards and is horizontally and vertically delineated in all soil borings.

A remediation strategy will be selected following the evaluation of soil analytical results.

Supporting documentation was included on the previously submitted Supplemental Form 27 Document No. 403515800.

**Soil Remediation Summary**

In Situ

Ex Situ

\_\_\_\_\_ Bioremediation ( or enhanced bioremediation )

Yes \_\_\_\_\_ Excavate and offsite disposal

\_\_\_\_\_ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 30

\_\_\_\_\_ Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or ECMC Facility ID # \_\_\_\_\_

\_\_\_\_\_ Natural Attenuation

\_\_\_\_\_ Excavate and onsite remediation

\_\_\_\_\_ Other \_\_\_\_\_

\_\_\_\_\_ 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 initial pressure testing, release response, source mass removal, or supplemental site investigation activities.

# REMEDIATION PROGRESS UPDATE

## PERIODIC REPORTING

### Approved Reporting Schedule:

Quarterly    Semi-Annually    Annually    Other  

### 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  

## 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.
- Investigation and delineation has been completed for organics in soil. Assessment of Table 915-1 metals and pH conditions in native material 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: \$

## 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:

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

E&P waste (solid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility:

Volume of E&P Waste (liquid) in barrels

E&P waste (liquid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC 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 ECMC 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 excavation activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The location will be reclaimed in accordance with the ECMC 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. 12/01/2022

Proposed date of completion of Reclamation. 08/30/2024

## 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. 12/02/2022

Actual Spill or Release date, or date of discovery. 12/02/2022

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 12/01/2022

Proposed site investigation commencement. 03/01/2024

Proposed completion of site investigation. 06/30/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/01/2022

Proposed date of completion of Remediation. 08/30/2024

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:

Based on the evaluation of the soil analytical results and the need for supplemental site investigation activities, the proposed date of site investigation commencement and the proposed date of the completion of site investigation was adjusted to span through the second quarter of 2024. The proposed supplemental site investigation activities will be completed following land access negotiations with the land owner and crew availability.

## **OPERATOR COMMENT**

This form is being submitted as a first quarter 2024 timeline update for the Walker 1 Flowline. Per ECMC request, tables and figures previously submitted have not been included with this form submittal. Please refer to ECMC document no. 403515800 for previously submitted tables and figures.

Following landowner approval and crew availability, PDC will conduct a supplemental site investigation to delineate pH and arsenic concentrations in the vicinity of the flowline excavation at the former Walker 1 Flowline. Supplemental Form 27s will be prepared and submitted on a quarterly schedule to provide updates and progress of the remediation until closure criteria has been achieved.

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: 02/27/2024

Email: taspillremediationcontractor@pdce.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with ECMC Rules and applicable orders and is hereby approved.

ECMC Approved: RICK ALLISON

Date: 04/22/2024

Remediation Project Number: 27511

## **COA Type**

## **Description**

<b><u>COA Type</u></b>	<b><u>Description</u></b>
0 COA	

## **ATTACHMENT 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**

<b><u>Att Doc Num</u></b>	<b><u>Name</u></b>
403684505	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403764319	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 2 Files

## **General Comments**

### **User Group**

### **Comment**

### **Comment Date**

<b><u>User Group</u></b>	<b><u>Comment</u></b>	<b><u>Comment Date</u></b>
		Stamp Upon Approval

Total: 0 comment(s)