

State of Colorado  
Energy & Carbon Management Commission

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Document Number:

403746323

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 ECMC 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: PDC ENERGY INC	Operator No: 69175	Phone Numbers
Address: 1099 18TH STREET SUITE 1500		Phone: (303) 860-5800
City: DENVER	State: CO	Zip: 80202
Contact Person: Karen Olson	Email: taspillremediationcontractor@pdce.com	Mobile: ( )

## PROJECT, PURPOSE &amp; SITE INFORMATION

## PROJECT INFORMATION

Remediation Project #: 33411 Initial Form 27 Document #: 403621243

## 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

Yes Multiple Facilities

Facility Type: WELL	Facility ID:	API #: 123-25409	County Name: WELD
Facility Name: HALL 42-33	Latitude: 40.533080	Longitude: -104.776580	
** correct Lat/Long if needed: Latitude: 40.533092		Longitude: -104.776601	
QtrQtr: SENE	Sec: 33	Twp: 7N	Range: 66W
Meridian: 6	Sensitive Area?	Yes	

Facility Type: LOCATION	Facility ID: 309810	API #:	County Name: WELD
Facility Name: HALL-67N66W 33SENE	Latitude: 40.533080	Longitude: -104.776580	
** correct Lat/Long if needed: Latitude: 40.532955		Longitude: -104.776281	
QtrQtr: SENE	Sec: 33	Twp: 7N	Range: 66W
Meridian: 6	Sensitive Area?	Yes	

Facility Type: SPILL OR RELEASE		Facility ID: 486396		API #:		County Name: WELD	
Facility Name: Hall 43-33 Flowline				Latitude: 40.533198		Longitude: -104.776458	
** correct Lat/Long if needed: Latitude:                      Longitude:							
QtrQtr: SENE	Sec: 33	Twp: 7N	Range: 66W	Meridian: 6	Sensitive Area? Yes		

Facility Type: SPILL OR RELEASE		Facility ID: 486397		API #:		County Name: WELD	
Facility Name: Hall 42-33 Wellhead				Latitude: 40.533077		Longitude: -104.776590	
** correct Lat/Long if needed: Latitude:                      Longitude:							
QtrQtr: SENE	Sec: 33	Twp: 7N	Range: 66W	Meridian: 6	Sensitive Area? Yes		

Facility Type: SPILL OR RELEASE		Facility ID: 486398		API #:		County Name: WELD	
Facility Name: Hall 42-33 PWV				Latitude: 40.533053		Longitude: -104.776211	
** correct Lat/Long if needed: Latitude:                      Longitude:							
QtrQtr: SENE	Sec: 33	Twp: 7N	Range: 66W	Meridian: 6	Sensitive Area? Yes		

## 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

Tank Battery: Nearest Well: Domestic - 1,128' S; Surface Water: Eaton Ditch - 324' NE; Occupied Building: 457' WSW; Livestock: 0' (Within Pasture); FWS Wetlands: 365' NE Riverine (R4SBC).

Wellhead (Hall 42-33): Nearest Well: Domestic - 1,180' S; Surface Water: Eaton Ditch - 367' NE; Occupied Building: 403' SW; Livestock: 0' (Within Pasture); FWS Wetlands: 400' NE Riverine (R4SBC); 100-Year Floodplain 1,472' WSW 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
UNDETERMINED	SOILS	TBD	Final Analytical Results

### INITIAL ACTION SUMMARY

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

In accordance with ECOM Rule 911, this form serves as notification for the decommissioning and abandonment of the Hall 42-33 production facility, Hall 42-33 wellhead, and removal of the associated flowline. The ground and sub-surfaces will be visually inspected for hydrocarbon impacts during equipment decommissioning. In addition, on-site dump lines located between the separator and tank battery will be removed by pulling from either end during decommissioning activities. Field observations and photo documentation will be recorded in a field inspection form for submittal to the ECOM.

### 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 ):

Soil samples will be collected from the surface in cardinal directions of the wellhead and grab soil samples will be collected below and/or adjacent to applicable facility equipment, as defined in the Rule 911.a.(4) guidance document (9/20/21), for field screening purposes. Discrete soil samples will be collected for laboratory analysis either in any area of observed hydrocarbon impacts, or in the sample locations designated by the ECOM. Soil samples collected at the tank battery, adjacent to the wellhead, and wellhead flowline riser from native material and will be submitted for laboratory analysis of the full Table 915-1 analytical suite by ECOM approved methods. See the attached Figure 1 for an illustration of the facility layout and proposed soil sample locations.

#### Proposed Groundwater Sampling

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

If groundwater is encountered during decommissioning and/or abandonment activities, a grab sample will be collected as soon as practical. If contaminated soil is in contact with groundwater or if free product/hydrocarbon sheen are observed, the release will be reported in accordance with Rule 912.b. Groundwater samples will be submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene by EPA Method 8260, chloride and sulfate anions by EPA Method 300.0, and total dissolved solids (TDS) by Method SM 2540C.

#### 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 ):

If a produced water vessel is present, discrete soil samples will be collected from the base of the excavation and excavation sidewall in areas most likely to be impacted and exhibiting the highest field screened VOC concentration and submitted for laboratory analysis of the full Table 915-1 analytical suite. Assessments will be conducted during the removal of the on-location flowline (approximately 112 feet in length). Soil samples will be collected below the flowline risers. The flowlines and adjacent sub-surface will be inspected for visual and olfactory indicators of potential failure and hydrocarbon impacts.

## SITE INVESTIGATION REPORT

### SAMPLE SUMMARY

**Soil**

Number of soil samples collected 3  
Number of soil samples exceeding 915-1 0  
Was the areal and vertical extent of soil contamination delineated? No  
Approximate areal extent (square feet) 100

**Groundwater**

Number of groundwater samples collected 3  
Was extent of groundwater contaminated delineated? No  
Depth to groundwater (below ground surface, in feet) 2  
Number of groundwater monitoring wells installed 0  
Number of groundwater samples exceeding 915-1 0

**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.

**NA / ND**

-- Highest concentration of TPH (mg/kg) 7.1  
NA Highest concentration of SAR  
BTEX > 915-1 No  
Vertical Extent > 915-1 (in feet) 6

ND Highest concentration of Benzene (µg/l)  
ND Highest concentration of Toluene (µg/l)  
ND Highest concentration of Ethylbenzene (µg/l)  
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?

Following discovery of the historic releases adjacent to the former wellhead, along the former flowline, and at the produced water vessel (PWV), a path forward will be provided in a forthcoming Supplemental Form 27 pending receipt of final laboratory analytical results. A path forward may entail a supplemental source mass removal via mechanical excavation, soil boring delineation, or installation of groundwater monitoring wells.

**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.

Any hydrocarbon impacted material will be transported off-site to a licensed disposal facility in accordance with Rules 905 and 906.

**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 March 28, 2024, a historic release was discovered during decommissioning activities at the Hall 42-33 Wellhead, Flowline, and Tank Battery when groundwater was observed in the wellhead excavation, the flowline excavation, and the produced water vessel excavation (PWV), these three locations had a sheen on the groundwater. Prior to confirmation sampling, mitigation activities were initiated and to date, approximately 8 cubic yards of impacted material was removed from the wellhead excavation and transported to North Weld Waste Management Facility for disposal under a PDC waste manifest. One soil sample was collected from the base of each excavation (WH01 @ 6', PWV01-B @ 2', & FL01-01 @ 6') and submitted for laboratory analysis of the Full Table 915-1 analytical suite. Due to the presence of groundwater, confirmation groundwater samples (GW01-GW03) were collected from each excavation and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, 1,2,4-TMB, TDS, sulfate, & chloride. On April 1, 2024, preliminary analytical results indicated that organic compounds were below the Table 915-1 Protection of Groundwater (POG) Soil Screening Levels (SSLs) in soil samples WH01, PWV01-B, & FL01-01; and the Table 915-1 Groundwater Standard in groundwater samples GW01-GW03. Final analytical results are pending. Additionally, background soil samples (BKG01 & BKG02) were collected from native material adjacent to the wellhead and submitted for preliminary analysis of the Table 915-1 metals. Pending receipt of the remaining Table 915-1 laboratory results, PDC will be submitting an analyte reduction request for the director approval based on the constituents identified in the samples collected from the source material. Following receipt of final analytical results, a path forward will be determined, as detailed in the associated Supplemental Form 27. Final analytical results and field activities will be summarized in a forthcoming Supplemental Form 27.

## Soil Remediation Summary

☐ In Situ

☒ Ex Situ

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

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

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

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 8

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

Name of Licensed Disposal Facility or COGCC 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 encountered during initial decommissioning activities conducted on March 28, 2024 between 2 feet and 6 feet bgs. Pending receipt of final analytical results, a path forward will be evaluated for the Hall 42-33 Wellhead & Tank Battery.

## REMEDIATION PROGRESS UPDATE

### PERIODIC REPORTING

#### Approved Reporting Schedule:

☒ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other 90 days following receipt of final lab results

#### ☐ 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 90 days following receipt of final lab results

### 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.

- Assessment activities as outlined herein are proposed.

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: \$ 50000

### 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 8

E&P waste (solid) description Hydrocarbon impacted soils

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: North Weld Waste Management

Volume of E&P Waste (liquid) in barrels 0

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.

Reclamation will be conducted in accordance with ECMC 1004 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 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. 04/15/2024

Proposed date of completion of Reclamation. 04/15/2029

## 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. 10/19/2023

Actual Spill or Release date, or date of discovery. 03/28/2024

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/11/2024

Proposed site investigation commencement. 05/01/2024

Proposed completion of site investigation. 09/30/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 03/11/2024

Proposed date of completion of Remediation. 04/15/2029

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 discovery of potential historic hydrocarbon impacts adjacent to the former wellhead, flowline, and produced water vessel locations. Following receipt of final analytical results, a path forward will be determined. The Implementation Schedule has been updated to reflect these changes.

**OPERATOR COMMENT**

Based on correspondence from the ECMC, this Supplemental Form 27 was prepared for the historic releases discovered at the Hall 42-33 Wellhead, Flowline, & Tank Battery; and in conjunction with the Supplemental Form 19s submitted under Document No. 403736623, 403736573, and 403736659.

Per the ECMC request of determining a remedial approach on this Form 27, the path forward will be dependent on the receipt of final analytical results. This may entail a supplemental source mass removal via mechanical excavation, soil boring delineation, or monitoring well installation activities, or none of the above. A path forward for this location will be proposed in a forthcoming Supplemental Form 27.

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

Signed: Karen Olson

Title: Remediation Advisor

Submit Date: \_\_\_\_\_

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: \_\_\_\_\_

Date: \_\_\_\_\_

Remediation Project Number: 33411

**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**

403746469	SOIL SAMPLE LOCATION MAP
403746475	SITE MAP
403746691	ANALYTICAL RESULTS
403746692	PHOTO DOCUMENTATION

Total Attach: 4 Files

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

		Stamp Upon Approval
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Total: 0 comment(s)