

State of Colorado  
Energy & Carbon Management Commission

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Document Number:  
404299559  
Receive Date:  
08/04/2025

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 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: <u>PDC ENERGY INC</u>	Operator No: <u>69175</u>	Phone Numbers Phone: <u>(970) 278-6934</u> Mobile: <u>( )</u>
Address: <u>1099 18TH STREET SUITE 1500</u>		
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80202</u>
Contact Person: <u>Erica Zuniga</u>	Email: <u>ericazuniga@chevron.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 39271 Initial Form 27 Document #: 404073643

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: <u>LOCATION</u>	Facility ID: <u>426699</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Leffler 26Q-HZ Pad</u>	Latitude: <u>40.539500</u>	Longitude: <u>-104.742620</u>	
** correct Lat/Long if needed: Latitude: <u>40.539165</u>		Longitude: <u>-104.743117</u>	
QtrQtr: <u>SWSE</u>	Sec: <u>26</u>	Twp: <u>7N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>
Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>490338</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Leffler 26Q-HZ Pad TB</u>	Latitude: <u>40.539195</u>	Longitude: <u>-104.743139</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SWSE</u>	Sec: <u>26</u>	Twp: <u>7N</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 Cropland

Is domestic water well within 1/4 mile? Yes

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**

Residential 0.19/0.2mi NW, 0.24mi W  
Farm Structure 0.17/0.21/0.23mi W, 0.21mi SW, 0.17/0.18/0.2mi NW

# SITE INVESTIGATION PLAN

## TYPE OF WASTE:

- |  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> E&P Waste      | <input type="checkbox"/> Other E&P Waste             | <input type="checkbox"/> Non-E&P Waste |
| <input checked="" type="checkbox"/> Produced Water | <input type="checkbox"/> Workover Fluids             |  |
| <input checked="" type="checkbox"/> Oil            | <input type="checkbox"/> Tank Bottoms                |  |
| <input checked="" type="checkbox"/> Condensate     | <input type="checkbox"/> Pigging Waste               |  |
| <input type="checkbox"/> Drilling Fluids           | <input type="checkbox"/> Rig Wash                    |  |
| <input type="checkbox"/> Drill Cuttings            | <input type="checkbox"/> Spent Filters               |  |
|  | <input type="checkbox"/> Pit Bottoms                 |  |
|  | <input type="checkbox"/> Other (as described by EPA) |  |

## DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
UNDETERMINED	GROUNDWATER	NA	Lab Analysis and Field Screening, if encountered
Yes	SOILS	Refer to attached tables	Lab Analysis and Field Screening

## 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 05/08/2025, 05/09/2025, and 05/12/2025, a site investigation was conducted pursuant to ECMC Rule 911 at the Leffler 26Q, 26T-421 Facility and Tank Battery location. On 05/12/2025, potentially impacted material was encountered at sample location SEP01-DL@4'. The sample collected exhibited olfactory and visual hydrocarbon impacts and elevated PID readings. A waste characterization sample was collected and sent to the laboratory on-hold, and approximately 3 cubic yards of impacted material was removed from site under PDC waste manifests and transported to Waste Management Buffalo Ridge landfill. An additional sample (FS01@5') was collected one foot below the waste characterization sample SEP01-DL@4'. By mistake, the laboratory ran the SEP01-DL@4' sample for partial Table 915-1 compounds, which included BTEXN, TPH, 1,2,4 trimethylbenzene (TMB), 1,3,5 TMB, EC, pH, boron, and metals. Although this material was removed, these results have been left in the attached decommissioning report along with the associated laboratory analytical reports.

## 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 ):

Grab confirmation soil samples were collected from the produced water vessel(s) excavation (PWV01-B@5', PWV01-N@2.5'), beneath the ground oil tank(s)(AST01@0-6" - AST04@0-6"), at the risers for the flowline(s) (SEP01-FL@4', SEP02-FL@4') and dumpline(s) (SEP01-DL@4', SEP02-DL@4', FS01@5') of any separator(s). In addition, the on-site dump lines located between the separator and tank battery were removed by pulling from either end. Soil samples were analyzed by a certified laboratory for the full extent of Table 915-1, including but not limited to: TPH (total volatile [C6-C10] and extractable [C10-C36] hydrocarbons) organic compounds in soil per ECMC Table 915-1, and EC, SAR, pH, metals, and boron. All samples collected were analyzed by a certified laboratory using approved ECMC laboratory analysis methods.

### Proposed Groundwater Sampling

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

If groundwater is encountered during the site investigation a grab groundwater will be collected and analyzed for all organic and inorganic compounds per ECMC Table 915-1; this sample analysis includes, but is not limited to BTEX, naphthalene, 1,2,4-TMB, and 1,3,5-TMB 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 ):

Visual inspection at the tank battery area occurred during abandonment activities. Field personnel field screened all disturbed areas using visual and olfactory senses. Additionally, discrete soil samples were 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. A detailed summary of tank battery decommissioning activities, including field notes, site photos, figures, and laboratory analytical results, is attached to this Form 27.

# 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) 700

### NA / ND

Highest concentration of TPH (mg/kg) \_\_\_\_\_  
Highest concentration of SAR \_\_\_\_\_  
BTEX > 915-1 No  
Vertical Extent > 915-1 (in feet) 5

### Groundwater

Number of groundwater samples collected 0  
Was extent of groundwater contaminated delineated? Yes  
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 05/08/2025, four background soil samples were collected from one discrete location (BKG01) adjacent to the tank battery and analyzed for metals per ECMC Table 915-1, pH, SAR, EC, and boron. Background soil samples were collected from depths ranging from 0.5 to 5 feet below ground surface (ft. bg). The maximum background concentrations for pH and boron were observed to be 7.91 and non-detect (<2.00 mg/L) respectively. The maximum background concentrations with a 1.25x multiplier applied for arsenic, barium, and selenium were calculated to be 8.18 mg/kg, 203 mg/kg, and 0.384 mg/kg, respectively. All arsenic and barium concentrations observed during decommissioning were below 1.25x the maximum background level.

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?

Based on the analytical results collected during decommissioning, a supplemental site investigation (SSI) will be completed to vertically and horizontally delineate the TPH, 1-methylnaphthalene, pH, and boron exceedances observed during decommissioning and to confirm the removal of hydrocarbon impacts at SEP01-DL@4'. A proposed SSI map is attached to this Form 27. During the SSI, soil samples will be collected and analyzed for full ECMC Table 915-1 constituents. Concurrently with the SSI, additional background samples will be collected under adjacent Leffler 26Q-421 Flowline (REM #39259) to determine if pH, boron, and selenium are attributed to native soil conditions at the site. The SSI will be completed in accordance with the proposed implementation schedule, and the results of the SSI will be submitted on a subsequent Form 27.

## **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 05/12/2025, potentially impacted material was encountered at sample location SEP01-DL@4'. The sample collected exhibited olfactory and visual hydrocarbon impacts and elevated PID readings. A waste characterization sample was collected and sent to the laboratory on-hand, and approximately 3 cubic yards of impacted material was removed from site under PDC waste manifests and transported to Waste Management Buffalo Ridge landfill.

### 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.

A supplemental site investigation (SSI) will be completed to vertically and horizontally delineate the TPH and 1-methylnaphthalene exceedances detected at sample location SEP02-DL@4, the pH exceedances observed at sample locations AST01@0-6", AST02@0-6", AST04@0-6", PWV01-B@5', and the pH and boron exceedances observed at sample location AST03@0-6" during decommissioning, in accordance with the attached proposed site investigation map, and proposed sampling plan outlined in the Site Investigation Report section of this Form 27. In addition, samples will be collected to confirm the removal of hydrocarbon impacts at SEP01-DL@4'.

**Soil Remediation Summary**

In Situ

Ex Situ

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

- Yes \_\_\_\_\_ Excavate and offsite disposal
- \_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 3
- \_\_\_\_\_ Name of Licensed Disposal Facility or ECMC Facility ID # \_\_\_\_\_
- No \_\_\_\_\_ 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 initial decommissioning 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 Decommissioning 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.

- Further soil investigation/delineation is required
- Source removal activities are required

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:

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

E&P waste (solid) description Soil

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Waste Management - Buffalo Ridge

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? No

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 in accordance with ECMC 1000 Series Rules.

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. 05/08/2025

Proposed date of completion of Reclamation. 01/27/2027

## 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. 12/31/2024

Actual Spill or Release date, or date of discovery. 05/12/2025

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/08/2025

Proposed site investigation commencement. 07/27/2025

Proposed completion of site investigation. 01/27/2026

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 01/27/2025

Proposed date of completion of Remediation. 07/27/2026

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:

The implementation schedule has been changed due to the decommissioning of the Leffler 26Q-HZ Tank Battery and necessity for supplemental site investigation activities adjacent to the tank battery. The proposed site investigation will be completed following the approval of this form.

## OPERATOR COMMENT

This Form 27 is being submitted to include the decommissioning results and historic reportable release discovered at the former Leffler 26Q-HZ Tank Battery location and propose supplemental site investigation.

Tank battery decommissioning activities occurred at the above referenced location on May 5, 9, and 12, 2025. Discrete soil samples were collected from beneath the former facility infrastructure as described in the approved Form 27 Initial (Document # 404073643). Analytical results indicated that soil samples SEP02-DL@4' exhibited total petroleum hydrocarbons (TPH) and 1-methylnaphthalene in exceedance of the regulatory standards. Groundwater was not encountered during initial decommissioning activities.

On 05/12/2025, potentially impacted material was encountered at sample location SEP01-DL@4'. The sample collected exhibited olfactory and visual hydrocarbon impacts and elevated PID readings. A waste characterization sample was collected and sent to the laboratory on-hold, and approximately 3 cubic yards of impacted material was removed from site under PDC waste manifests and transported to Waste Management Buffalo Ridge landfill. An additional sample (FS01@5') was collected one foot below the waste characterization sample SEP01-DL@4'. By mistake, the laboratory ran the SEP01-DL@4' sample for partial Table 915-1 compounds, which included BTEXN, TPH, 1,2,4 trimethylbenzene (TMB), 1,3,5 TMB, EC, pH, boron, and metals. These results have been left in the attached decommissioning report along with the associated laboratory analytical reports.

On 05/08/2025, four background soil samples were collected from one discrete location (BKG01) adjacent to the tank battery and analyzed for metals per ECMC Table 915-1, pH, SAR, EC, and boron. Background soil samples were collected from depths ranging from 0.5 to 5 feet below ground surface (ft. bg). The maximum background concentrations for pH and boron were observed to be 7.91 and non-detect (<2.00 mg/L) respectively. The maximum background concentrations with a 1.25x multiplier applied for arsenic, barium, and selenium were calculated to be 8.18 mg/kg, 203 mg/kg, and 0.384 mg/kg, respectively. All arsenic and barium concentrations observed during decommissioning were below 1.25x the maximum background level.

Based on decommissioning analytical results, a supplemental site investigation (SSI) will be completed to vertically and horizontally delineate the TPH, 1-methylnaphthalene, pH, and boron exceedances observed at the tank battery and to confirm the removal of hydrocarbon impacts at SEP01-DL@4'. During the SSI, soil samples will be collected and analyzed for full ECMC Table 915-1 constituents. Concurrently with the SSI, additional background samples will be collected under adjacent Leffler 26Q-421 Flowline (REM #39259) to determine if elevated SAR, cadmium, and lead are attributed to native soil conditions at the site. The SSI will be completed in accordance with the proposed implementation schedule. The proposed soil boring locations are illustrated on the attached proposed site investigation plan.

Quarterly reporting will be conducted until closure criteria are achieved for the remediation project. The results of the supplemental site investigation will be submitted on a subsequent Form 27.

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

Signed: Collin Barker

Title: Environmental Consultant

Submit Date: 08/04/2025

Email: cbarker@tasman-geo.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: 12/03/2025

Remediation Project Number: 39271

## COA Type

## Description

	Operator may adhere to the schedule on batch-approved Supplemental Form 27 Doc# 404372300 to complete the site investigation by 03/09/2026.
	One more more soil samples was analyzed for VOCs beyond the EPA recommended holding time of 14 days from sample collection. Operator shall review all laboratory analytical data and re-sample those locations where samples were analyzed beyond the recommended holding time.
2 COAs	

## 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

404299559	FORM 27-SUPPLEMENTAL-SUBMITTED
404300521	SITE INVESTIGATION REPORT
404300522	LABORATORY ANALYTICAL REPORT
404300525	LABORATORY ANALYTICAL REPORT
404300526	LABORATORY ANALYTICAL REPORT
404300527	LABORATORY ANALYTICAL REPORT
404300529	LABORATORY ANALYTICAL REPORT
404300530	LABORATORY ANALYTICAL REPORT

404301070	SITE INVESTIGATION PLAN
404304127	SITE INVESTIGATION PLAN

Total Attach: 10 Files

**General Comments**

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

Total: 0 comment(s)