

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

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Document Number:  
404090130  
Receive Date:  
02/12/2025

Report taken by:  
Alexander Ahmadian

**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>karen.olson@chevron.com</u>	

**PROJECT, PURPOSE & SITE INFORMATION**

**PROJECT INFORMATION**

Remediation Project #: 24538 Initial Form 27 Document #: 403097135

**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>460107</u>	API #: _____	County Name: <u>ADAMS</u>
Facility Name: <u>Brant LD Pad</u>	Latitude: <u>39.980453</u>	Longitude: <u>-104.847958</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SENE</u>	Sec: <u>11</u>	Twp: <u>1S</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>482279</u>	API #: _____	County Name: <u>ADAMS</u>
Facility Name: <u>Brant HZ</u>	Latitude: <u>39.982022</u>	Longitude: <u>-104.847716</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>SENE</u>	Sec: <u>11</u>	Twp: <u>1S</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

## SITE CONDITIONS

General soil type - USCS Classifications SM

Most Sensitive Adjacent Land Use Agricultural / Residential

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 - 440' WSW; Surface Water: Brantner Ditch - 530' W; Occupied Building: 640' NNE; Livestock: 130' W; FWS Wetlands: 530' W Riverine (R4SBC); HPH Sensitive Wildlife Habitat: Rule 1202.c: 818' ESE - Aquatic Native Species Conservation Area, Rule 1202.d: 495' SE - Mule Deer Migration Corridor; 100-year floodplain 569' E of tank battery.

# 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
No	GROUNDWATER	Refer to Document No. 403560741	Confirmation Groundwater Sampling
Yes	SOILS	Refer to Document No. 403560741	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 May 28, 2022, a release was discovered at the Brant HZ Pad. A water treater gasket failure resulted in the release of approximately forty (40) BBLs of production fluid were released from the water treater outside of containment. Following the discovery, mitigation activities were immediately initiated and approximately twenty (20) BBLs of spilled production fluid were recovered via hydro-vacuum and returned to on-site production tanks. Between June 2, 2022 and August 30, 2023, approximately 1,355 cubic yards (CY) of impacted material were transported to the Republic Services, Front Range, and Buffalo Ridge Landfills and disposed of under PDC waste manifests. Additionally, groundwater was encountered during excavation activities at approximately 7 feet bgs. Consequently, hydro-vacuum recovery of groundwater was initiated and to date approximately 45 barrels of groundwater were removed from the excavation and transported to the NGL C7 and Republic Services facilities.

## 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 June 2, 2022, one soil sample (SS01) was collected from stockpiled impacted material removed during mitigation activities and submitted for laboratory analysis of the full Table 915-1 analytical suite. Preliminary analytical results indicate that the COCs include BTEX, 1,2,4-TMB, 1,3,5-TMB, naphthalene, TPH (C6-C36), benzantracene (benz(a)), benzopyrene (benzo(a)), chrysene, fluorene, pyrene, 1-M, and 2-M. Between June 2 and 8, 2022, twenty-one (21) soil samples (SS02-SS22) were collected within and outside the tank battery berm between 0-6 inches and 5 feet bgs and submitted for preliminary laboratory analysis of the above mentioned COCs. Analytical results indicated that organic compound concentrations were in exceedance of the acceptable ECMC Table 915-1 Protection of Groundwater SSLs in soil samples SS01, SS04, SS06-SS08, SS11, SS13-17, & SS21SS22.

### 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 ):

Supporting documentation was included on the previously submitted Supplemental Form 27 Document no. 403560741.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 105  
Number of soil samples exceeding 915-1 18  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 2540

### NA / ND

-- Highest concentration of TPH (mg/kg) 10300  
-- Highest concentration of SAR 3.11  
BTEX > 915-1 Yes  
Vertical Extent > 915-1 (in feet) 7

### Groundwater

Number of groundwater samples collected 6  
Was extent of groundwater contaminated delineated? Yes  
Depth to groundwater (below ground surface, in feet) 7  
Number of groundwater monitoring wells installed 6  
Number of groundwater samples exceeding 915-1 0

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) \_\_\_\_\_

### 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 June 2, 2022, three (3) background soil samples (BKG01, BKG02, & BKG03) were collected from the native material up-gradient of the pad at approximately 0-6 inches bgs and submitted for laboratory analysis of the Table 915-1 metals. Analytical results indicated that arsenic, barium, and selenium were in exceedance of the applicable regulatory standards in native soil. In addition, lead was in exceedance of the applicable regulatory standards in sample BKG01 @ 0-6". The soil boring location map was included on the previously submitted Supplemental Form 27 Document No. 403560741.

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

Volume of solid waste (cubic yards) 1355      Volume of liquid waste (barrels) 60

Is further site investigation required?

On May 9, 2023, thirteen (13) soil borings (SB01-SB13) were advanced via hand auger to confirm and delineate the vertical and horizontal extents of the organic exceedances observed during confirmation soil sampling activities. Twenty-six (26) soil samples were collected from the soil borings SB01-SB13 at depths ranging between 1 ft & 6 ft bgs. and were submitted for laboratory analysis of BTEX, 1,2,4-TMB, 1,3,5-TMB, naphthalene, TPH (C6-C36), benzantracene, benzopyrene, chrysene, fluorene, pyrene, 1-M, and 2-M. Analytical results indicated that organic concentrations were in exceedance in soil borings SB04 and SB09 at 1 ft bgs.

On March 6, and March 7, 2024, six monitoring wells (BH01 – BH06) were installed to confirm the absence of dissolved-phase hydrocarbon impacts surrounding the former excavation extent [Figure 1]. Lithologic descriptions and volatile organic compound (VOC) concentrations measured using a photoionization detector (PID) were recorded for each monitoring well.

The first quarter 2025 groundwater monitoring sampling event was conducted on January 14, 2025. Analytical results are still pending at the time of this Form 27 submittal, and will be included 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.

During initial mitigation activities between June 2 and 8, 2022, approximately 30 cubic yards of impacted material were excavated adjacent to the water treater and transported to the Waste Management Erie Facility for disposal under PDC waste manifests. Additionally, approximately 20 BBLs of spilled production fluid were recovered via hydro-vacuum and returned to on-site production tanks.

Between August 24 and 30, 2023, approximately 1,325 cubic yards (CY) of impacted material were transported to the Republic Services, Front Range, and Buffalo Ridge Landfills and disposed of under PDC waste manifests. In addition, approximately 45 barrels of groundwater were removed from the excavation and transported to the NGL C7 and Republic Services facilities.

## 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.

Supplemental source mass removal was re-initiated on August 24, 2023, via mechanical excavation. Between August 24 & 30, 2023, fifty-two (52) soil samples (SS23-SS78) were collected from the base and sidewalls of the excavation and submitted for analysis for the above mentioned COCs. Additionally, four (4) soil samples (SS57, SS62, SS69, & SS72) were collected from the excavation sidewalls at approximately 2.5 ft bgs and submitted for laboratory analysis of pH, EC, SAR, & boron. Analytical results indicated that constituent concentrations were in compliance of applicable Table 915-1 standards in all samples collected from the final excavation extent.

One five point composite soil sample (CS01) was collected from beneath the excavated soil staging and load out area and submitted for laboratory analysis of the approved list of COCs. Analytical results indicated the composite sample constituents were in compliance with the applicable Table 915-1 standards.

Additionally, on August 25, 2023, groundwater was encountered during excavation activities at approximately 7 feet bgs. As such, one groundwater sample (GW01) was collected from within the excavation and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, & 1,3,5-TMB. Analytical results indicated that groundwater constituents were below the applicable Table 915-1 standards.

Monitored natural attenuation (MNA) was selected as the remediation strategy for this site during the second quarter 2024 and will remain the selected remediation strategy through the first quarter 2025.

## Soil Remediation Summary

In Situ

Ex Situ

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

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

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

\_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 1355

\_\_\_\_\_ 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

Yes \_\_\_\_\_ 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.

Based on the analytical data collected during supplemental source mass removal activities, PDC will conduct quarterly groundwater monitoring at the six site monitoring wells (BH01 - BH06) until closure criteria are met. Groundwater samples will be submitted for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260B, chloride and sulfate anions by EPA Method 300.0 and total dissolved solids (TDS) by Method SM 2540C in accordance with Table 915-1.

The first quarter 2025 groundwater monitoring sampling event was conducted on January 14, 2025. Analytical results are still pending at the time of this Form 27 submittal, and will be included on a subsequent Form 27.

# 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 1Q2025 Timeline Update

## 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.

- Investigation and delineation has been completed in soil and groundwater.
- Source mass removal has been completed, monitoring wells installed, and groundwater will continue to be monitored for natural attenuation.
- Closure sampling for full Table 915-1 suite is required.
- Facility and infrastructure were decommissioned and the location will be reclaimed in accordance with the ECMC1000 Series.

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: \$ 25000

## 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 1355

E&P waste (solid) description Hydrocarbon impacted soil

ECMC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-ECMC Disposal Facility: Republic Services, Front Range, and Buffalo Ridge Landfills

Volume of E&P Waste (liquid) in barrels 60

E&P waste (liquid) description Produced water & Hydrocarbon impacted groundwater

ECMC Disposal Facility ID #, if applicable: \_\_\_\_\_

Non-ECMC Disposal Facility: On-site production tanks, NGL C7, and Republic Services facilities

# 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.

The Brant HZ Pad is an active facility and there are no current plans for decommissioning or reclamation activities. This stated, following excavation activities, the location was backfilled, compacted and re-contoured for the tank battery operations to continue.

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. \_\_\_\_\_

Proposed date of completion of Reclamation. \_\_\_\_\_

## 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. 05/29/2022

Actual Spill or Release date, or date of discovery. 05/28/2022

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/02/2022

Proposed site investigation commencement. 03/06/2024

Proposed completion of site investigation. 03/07/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 06/02/2022

Proposed date of completion of Remediation. 07/28/2028

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:

Monitoring well installation activities were completed on March 6, and March 7, 2024. No further site investigation activities are planned at this time.

**OPERATOR COMMENT**

This Supplemental Form 27 is being submitted as a first quarter 2025 timeline update for the Brant HZ Facility location.

The first quarter 2025 groundwater monitoring sampling event was conducted on January 14, 2025. Analytical results are still pending at the time of this Form 27 submittal, and will be included on a subsequent Form 27.

Quarterly reporting will be conducted until closure criteria are achieved for this remediation project.

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

Signed: Mike Medina

Title: Environmental Consultant

Submit Date: 02/12/2025

Email: tas-chevron-2@tasman-geo.com

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

ECMC Approved: Alexander Ahmadian

Date: 05/09/2025

Remediation Project Number: 24538

**COA Type**

**Description**

0 COA	
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**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**

404090130	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
404197638	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 2 Files

**General Comments**

**User Group**

**Comment**

**Comment Date**

Environmental	ECMC has processed this form as an update; no analytical was attached thus approval of this form does not imply any agreement with comments on completion of site investigation. All ongoing/unaddressed comments/COAs from previous Forms remain applicable.	05/09/2025
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Total: 1 comment(s)