

State of Colorado  
Energy & Carbon Management Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:  
403829767  
Receive Date:  
06/28/2024  
Report taken by:  
Taylor Robinson

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>(303) 860-5800</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>Karen Olson</u>	Email: <u>taspillremediationcontractor@pdce.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 26725 Initial Form 27 Document #: 403257000

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>331536</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>EDWARDS-65N67W 9NESE</u>	Latitude: <u>40.412080</u>	Longitude: <u>-104.890860</u>	
** correct Lat/Long if needed: Latitude: <u>40.411688</u>		Longitude: <u>-104.889120</u>	
QtrQtr: <u>NESE</u>	Sec: <u>9</u>	Twp: <u>5N</u>	Range: <u>67W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: <u>SPILL OR RELEASE</u>	Facility ID: <u>485547</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Edwards 43-9 - Tank Battery</u>	Latitude: <u>40.411760</u>	Longitude: <u>-104.889068</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NESE</u>	Sec: <u>9</u>	Twp: <u>5n</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

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: Monitoring / Sampling - 516' WNW; Surface Water: Intermittent Creek - 1,200' NW; Occupied Building: 1,032' S; FWS Wetlands: 1,200' NW Riverine (R4SBC).

# 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. 403704197	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 October 12, 2023, field screening and confirmation soil sampling activities were conducted in accordance with the ECMC Rule 911 during the decommissioning of the Edwards 43-9 Tank Battery. On October 30, 2023, following the receipt of initial analytical results, it was determined that a historic release was discovered at above ground storage tank (AST). On November 3, 2023, mitigation activities were initiated and to date approximately 6 cubic yards of impacted material were removed and transported to the North Weld Waste Management Facility for disposal under a PDC waste manifest.

## 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 October 12, 2023, one soil sample (AST01) was collected from impacted source material adjacent to the AST at approximately 0-6 inches below ground surface (bgs). The sample was submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, total petroleum hydrocarbons (TPH[C6-C36]), 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB. Due to hold time constraints, the AST sample was unable to be analyzed for the full Table 915-1 analytical suite. As such, soil samples collected during mitigation activities (SS01-SS05) were submitted for analysis of the full Table 915-1 analytical suite. Analytical results indicated all Table 915-1 constituents were below the applicable standards in soil samples collected from the final excavation extent, except for cadmium in soil sample SS03 @ 0.5'.

### 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 ):

On October 12, 2023, soil encountered on-site and below production equipment was visually inspected and field screened for volatile organic compounds (VOC) concentrations using a photoionization detector (PID). Per the approved proposed sampling plan, samples were collected below and/or adjacent to the separator flowline & dump-line (SEP01-FL & SEP01-DL) and submitted for analysis of Table 915-1 Organic Compounds in Soil and TPH (C6-C36). Additionally, soil samples (PWV01-B & PWV01-S) were collected from the base and sidewall exhibiting the highest field screened PID response and submitted for analysis of Table 915-1 Organic Compounds in Soil, TPH (C6-C36), and Soil Suitability for Reclamation constituents. Analytical results indicated that the soil samples were in compliance with the applicable standards.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

**Soil**

Number of soil samples collected 10  
Number of soil samples exceeding 915-1 2  
Was the areal and vertical extent of soil contamination delineated? No  
Approximate areal extent (square feet) 100

**NA / ND**

-- Highest concentration of TPH (mg/kg) 62  
-- Highest concentration of SAR 3.83  
BTEX > 915-1 No  
Vertical Extent > 915-1 (in feet) 1

**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 October 12 and November 3, 2023, four background soil borings (BKG01-BKG04) were advanced in native material adjacent to the tank battery location. Two soil samples were collected from each background soil boring at depths ranging between approximately 0.5 ft and 4 ft bgs and were submitted for laboratory analysis of Table 915-1 metals and pH.  
On September 2, 2022, one background soil boring (BKG01) was advanced at the nearby Warner 42-09D tank battery location with samples collected at 1 ft, 3 ft, & 4 ft bgs and submitted for analysis of Table 915-1 metals, pH, and SAR.  
On November 14, 2023, one background soil boring (BKG02) was advanced at the nearby B&B 10-12 wellhead location with samples collected at 4 ft & 6 ft bgs and submitted for analysis of pH.  
Analytical results indicated that arsenic, barium, selenium, and pH concentrations were in exceedance of the applicable regulatory standards in native soil.

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

Volume of solid waste (cubic yards) 6 Volume of liquid waste (barrels) 0

Is further site investigation required?

Up to four (4) soil borings will be advanced to confirm and vertically and horizontally delineate the cadmium exceedance observed in soil sample SS03 @ 0.5'.  
Up to three (3) additional background soil boring will be advanced adjacent to the former tank battery location in order to evaluate cadmium in native material. The proposed soil boring locations were illustrated on the previously submitted Supplemental Form 27 Document No. 403704197.

**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 November 3, 2023, approximately 6 cubic yards of impacted material were removed from the AST location and transported to the North Weld Waste Management Facility under PDC waste manifests.

**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 November 3, 2023, source mass removal activities were initiated and five (5) soil samples (SS01-SS05) were collected from the sidewalls and base of the final AST excavation extent at depths ranging from 0.5 feet to 2 feet bgs and were submitted for laboratory analysis the full ECMC Table 915-1 analytical suite. Analytical results indicated that constituent concentrations were below the applicable ECMC Table 915-1 standards in all samples collected from the final excavation extent, except for cadmium in sidewall soil sample SS03 @ 0.5'. As such, up to four (4) soil borings will be advanced to confirm and vertically and horizontally delineate the cadmium exceedance observed in soil sample SS03 @ 0.5'.

Supporting documentation was included on the previously submitted Supplemental Form 27 Document No. 403704197.

### Soil Remediation Summary

In Situ

Ex Situ

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

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

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

\_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 6

\_\_\_\_\_ 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 decommissioning and mitigation activities conducted at the former Edwards 43-9 Tank Battery.

# 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.

- Facility and infrastructure were decommissioned and the location will be reclaimed in accordance with the ECMC 1000 Series.
- Source mass removal has been completed.
- Investigation and delineation is complete for organics in soil.
- Investigation and delineation is ongoing for cadmium in soil.

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 tank battery decommissioning and source mass removal activities, the location was be backfilled, compacted, and re-contoured to match preexisting 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. 10/12/2023

Proposed date of completion of Reclamation. 11/03/2028

## IMPLEMENTATION SCHEDULE

Per Rule 913.d.(2): Any change from the approved implementation schedule will be requested at least 14 days in advance, and the Operator may not make the change without the Director's approval.

### PRIOR DATES

Date of Surface Owner notification/consultation, if required. 08/15/2022

Actual Spill or Release date, or date of discovery. 10/30/2023

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/02/2023

Proposed site investigation commencement. 07/01/2024

Proposed completion of site investigation. 09/30/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 10/12/2023

Proposed date of completion of Remediation. 11/03/2028

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:

Based on soil analytical results received for samples collected during decommissioning and source mass removal activities, supplemental site investigation activities are needed to delineate the cadmium exceedance observed in soil sample SS03 @ 0.5'. Subsequently, an investigation will be conducted to assess cadmium concentrations in native material. As such, the proposed date of site investigation commencement and the proposed date of the completion of site investigation was adjusted to span through the third quarter of 2024. The proposed supplemental site investigation activities will be completed following land access negotiations with the landowner and crew availability.

**OPERATOR COMMENT**

This form is being submitted as a second quarter 2024 timeline update for the Edwards 43-9 Tank Battery. Per ECMC request, tables and figures previously submitted have not been included with this form submittal. Please refer to ECMC document no. 403704197 for previously submitted tables and figures.

Following landowner approval and crew availability, a supplemental site investigation activities will be conducted to assess cadmium concentrations in the vicinity of soil sample SS03 @ 0.5'. Subsequently, an assessment of cadmium concentrations in native material adjacent to the Edwards 43-9 Tank Battery location will be conducted. 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: Remediation Advisor

Submit Date: 06/28/2024

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: Taylor Robinson

Date: 08/20/2024

Remediation Project Number: 26725

**COA Type**

**Description**

COA Type	Description
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
403829767	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403895422	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 2 Files

**General Comments**

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)