

State of Colorado
Energy & Carbon Management Commission

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

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: LOCATION	Facility ID: 331536	API #: _____	County Name: WELD
Facility Name: EDWARDS-65N67W 9NESE	Latitude: 40.412080	Longitude: -104.890860	
** correct Lat/Long if needed: Latitude: 40.411688		Longitude: -104.889120	
QtrQtr: NESE	Sec: 9	Twp: 5N	Range: 67W Meridian: 6 Sensitive Area? Yes
Facility Type: SPILL OR RELEASE	Facility ID: 485547	API #: _____	County Name: WELD
Facility Name: Edwards 43-9 - Tank Battery	Latitude: 40.411760	Longitude: -104.889068	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NESE	Sec: 9	Twp: 5n	Range: 67w 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

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).

DENIED

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	GROUNDWATER	NA	Laboratory analysis, if encountered
Yes	SOILS	Refer to tables & figures	Laboratory analysis & 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 October 12, 2023, field screening and confirmation soil sampling activities were conducted in accordance with the ECOM Rule 911 and the approved proposed sampling plan on the Initial Form 27 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 9
Number of soil samples exceeding 915-1 0
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 0

NA / ND

ND Highest concentration of TPH (mg/kg) _____
-- Highest concentration of SAR 1.64
BTEX > 915-1 No
Vertical Extent > 915-1 (in feet) 0

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
0 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 10/12/23 and 11/03/23, eight background soil samples were collected from four discrete soil borings (BKG01-BKG04) adjacent to the tank battery location with samples collected at 0.5 ft & 2 ft bgs.

On 09/02/22, 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.

On 09/14/23, one background soil boring (BKG01) was advanced at the nearby Edwards 11-15DU Wellhead location with samples collected at 4 ft & 6 ft bgs.

On 11/14/23, 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.

On 01/28/25, nine background soil samples were collected from three discrete soil borings (BKG05-BKG07) adjacent to the tank battery and analyzed for metals in soil per ECMC Table 915-1, pH, SAR, EC, and boron.

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?

Per the COA on ECMC document no. 404024639, additional background soil boring samples will be collected from locations sufficiently away from the impacted area, that will reflect the conditions of native soil. 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 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.

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 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.

A Site Assessment was conducted on 01/28/2025 to delineate the cadmium exceedance observed at soil sample location SS03@0.5' during SSMR activities. Four soil borings (BH01-BH04) were advanced. BH01@0.5' was advanced at the same location as soil sample SS03@0.5'. BH02-BH04 were advanced surrounding BH01 to laterally delineate the cadmium exceedance identified at SS03@0.5'. Soil samples were collected and analyzed for full ECMC Table 915-1 constituents. Groundwater was not encountered during this assessment. Cadmium exceedances were observed at soil sample locations BH01@2' and BH03@0.5', additional background soil boring samples will be collected from locations sufficiently away from the impacted area, that will reflect the conditions of native soil.

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, excavation, or site investigation 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 Confirmation 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

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:

No beneficial use.

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. 12/31/2026

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. 06/05/2025

Proposed completion of site investigation. 12/05/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/05/2025

Proposed date of completion of Remediation. 06/05/2026

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 is being updated to reflect the completion of the January 2025 supplemental site investigation and necessity for additional background sampling 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 supplemental site investigation (SSI) results and SSI proposal for the former Edwards 43-9 tank battery location.

On January 28, 2025, a site assessment was completed. Four soil borings were advanced in previously collected decommissioning laboratory soil sample locations (SEP01-DL, SEP01-FL, PWV01-B, PWV01-S) in an effort to demonstrate Full ECMC Table 915-1 compliance across the site, four soil borings (BH01, BH02, BH03, BH04) were advanced to confirm and vertically and horizontally delineate the cadmium exceedance observed in soil sample SS03 @ 0.5', and three background soil borings (BKG05, BKG06, BKG07) were advanced in order to evaluate ECMC Table 915-1 metals in soil, pH, EC, SAR and boron in native material.

During the SSI, nine background soil samples were collected from three discrete soil borings (BKG05-BKG07) adjacent to the tank battery and analyzed for metals in soil per ECMC Table 915-1, pH, SAR, EC, and boron. Background soil samples were collected from depths ranging between 0.5 to 4 feet below ground surface (ft bgs). To date, the maximum background concentration for pH was observed to be 9.22. The maximum background concentrations with a 1.25x multiplier applied for arsenic, barium, cadmium, and selenium were calculated to be 12.1 mg/kg, 314 mg/kg, 0.703 mg/kg, and 1.04 mg/kg respectively. All pH concentrations observed during decommissioning, SSMR, and SSI activities were below background levels.

Per the COA on ECMC document no. 404024639, additional background soil boring samples will be collected from locations sufficiently away from the impacted area that will reflect the conditions of native soil. as shown on the attached proposed map.

Pursuant to Rule 913.e, quarterly reporting will be conducted until closure criteria are achieved for the remediation project. The ECMC will be updated with the analytical results of the site investigation 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: Ben Wagner

Title: Environmental Consultant

Submit Date: 06/11/2025

Email: bwagner@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: _____ Date: _____

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
404227366	FORM 27 DENIED
404227560	ANALYTICAL RESULTS
404234729	SITE INVESTIGATION REPORT
404290799	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 4 Files

General Comments

User Group	Comment	Comment Date
Environmental	Attached document #404227560(Summit Work Order #2501413) indicates that 8260 was analyzed outside of holding times. ECMC has denied this Form 27, Operator is directed to submit a replacement Form 27 as soon as possible with a plan for resampling.	07/23/2025

Total: 1 comment(s)