FORM 27 Rev 5/22

State of Colorado
Energy & Carbon Management Commission

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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 INFORMATON

Name of Operator: PDC ENERGY INC Operator No: 69175
Address: 1099 18TH STREET SUITE 1500
City: DENVER State: CO Zip: 80202
Contact Person: Karen Olson

Phone Numbers
Phone: (303) 860-5800
Mobile: ( )
Email: taspillremediationcontractor@pdce.com

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 33363 Initial Form 27 Document #: 403624680

PURPOSE INFORMATION

- [ ] Rule 913.c.(1): Pit or Cuttings Trench closure.
- [X] Rule 913.c.(2): Buried or partially buried vessel closure, which will be by removal.
- [X] 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.
- [X] 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: 433753 API #: County Name: WELD
Facility Name: Circle B Production Pad 6-66-9 Latitude: 40.508050 Longitude: -104.785300
** correct Lat/Long if needed: Latitude: 40.507748 Longitude: -104.785830
QtrQtr: NENW Sec: 9 Twp: 6N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 486226 API #: County Name: WELD
Facility Name: Merritt Sec. 9 Tank Battery Latitude: 40.508037 Longitude: -104.785201
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NENW Sec: 9 Twp: 6N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 486287 API #: County Name: WELD

Facility Name: Merritt Sec. 9 Tank Battery (ASTs) Latitude: 40.507969 Longitude: -104.785651

** correct Lat/Long if needed: Latitude: Longitude:

QtrQtr: NENW Sec: 9 Twp: 6N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 486336 API #: County Name: WELD

Facility Name: Merritt Sec. 9 Tank Battery_AST-DL Latitude: 40.507842 Longitude: -104.785550

** correct Lat/Long if needed: Latitude: Longitude:

QtrQtr: NENW Sec: 9 Twp: 6N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 486393 API #: County Name: WELD

Facility Name: Merritt Sec. 9 Tank Battery_COMP-DL Latitude: 40.508209 Longitude: -104.785299

** correct Lat/Long if needed: Latitude: Longitude:

QtrQtr: NENW Sec: 9 Twp: 6N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 486411 API #: County Name: WELD

Facility Name: Merritt Sec. 9 Tank Battery Latitude: 40.507744 Longitude: -104.785353

** correct Lat/Long if needed: Latitude: Longitude:

QtrQtr: NENW Sec: 9 Twp: 6N Range: 66W Meridian: 6 Sensitive Area? Yes

Facility Type: SPILL OR RELEASE Facility ID: 486418 API #: County Name: WELD

Facility Name: Merritt Sec. 9 Tank Battery_COMPSUC Latitude: 40.507660 Longitude: -104.785703

** correct Lat/Long if needed: Latitude: Longitude:

QtrQtr: NENW Sec: 9 Twp: 6N 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

Nearest Well: Temporary Dewatering Well - 1,281' NE; Surface Water: Freshwater Pond - 172' S; Occupied Building: 155' NW; Livestock: 147' S; FWS Wetlands: 460' E Riverine (R5UBFx); 100-Year Floodplain 206' E of Tank Battery.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [X] **E&P Waste**
  - [X] Produced Water
  - [X] Oil
  - [X] Condensate
  - [ ] Drilling Fluids
  - [ ] Drill Cuttings
- [ ] **Other E&P Waste**
  - [ ] Workover Fluids
  - [ ] Tank Bottoms
  - [ ] Pigging Waste
  - [ ] Rig Wash
  - [ ] Spent Filters
  - [ ] Pit Bottoms
  - [ ] Other (as described by EPA) _____
- [ ] **Non-E&P Waste** _____

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	Refer to Tables & Figures	Lab Analysis and Field Screening
Yes	SOILS	Refer to Tables & Figures	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.

In accordance with ECMC Rule 911, this form serves as notification for the completion of decommissioning and abandonment of the Merritt sec 9 production facility. The ground and sub-surfaces was visually inspected for hydrocarbon impacts during equipment decommissioning. In addition, on-site dump lines located between the separator and tank battery were removed by pulling from either end during decommissioning activities. Field observations and photo documentation were recorded in a field inspection form for submittal to the ECMC.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

[X] Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Grab soil samples were 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 were collected for laboratory analysis either in any area of observed hydrocarbon impacts, or in the sample locations designated by the ECMC. Soil samples were submitted for laboratory analysis of the full Table 915-1 analytical suite by ECMC approved methods.

Proposed Groundwater Sampling

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

Groundwater was encountered during decommissioning and excavation activities, and six grab samples (GW01-GW06) were collected. The locations where contaminated soil was in contact with groundwater or if free product/hydrocarbon sheen was observed, a release was reported in accordance with Rule 912.b. Groundwater samples were 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

[X] Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Per landowner request, surface water samples will be collected from the pond to the southwest of the former tank battery location.

Additional Investigative Actions

[ ] Additional alternative investigative actions described in attached Site Investigation Plan (summary):

Multiple produced water vessels were observed present and 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. The soil samples will be submitted for laboratory analysis of the full Table 915-1 analytical suite by ECMC approved methods. Assessment of off location flowlines were addressed with their respective wellheads under a separate Form 27. During decommissioning activities, additional manifold infrastructure associated with the former Circle B Pad was encountered and located between the Merritt Sec 9 Tank battery location and associated wellhead locations. Appropriate soil samples were collected and submitted for laboratory analysis of the full Table 915-1 analytical suite.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 282
Number of soil samples exceeeding 915-1: 86
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet): 26520

NA / ND

-- Highest concentration of TPH (mg/kg): 8260
-- Highest concentration of SAR: 7.78
BTEX > 915-1: Yes
Vertical Extent > 915-1 (in feet): 9

Groundwater

Number of groundwater samples collected: 6
Was extent of groundwater contaminated delineated? No
Depth to groundwater (below ground surface, in feet): 4
Number of groundwater monitoring wells installed: 0
Number of groundwater samples exceeding 915-1: 2

-- Highest concentration of Benzene (µg/l): 250
-- Highest concentration of Toluene (µg/l): 1.8
-- Highest concentration of Ethylbenzene (µg/l): 240
-- Highest concentration of Xylene (µg/l): 890
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?

Sixteen background soil sample were collected from 4 locations (BKG01-BKG04) near the tank battery and analyzed for metals, pH, and SAR in soil per ECMC Table 915-1. Background soil samples were collected from depths ranging between 3 to 8 feet below ground surface (ft bgs). Arsenic, barium, cadmium, lead, nickel, and pH were observed to be above ECMC Table 915-1 standards.

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

Volume of solid waste (cubic yards): 7165
Volume of liquid waste (barrels): 23795

☒ Is further site investigation required?

A Supplemental Site Investigation (SSI) was conducted on September 30, 2024 to vertically and horizontally delineate the remaining organic exceedances south of the Southern sidewall of the "B" excavation. Soil samples collected during this investigation were analyzed for Table 915-1 organics and TPH and analytical results are currently pending. Following receipt of analytical data, a remedial excavation will be conducted to remove the remaining organic impacts on the south side of the "B" excavation. Concurrently with remedial excavation activities, additional background samples will be collected to determine if pH, arsenic, barium, cadmium, lead, and selenium are attributed to native conditions at the site. Confirmation soil sample final analytical results conducted during SSI and source mass removal activities will be summarized 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 March 11, 2024, approximately 9 cubic yards (cy) of impacted material were removed adjacent to the SEP05-FL excavation. On March 12, 2024, approximately 3 cy were removed adjacent to the SEP03-DL excavation. On March 15, 2024, approximately 120 cy of pea gravel were removed adjacent to the AST containment basin. On March 21, 2024, approximately 6 cubic yards were removed adjacent to the AST-DL02 excavation and approximately 6 cy were removed adjacent to the ASTDL-01 excavation. On March 27, 2024, approximately 3 cy were removed adjacent to the MAN03-DL05-01 excavation. On March 28, 2024, approximately 8 cy were removed adjacent to the MAN04-FL01-01 excavation.

Between May 20 & 21, 2024, approximately 130 cy were removed adjacent to the SEP05-FL ("A") excavation. On July 22, 2024, approximately 40 cy were removed adjacent to the Compressor dump line ("C") excavation. Between May 20 & July 11, approximately 6,840 cy were removed adjacent to the AST riser, AST dump-line, Compressor Suction Line, and Compressor Suction line #2 ("B") excavation.

Spill #486226 is encompassed by the "A" excavation (Figure 18).

Spill #486287, 486418, 486336, & 486411 are encompassed by the "B" excavation (Figure 19).

Spill #486393 is encompassed by the "C" excavation (Figure 20).

The site overview map (Figure 17) illustrates the spill numbers, spill locations, and corresponding infrastructure the failed soil samples were collected from.

All impacted soils removed from site were transported to North Weld Waste Management in Ault, CO for disposal under PDC waste manifests.

The remaining organic compound exceedances will be removed through a remedial excavation. 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.

Remedial excavation A was conducted between May 20 & 21, 2024 to remove organic impacts. 16 confirmation soil samples (A-SS01-A-SS04, A-SS06-A-SS07, A-SS11-A-SS19) were collected from the base and sidewalls of the final excavation extent. One soil sample (A-SS10) was collected to analyze soil suitability for reclamation.

Remedial excavation B was conducted between May 21 & July 11, 2024 to remove organic impacts. 88 confirmation soil samples (B-SS01-BSS03, B-SS05-BSS89) were collected from the base and sidewalls of the excavation extent. One soil sample (B-SS04) was collected to analyze soil suitability for reclamation.

Remedial excavation C was conducted on July 22, 2024 to remove organic impacts. 5 confirmation soil samples (C-SS01-C-SS05) were collected from the base and sidewalls of the final excavation extent.

All confirmation soil samples were analyzed for Table 915-1 organics, TPH, pH, SAR, arsenic, barium, cadmium, lead, and selenium as approved on approved Supplemental Form 27 Document #403824942. All soil samples collected to analyze soil suitability for reclamation were submitted for pH, EC, SAR, and boron.

Analytical results indicated that all organic compounds were observed below ECMC Table 915-1 standards in soil samples collected from the final excavation extent in the A & C locations. Analytical results from soil samples collected from the final B excavation extent indicated organic compounds were below ECMC Table 915-1 standards, except for along the south sidewall. Due to landowner negotiations, the B excavation was paused until land access was granted. pH, arsenic, barium, cadmium, and/or selenium remain above ECMC standards in soil samples collected from the final excavation extents.

Following supplemental source mass removal a monitoring well network will be proposed and a sitewide path forward will be provided to address remaining SSR or metal exceedances remaining on location in exceedances.

Soil Remediation Summary

☐ **In Situ**

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

☒ **Ex Situ**

- Yes Excavate and offsite disposal
  - If Yes: Estimated Volume (Cubic Yards) 7165
  - Name of Licensed Disposal Facility or ECMC Facility ID # _____
- ____ 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.

Following the completion of supplemental source mass removal activities, a groundwater monitoring well network will be proposed.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

[X] 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

[X] Other Supplemental Source Mass Removal Summary & 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.

- 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: $ 100000

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 7165

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 23795

E&P waste (liquid) description Groundwater

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: NGL C10

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? Yes

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

- [X] 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. 03/08/2024

Proposed date of completion of Reclamation. 10/01/2026

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. 10/26/2023

Actual Spill or Release date, or date of discovery. 03/12/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 03/07/2024

Proposed site investigation commencement. 10/01/2024

Proposed completion of site investigation. 04/01/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 04/01/2025

Proposed date of completion of Remediation. 04/01/2026

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.

[X] 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 remedial excavation at the Merritt Sec 9 tank battery and necessity for supplemental site investigation (SSI) activities, additional remedial excavation activities, and native material assessment adjacent to the tank battery. SSI activities took place September 30, 2024 and analytical results are currently pending. The remedial excavation is scheduled to occur in October or November of 2024.

OPERATOR COMMENT

This Form 27 is being submitted to include the remedial excavation results for the former Merritt Sec 9 Tank Battery location.

Between May 20 and July 22, 2024, approximately 7,010 CY and 23,795 bbls of impacted material were removed and hauled off this location to approved disposal facilities. Analytical results of confirmation soil samples indicated organic compound concentrations remain in exceedance along the South sidewall of the current "B" excavation extent. and analytical data is currently pending.

Sixteen background soil sample were collected from 4 locations (BKG01-BKG04) near the tank battery and analyzed for metals in soil per ECMC Table 915-1, pH and SAR. Background soil samples were collected from depths ranging between 3 to 8 feet below ground surface (ft bgs). Arsenic, barium, cadmium, lead, nickel, and pH were observed to be above ECMC Table 915-1 standards.

Following receipt of final analytical results from the SSI, a remedial excavation will be conducted to remove the remaining organic impacts to the South of the "B" excavation. Concurrently with remedial excavation activities, additional background samples will be collected to determine if pH, arsenic, barium, cadmium, lead, and selenium are attributed to native conditions at the site. Excavation activities are scheduled to occur during October or November of 2024.

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: Karen Olson Title: Remediation Advisor

Submit Date: 10/01/2024 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: RICK ALLISON Date: 12/24/2024

Remediation Project Number: 33363

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
403935820	FORM 27-SUPPLEMENTAL-SUBMITTED
403936421	PHOTO DOCUMENTATION
403942526	ANALYTICAL RESULTS
403942532	SOIL SAMPLE LOCATION MAP

Total Attach: 4 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)