

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:  
403713718  
Receive Date:  
03/14/2024  
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) 313-5582</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>Jason Davidson</u>	Email: <u>ENspillremediationcontractor@pdce.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 29396 Initial Form 27 Document #: 403407130

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>WELL</u>	Facility ID: _____	API #: <u>123-11844</u>	County Name: <u>WELD</u>
Facility Name: <u>LOWELL-PAUL DAIRY 1-33</u>	Latitude: <u>40.450480</u>	Longitude: <u>-104.775430</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NENE</u>	Sec: <u>33</u>	Twp: <u>6N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: <u>LOCATION</u>	Facility ID: <u>322671</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>LOWELL-PAUL DAIRY-66N66W 33NENE</u>	Latitude: <u>40.450480</u>	Longitude: <u>-104.775430</u>	
** correct Lat/Long if needed: Latitude: <u>40.450479</u>		Longitude: <u>-104.775225</u>	
QtrQtr: <u>NENE</u>	Sec: <u>33</u>	Twp: <u>6N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

**SITE CONDITIONS**

General soil type - USCS Classifications GW

Most Sensitive Adjacent Land Use Rangeland

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**

Closest Domestic Well – 1150' NW  
Additional Domestic Wells - None  
Nearest Surface Water - Cache La Poudre River - 800' SW  
Site is located within 100-Year Effective Floodplain  
Nearest Occupied Building – 540' NE  
Additional Occupied Buildings – 820' NE, 880' W  
Freshwater Forested/ Shrub Wetland – 1150' S  
Aquatic Native Species Conservation Waters Buffer – 350' S  
  
No other potential receptors are located within ¼ mile of the Site  
Above distances are approximations from Site center

# 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 Table 5	Grab Groundwater Sampling
No	SOILS	Refer to Tables 2-4 & Figure 2	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.

In accordance with ECMC Rule 911, this form serves as notification for the decommissioning and abandonment of the Lowell-Paul Dairy 1-33 production facility, Lowell-Paul Dairy 1-33 wellhead, and removal of the associated flowlines. The ground and sub-surfaces will be visually inspected for hydrocarbon impacts during equipment decommissioning. In addition, on-site dump lines located between the separator and tank battery will be removed by pulling from either end during decommissioning activities. Field observations and photo documentation will be recorded in a field inspection form for submittal to the ECMC.

## 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 ):

Soil samples will be collected from the surface in cardinal directions of the wellhead and grab soil samples will be 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 will be collected for laboratory analysis either in any area of observed hydrocarbon impacts, or in the sample locations designated by the ECMC. Soil samples collected at the tank battery and adjacent to the wellheads and wellhead flowline riser from native material and will be submitted for laboratory analysis of BTEXN, TMB's, PAH, TPH (C6-C36), pH, EC, SAR, and boron by ECMC approved methods, with the exception of the sample(s) collected below the AST (s) which will be analyzed for BTEXN, TMB's, PAH's, and TPH (C6-36).

### Proposed Groundwater Sampling

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

If groundwater is encountered during decommissioning and/or abandonment activities, a grab sample will be collected as soon as practical. If contaminated soil is in contact with groundwater or if free product/hydrocarbon sheen are observed, the release will be reported in accordance with Rule 912.b. Groundwater samples will be submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260.

### 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 ):

If a produced water vessel is present, discrete soil samples will be 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 and submitted for laboratory analysis of BTEXN, TMB's, PAH's, TPH (C6-C36), pH, EC, SAR, and boron. Assessments will be conducted during the removal of the on-location flowline (~70 feet in length) and soil samples will be collected below the flowline risers. The flowlines and adjacent sub-surface will be inspected for visual and olfactory indicators of potential failure and hydrocarbon impacts. Soils will be field screened below the flowline and if suspected impacts are observed, a soil sample will be collected and submitted for analysis of BTEXN, TMB's, PAH's, and TPH (C6-C36).

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 10  
Number of soil samples exceeding 915-1 1  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 300

### NA / ND

-- Highest concentration of TPH (mg/kg) 0.96  
-- Highest concentration of SAR 2.95  
BTEX > 915-1 No  
Vertical Extent > 915-1 (in feet) 6

### Groundwater

Number of groundwater samples collected 1  
Was extent of groundwater contaminated delineated? Yes  
Depth to groundwater (below ground surface, in feet) 5  
Number of groundwater monitoring wells installed 0  
Number of groundwater samples exceeding 915-1 0

ND Highest concentration of Benzene (µg/l) \_\_\_\_\_  
ND Highest concentration of Toluene (µg/l) \_\_\_\_\_  
-- Highest concentration of Ethylbenzene (µg/l) 1.7  
-- Highest concentration of Xylene (µg/l) 3.6  
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?

Six site-specific background samples were collected from four background soil samples (BKG01-BKG04) from approximately 3 ft., 4 ft., and 5 ft-bgs in areas away from oil and gas infrastructure. Soil samples BKG01@4 and BKG02@4 were submitted for analysis of arsenic and lead and soil samples BKG03 through BKG04 were submitted for analysis of EC, pH, SAR, boron, arsenic, barium, lead, and selenium by ECMC approved methods.

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?

PDC is currently in the process of evaluating lead concentrations at the Site.

## 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 October 24, 2023, excavation was conducted to remove the impacted soil at the wellhead. Four excavation confirmation soil samples (EX02-EX05) were collected from the sidewalls of the excavation from approximately 3 ft-bgs and one excavation confirmation soil sample (EX01@5.5) from the floor of the excavation from approximately 5.5 ft-bgs. The final extent of excavation was approximately 20 feet by 15 feet to a total depth of 5.5 ft-bgs. In total, approximately 60 cubic yards of presumably impacted soil were removed and hauled to Waste Management's North Weld Landfill in Ault, CO in accordance with ECMC Rules 905 and 906. Copies of the waste manifests are available upon request.

Please refer to the attached Facility Closure Investigation and Excavation Environmental Report for a summary of the source removal activities conducted at the Site.

### 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.

As described above, hydrocarbon impacted soil has been removed leaving only residual concentrations of lead reported above ECMC Table 915-1 standards at one sample location to be resolved.

Please refer to the Source Removal Summary section above and to the attached Facility Closure Investigation and Excavation Environmental Report for a summary of the source removal activities conducted at the Site.

### **Soil Remediation Summary**

In Situ

Ex Situ

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

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

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

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 60

\_\_\_\_\_ 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 encountered in the wellhead excavation at approximately 5.5 ft-bgs. One grab groundwater sample was collected and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260. All results were reported below their respective ECMC Table 915-1 regulatory standards. Refer to the attached Table 5 for a summary of the analytical results.

Please refer to the attached Facility Closure Investigation and Excavation Environmental Report for a summary of groundwater activities at the Site.

# 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 Site Investigation and Remediation Progress Report

## 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.

- Source mass removal is complete.
- Facility closure activities and confirmation soil sampling were conducted at the Lowell-Paul Dairy 1-33 wellhead and production facility on October 19 and October 24, 2024.
- PDC is currently in the process of evaluating lead concentrations at the Site.

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 60

E&P waste (solid) description Hydrocarbon impacted soil

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

Non-ECMC Disposal Facility: Waste Management's North Weld Landfill in Ault, CO

Volume of E&P Waste (liquid) in barrels 0

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? Yes

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 facility closure activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The location will be reclaimed in accordance with the ECMC 1000 series.

Is the described reclamation complete? No

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. 10/31/2024

Proposed date of completion of Reclamation. 10/31/2026

## 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. 04/13/2023

Actual Spill or Release date, or date of discovery. 10/19/2023

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 10/19/2023

Proposed site investigation commencement. 10/19/2023

Proposed completion of site investigation. 09/30/2024

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 10/24/2023

Proposed date of completion of Remediation. 10/24/2023

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:

**OPERATOR COMMENT**

Hydrocarbon impacted soils were identified at the wellhead during facility closure activities. Excavation was conducted and the identified impacted soil was removed and transported offsite for disposal at a properly permitted waste facility. All analytical results reported for excavation confirmation soil samples collected from the final extent of the excavation were compliant with their applicable Table 915-1 GWSSLs, or less than 1.25x average background concentrations for arsenic, barium, and selenium, leaving only residual concentrations of lead reported above ECMC Table 915-1 standards at one sample location to be resolved. All groundwater analytical results reported for the grab groundwater sample were reported as compliant with their respective Table 915-1 groundwater standards.

As previously discussed, a reduced analyte list for subsequent confirmation samples was requested and approved by the ECMC in Form 27 Supplemental Document Number 403627558 on December 18, 2023. PDC is currently in the process of evaluating lead concentrations at the Site. The results of the evaluation will be summarized in the next quarterly supplemental Form 27 submission.

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

Signed: Jason Davidson

Title: Remediation Advisor

Submit Date: 03/14/2024

Email: ENspillremediationcontractor@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: 05/03/2024

Remediation Project Number: 29396

**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**

403713718	FORM 27-SUPPLEMENTAL-SUBMITTED
403713822	REMEDATION PROGRESS REPORT

Total Attach: 2 Files

**General Comments**

**User Group**

**Comment**

**Comment Date**

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)