

State of Colorado
Energy & Carbon Management Commission

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09/26/2024
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 #: 31414 Initial Form 27 Document #: 403441996

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>123-11231</u>	County Name: <u>WELD</u>
Facility Name: <u>SMITH-REEVES 27-1</u>	Latitude: <u>40.368860</u>	Longitude: <u>-104.871750</u>	
** correct Lat/Long if needed: Latitude: <u>40.368848</u>		Longitude: <u>-104.871767</u>	
QtrQtr: <u>NESE</u>	Sec: <u>27</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>485885</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Smith Reeves 27-1 Wellhead/Flowline</u>	Latitude: <u>40.366002</u>	Longitude: <u>-104.870828</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NESE</u>	Sec: <u>27</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? No

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 - 2,595' SW; Surface Water: Loveland and Greeley Canal - 644' SSW; Occupied Building: 737' ENE; Livestock: 658' ENE; FWS Wetlands: 644' SSW Riverine (R4SBCx); HPH Sensitive Wildlife Habitat: Rule 1202.d: Wellhead & Flowline Within Mule Deer Severe Winter Range.

Flowline Conflict: Wellhead & Flowline within Mule Deer Severe Winter Range.

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. 403698907	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 December 1, 2023, field screening and confirmation soil sampling activities were conducted in accordance with the ECMC Rule 911 during the decommissioning of the Smith-Reeves 27-1 wellhead and removal of the associated flowline. On December 29, 2023, it was determined that a historic release was discovered along the flowline when analytical results returned with organic compound exceedances at soil sample locations FL01-05, FL01-06, and FLR02. Due to subcontractor availability, excavation activities were unable to be initiated. As such, no soil was removed from the location.

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 December 1, 2023, three soil samples (FL01-05, FL01-06, & FLR02) were collected from the flowline source areas at approximately 4 feet below ground surface (bgs). The samples were submitted for laboratory analysis of the full ECMC Table 915-1 analytical suite. Analytical results indicated that site specific COCs include: benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, total petroleum hydrocarbons (TPH[C6-C36]), 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, anthracene, benzanthracene, benzopyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, indenopyrene, and pyrene.

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, and 1,3,5-trimethylbenzene 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):

On December 1, 2023, soil encountered on-site and below production equipment was visually inspected and field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). Per the approved proposed soil sampling plan, two soil samples (WH01 & FLR01) were collected below the wellhead & flowline riser at approximately 6 ft & 4 ft bgs, respectively, and submitted for laboratory analysis of the full Table 915-1 analytical suite. Four (4) additional soil samples (FL01-01 - FL01-04) were collected every 250 feet along the flowline and at the halfway point. Soil sample (FL01-03) was submitted for laboratory analysis of the full Table 915-1 analytical suite. Analytical results indicated that all compound concentrations were within the acceptable Table 915-1 standards, except for lead in WH01; arsenic, cadmium, & lead in FLR01; EC & selenium in FL01-03.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 6
Number of soil samples exceeding 915-1 6
Was the areal and vertical extent of soil contamination delineated? No
Approximate areal extent (square feet) 100

NA / ND

ND Highest concentration of TPH (mg/kg) _____
-- Highest concentration of SAR 3.1
BTEX > 915-1 No
Vertical Extent > 915-1 (in feet) 6

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 December 1, 2023, two background soil samples (BKG01 @ 4' and BKG01 @ 6') were collected from native material topographically up-gradient of the wellhead location and submitted for laboratory analysis of ECMC Table 915-1 Metals, pH, and EC. Analytical results indicated that pH, arsenic, & barium were observed in exceedance of the applicable regulatory standards in native material.

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?

Based on the final analytical results, supplemental source mass removal activities are proposed to be initiated to remove remaining hydrocarbon impacted material via mechanical excavation adjacent to and below soil samples FL01-05 @ 4', FL01-06 @ 4', & FLR02 @ 4'. Confirmation soil samples will be collected from the base and sidewalls of the final excavation extents and submitted for laboratory analysis of the ECMC approved COCs.

Additionally, analytical results indicated that lead was in exceedance of the applicable standards in soil sample WH01; cadmium and lead were in exceedance of the applicable standards in soil sample FLR01. As such, up to five (5) soil borings will be advanced to confirm as well as vertically and horizontally delineate the cadmium & lead exceedances observed in soil samples WH01 @ 6' & FLR01 @ 4'.

Analytical results indicated that EC & selenium were in exceedance of the applicable standards in soil sample FL01-03. As such, up to five (5) soil borings will be advanced to confirm as well as vertically and horizontally delineate the EC & selenium exceedances observed in soil sample FL01-03 @ 4'.

Up to five (5) additional background soil borings will be advanced in native material adjacent to the final wellhead excavation extent and soil sample FL01-03 to evaluate EC, cadmium, lead, & selenium in native material. The proposed soil boring locations are illustrated on Figures 3 & 4.

Analytical results will be summarized in a forthcoming Supplemental 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.

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.

On December 29, 2023, a historic release was discovered following receipt of final analytical results from soil samples collected during decommissioning activities at the Smith Reeves 27-1 Wellhead. On December 1, 2024, as per the approved proposed soil sampling plan, two soil samples (WH01 & FLR01) were collected below the wellhead & flowline riser at approximately 6 ft bgs & 4 ft bgs. Seven (7) soil samples (FL01-01 - FL01-06 & FLR02) were collected along the flowline, at the halfway point, at the significant direction changes, and at the separator flowline riser. Soil samples (WH01, FLR01, FL01-03, FL01-05, FL01-06, & FLR02) were submitted for laboratory analysis of the full Table 915-1 analytical suite. Analytical results indicated that organic and inorganic compound concentrations were in compliance with the applicable Table 915-1 standards, with exception to the following samples:

- WH01: lead
- FLR01: cadmium & lead
- FL01-03: EC & selenium
- FL01-05: benzantracene
- FL01-06: benzantracene
- FLR02: benzantracene

Supporting documentation was included on the previously submitted Supplemental Form 27 Document No. 403698907

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ 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 of the wellhead and removal of the flowline.

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 Third Quarter 2024 - 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.

- Source mass removal and confirmation sampling will be conducted to remove impacted soil adjacent to the flowline release.
- Investigation and delineation of EC, cadmium, lead, & selenium is ongoing.
- Native material assessment of EC, cadmium, lead, & selenium is ongoing.
- Facility and infrastructure were decommissioned and the location will be reclaimed in accordance with the ECMC 1000 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: \$ 50000

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? No

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 wellhead decommissioning and flowline 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.

Following additional source mass removal activities, the location will 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? _____

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. 12/01/2023

Proposed date of completion of Reclamation. 12/01/2028

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. 04/19/2023

Actual Spill or Release date, or date of discovery. 12/29/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 07/13/2023

Proposed site investigation commencement. 09/26/2024

Proposed completion of site investigation. 03/26/2025

REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/01/2023

Proposed date of completion of Remediation. 12/01/2028

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 the evaluation of the soil analytical results and the need for supplemental source mass removal, the proposed date of site investigation commencement and the proposed date of the completion of site investigation was adjusted to span through the Fourth Quarter of 2024. The proposed supplemental site investigation activities will be completed following land access negotiations with the land owner and crew availability.

OPERATOR COMMENT

This Supplemental Form 27 is being submitted as a Third Quarter 2024 timeline update for the Smith-Reeves 27-1 wellhead. Per ECMC request, tables and figures previously submitted have not been included with this form submittal. Please refer to ECMC document no. 403698907 for previously submitted tables and figures.

Following landowner approval and crew availability, supplemental source mass removal activities will be initiated along the former Smith-Reeves 27-1 flowline at the location of soil samples FL01-05, FL01-06, and FLR02. Additionally, supplemental site investigation activities will be conducted to assess EC, cadmium, lead, and/or selenium concentrations adjacent to and below the former wellhead excavation and along the flowline at soil sample FL0103. Sequentially, a supplemental site investigation will be conducted to assess EC, cadmium, lead, and selenium in native material.

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: Brock Nelson

Title: Environmental Consultant

Submit Date: 09/26/2024

Email: bnelson@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: Taylor Robinson

Date: 11/27/2024

Remediation Project Number: 31414

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

403932749	FORM 27-SUPPLEMENTAL-SUBMITTED
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Total Attach: 1 Files

General Comments

User Group

Comment

Comment Date

		Stamp Upon Approval
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Total: 0 comment(s)