

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: <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 #: 30534 Initial Form 27 Document #: 403449064

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>123-29164</u>	County Name: <u>WELD</u>
Facility Name: <u>MEYER 4</u>	Latitude: <u>40.389926</u>	Longitude: <u>-104.792679</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NWNW</u>	Sec: <u>21</u>	Twp: <u>5N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

Facility Type: <u>LOCATION</u>	Facility ID: <u>332800</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>MEYER-65N66W 21NWNW</u>	Latitude: <u>40.389930</u>	Longitude: <u>-104.792660</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NWNW</u>	Sec: <u>21</u>	Twp: <u>5N</u>	Range: <u>66W</u> Meridian: <u>6</u> Sensitive Area? <u>Yes</u>

SITE CONDITIONS

General soil type - USCS Classifications SC

Most Sensitive Adjacent Land Use Residential

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

Closest Domestic Well – 1560' SW
Nearest Surface Water – Loveland and Greeley canal and Boomerang Ditch – 35' E
Nearest Occupied Building – Hospital 220' NE
Additional Occupied Buildings – Residential buildings 420' S

No other potential receptors are located within ¼ mile of the Site
Above distances are approximations

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
No	GROUNDWATER	Not impacted	Not encountered
No	SOILS	Refer to Fig 2-3 and Tables 2-4	Excavation/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.

Hydrocarbon impacted soils were identified at the former separator dump line riser during facility closure activities. Excavation was conducted and the identified impacted soil was removed and transported offsite for disposal under PDC manifest to Waste Management's North Weld Landfill in Ault, Colorado in accordance with Rules 905 and 906. Analytical results reported for all excavation confirmation soil samples collected from the final extents of the excavation were compliant with their applicable Table 915-1 GWSSLs, less than the highest background pH concentrations, or less than 1.25x average background concentrations for arsenic, barium, lead, and selenium except for excavation soil samples EX07@4 and EX16@4.

Please refer to the Source Removal Summary section under the Remedial Action Plan tab of this Form 27 and to the Facility Closure Investigation and Excavation Environmental Report submitted with Form 27 Document Number 403753828 for a summary of the source removal activities conducted at the Site.

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):

Based on the results of the excavation confirmation soil samples (EX07@4 and EX16@4) collected from the sidewalls of the final excavation extent, and background samples collected from areas away from potential sources of impact related to the Site, a reduced analyte list for subsequent confirmation samples was requested in Form 27 Supplemental Document Number 403658044 on January 22, 2024, and approved by the ECMC on February 1, 2024.

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):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 32
Number of soil samples exceeding 915-1 3
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 2300

NA / ND

-- Highest concentration of TPH (mg/kg) 391
-- Highest concentration of SAR 4.1
BTEX > 915-1 Yes
Vertical Extent > 915-1 (in feet) 8

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?

Eleven site-specific background samples were collected from 8 background soil borings (BKG01-BKG08) from approximately 3 ft., 4 ft., and 6 ft-bgs in areas away from oil and gas infrastructure.

Please refer to the Facility Closure Investigation and Excavation Environmental Report submitted with Form 27 Document Number 403753828 for a summary of background soil samples collected at the Site.

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?

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 31, November 1, and November 2, 2023, excavation was conducted to remove the impacted soil at the former separator dump line riser. Nine confirmation soil samples (EX05-EX07, EX09-EX12, EX15-EX16) were collected from the sidewalls of the excavation at depths ranging from 3 ft., to 4 ft-bgs, and four confirmation soil samples (EX01, EX08, EX13-EX14) were collected from the floor of the excavation at depths ranging from 6 ft., to 8 ft-bgs.

The final extent of the excavation was approximately 50 feet by 46 feet to a depth ranging from 6 ft., to 8 ft-bgs. In total, approximately 440 cubic yards of presumably impacted soil were removed and hauled to Waste Management's North Weld Landfill in Ault, CO in accordance with ECOM Rules 905 and 906. Copies of the waste manifests are available upon request.

On February 29, 2024, additional confirmation soil samples (SS01-SS08) were collected to vertically and horizontally delineate the remaining barium exceedances vertically and horizontally in excavation confirmation soil samples EX07@4 (139 mg/kg) and EX16@4 (285 mg/kg).

Please refer to the Facility Closure Investigation and Excavation Environmental Report submitted with Form 27 Document Number 403753828 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, soil has been removed leaving only residual concentrations of barium reported above ECMC Table 915-1 standards to be resolved.

Please refer to the Facility Closure Investigation and Excavation Environmental Report submitted with Form 27 Document Number 403753828 for a summary of remediation 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) _____ 440

_____ 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 initial site investigation and facility decommissioning activities.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

Quarterly Semi-Annually Annually Other Final closure request

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 Final closure request

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.

- The project has been completed and no further assessment or remediation is required at this time.

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: \$ 1000

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 440

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. 05/25/2023

Actual Spill or Release date, or date of discovery. 10/26/2023

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 10/25/2023

Proposed site investigation commencement. 10/25/2023

Proposed completion of site investigation. 06/28/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 10/25/2023

Proposed date of completion of Remediation. 11/02/2023

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:

Proposed Completion of Site Investigation and Remediation dates updated based on analytical results from delineation soil samples collected on 2/29/2024.

OPERATOR COMMENT

Please refer to the Facility Closure Investigation and Excavation Environmental Report submitted with Form 27 Document Number 403753828 for a summary of facility closure soil sampling and excavation activities conducted at the Site.

Hydrocarbon impacted soils were identified at the former separator dump line riser 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. Analytical results reported for all facility closure confirmation soil samples and excavation confirmation soil samples collected from the final extent of the excavation were compliant with their applicable Table 915-1 GWSSLs, less than the highest background pH concentrations, or less than 1.25x the highest background concentrations for arsenic, barium, lead, and selenium, except for barium reported for excavation confirmation soil samples EX07@4 (139 mg/kg) and EX16@4 (285 mg/kg).

Additional confirmation soil samples SS01 through SS08 were collected to delineate the remaining barium exceedances vertically and horizontally. All barium results for soil samples SS01 through SS08 were reported as compliant with their respective standards and barium concentrations were successfully delineated. Groundwater was not encountered during facility closure and decommissioning activities.

All other Table 915 analytes reported for soil samples EX07 and EX16 are reported as compliant with their respective GWSSL and calculated background standards. There is no indication in the organics or soil suitability parameters that suggest the elevated barium is the result of hydrocarbon or produced water contamination.

Additional background sampling at the Lesser 21 wellheads and associated production facility located ~3,500 feet from the Site has also reported elevated concentrations for barium in background samples collected from 3-4 ft-bgs. These concentrations ranged from 173 mg/kg to 245 mg/kg. Please refer to Document Numbers 403702743, 403691457, and 403669857.

Based on the information summarized in this Form 27, PDC respectfully requests a No Further Action (NFA) determination from ECMC for Remediation Project #30534.

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: 07/02/2024

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: Taylor Robinson

Date: 08/22/2024

Remediation Project Number: 30534

COA Type

Description

COA Type	Description
1 COA	NFA has been removed at this time. ECMC acknowledges that barium has been vertically and horizontally delineated; however, Operator shall remove all elevated barium impacts that remain in situ. If base and side wall confirmation samples indicate impacts have been removed and/or are below 1.25x background levels, closure may be requested at that time. Or Operator shall prove depth to groundwater on location is greater than 20ft past known impacts with a confining layer. Then RSSLs may be requested.

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

Att Doc Num	Name
403841632	INVESTIGATION/REMEDICATION WORKPLAN (SUPPLEMENTAL)
403841638	MAP
403841639	SOIL SAMPLE LOCATION MAP
403841640	SOIL SAMPLE LOCATION MAP
403841641	ANALYTICAL RESULTS
403841642	ANALYTICAL RESULTS
403841644	ANALYTICAL RESULTS
403841645	ANALYTICAL RESULTS

403841646	ANALYTICAL RESULTS
403841647	ANALYTICAL RESULTS
403898553	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 11 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
		Stamp Upon Approval

Total: 0 comment(s)