

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 ECOM 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 #: 31438 Initial Form 27 Document #: 403485013

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>LOCATION</u>	Facility ID: <u>310839</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>NELSON-65N67W 34NESW</u>	Latitude: <u>40.355690</u>	Longitude: <u>-104.883580</u>	
** correct Lat/Long if needed: Latitude: <u>40.354902</u>		Longitude: <u>-104.881726</u>	
QtrQtr: <u>NESW</u>	Sec: <u>34</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>485977</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>Nelson 34K Tank Battery</u>	Latitude: <u>40.354862</u>	Longitude: <u>-104.881956</u>	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: <u>NESW</u>	Sec: <u>34</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? 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 - 918' NE; Surface Water: Hill and Brush Ditch - 540' SSW; Occupied Building: 743' NW; Livestock: 1,255' WNW; FWS Wetlands: 540' SSW Riverine (R4SBCx); HPH Sensitive Wildlife Habitat: Rule 1202.c: 1,121' SSW Aquatic Native Species Conservation Area; Rule 1202.d: Tank Battery Within Mule Deer Winter Concentration Area; Rule 1202.d: 584' SSW - Mule Deer Severe Winter Range; Rule 309.e.1: 682' W - Bald Eagle Roost Site; 100-Year Floodplain 1,083' S of Tank Battery.

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
Yes	SOILS	Refer to Tables 1-5 & Figures 1 & 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.

On December 28, 2023, field screening and confirmation soil sampling activities were conducted in accordance with the ECMC Rule 911 during the decommissioning of the former Nelson 34K Tank Battery (Figure 1). On January 15, 2024, following the receipt of initial analytical results, it was determined that a historic release was discovered at the separator dump line riser (SEP01-DL). Following the discovery, mitigation activities were initiated on January 30, 2024, to delineate and remove remaining hydrocarbon impacts. Approximately 40 cubic yards (CY) were removed from the separator dump line excavation and transported to the North Weld Waste Management Facility for disposal under PDC waste manifests.

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 28, 2023, one source characterization soil sample (SEP01-DL @ 3') was collected from the separator dump line source area at approximately 3 feet below ground surface (bgs). The sample was 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.

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 December 28, 2023, soil encountered on-site and below production equipment was visually inspected and field screened for VOC concentrations using a PID. Per the approved proposed sampling plan, samples were collected below and/or adjacent to the separator flowline (SEP01-FL), above ground storage tank (AST), compressor (COMP), produced water vessel (PWV) base and sidewall with the highest PID reading and submitted for analysis of ECMC Table 915-1 analytical suite. In addition, field screenings were taken at the remaining sidewalls of the produced water vessel excavation, below the water dump line, the emission control device, and the meter house. Analytical results indicated that the soil samples were in compliance with the applicable standards, except for pH in the compressor (COMP01) soil sample.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

NA / ND

Number of soil samples collected 12 -- Highest concentration of TPH (mg/kg) 1010
 Number of soil samples exceeding 915-1 2 -- Highest concentration of SAR 0.464
 Was the areal and vertical extent of soil contamination delineated? No BTEX > 915-1 No
 Approximate areal extent (square feet) 100 Vertical Extent > 915-1 (in feet) 3

Groundwater

Number of groundwater samples collected 0 Highest concentration of Benzene (µg/l) _____
 Was extent of groundwater contaminated delineated? No Highest concentration of Toluene (µg/l) _____
 Depth to groundwater (below ground surface, in feet) _____ Highest concentration of Ethylbenzene (µg/l) _____
 Number of groundwater monitoring wells installed _____ Highest concentration of Xylene (µg/l) _____
 Number of groundwater samples exceeding 915-1 _____ 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 28, 2023, three background soil samples (BKG01) were collected at approximately 3 feet, 4 feet, and 6 feet bgs from native material topographically up-gradient of the tank battery and submitted for analysis of ECMC Table 915-1 metals and pH. Analytical results indicated that arsenic, lead, and selenium was in exceedance of the applicable regulatory standards in native soil.
 Additionally on January 25 and 30, 2024, eighteen background soil samples (BKG02-BKG07) were collected at approximately 2.5 feet, 3 feet, and 4 feet bgs at each background soil boring, from native material topographically up-gradient of the tank battery and submitted for analysis of Table 915-1 metals and pH. Analytical results indicated that pH was in exceedance of the applicable regulatory standards in native soil. Table 915-1 metal analytical results are currently pending.

Was investigation derived waste (IDW) generated as part of this investigation?
 Volume of solid waste (cubic yards) 40 Volume of liquid waste (barrels) 0

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 January 30, 2024, approximately 40 cubic yards of impacted material were excavated and transported to the North Weld Waste Management Facility in Ault, CO for disposal 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 January 30, 2023, source mass removal activities were initiated and six soil samples (SS01-SS04, SS06) were collected at depths of approximately 3 feet & 4 feet bgs from the base and sidewalls of the final excavation extent and were submitted for laboratory analysis of Table 915-1 Organic Compounds in Soil & TPH. One additional soil sample (SS05) was collected from the final excavation extent at 2.5 feet bgs, and was submitted for analysis of Table 915-1 Soil Suitability for Reclamation constituents. Analytical results indicated that all compound concentrations for soil samples collected from the final excavation extent were in compliance with the applicable standards or below background concentrations. Based on the analytical results, the following exceedances were observed:

-pH: COMP01

Consequently, 21 background soil samples (BKG01-BKG07) were collected in native material adjacent to the former tank battery at depths ranging from 2.5 feet to 6 feet bgs & submitted for laboratory analysis of Table 915-1 metals and pH. Analytical results indicated that arsenic concentrations and pH were in exceedance of the applicable regulatory standards in native soil. Based on the background analytical results, all soil samples are below or within 1.25x the background concentrations except for pH in soil sample COMP01. Analytical results are summarized in Tables 1 through 4. The GPS coordinates & field screened VOC concentrations are summarized in Table 5. The soil sample locations and excavation site map are illustrated on Figures 1 & 2. The laboratory analytical results are included as Attachment A and the field notes and photo log are included as Attachment B.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

Yes _____ Excavate and offsite disposal

_____ Chemical oxidation

If Yes: Estimated Volume (Cubic Yards) _____ 40

_____ Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or ECOM 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 and mitigation activities conducted at the former Nelson 34K 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, No Further Action Request (NFAR), & 2Q24 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.

- Facility and infrastructure were decommissioned and the location will be reclaimed in accordance with the ECMC 1000 Series.
- Source mass removal has been completed.
- Investigation and delineation is complete for organics and inorganics in soil.

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 _____ 40

E&P waste (solid) description Hydrocarbon impacted soils.

ECMC Disposal Facility ID #, if applicable: _____

Non-ECMC Disposal Facility: North Weld Waste Management Facility

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? Yes

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 tank battery decommissioning and source mass removal activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The location will be reclaimed in accordance with 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. 12/28/2023

Proposed date of completion of Reclamation. 07/08/2025

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. 07/05/2023

Actual Spill or Release date, or date of discovery. 01/15/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 08/23/2023

Proposed site investigation commencement. 01/30/2024

Proposed completion of site investigation. 01/30/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 12/28/2023

Proposed date of completion of Remediation. 01/30/2024

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:

No additional investigation is required at this time, should the ECMC agree that the pH value observed in soil sample COMP01 is not attributed to Oil & Gas activities. The proposed site investigation commencement and completion dates have been adjusted to the supplemental site investigation completion date.

OPERATOR COMMENT

This Supplemental Form 27 was submitted to summarize the final analytical results for soil samples collected at the former Nelson 34K tank battery location.

Analytical results from the January 30, 2024, site investigation indicated that the TPH exceedance observed in soil sample SEP01-DL collected below the separator dump-line riser was excavated and both vertically & horizontally delineated to below Table 915-1 standards.

Based on the analytical results for soil samples collected during decommissioning and source mass removal activities, all hydrocarbon impacted material has been removed and delineated. The pH exceedance recorded in soil sample COMP01 of 8.68 is just above the background concentration of 8.61. Based on the absence of other indicators that a spill or release occurred at or near the COMP01 soil sample location, such as hydrocarbon exceedances or elevated EC and SAR in soil, the pH result at the COMP01 soil sample location is not associated with E&P activities. Consequently, PDC requests that pH not be considered a Table 915-1 contaminant of concern at this location. As such, PDC is requesting a No Further Action (NFA) determination for the Nelson 34K tank battery.

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: 07/08/2024

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: Taylor Robinson

Date: 08/26/2024

Remediation Project Number: 31438

COA Type

Description

	<p>Based on the information presented, it appears the elevated pH sample from the wellhead area appears to be de minimis in quantity or within the range of background pH; therefore, elevated pH may not be associated with E&P activities. It appears that no further remedial action is necessary at this time and the ECMC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding ECMC standards or background levels or if groundwater is found to be impacted, then further investigation and/or remediation activities may be required.</p> <p>The surface area disturbed by the remediation activity shall be reclaimed in accordance with the 1000 Series Reclamation Rules. For locations with active ongoing oil and gas operations, comply with Rule 1003 interim reclamation requirements and for locations that will no longer have active oil and gas operations, comply with Rule 1004 Final Reclamation requirements.</p>
1 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
403846814	INVESTIGATION/REMEDATION WORKPLAN (SUPPLEMENTAL)
403846834	SOIL SAMPLE LOCATION MAP
403846842	SOIL SAMPLE LOCATION MAP
403846844	ANALYTICAL RESULTS
403846847	PHOTO DOCUMENTATION
403900648	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 6 Files

General Comments

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

Total: 0 comment(s)