

# State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

403236961

Receive Date:

12/05/2022

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 COGCC 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>	<b>Phone Numbers</b>
Address: <u>1775 SHERMAN STREET - STE 3000</u>		Phone: <u>(303) 860-5800</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80203</u>
Contact Person: <u>Karen Olson</u>	Email: <u>tasfillremediationcontractor@pdce.com</u>	Mobile: <u>( )</u>

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 21625 Initial Form 27 Document #: 402904779

#### 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>123-23657</u>	County Name: <u>WELD</u>
Facility Name: <u>SEELEY LAKE 5</u>		Latitude: <u>40.467880</u>	Longitude: <u>-104.727190</u>
		** correct Lat/Long if needed: Latitude: _____	Longitude: _____
QtrQtr: <u>SESW</u>	Sec: <u>24</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>333330</u>	API #: _____	County Name: <u>WELD</u>
Facility Name: <u>SEELEY LAKE-66N66W 24SESW</u>		Latitude: <u>40.467880</u>	Longitude: <u>-104.727190</u>
		** correct Lat/Long if needed: Latitude: <u>40.468010</u>	Longitude: <u>-104.727645</u>
QtrQtr: <u>SESW</u>	Sec: <u>24</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 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**

Tank Battery: Surface Water: Irrigation Ditch - 500' S; Occupied Building: 840' WSW; Livestock: 555' S; FWS Wetlands: 230' W Freshwater Emergent Wetland (PEM1C); HPH Sensitive Wildlife Habitat: Rule 309.e.1: - Site Within Bald Eagle Roost Site.

Wellhead (Seeley Lake 5): Surface Water: Irrigation Ditch - 455' S; Occupied Building: 965' WNW; Livestock: 510' S; FWS Wetlands: 350' W Freshwater Emergent Wetland (PEM1C); HPH Sensitive Wildlife Habitat: Rule 309.e.1: 25' - SW Bald Eagle Roost Site.

# 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	SOILS	Refer to Tables 1-5 and Figures 1-5	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 COGCC Rule 911, this form serves as notification for the decommissioning and abandonment of the Seeley Lake 3,5 production facility, Seeley Lake 5 wellhead, and removal of the off-location flowline. The ground and sub-surfaces will be visually inspected for hydrocarbon impacts during equipment decommissioning. Field observations and photo documentation will be recorded in a field inspection form for submittal to the COGCC

## 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 ):

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 COGCC. GPS data will be collected for all soil sample locations. Soil samples collected at the tank battery will be submitted for laboratory for analysis of BTEX, naphthalene, TPH (C6-C36), 1,2,4-TMB, and 1,3,5-TMB by EPA Methods 8260B and 8015. Additionally, soil sample(s) will be collected in the area most likely to be impacted by produced water and will be submitted for laboratory analysis of EC, pH, SAR, and boron by saturated paste and hot water soluble extraction methods. Soil samples will be collected adjacent to the wellhead from native material and submitted for laboratory analysis of Organic Compounds in Soil and soil suitability.

### 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 ):

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. The soil samples will be submitted for additional laboratory analysis of EC, pH, SAR, and boron by saturated paste and hot water soluble extraction methods. Assessments will be conducted during the removal of the on-location flowline (estimated to be 150 ft in length) and soil samples will be collected below the flowline risers. The flowlines and adjacent sub-surface will be inspected for any 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 for an initial assessment. Samples will be submitted for laboratory analysis of Organic Compounds in Soil and TPH (C6-C36). GPS data and photo documentation will be recorded.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

**Soil**

Number of soil samples collected 14

Number of soil samples exceeding 915-1 2

Was the areal and vertical extent of soil contamination delineated? Yes

Approximate areal extent (square feet) 200

**NA / ND**

-- Highest concentration of TPH (mg/kg) 5

-- Highest concentration of SAR 1.53

BTEX &gt; 915-1 No

Vertical Extent &gt; 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 April 4, 2022, 4 background soil samples were collected from background soil boring (BKG01) between depths of 2.5' and 6' bgs. The 4 background soil samples were collected from native material and submitted for analysis of Table 915-1 metals. Additionally, the soil samples collected between depths of 2.5' and 5' bgs were submitted for analysis of EC. Analytical results indicated that arsenic, barium, and selenium were in exceedance of the applicable regulatory standards in native soil.

Additionally, per the COA issued by the COGCC on July 13, 2022 (Document # 403093880) on October 24, 2022, 17 background soil samples were collected from five background soil borings (BKG02-BKG06) between depths of 1' and 8' bgs. The 17 background soil samples were collected from native material and submitted for analysis of barium and EC. Analytical results indicated that barium and EC were in exceedance of the applicable regulatory standards in native soil.

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

Volume of solid waste (cubic yards) 18

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 April 1, 2022, approximately 9 cubic yards (CY) were removed from below the former separator dump line and transported to the North Weld Waste Management Facility for disposal under a PDC waste manifest. On April 4, 2022, approximately 9 cubic yards (CY) were removed from below the former produced water vessel and transported to the North Weld Waste Management Facility for disposal under a PDC waste manifest.

**REMEDIAL 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 October 24, 2022, a supplemental site investigation was conducted at the former Seeley Lake 3,5 tank battery and Seeley Lake 5 wellhead location. Five soil borings (SB01-SB05) were advanced via hand auger adjacent to and surrounding the former separator excavation to confirm and delineate the vertical and horizontal extents of the EC exceedance observed in soil sample SEP01-DL-S. Four soil samples were collected from soil boring SB01 between 1 foot and 6 feet bgs, from soil adjacent to SEP01-DL-S. Additionally, one soil sample was collected from each of the surrounding soil borings SB02-SB05 at 2.5 feet bgs. All soil samples were submitted for laboratory analysis of EC. Analytical results indicated that EC levels were in compliance with the applicable COGCC Table 915 Soil Suitability for Reclamation standards for all soil samples collected. In addition, due to elevated PID readings exhibited in soil boring SB01 at 6 feet bgs, one soil sample was collected and submitted for laboratory analysis of BTEX, naphthalene, TPH(C6-C36), 1,2,4-TMB, and 1,3,5-TMB. Analytical results indicated that organic constituents were in compliance with the Table 915-1 standards in soil sample SB01 @ 6'.

Additionally, Five soil borings (SB06-SB10) were advanced via hand auger adjacent to and surrounding the former wellhead excavation to confirm and delineate the vertical and horizontal extents of the EC exceedance observed in soil samples FLR01. Four soil samples were collected from soil boring SB06 between 1 foot and 6 feet bgs, from soil adjacent to FLR01. Additionally, one soil sample was collected from each of the surrounding soil borings SB07-SB10 at 3 feet bgs. All soil samples were submitted for laboratory analysis of EC. Analytical results indicated that EC levels were in compliance with the applicable COGCC Table 915 Soil Suitability for Reclamation standards for all soil samples collected. Soil boring locations are illustrated on Figures 4 and 5.

## Soil Remediation Summary

☐ In Situ

☒ Ex Situ

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

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

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

If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 18

\_\_\_\_\_ Air sparge / Soil vapor extraction

Name of Licensed Disposal Facility or COGCC 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 decommissioning, confirmation sampling activities, or supplemental site investigation activities.

## REMEDIATION PROGRESS UPDATE

### PERIODIC REPORTING

#### Approved Reporting Schedule:

☐ Quarterly☐ Semi-Annually☐ Annually☒ Other

Tank Battery and Wellhead Decommissioning 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 Tank Battery and Wellhead Decommissioning 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 18

E&P waste (solid) description Hydrocarbon impacted material

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: North Weld Waste Management Facility

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

E&P waste (liquid) description

COGCC Disposal Facility ID #, if applicable:

Non-COGCC 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? Yes

Does the previous reply indicate consideration of background concentrations? Yes

Does Groundwater meet Table 915-1 standards? Yes

Is additional groundwater monitoring to be conducted?           

Operator shall comply with the COGCC 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, wellhead and flowline abandonment activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The location will be reclaimed in accordance with the COGCC 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. 04/04/2022

Proposed date of completion of Reclamation. 04/04/2023

## 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. 11/10/2021

Actual Spill or Release date, or date of discovery.           

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/10/2022

Proposed site investigation commencement. 10/24/2022

Proposed completion of site investigation. 10/24/2022

### REMEDIAL ACTION DATES

Proposed start date of Remediation. 04/01/2022

Proposed date of completion of Remediation. 10/24/2022

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

On October 24, 2022, a supplemental site investigation was conducted at the former Seeley Lake 3,5 tank battery and Seeley Lake 5 wellhead location. Ten soil borings (SB01-SB10) were advanced via hand auger adjacent to and surrounding the former separator and wellhead excavations to confirm and delineate the vertical and horizontal extents of the EC exceedance observed in soil sample SEP01-DL-S and FLR01. Analytical results indicated that EC levels were in compliance with the applicable COGCC Table 915 Soil Suitability for Reclamation standards for all soil samples collected. Based on the results, the initial EC exceedances recorded during initial decommissioning activities were discrete locations and native soil below and adjacent to the former wellhead and separator locations were in compliance with the Soil Suitability for Reclamation standards.

Additionally, per the COA issued by the COGCC (Document # 403093880) on July 13, 2022, seventeen background soil samples (BKG02-BKG06) were advanced via hand auger adjacent to the former tank battery and wellhead in native material. Background soil samples were collected between 2.5 feet and 8 feet bgs, and submitted for analysis of barium and EC. Analytical results indicated that barium and EC were in exceedance of the applicable regulatory standards in native soil.

The average barium concentration in native material is 187 mg/kg and 1.25x the background barium concentration is 234 mg/kg. Barium exceedances observed in soil samples collected from the final separator excavation extent are within 1.25x the background concentrations and indicative of native soil conditions, as referenced in footnote 11 of the Table 915-1. The sidewall soil sample collected from the produced water vessel (PWV) excavation extent (PWV01-W) is within 1.25x the background concentrations; however, the soil sample collected from the PWV base (PWV01-B) yields a concentration of 247 mg/kg, and approximately 1.32x the average native material barium concentration.

Consequently, a statistical analysis of the data for the barium levels observed in confirmation and background soil samples was conducted. This analysis indicated that background barium concentrations were generally observed to be within 66.5 mg/kg and 865 mg/kg, with 3 distinct native material concentrations present above 247 mg/kg. Confirmation soil barium levels were generally observed to be within 141 mg/kg and 247 mg/kg. The average native material barium concentration was observed to be 187 mg/kg whereas the average confirmation soil barium concentration was observed to be 194 mg/kg. In conclusion, although the PWV01-B barium concentration is greater than 1.25x the mean native material barium concentration, the statistical analysis demonstrates all confirmation barium concentrations are present within the range of native material concentrations, demonstrate similar average concentrations, and are less than multiple barium concentrations observed in native material. The graphical representation of this statistical analysis is provided as attachment C.

Based on the analytical results collected during the supplemental site investigation activities, PDC is submitting a No Further Action (NFA) request for the Seeley Lake 3,5 tank battery and Seeley Lake 5 wellhead location.

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

Signed: Karen Olson

Title: Senior Program Manager

Submit Date: 12/05/2022

Email: [taspillremediationcontractor@pdce.com](mailto:taspillremediationcontractor@pdce.com)

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: RICK ALLISON

Date: 02/15/2023

Remediation Project Number: 21625

## COA Type

## Description

	<p>Impacts discovered and removed at the separator, produced water vessel and well appear limited in extent, based on Operator's previous and current submittals. Therefore, COGCC accepts Operator's analysis of EC and barium results at this time.</p> <p>Based on the information presented, it appears that no further remedial action is necessary at this time and the COGCC approves the closure request. However, should future conditions at the site indicate contaminant concentrations in soils exceeding COGCC standards 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 Check 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.



<u>Att Doc Num</u>	<u>Name</u>
403236961	FORM 27-SUPPLEMENTAL-SUBMITTED
403237041	LOGS
403244482	SOIL SAMPLE LOCATION MAP
403246132	ANALYTICAL RESULTS
403246133	OTHER

Total Attach: 5 Files

### General Comments

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

Total: 0 comment(s)