

# State of Colorado Oil and Gas Conservation Commission

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Report taken by:

Candice (Nikki) Graber

## 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) 8605800</u>
City: <u>DENVER</u>	State: <u>CO</u>	Zip: <u>80203</u>
Contact Person: <u>Karen Olson</u>	Email: <u>COGCCSpillRemediation@pdce.com</u>	Mobile: <u>( )</u>

### PROJECT, PURPOSE & SITE INFORMATION

#### PROJECT INFORMATION

Remediation Project #: 18114 Initial Form 27 Document #: 402688392

#### 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: Wellhead Closure and Flowline Removal

#### SITE INFORMATION

No Multiple Facilities

Facility Type: <u>WELL</u>	Facility ID: <u></u>	API #: <u>123-17813</u>	County Name: <u>WELD</u>
Facility Name: <u>DINNER 14-B-1</u>		Latitude: <u>40.306339</u>	Longitude: <u>-104.747187</u>
		** correct Lat/Long if needed: Latitude: <u></u>	Longitude: <u></u>
QtrQtr: <u>SESW</u>	Sec: <u>14</u>	Twp: <u>4N</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 Agriculture

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 - 905 feet SE, Surface Water: Unnamed Irrigation Pond - 278 feet N, Occupied Building - 260 feet SW, Livestock - 1,180 feet W, FWS Wetlands - 278 feet N

# 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	GROUNDWATER	Refer to Table 4 & Figure 2	Confirmation Groundwater Sampling
Yes	SOILS	Refer to Tables 1-4 & 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.

On July 15, 2021, field screening and confirmation soil sampling was conducted in accordance with the COGCC Rule 911 during the decommissioning and closure of the Dinner 14 B-1 Wellhead (Figure 1). During decommissioning activities, historic hydrocarbon impacts were discovered at the wellhead. Following the discovery, mitigation activities were initiated to delineate and remove remaining hydrocarbon impacts. Groundwater was encountered in the excavation at approximately 11 feet below ground surface (bgs). A total of 3,189.5 cubic yards (cy) of impacted material were excavated 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 July 15, 2021, one soil sample (SS01) was collected from the impacted source material at approximately 10 feet bgs and was submitted for laboratory analysis of the full COGCC Table 915-1 analytical suite. Between July 30 and August 9, 2021, forty-five (45) soil samples (SS02-SS42 and SS44-SS47) were collected from sidewalls and base of the excavation at depths ranging from 5' to 20' bgs and were submitted for laboratory analysis of BTEX, 1,2,4-trimethylbenzene(TMB), 1,3,5-TMB, naphthalene(N), total petroleum hydrocarbons(TPH), fluorene, pyrene, 1-methylnaphthalene(M), and 2-M. In addition, one soil sample (SS43) was collected at approximately 2.5 feet bgs from the sidewall of the final excavation extent and submitted for laboratory analysis of pH, EC, SAR and boron. Analytical results indicated that constituent concentrations were below the applicable COGCC Table 915-1 Protection of Groundwater SSLs in all samples collected from the final excavation extent.

### Proposed Groundwater Sampling

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

On July 19, 2021, one groundwater sample (GW01) was collected from the excavation and submitted for laboratory analysis of BTEX, N, 1,2,4-TMB, and 1,3,5-TMB. Analytical results indicated that benzene, 1,2,4-TMB and 1,3,5-TMB exceeded COGCC Table 915-1 standards. The groundwater sample location is illustrated on Figure 2 and the analytical results are summarized on Table 5.

### 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 ):

During initial closure activities conducted on July 15, 2021, 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, samples were collected adjacent to the cut and capped wellhead as well as between ground surface and 6 inches in the four cardinal directions surrounding the wellhead. Also, three field screened soil samples were collected adjacent to/below the flowline. In addition, three field screening sample locations were collected adjacent to/below the flowline. Sample locations collected during the initial decommissioning activities are illustrated on Figure 1.

# SITE INVESTIGATION REPORT

## SAMPLE SUMMARY

### Soil

Number of soil samples collected 47  
Number of soil samples exceeding 915-1 2  
Was the areal and vertical extent of soil contamination delineated? Yes  
Approximate areal extent (square feet) 5640

### NA / ND

-- Highest concentration of TPH (mg/kg) 1052  
-- Highest concentration of SAR 2.27  
BTEX > 915-1 Yes  
Vertical Extent > 915-1 (in feet) 20

### Groundwater

Number of groundwater samples collected 1  
Was extent of groundwater contaminated delineated? No  
Depth to groundwater (below ground surface, in feet) 11'  
Number of groundwater monitoring wells installed 0  
Number of groundwater samples exceeding 915-1 1

-- Highest concentration of Benzene (µg/l) 12  
ND Highest concentration of Toluene (µg/l)   
-- Highest concentration of Ethylbenzene (µg/l) 34  
-- Highest concentration of Xylene (µg/l) 280  
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?

On July 15, 2021, one background soil sample (BKG01) was collected at approximately 2.5 feet bgs and on August 9, 2021 three (3) background soil samples (BKG02) were collected from depths of 5 feet, 10 feet, and 18 feet bgs, respectively. All background soil samples were collected from native material topographically up-gradient of the wellhead and submitted for analysis of COGCC Table 915-1 metals. Analytical results indicated that arsenic and selenium 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) 3190 Volume of liquid waste (barrels) 9685

☒ Is further site investigation required?

Eight (8) groundwater monitoring wells will be installed via direct-push drilling methods to confirm the absence of dissolved-phase hydrocarbon impacts within and surrounding the former excavation extent. Lithologic descriptions and volatile organic compound (VOC) concentrations using a photoionization detector (PID) will be recorded for each borehole. If elevated VOC concentrations are encountered during the investigation, a sample will be collected from the interval exhibiting the highest VOC concentration from the borehole and submitted for laboratory analysis of the COGCC approved COCs. Proposed monitoring well locations are illustrated on Figure 3.

## 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.

Between July 15 and August 9, 2021, approximately 3,189.5 CY of impacted solids were removed from the excavation and transported to North Weld Waste Management Facility in Ault, Colorado for disposal under PDC waste manifests. Additionally, groundwater vacuum recovery was conducted concurrent with excavation activities and approximately 9,685 barrels of groundwater were removed from the excavation and transported to the NGL C6 facility for disposal under PDC waste manifests.

## 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.

A remediation strategy will be selected following the evaluation of groundwater analytical results.

## Soil Remediation Summary

☐ In Situ

☒ Ex Situ

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

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

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

\_\_\_\_\_ If Yes: Estimated Volume (Cubic Yards) \_\_\_\_\_ 3190

\_\_\_\_\_ 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.

Based on the analytical data collected during source mass removal activities, PDC will conduct quarterly groundwater monitoring at the 8 proposed monitoring wells until closure criteria are met. Groundwater samples will be submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, and 1,3,5-TMB by EPA Method 8260B in accordance with Table 915-1. In addition, site-specific inorganic parameters, including total dissolved solids (TDS), chlorides, and sulfates, will be evaluated at the source, up-and down-gradient monitoring wells during the fourth quarter of 2021. Contingent on analytical results, inorganic parameter analysis will be discontinued after one sampling event.

## 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

### 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 3190

E&P waste (solid) description Non-Regulated Solids - E&P Contaminated Soil

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: North Weld Waste Management Facility

Volume of E&P Waste (liquid) in barrels 9685

E&P waste (liquid) description Hydrocarbon impacted groundwater

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: NGL C6

## 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 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.

Reclamation will be conducted in accordance with COGCC 1004 Series Rules.

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. \_\_\_\_\_

Proposed date of completion of Reclamation. \_\_\_\_\_

## 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. 10/27/2020

Actual Spill or Release date, or date of discovery. \_\_\_\_\_

### SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 06/03/2021

Proposed site investigation commencement. 07/15/2021

Proposed completion of site investigation. \_\_\_\_\_

### REMEDIAL ACTION DATES

Proposed start date of Remediation. \_\_\_\_\_

Proposed date of completion of Remediation. \_\_\_\_\_

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**

Based on the analytical data collected during source mass removal activities, PDC will conduct quarterly groundwater monitoring at the 8 proposed monitoring wells until closure criteria are met.

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

Signed: ` Karen Olson

Title: Snr. Program Manager

Submit Date: ` 09/20/2021

Email: COGCCSpillRemediation@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: Candice (Nikki) Graber

Date: 10/07/2021

Remediation Project Number: 18114

**Condition of Approval****COA Type****Description**

	Operator will submit a minimum of one soil sample for the proposed laboratory analysis from each soil boring advanced during monitoring well installation (this shall include Soil Suitability Parameters).
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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.

**Att Doc Num****Name**

402807858	FORM 27-SUPPLEMENTAL-SUBMITTED
402810877	SITE MAP
402810984	ANALYTICAL RESULTS
402810986	PHOTO DOCUMENTATION

Total Attach: 4 Files

**General Comments****User Group****Comment****Comment Date**

		Stamp Upon Approval
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Total: 0 comment(s)