

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: PDC ENERGY INC	Operator No: 69175	Phone Numbers
Address: 1775 SHERMAN STREET - STE 3000		Phone: (303) 860-5800
City: DENVER State: CO Zip: 80203		Mobile: ()
Contact Person: Karen Olson	Email: COGCCSpillRemediation@pdce.com	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 18160 Initial Form 27 Document #: 402694343

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: WELL	Facility ID: _____	API #: 123-10498	County Name: WELD
Facility Name: KERBS 1-20	Latitude: 40.301565	Longitude: -104.805232	
** correct Lat/Long if needed: Latitude: _____		Longitude: _____	
QtrQtr: NENW	Sec: 20	Twp: 4N	Range: 66W Meridian: 6 Sensitive Area? Yes

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 1,080 feet SE, Nearest Surface Water: Freshwater Pond 610 feet NE, FWS Wetlands Freshwater Pond 610 feet NE, Occupied Buildings: 1,860 SW

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 Tables 1-5 and 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.

In accordance with COGCC Rule 911, this form serves as notification for decommissioning and/or abandonment of the production facility or the off-location wellhead and 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 (1/4/21), 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 will be submitted for laboratory for analysis of BTEX, naphthalene, total petroleum hydrocarbons (TPH C6-C36), 1,2,4-trimethylbenzene (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 to confirm soil suitability for reclamation. The sample(s) will be submitted for laboratory analysis of electrical conductivity (EC), pH, sodium adsorption ratio (SAR), and boron by saturated paste and hot water soluble extraction methods. Refer to the Proposed Sample Location Map.

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):

During closure activities conducted on June 22, 2021, soil encountered adjacent to and surrounding the wellhead and below the flowline riser was visually inspected and field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). In addition, a field screening samples was collected, and inspection conducted below the separator end of the flowline. GPS coordinates and field screened VOC concentrations are summarized in Table 5. Sample locations at the wellhead and along the flowline are illustrated on Figures 1 and 2.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 10

Number of soil samples exceeding 915-1 1

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet) 306

NA / ND

-- Highest concentration of TPH (mg/kg) 310

-- Highest concentration of SAR 0.722

BTEX > 915-1 Yes

Vertical Extent > 915-1 (in feet) 13

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 June 23, 2021, one background soil sample (BKG01) was collected at approximately 4 feet bgs from native material topographically up-gradient of the wellhead and submitted for analysis of COGCC Table 915-1 metals. These laboratory results are pending.

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

Volume of solid waste (cubic yards) 179

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.

Between May 13 and June 23, 2021, approximately 179.5 CY of impacted material were removed from the excavation and transported to the North Weld Waste Management Facility in Ault, Colorado 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 May 13, 2021, a reportable release was discovered at the Kerbs 1-20 Wellhead during routine maintenance activities. Following the discovery, one soil sample (SS01) was collected from the source mass material and submitted for laboratory analysis of the full COGCC Table 915-1 analytical suite. Following an emergency plug and abandonment of the well, excavation activities were conducted on June 22 and 23, 2021. Nine soil samples (SS02 – SS10) were collected from the base and sidewalls of the excavation at depths ranging from 4 feet to 13 feet below ground surface (bgs) and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, TPH (C6-C36), acenaphthene, fluorene, pyrene, 1-methylnaphthalene (M), and 2-M. In addition, one soil sample (SS11) was collected from the excavation at approximately 2.5 feet bgs and submitted for analysis of the Table 915-1 soil suitability constituents. Initial soil analytical results are summarized in Tables 1-4. GPS coordinates and field screened VOC readings for the soil samples collected during excavation activities are summarized in Table 5. Pending receipt of the remaining Table 915 laboratory results, additional source mass removal activities may be required. Excavation and confirmation sampling activities and final analytical results will be summarized in a forthcoming Supplemental Form 27 – Analyte Reduction Request. The current excavation extent and sample locations are illustrated on Figure 1. The draft laboratory reports are included in Attachment A and the excavation field notes and photo logs are included in 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) _____ 179
_____ 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.

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 179

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

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: North Weld Waste Management

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? 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? 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. _____

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. 05/13/2021

Actual Spill or Release date, or date of discovery. 05/13/2021

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 05/24/2021

Proposed site investigation commencement. 05/13/2021

Proposed completion of site investigation. 06/23/2021

REMEDIAL ACTION DATES

Proposed start date of Remediation. 05/13/2021

Proposed date of completion of Remediation. 06/23/2021

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

Per the Condition of Approval (COA) issued by the COGCC on May 27, 2021, PDC is providing this Supplemental Form 27 update within 30 days of the approved Supplemental Form 19 (Doc. No. 402696053). Groundwater has not been encountered within the excavation, therefore no monitoring well installation activities are planned at this time.

Per COGCC request, unedited photo SS01 showing wire brush marks and a post cleaning photo is attached. COGCC inspector Tom Peterson was on location and observed the exposure, scraping and cleaning off of the surface casing activities.

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: 07/13/2021

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: 08/02/2021

Remediation Project Number: 18160

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

	Operator shall conduct a soil gas survey around the wellhead after backfill and prior to closure of this remediation.
	Operator shall sample the area(s) most likely to be impacted by produced water for inorganics and soil suitability parameters regardless of depth below ground surface. The prior 2008 FAQ response #32 is no longer valid.
2 COAs	

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**

402727636	FORM 27-SUPPLEMENTAL-SUBMITTED
402727642	SOIL SAMPLE LOCATION MAP
402728748	PHOTO DOCUMENTATION
402729016	SOIL SAMPLE LOCATION MAP
402729027	ANALYTICAL RESULTS
402745887	PHOTO DOCUMENTATION

Total Attach: 6 Files

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

Environmental	Operator submitted this Form 27 on 6/24/2021, COGCC returned it to draft on 7/6/2021 requesting an unedited photograph of SS01	07/06/2021
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Total: 1 comment(s)