

State of Colorado
Oil and Gas Conservation Commission

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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>	Phone Numbers
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>		Mobile: <u>()</u>
Contact Person: <u>Karen Olson</u>	Email: <u>COGCCSpillRemediation@pdce.com</u>	

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 20214 Initial Form 27 Document #: 402815201

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

No Multiple Facilities

Facility Type: <u>WELL</u>	Facility ID: _____	API #: <u>123-22567</u>	County Name: <u>WELD</u>
Facility Name: <u>SCHLAGEL 5-26</u>	Latitude: <u>40.366944</u>	Longitude: <u>-104.512222</u>	
	** correct Lat/Long if needed: Latitude: <u>40.367039</u>	Longitude: <u>-104.512419</u>	
QtrQtr: <u>NWSE</u>	Sec: <u>26</u>	Twp: <u>5N</u>	Range: <u>64W</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: Irrigation - 868 feet NW (two additional water wells <1,000 feet SW and SE, Surface Water: Latham Ditch - 1,080 feet SW, Occupied Buildings: 1,300 feet N / 1,310 feet NW, Livestock: 1,215 feet SW, FWS Wetlands: Riverine (R4SBC) Latham Ditch - 1,080 feet SW

Flowline conflict unlikely, but flowline is <100 feet from Latham Ditch at separator (southern terminus)

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
No	GROUNDWATER	See Table 4 and Figure 1	Confirmation Groundwater Sampling
No	SOILS	See Tables 1-5 and Figures 1 and 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 the abandonment of the Schlage! 5-26 wellhead and removal of the associated flowline. The ground and sub-surfaces will be visually inspected for hydrocarbon impacts during abandonment activities. 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):

Soil samples will be collected from the surface in cardinal directions of the wellhead, 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 adjacent to the cut and capped wellhead from native material and below the flowline riser. GPS data will be collected for all soil sample locations. Soil samples will be submitted for laboratory for analysis of Organic Compounds in Soil, TPH (C6-C36), and Soil Suitability for Reclamation by COGCC approved methods. Refer to the Wellhead and Flowline Location Map. A sample location figure will be provided in the Supplemental Form 27.

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 at designated laboratory sample locations, a grab groundwater sample will be collected as soon as practical. If groundwater is encountered at designated field screening sample locations, a groundwater sample will not be collected unless field screening indicates that potentially hydrocarbon-impacted soils are present. If contaminated soil is in contact with groundwater, or if free product/hydrocarbon sheen is 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):

Assessments will be conducted during the removal of this off-location flowline (estimated to be 1860 feet in length) approximately every 250 feet and at the flowline endcaps. Additional assessments will be conducted where the direction changes from S to W and W to NW, and in the areas where the flowline is in close proximity to sensitive areas, such as surface water and FWS wetlands. The flowline 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 and submitted for laboratory analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, and TPH (C6-C36). If analytical results indicate the presence of organic compound concentrations, the sample will be analyzed for the full Table 915-1 suite. GPS data and photo documentation will be recorded for each inspection/sample location.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected 5
Number of soil samples exceeding 915-1 0
Was the areal and vertical extent of soil contamination delineated? Yes
Approximate areal extent (square feet) 100

NA / ND

ND Highest concentration of TPH (mg/kg) _____
-- Highest concentration of SAR 2.49
BTEX > 915-1 No
Vertical Extent > 915-1 (in feet) 7

Groundwater

Number of groundwater samples collected 1
Was extent of groundwater contaminated delineated? Yes
Depth to groundwater (below ground surface, in feet) 7
Number of groundwater monitoring wells installed 0
Number of groundwater samples exceeding 915-1 0

ND Highest concentration of Benzene (µg/l) _____
ND Highest concentration of Toluene (µg/l) _____
ND Highest concentration of Ethylbenzene (µg/l) _____
ND Highest concentration of Xylene (µg/l) _____
NA Highest concentration of Methane (mg/l) _____

Surface Water

0 Number of surface water samples collected
0 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?

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.

No soil was removed from the location during wellhead closure activities and removal of the associated flowline.

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.

Soil encountered adjacent to and surrounding the wellhead and below the flowline riser was visually inspected and field screened for VOC concentrations using a PID. In addition, field screening samples were collected, and inspections conducted along the flowline with an emphasis on areas in close proximity to sensitive areas and direction changes. Per the approved proposed soil sampling plan, two soil samples were collected at approximately 3 feet and 7 feet bgs from undisturbed areas most likely to be impacted by oil and gas operations located adjacent to and below production infrastructure. Soil samples FLR01 and WH01 were submitted for lab analysis of the COGCC Table 915-1 Organic Compounds in Soil, TPH (C6-C36), pH, EC, SAR, and boron. During flowline removal two soil samples (FL01-06 & FL01-07) along the flowline and one soil sample (FLR02) at the flowline riser of the associated tank battery were also collected and submitted for lab analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, and TPH (C6-C36). Analytical results indicated that organic compounds and soil suitability constituents were in compliance with the applicable COGCC Table 915-1 Protection of Groundwater SSLs in all samples. During decommissioning activities groundwater was encountered at approximately 7.5 feet bgs and upon discovery sample GW01 was collected from the excavation of the wellhead and was submitted for analysis of BTEX, naphthalene, 1, 2, 4-TMB, 1, 3, 5-TMB. Lab results indicated that the sample was in compliance with the applicable COGCC Table 915-1 Groundwater Standards. Analytical results are summarized in Tables 1-4, and GPS coordinates and field screened VOC concentrations are summarized in Table 5. Field screening and lab sample locations collected at the wellhead and along the flowline are illustrated on Figures 1 and 2. The laboratory report is included as Attachment A and the wellhead and flowline decommissioning field notes and photo log are included as Attachment B.

Soil Remediation Summary

In Situ

Ex Situ

_____ Bioremediation (or enhanced bioremediation)

_____ Excavate and offsite disposal

_____ Chemical oxidation

_____ If Yes: Estimated Volume (Cubic Yards) _____

_____ 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? No

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

Volume of E&P Waste (solid) in cubic yards _____

E&P waste (solid) description _____

COGCC Disposal Facility ID #, if applicable: _____

Non-COGCC Disposal Facility: _____

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

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? No

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 wellhead and flowline removal activities, the location was backfilled, compacted, and re-contoured to match pre-existing conditions. The location will be reclaimed in accordance with 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. 11/16/2021

Proposed date of completion of Reclamation. 11/16/2022

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. 08/12/2021

Actual Spill or Release date, or date of discovery. _____

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 10/13/2021

Proposed site investigation commencement. 11/16/2021

Proposed completion of site investigation. 11/16/2021

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:

