FORM 27 Rev 5/22

State of Colorado
Energy & Carbon Management Commission

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Document Number: 404304362
Receive Date:
Report taken by:

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 ECMC 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 INFORMATON

Name of Operator: PDC ENERGY INC Operator No: 69175
Address: 1099 18TH STREET SUITE 1500
City: DENVER State: CO Zip: 80202
Contact Person: Kristofer Shepherd Email: RBUEUF27@chevron.com

Phone Numbers
Phone: (970) 304-5000
Mobile: ( )

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 22766 Initial Form 27 Document #: 403008744

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.
- [X] 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.
- [X] 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: LOCATION Facility ID: 436119 API #: County Name: WELD
Facility Name: Schmunk EF Offsite Tank Battery 31 Latitude: 40.534297 Longitude: -104.701619
** correct Lat/Long if needed: Latitude: 40.534142 Longitude: -104.701656
QtrQtr: SWNE Sec: 31 Twp: 7n Range: 65w Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications ML
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

The Schmunk EF tank battery is surrounded by agricultural land in all directions. An irrigation pond is in place ˜430 feet north and irrigation ditches are in place ˜1,275 feet west and ˜1,320 feet east of the battery. A residential neighborhood is in place ˜1,000 feet south. There is one groundwater well mapped within a ¼ mile of the battery. The 100-year floodplain of the Mead Lateral Ditch is mapped ˜950 feet southwest of the battery.
No other potential receptors are located within ¼ mile of the Site.
Above distances are approximations.

SITE INVESTIGATION PLAN

TYPE OF WASTE:

[X] **E&P Waste**	[ ] **Other E&P Waste**	[ ] **Non-E&P Waste**
[X] Produced Water	[ ] Workover Fluids	_____
[X] Oil	[ ] Tank Bottoms	
[X] 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 Tables and Figures	Lab Analysis and Field Screening
Yes	SOILS	Refer to Tables and Figures	Lab Analysis and Field Screening

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 February 23, 2022, Great Western Operating Company, LLC (Great Western) personnel observed oil leaking from a Balon valve at Condensate Tank #3, which resulted in the release of approximately 47 barrels (bbl) of oil. The release was discovered during a routine site inspection and was immediately stopped and contained within unlined steel containment. On February 24, 2022, Great Western completed excavation activities inside steel containment utilizing hydrovac equipment. All oil, impacted soil, and snow melt were removed by the hydrovac. However, road base/surface material was frozen and unable to be excavated. On April 5, 2022, a limited subsurface investigation was completed via hand auger within steel containment, adjacent to the partially buried produced water tanks and west row of aboveground storage tanks (ASTs). Six characterization soil samples were collected from five hand augured soil borings. Initial actions taken by Great Western were documented on the Initial Site Investigation and Remediation Workplan Form 27 #403008744. On April 19 through 22, 2022, Acme Oilfield Services, Inc, (Acme) removed approximately 1,312 tons (1,010 cubic yards) of petroleum hydrocarbon impacted soil from beneath the ASTs and partially buried produced water tanks. The final excavation extent was approximately 50 feet by 80 feet to a depth of 8 feet below ground surface (bgs). Impacted soil was transported offsite for disposal at Waste Management's North Weld Landfill in Ault, Colorado.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

[X] Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Once groundwater analytical results indicate groundwater is in-compliance with ECMC Table 915-1 clean up levels, PDC will collect a confirmation soil sample from the location and depth interval that confirmation soil samples W-4@5.0, MW-6@8.0, MW-8@9.0, and MW-14@8.0 were previously collected to evaluate the success of MNA at reducing adsorbed-phase contaminant concentrations. Soil samples will be submitted for VOCs, PAHs, metals, and soil suitability parameters per ECMC Table 915-1.

Proposed Groundwater Sampling

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

The well network of sixteen monitoring wells (MW-1 to MW-14, MW-18 and MW-19) are sampled quarterly and submitted to a certified laboratory for analysis of BTEX, naphthalene, 1,2,4-TMB, 1,3,5-TMB, 1-methylnapthalene, 2-methylnaphthalene, chloride and sulfate ion, and TDS per ECMC-approved Methods. Four monitoring wells (MW-15, MW-16, MW-17, and MW-20) have been destroyed due to farming activity.

Inorganic constituents have been below their respective ECMC Table 915-1 standards and/or calculated background concentrations in all samples collected from onsite monitoring wells for four consecutive quarters. Only two TDS exceedances (MW-8 and MW-13, Third Quarter 2024) and one sulfate exceedances (Fourth Quarter 2022) have been observed since groundwater monitoring began in the Fourth Quarter 2022. Therefore, PDC is proposing the discontinuation of Table 915-1 inorganic constituents in groundwater from quarterly monitoring.

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):

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 23

Number of soil samples exceeeding 915-1: 3

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

Approximate areal extent (square feet): 3200

NA / ND

-- Highest concentration of TPH (mg/kg): 1500

-- Highest concentration of SAR: 4.8

BTEX > 915-1: Yes

Vertical Extent > 915-1 (in feet): 9

Groundwater

Number of groundwater samples collected: 46

Was extent of groundwater contaminated delineated? Yes

Depth to groundwater (below ground surface, in feet): 7

Number of groundwater monitoring wells installed: 16

Number of groundwater samples exceeding 915-1: 4

-- Highest concentration of Benzene (µg/l): 41.4

-- Highest concentration of Toluene (µg/l): 1.04

-- Highest concentration of Ethylbenzene (µg/l): 38.5

-- Highest concentration of Xylene (µg/l): 56.3

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?

[X] Were background samples collected as part of this site investigation?

One background soil sample (BG-1@1.0) was collected in April 2022.

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

Volume of solid waste (cubic yards):

Volume of liquid waste (barrels):

[X] Is further site investigation required?

Once groundwater analytical results indicate groundwater is in-compliance with ECMC Table 915-1 clean up levels, PDC will collect a confirmation soil sample from the location and depth interval that confirmation soil samples W-4@5.0, MW-6@8.0, MW-8@9.0, and MW-14@8.0 were previously collected to evaluate the success of MNA at reducing adsorbed-phase contaminant concentrations. Soil samples will be submitted for VOCs, PAHs, metals, and soil suitability parameters per ECMC Table 915-1.

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.

April 19 through 22, 2022, Acme Oilfield Services, Inc, (Acme) removed approximately 1,010 cubic yards of impacted soil from beneath the ASTs and partially buried produced water tanks. The final excavation extent was approximately 50'x80' to a depth of 8' below ground surface (bgs). Impacted soil was transported offsite for disposal at Waste Management's North Weld Landfill in Ault, Colorado. All waste generated was managed and disposed of in per Rules 905 and 906. Prior to backfilling the excavation, 1-2 feet of clean, washed pea gravel was added to the base of the excavation to facilitate future remediation (if necessary). Excavation activities were reported via Form 27 #403101261.

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.

Inorganic constituents have been below their respective ECMC Table 915-1 standards and/or calculated background concentrations in all samples collected from onsite monitoring wells for four consecutive quarters. Only two TDS exceedances (MW-8 and MW-13, Third Quarter 2024) and one sulfate exceedances (Fourth Quarter 2022) have been observed since groundwater monitoring began in the Fourth Quarter 2022. Therefore, PDC is proposing the discontinuation of Table 915-1 inorganic constituents in groundwater from quarterly monitoring.

Monitored natural attenuation (MNA) will be implemented at the site to address dissolved-phase impacts in MW-8. A No Further Action (NFA) designation will be requested from the ECMC when remediation criteria have been achieved and following the observation of four consecutive quarters of groundwater compliant with the applicable ECMC Table 915-1 standards under static conditions at the site.

Soil Remediation Summary

☐ **In Situ**

- ____ Bioremediation (or enhanced bioremediation)
- ____ Chemical oxidation
- ____ Air sparge / Soil vapor extraction
- ____ Natural Attenuation
- ____ Other _____

☒ **Ex Situ**

- Yes Excavate and offsite disposal
  - If Yes: Estimated Volume (Cubic Yards) 1010
  - Name of Licensed Disposal Facility or ECMC Facility ID # _____
- ____ Excavate and onsite remediation
  - ____ Land Treatment
  - ____ Bioremediation (or enhanced bioremediation)
  - ____ Chemical oxidation
  - ____ Other _____

Groundwater Remediation Summary

- ____ Bioremediation (or enhanced bioremediation)
- ____ Chemical oxidation
- ____ Air sparge / Soil vapor extraction
- Yes Natural Attenuation
- Yes Other 53 bbls of produced water, oil, condensate, melted snow, roadbase removed by vac truck

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.

On June 25 (2Q25), September 18 (3Q25), and December 31, 2025 (4Q25) groundwater monitoring events were completed. Monitoring wells MW-1 to MW-14, MW-18 and MW-19 were sampled and submitted to a certified laboratory for analysis of BTEX, naphthalene, 1,2,4-TMB, and 1,3,5-TMB, 1-methylnapthalene, 2-methylnaphthalene, chloride and sulfate ion, and TDS per ECMC-approved Methods. A groundwater sample was not collected from monitoring well MW-19 during the 3Q25 as it was unable to be located in the cornfield or during the 4Q25 due to an obstruction within the well casing.

Samples collected from monitoring wells MW-8 and MW-14 exceeded the ECMC Table 915-1 regulatory limit for benzene during the 2Q25. The samples collected from monitoring wells MW-8 exceeded the ECMC Table 915-1 regulatory limit for benzene and the EPA Regional Screening Level for 1-methylnapthalene in Residential Tap water during the 3Q25 and 4Q25.

Inorganic constituents have been below their respective ECMC Table 915-1 standards and/or calculated background concentrations in all samples collected from onsite monitoring wells for four consecutive quarters. Only two TDS exceedances (MW-8 and MW-13, Third Quarter 2024) and one sulfate exceedances (Fourth Quarter 2022) have been observed since groundwater monitoring began in the Fourth Quarter 2022. Therefore, PDC is proposing the discontinuation of Table 915-1 inorganic constituents in groundwater from quarterly monitoring. Next quarterly groundwater sampling event is scheduled for March 2026.

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Approved Reporting Schedule:

[X] 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: [X] Groundwater Monitoring [ ] Land Treatment Progress Report [ ] O&M Report

[ ] Other

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.

- Source mass removal is complete.
- MNA is proposed as the remediation approach to address both groundwater and impacted soil in the saturated zone.
- Sixteen groundwater monitoring wells are actively sampled quarterly.
- Quarterly groundwater sampling is ongoing and will continue until four consecutive quarters of groundwater results below ECMC Table 915-1 concentration levels are achieved.

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: $ 50000

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 1010

E&P waste (solid) description Hydrocarbon impacted soil

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Waste Management's North Weld Landfill in Ault, CO

Volume of E&P Waste (liquid) in barrels 53

E&P waste (liquid) description Produced water, oil, condensate, melted snow, roadbase

ECMC Disposal Facility ID #, if applicable:

Non-ECMC Disposal Facility: Republic Services' Tower Landfill in Commerce City, CO

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? No

Does the previous reply indicate consideration of background concentrations?

Does Groundwater meet Table 915-1 standards? No

Is additional groundwater monitoring to be conducted? Yes

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.

The Schmunk EF tank battery is an active facility and there are no current plans for decommissioning or reclamation activities. Following excavation activities the location was backfilled, compacted, and re-contoured for the tank battery operations to continue.

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. 04/19/2022

Proposed date of completion of Reclamation. 04/22/2022

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. 02/23/2022

Actual Spill or Release date, or date of discovery. 02/23/2022

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 02/24/2022

Proposed site investigation commencement. 04/05/2022

Proposed completion of site investigation. 12/31/2028

REMEDIAL ACTION DATES

Proposed start date of Remediation. 04/12/2022

Proposed date of completion of Remediation. 06/30/2028

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:

Implementation schedule has been updated to account for additional quarters of monitoring to achieve four consecutive quarters of compliance with ECMC Table 915-1 regulatory limits.

OPERATOR COMMENT

The previous Supplemental Form 27 #404190467 included a laboratory report Work Order #2412343 for groundwater samples collected on December 16, 2024, that was later indicated to contain data that was reported outside of hold.

PDC was informed by the laboratory that the sample holding times were exceeded for various Table 915-1 constituents. Because not all analytes would be outside of holding times, the lab ran the samples for the full Table 915-1 suite. The full laboratory report (Report) is being transmitted to ECMC for transparency. The Report's case narrative identifies which constituents were run outside of the required holding times. The Report's note column also identifies the impacted constituents. Operator will not be relying on any results associated with a constituent that was outside of the required holding time. The Method 300.0 analyses (chloride and sulfate) were analyzed outside of allotted holding times due to delays at the laboratory for the groundwater samples collected during the 4Q24 groundwater sampling event on December 16, 2024.

This form updates the ECMC with data collected during groundwater monitoring events completed on June 25 (2Q25), September 18 (3Q25), and December 31, 2025 (4Q25) at the Schmunk AST (REM #22766). Samples collected from monitoring wells MW-8 and MW-14 exceeded the ECMC Table 915-1 regulatory limit for benzene during the 2Q25. The samples collected from monitoring wells MW-8 exceeded the ECMC Table 915-1 regulatory limit for benzene and the EPA Regional Screening Level for 1-methylnapthalene in Residential Tap water during the 3Q25 and 4Q25.

Inorganic constituents have been below their respective ECMC Table 915-1 standards and/or calculated background concentrations in all samples collected from onsite monitoring wells for four consecutive quarters. Only two TDS exceedances (MW-8 and MW-13, Third Quarter 2024) and one sulfate exceedances (Fourth Quarter 2022) have been observed since groundwater monitoring began in the Fourth Quarter 2022. Therefore, PDC is proposing the discontinuation of ECMC Table 915-1 inorganic constituents in groundwater from quarterly monitoring.

Given the fluctuating yet overall declining trend in benzene concentrations at MW-8, monitored natural attenuation (MNA) will be implemented to address dissolved-phase groundwater impacts at the site.

Once groundwater analytical results indicate groundwater is in-compliance with ECMC Table 915-1 clean up levels, PDC will collect a confirmation soil sample from the location and depth interval that confirmation soil samples W-4@5.0, MW-6@8.0, MW-8@9.0, and MW-14@8.0 were previously collected to evaluate the success of MNA at reducing adsorbed-phase contaminant concentrations. If exceedances persist, remedial alternatives will be evaluated at that time.

A No Further Action (NFA) designation will be requested from the ECMC when remediation criteria have been achieved and following the observation of four consecutive quarters of groundwater of compliance with applicable ECMC Table 915-1 standards under static conditions at the site.

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

Signed: Andrew Davis Title: Consultant

Submit Date: Email: CVX-PM@cdhconsult.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: Date:

Remediation Project Number: 22766

COA Type	Description
0 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
404304462	LABORATORY ANALYTICAL REPORT
404304465	LABORATORY ANALYTICAL REPORT
404520523	LABORATORY ANALYTICAL REPORT
404520539	LABORATORY ANALYTICAL REPORT
404553307	MONITORING REPORT

Total Attach: 5 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)