FORM
27
Rev 5/22

State of Colorado
Energy & Carbon Management Commission

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Report taken by: Kari Brown

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.

DENIED

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: Karen Olson Email: Karen.Olson@Chevron.com

Phone Numbers
Phone: (303) 318-6106
Mobile: ( )

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 36144 Initial Form 27 Document #: 403848534

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: SPILL OR RELEASE Facility ID: 486753 API #: County Name: WELD
Facility Name: Wilson IC Pad Latitude: 40.259941 Longitude: -104.959740
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: NWNW Sec: 1 Twp: 3N Range: 68W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications SM Most Sensitive Adjacent Land Use Crop/agriculture
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

Surface Water within 1/4 mile- unnamed irrigation ditch 659' SW; unnamed creek 900' NE
Occupied Buildings within 1/4 mile- residence 990' S
Wetlands within 1/4 mile- freshwater emergent wetland 900' NE

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**
- [X] Produced Water
- [X] Oil
- [X] Condensate
- [ ] Drilling Fluids
- [ ] Drill Cuttings

- [ ] **Other E&P Waste**
- [ ] Workover Fluids
- [ ] Tank Bottoms
- [ ] Pigging Waste
- [ ] Rig Wash
- [ ] Spent Filters
- [ ] Pit Bottoms
- [ ] Other (as described by EPA) _____

- [ ] **Non-E&P Waste**

_____

DENIED

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	GROUNDWATER	Undetermined	MWs and laboratory data
Yes	SOILS	10' x 20' x 22'	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 4/20/2024, an unknown amount of an oil/water fluid mix daylighted from the subsurface from a buried dump line. The facility was shut-in and clean-up operations commenced. Hydrovac trucks were used to remove approximately 120 cubic yards of impacted soil to a depth of approximately 22 feet below ground surface.

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):

On 4/22/24 a waste characterization sample was collected and analyzed for ECMC Table 915-1 constituents at Summit Scientific in Golden, Colorado. On 4/26/24, seven soil borings were advanced around the release area to delineate the extent of impacted soil. These borings were completed as 1-inch diameter monitoring wells. Soil boring samples at various depths were submitted to Origins Laboratory, Inc for 915-1 analysis and exhibited several exceedances. See attached figures for locations.

Proposed Groundwater Sampling

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

On 4/26/24, seven soil borings were advanced around the release area to delineate the extent of impacted groundwater. These borings were completed as 1-inch diameter monitoring wells. Groundwater samples were collected on 4/29/2024 from 5 of the 7 monitoring wells that had sufficient water and were submitted to Origins Laboratory, Inc in Denver, Colorado for ECMC table 915-1 Organic Compounds in Groundwater constituent analysis. See attached figures for locations. Laboratory results indicated exceedances of ECMC Table 915 standards in all monitoring wells sampled. Operator intends to install 7 more monitoring wells as well as re-drill MW-6 and MW-7 to further delineate the extent of impacts to groundwater.

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

		NA / ND		
Number of soil samples collected	19	--	Highest concentration of TPH (mg/kg)	6100
Number of soil samples exceeeding 915-1	19	--	Highest concentration of SAR	1.03
Was the areal and vertical extent of soil contamination delineated?	Yes		BTEX > 915-1	Yes
Approximate areal extent (square feet)	250		Vertical Extent > 915-1 (in feet)	22

Groundwater

Number of groundwater samples collected	5	--	Highest concentration of Benzene (µg/l)	13600
Was extent of groundwater contaminated delineated?	No	--	Highest concentration of Toluene (µg/l)	9800
Depth to groundwater (below ground surface, in feet)	19	--	Highest concentration of Ethylbenzene (µg/l)	550
Number of groundwater monitoring wells installed	7	--	Highest concentration of Xylene (µg/l)	3700
Number of groundwater samples exceeding 915-1	5	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?

☐ 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?

Nine additional monitoring wells are proposed to delineate the extent of soil and groundwater impacts. These wells will be installed during 3Q 2024. Soil and groundwater samples will be collected from each boring/well and analyzed for Table 915-1 organics, inorganics and metals by ECMC approved laboratory methods.

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.

Approximately 120 cubic yards (CY) of impacted soil were hydrovacced and transported offsite for disposal under PDC manifest to Republic Services Tower Road landfill in Commerce City, CO in accordance with Rules 905 and 906. Copies of the waste manifests are available upon request.

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.

DENIED

Immediately after the release was discovered, hydrovac crews initiated fluid and impacted soil removal in the affected area. Approximately 120 CY of petroleum-impacted soil were excavated and transported offsite for disposal.

Soil that had visual and olfactory indication of contamination was excavated and removed from site; however, residual soil impacts remain at the site as indicated by laboratory data for the seven monitoring wells that were installed on 4/26/24. Further, groundwater impacts have been observed in five of the seven monitoring wells.

On 9/17/24, seven additional monitoring wells were installed via Geoprobe or hand auger (HA-14 only). Soil samples from each Geoprobe installed well were collected and analyzed for Table 915-1 constituents. Groundwater data is pending and will be reported with the next supplemental Form 27.

The attached Tables 1–5 and Figures 1-6 summarize the soil and groundwater impacts. The boring logs and laboratory reports are provided as attachments.

Operator will assess the site investigation data and proposed further remedial actions when the additional laboratory data is available.

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) 120
  - Name of Licensed Disposal Facility or ECMC Facility ID # ____
- No 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
- ____ 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.

A total of 14 groundwater monitoring wells have been installed at the site. MW-6 and MW-7 were re-drilled via rotary auger method rather than direct push to allow groundwater sampling; previously, these wells encountered refusal during direct push and were not deep enough to make water.

Groundwater samples will be collected from each monitoring well and analyzed for ECMC Table 915-1 Organic Compounds and Inorganic Parameters in Groundwater by ECMC approved methods. Groundwater sampling and analyses will be completed on a quarterly basis until four consecutive quarters of results below table 915-1 are achieved. At that time, a request for a no further action (NFA) determination will be submitted.

DENIED

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

[X] Other Remediation progress

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.
- Assessment activities as outlined herein are proposed.
- Advance 14 soil borings and complete each as a monitoring well.
- Complete laboratory analyses on soil
- Complete laboratory analyses of groundwater samples (quarterly) from the wells.
- Prepare and submit quarterly groundwater monitoring reports.

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: $ 20000

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 120

E&P waste (solid) description Hydrocarbon impacted soil

ECMC Disposal Facility ID #, if applicable:

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

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

E&P waste (liquid) description

ECMC Disposal Facility ID #, if applicable:

Non-ECMC 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 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.

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? No

If YES, does the seed mix comply with local soil conservation district recommendations? _____

Did the local soil conservation district provide the seed mix? No

SITE RECLAMATION DATES

Proposed date of commencement of Reclamation. _____

Proposed date of completion of Reclamation. _____

DENIED

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. 04/22/2024

Actual Spill or Release date, or date of discovery. 04/20/2024

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 04/20/2024

Proposed site investigation commencement. 04/22/2024

Proposed completion of site investigation. 10/31/2024

REMEDIAL ACTION DATES

Proposed start date of Remediation. 04/20/2024

Proposed date of completion of Remediation. 09/30/2027

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

A remedial excavation was conducted to remove a significant portion of the impacted soil; however, residual impacted soil and groundwater remain at the site. Fourteen monitoring wells have been installed to delineate the extent of groundwater impacts. Laboratory data from the groundwater samples will be reported in the next supplemental Form 27. Based on these data, Operator will evaluate additional remedial measures.

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

Signed: Paul Henehan Title: Consultant

Submit Date: 10/11/2024 Email: paulh@fremontenv.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: 36144

COA Type	Description
0 COA	

DENIED

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
403954128	FORM 27 DENIED
403954348	MONITORING REPORT
403954350	ANALYTICAL RESULTS
403954351	ANALYTICAL RESULTS
404053779	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 5 Files

General Comments

User Group	Comment	Comment Date
Environmental	The Laboratory Analytical PDF attached to this form indicates it has been altered after lab delivery. ECMC has not conducted a complete technical review of this form, data, or attachments but is denying this form. Operator will conduct a thorough review of all laboratory analytical reports and data and contact ECMC Regional Environmental Protection Specialist (EPS) to report findings.	01/09/2025

Total: 1 comment(s)