Annual Report: 40 C.F.R. 98.446 (Subpart RR)

Company Name:	BKV dCarbon Ventures, LLC
Company Address:	4800 Blue Mound Rd, Fort Worth, TX 76106
GHGRP ID:	583361
Facility Name:	Barnet RDC Well No. 1
Facility Address:	33.182612/-97.820137, Bridgeport, TX 76426
Reporting Period:	November 8, 2023 – December 31, 2023
Date of Submittal:	March 25, 2024

Executive Summary:

BKV dCarbon Ventures, LLC (dCarbon) began monitoring efforts pursuant to the final Barnet RDC #1 Monitoring, Reporting and Verification (MRV) Plan on November 8, 2023 for the MRV plan Specified Period. Monitoring continued through the 2023 reporting period. The final MRV Plan was approved by EPA on July 7, 2023. The MRV plan identification number is 1014524-1.

Summary Table of Monitoring Activities:

The below table summarizes dCarbon's monitoring of potential leakage pathways to the surface, should any occur.

Leakage Pathway	Likelihood	Detection Method
Potential Leakage from Surface Equipment	**Possible**	Continuous SCADA surveillance. Daily AVO inspections. Continuous fixed H2S monitors. Routine use of personal 5-gas monitors (O2, CO2, CO, H2S, LEL). Continuous operation of Coriolis meters. BKV has been continuously monitoring surface pressure equipment since project start up. No leaks of CO2 reported under this MRV plan have been detected or suspected since start up.
Leakage from Approved, Not Yet Drilled Wells	**Improbable**, as there are no approved not yet drilled wells	Quarterly review of proposed drilling records. There have been no permits submitted or approved within the AOR since MRV Plan approval.
Leakage from Existing wells	**Improbable**, as there are several thousand feet of impermeable rock between the injection zone and the total depth of existing wells	Continuous SCADA monitoring of injection well volumes, annulus pressures, temperatures, gas composition data. Annual Mechanical Integrity Testing

		BKV has been continuously monitoring wellbore pressure and temperature gauges since project start up. We have no reason at this time to suspect leakage from existing wells producing form formations thousands of feet above the injection interval.
Potential Leakage from Fractures and Faults	**Improbable**, as there are several thousand feet of impermeable rock between the injection zone and surface or USDW that would need to be compromised and there are no mapped faults within the MMA.	Continuous SCADA monitoring of injection well volumes, annulus pressures, temperatures, gas composition data. Annual Mechanical Integrity Testing BKV has been continuously monitoring wellbore pressure and temperature gauges since project start up. We have maintained injection operations below the expected fracture pressure for the injection zone. We have also been monitoring surface H2S and CO2 sensors to detect surface leakage of CO2. We have no reason at this time to suspect leakage from faults or fractures.
Leakage Through Confining Layers	**Improbable**, as the upper confining zone is nearly 1,000' thick and very low porosity and permeability	Continuous SCADA monitoring of injection well volumes, annulus pressures, temperatures, gas composition data. Annual Mechanical Integrity Testing BKV has been continuously monitoring wellbore pressure and temperature gauges since project start up as well as seismic sensors in the area. We have maintained injection operations below the expected fracture pressure for the confining zone. We have also been monitoring surface H2S and CO2 sensors to detect surface leakage of CO2. We have no reason at this time to suspect leakage through confining layers.
Leakage from Natural or Induced Seismicity	**Improbable**, as there are several thousand feet of impermeable rock between the injection zone and surface or USDW that would need to be compromised and there are no mapped faults within the MMA.	Seismic monitoring. Continuous SCADA monitoring of injection well volumes, annulus pressures, temperatures, gas composition data. Annual Mechanical Integrity Testing BKV has been continuously monitoring wellbore pressure and temperature gauges since project start up as well as seismic sensors in the area. We have also been monitoring surface H2S and CO2 sensors to detect surface leakage of CO2 We have

		no reason at this time to suspect leakage from induced seismicity and have not detected and seismicity invents which are atributable to our injection under this MRV plan
Leakage from Lateral Migration	**Improbable**, as the Ellenburger is a very thick and laterally continuous formation with the closest well penetration five miles downdip.	Continuous SCADA monitoring of injection well volumes, annulus pressures, temperatures, gas composition data. Annual Mechanical Integrity Testing BKV has been continuously monitoring wellbore pressure and temperature gauges since project start up and is using that data, combined with injection rate, to update and history match our simulation model. At this time, we believe CO2 is behaving in the subsurface as expected. Additionally, given the extensive lateral continuity and extremely low porosity/permeability of the Ellenburger confining interval, we do not see any possible leakage potential through lateral migration at this time.

(i) A narrative history of the monitoring efforts conducted over the previous calendar year, including a listing of all monitoring equipment that was operated, its period of operation, and any relevant tests or surveys that were conducted.

BKV has collected flow, pressure, and gas composition data from the CO2 stream being injected. Flow and pressure data are monitored continuously by BKV personnel with automated alarms set should any anomalies be detected. This includes real-time monitoring of wellhead, annulus, and bottomhole temperature and pressure monitoring.

CO2 mass measurement is accomplished with high precision Coriolis meters. The Coriolis meter located at the injection wellsite is the meter that is used for reporting under subpart RR. The meter is paired with an online gas chromatograph, both of which have been calibrated to manufacturer specifications. The custody transfer meters generated volumetric flow rate data for use in the mass balance equations in 40 CFR §98.443. The Coriolis meters measures flow rate continually, and gas composition samples are analyzed in the gas chromatograph on average every 5 minutes.

Metering protocols used by BKV followed the prevailing industry standard(s) for custody transfer as currently promulgated by the API, the American Gas Association (AGA), and the Gas Processors Association (GPA), as appropriate. These meters are maintained routinely, operated continually, and fed data directly to BKV's centralized data collection system. The meters met the industry standard for custody transfer meter accuracy and calibration frequency.

Should any equipment leaks have been suspected, BKV would have used 40 C.F.R. Part 98 Subpart W and other engineering estimates to calculate emissions from equipment.

A description of any changes to the monitoring program that you concluded were not material changes warranting submission of a revised MRV plan under § 98.448(d).

The following non-material changes were made to the existing monitoring program as outlined in the approved MRV plan: Meter configuration: low pressure CO2 meter not installed as displayed on pg 44 of MRV. The two high precision Coriolis meters that were depicted on Pg 44 were installed as described in the MRV plan and have been operational since start-up. The wellsite Coriolis meter that was installed and depicted in the MRV plan remains the primary meters for determining volumes for sequestration under subpart RR. The other meters were redundant for pipeline monitoring and other commercial purposes.

(ii) A narrative history of any monitoring anomalies that were detected in the previous calendar year and how they were investigated and resolved.

For the for the 2023 reporting period, dCarbon did not observe any anomalies that could indicate leakage from the surface or subsurface in any of the detection systems.

(iii) A description of any surface leakages of CO2, including a discussion of all methodologies and technologies involved in detecting and quantifying the surface leakages and any assumptions and uncertainties involved in calculating the amount of CO2 emitted.

Field personnel routinely visited surface facilities and conducted visual inspections at the RDC Well No1 during the reporting period. These inspections included pressures and flow rates in the facility, valve leaks, and also a general observation of the facility for visible CO2 or fluid line leaks.

In addition to these visual inspections, dCarbon used the results of the personal 5-gas monitors worn by field personnel as a supplement for smaller leaks that may escape visual detection.

For the 2023 reporting period there was no surface leakage at the RDC Well No. 1 and no monitoring anomalies were found.

Certification by Designated Representative:

Based on information and belief formed after reasonable inquiry, the statements and information in this report are true, accurate, and complete.

Designated Representative:
Lauren Read, Vice President of Operations
dCarbon Ventures, LLC

Alternate Designated Representative:
Emily Larkin, Manager – EHSR

For information regarding this report, please contact the following:
Contact Name: Emily Larkin,
Phone Number:(806) 663-9084
Email Address: EmilyLarkin@bkvcorp.com