Part 98 Mandatory Greenhouse Gas Reporting
Subpart RR – Geologic Sequestration of Carbon Dioxide

Annual Monitoring Report

Reporting Period: January 1 – December 31, 2018

Archer Daniels Midland Company (ADM)
Decatur Corn Processing Plant
4666 Faries Parkway
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March 28, 2019

40 CFR Part 98, Section 446, Paragraph (f)(12)

(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.

ADM is operating under a Monitoring, Reporting, and Verification (MRV) Plan CCS2 for carbon capture and sequestration at its ADM Decatur location. The plan lists several monitoring efforts with associated monitoring equipment and its period of operation. It also lists tests and/or surveys that must be conducted in the previous calendar year. The monitoring and testing efforts conducted over the previous calendar year include:

- **Continuous monitoring of injection pressure, annulus pressure, and temperature monitoring at the injection well;**
- **Groundwater quality monitoring in the local drinking water strata, the lowermost underground source of drinking water (USDW), and the strata immediately above the Eau Claire confining zone;**
- **External mechanical integrity testing (MIT) and pressure fall-off testing at the injection well;**
- **Plume and pressure front monitoring in the Mt. Simon using direct and indirect methods (i.e., brine geochemical monitoring, pulse neutron / RST logs, VSP and 3D seismic surveys).**

ADM began injection of carbon dioxide on April 7, 2017 and has continued to operate the monitoring equipment for the duration of injection. ADM utilizes equipment that is recommended by the manufacturers of the equipment for this particular operation and the equipment is calibrated and maintained based on the manufacturer's recommendations. The methodologies utilized for mechanical integrity testing and plume and pressure front monitoring have been approved by the Agency.

(ii) 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).

ADM has reviewed the MRV Plan and has concluded that no changes are required.

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

ADM has determined that no anomalies were detected in the previous calendar year.

(iv) 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.

ADM did not detect any visual surface leakage of CO2 from components associated with the Illinois Industrial Carbon Capture and Sequestration (IL-ICCS) project in the previous calendar year.

To estimate fugitive CO2 emissions from component surface leakages, ADM utilized a Velocicalc 9565 analyzer with 982 probe to physically monitor the components (i.e. valves, connectors, etc.) on the injection system. The highest concentrations that were recorded on a sample set of components were used to calculate total emissions. These values were entered into an equation which included total component counts to calculate total fugitive emissions. Since no EPA methodology exists for estimating CO2 emissions, ADM used EPA Emissions Estimation Protocol for Petroleum Refineries Leak Rates for Synthetic Organic Chemical Manufacturing Industry (SOCMI) which estimates Total Organic Content (TOC) rather than CO2. The total amount of CO2 leakage based on this methodology was calculated to be 0.707 metric tons. Also, no visual leaks have been observed during the monthly inspections required by the monitoring plan.

During the course of the reporting period, ADM also used CO2 sourced from a location downstream of the custody meter to provide pressure on the annulus system. There was periodic venting of CO2 from this system due to pressure changes. ADM estimates these emissions to be 142.44 metric tons. The methodology used to estimate the emissions was based on the pressure and temperature of the system and the output of the control valve releasing the CO2 gas, all of which are continuously recorded in the data historian software.