UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

STATEMENT OF BASIS

FOR

PROPOSED MODIFICATION OF

U. S. EPA's UNDERGROUND INJECTION CONTROL (UIC) PROGRAM
CLASS II-D PERMIT NUMBER VAS2D970BRUS

FOR

CNX Gas Company, LLC
627 Claypool Hill Mall Road
Cedar Bluff, VA 24609

FOR

A project consisting of one Class II-D underground injection well, Well No. AW114ACV, used for the disposal of produced fluids associated with oil and gas production operations conducted by CNX Gas Company, LLC (CNX). The injection well is located at:

Buckhorn Coal Tract
Swords Creek District
Clinch River
Russell County, Virginia
Latitude 37° 07' 13.6" Longitude -81° 57' 37.5"

On May 7th, 2013, the U. S. Environmental Protection Agency (EPA) issued an Underground Injection Control (UIC) Program permit to CNX for a Class II-D disposal well. This issuance followed a process of evaluation and public input including a public comment period on the draft permit before the final permit was issued.

On September 10th, 2018, EPA received a request from CNX to include two additional injection zones, both located above the current permitted injection zone, in the permit for the injection well. The current injection formation is the Weir, at a depth from 5526 feet to 5522 feet below ground surface, and a second interval from 5582 feet to 5580 feet. CNX requested to add the Big Lime Limestone formation, from 4762 to 4752 feet below ground surface, and the Lower Maxon Sandstone formation, from 4334 to 4318 feet below ground surface. When the well was originally constructed as a production well, sections of the casing located in the Big Lime, Lower Maxon, and Weir formations were perforated to allow for

natural gas to enter the well and be pumped to the surface. In converting the production well to an injection well, CNX had originally planned to perform a "squeeze job", where cement is pumped into the perforated section to plug the holes in the casing and seal off the formations behind the casing from the well. The squeeze job was not able to adequately seal off the former production zones so CNX has requested to add the perforated zones to the permit. To evaluate the modification application, EPA requested additional information from CNX pertaining to the well, including a well construction diagram, updated plugging and abandonment cost estimate, and additional geologic information on the proposed confining zones.

After reviewing the information submitted by CNX and other information in the permit record, EPA is proposing to modify the permit to add the two additional injection zones.

Injection and Confining Zones: The Big Lime and Lower Maxon formations are both located above the current permitted formation, the Weir sandstone. Injection is limited in the Big Lime formation to the interval between 4762 to 4752 feet, which is overlain by a limestone of low permeability. Injection is limited in the Lower Maxon to the interval between 4334 to 4318 feet, which is overlain by low permeability, confining interbedded shales and siltstones. CNX also cites competent quartz arenites, a dense sedimentary rock, in the Pocahontas Formation approximately 2000 feet above the Lower Maxon and 1600 feet below the lowermost USDWs. CNX's original 2012 permit application shows the deepest USDWs in the area to be approximately 400 feet below surface, with a conservative depth of 600 feet below land surface used for calculations. The Lower Maxon is the uppermost of the formations to be added to the permit formations and is separated from the lowermost USDW by approximately 3720 feet.

Maximum Injection Pressure: The current maximum surface injection pressure (MIP) allowed by the permit is 841 psi (pounds per square inch). This MIP was calculated using information for the Weir formation. Based on the information CNX submitted on the instantaneous shut-in pressures and depths for the Big Lime and Lower Maxon formations, EPA calculated the allowable maximum surface injection pressures for the Big Lime and the Lower Maxon to be 1798 psi and 3835 psi, respectively. The MIP in the permit will remain at 841 psi, which will ensure that the injection operations are protective of underground sources of drinking water in all the injection formations as it is significantly lower than the other calculated MIPs.

Area of Review: The permit was issued with a fixed Area of Review of a one quarter mile radius. The addition of the injection zones in the Big Lime and Lower Maxon do not change the determination of a one quarter mile radius as the Area of Review for this well, because the chemistry of injected fluids, the hydrogeology, the population, the ground water use and the historical practices for area of the well remain the same. CNX confirmed that within the Area of Review there no new production wells, hazardous waste facilities, drinking water wells, springs of surface bodies of water, known to CNX or listed in the public record. In the original application CNX had identified around 56 active coalbed methane wells which did not penetrate the Weir formation. Neither do these wells penetrate the two additional injection formations added in this modification.

Well Construction: CNX provided an updated well construction diagram showing the modified construction details in the tubing, casing and packer to allow for injection into the two additional zones. Following construction completion, CNX will be required to conduct and provide results from a mechanical integrity test to EPA before being issued with an authorization to inject.

Plugging and Abandonment: CNX submitted to EPA an updated estimate of the cost plug and abandon the well. CNX will submit a surety bond that covers the updated estimated cost to close, plug and abandon the Injection Well.

Additional Information: Modifying the injection zones of a UIC permit qualifies as a permit modification subject to public notice and comment as provided in 40 CFR 124.5, 124.6, and 144.39. For this reason, EPA is issuing this draft permit injection zone modification for a public comment period of 30 days. As stated in 40 CFR 124.5 (c)(2) and 144.39, only the conditions subject to modification are reopened. This public comment period will be solely for comments on the modification to add two injection zones in the permit.

Submit questions, comments, and requests for additional information to:

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1650 Arch Street
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215-814-5466

Copies of the original Statement of Basis document are available upon request for informational purposes.

EPA has tentatively scheduled a hearing for June 26, 2019, at 6:00 pm, at the Southwest Virginia Community College, Cannon Hall Room B-121, 724 Community College Road, Cedar Bluff, VA 24609. **Requests to hold a public hearing must be received in the office listed above by June 19, 2019.** When requesting a public hearing, please state the nature of issues proposed to be raised. EPA expressly reserves the right to cancel this hearing unless a significant degree of public interest, specific to the proposed addition of injection zones for the permitted UIC brine disposal injection operation, is evidenced by the above date. **The Administrative Record for this action will remain open for public comment until June 21, 2019**.