



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

STATEMENT OF BASIS

FOR

U. S. EPA's UNDERGROUND INJECTION CONTROL (UIC) PROGRAM  
DRAFT CLASS IID PERMIT NUMBER PAS2D025BELK

FOR

Seneca Resources Corporation  
5800 Corporate Blvd., Suite 300  
Pittsburgh, Pennsylvania 15237

FOR

A project consisting of one Class II-D injection well #38268 (API#37-047-23835) used for the disposal of produced fluids, associated with Seneca Resources Corporation oil and gas production operations. The injection well is located at:

SRC Kane Field  
Highland Township  
Elk County, Pennsylvania  
Latitude 41°37'08.1" Longitude -78°49'17.5"

On June 25, 2012, Seneca Resources Corporation (Seneca) submitted a UIC permit application for the construction and operation of the above referenced injection well. EPA has reviewed this application, as well as subsequent submittals of additional information, and has found the application to be acceptable.

The draft permit specifies conditions for construction, operation, monitoring, reporting, and plugging and abandonment, which are specified so as to prevent the movement of fluids into an Underground Source of Drinking Water. General provisions for EPA UIC permit requirements are found at 40 CFR Parts 144 and 146. In addition, permit conditions specific to this project are as follows:

**Area of Review:** This is an area surrounding the project or a well which the applicant must, first research, and then develop a program for corrective action to address any wells which penetrate the injection zone and which may provide conduits for fluid migration. Seneca proposed a fixed radius Area of Review of a one-quarter mile. This is a larger radius than what would have applied using a zone of endangering influence calculation. Seneca has provided documentation on the well population within the Area of Review. After extensive research of local, county and

state well records, as well as a field survey, no ground water wells were found. The closest public water supply source is from a spring located approximately 0.5 miles north of the proposed injection well. The nearest ground water well is approximately 0.8 miles to the northeast of the proposed injection well. There is one active Seneca gas production well #38281 (API#37-047-23884) located about 0.2 miles to the southwest. Well #38281 penetrates the injection zone and has cemented surface casing to a depth of 602 feet. If this well is ever taken out of production, Seneca is required to notify EPA for specific guidance on corrective action to be taken. There is also a plugged Seneca gas well #01328 (API#37-047-00449) about 1320 feet to the southeast of the proposed injection well. The plugging report documents that the well was properly plugged. If any other well which penetrates the injection zone is located at a future date, corrective action will be performed on that well in the form of plugging and abandonment.

**Underground Sources of Drinking Water (USDWs):** USDWs are defined by the UIC regulations as aquifers or portions thereof which contain waters that have 10,000 parts per million or less of Total Dissolved Solids and which are being or could be used as a source of drinking water. The permittee has identified the lowermost USDW's depth to be approximately 400 feet below surface elevation. The geologic name of this fresh water bearing formation is the Mississippian Devonian. The surface casing in the proposed injection well has been cemented from 553 feet to the surface. This exceeds the regulatory criteria of 40 CFR §146.22 which requires surface casing to be placed to at least 50 feet below the lowermost USDW and cemented back to the surface.

**Injection and Confining Zones:** Injection of fluids for disposal is limited by the permit to the Upper Devonian Elk 3 Sand in the interval between 2354 feet and 2403 feet. This injection zone is separated from the lowermost USDW by an interval of approximately 1954 feet, while the confining zone, immediately adjacent to the injection zone, the Elk Shale, is comprised of approximately 26 feet of shale.

**Geologic Review:** The permittee has submitted geologic information of public record documenting the absence of any faults/fractures that could be influenced during the injection operation.

**Injection fluid:** The permit limits this well to the disposal of produced fluids associated solely with Seneca's oil and gas production activities, with an expected maximum volume of 45,000 barrels per month.

**Maximum Injection Pressure:** The maximum allowable surface injection pressure for the permitted operation will be 1416 pounds per square inch (psi) and the maximum bottom-hole pressure will be 2598 psi. These maximum pressures were developed using a specific gravity for the injection fluid of 1.16 and an injection well depth of 2354 feet. Injection pressure and annular pressure will be continuously monitored. These pressure limitations will meet the regulatory criteria of 40 CFR § 146.23(a) and have been calculated using the top of the Elk 3

Sand Formation at the facility location and the anticipated specific gravity of the injection fluid, and the geologic information appropriate to the injection zone at this locality. The maximum injection pressure has been calculated to prevent the fracturing of the Elk 3 Sand Formation during operation.

**Monitoring and Reporting Requirements:** The permittee will be responsible for monitoring injection pressure, annular pressure, flow rate and cumulative volume on a continuous basis and reporting this data to EPA on an annual basis. The permittee is also required to conduct a mechanical integrity test (MIT) once every five years. This test will provide EPA with an evaluation of the integrity of the casing, tubing and packer in the well as well as documentation as to the absence of fluid movement into or between USDWs, thus helping to assure that USDWs are protected.

**Plugging and Abandonment:** The facility has submitted a plugging and abandonment plan that will result in an environmentally protective well closure at the time of cessation of operations. The permittee has also made a demonstration of financial responsibility that indicates adequate resources will be maintained for well closure and should preclude the possibility of abandonment without proper closure.

**Expiration Date:** A final permit, when issued, will be in effect for ten years from the date of permit issuance. Annual review of the permittee's operation will be conducted. This proposed draft permit contains essentially the same conditions as the final permit will unless information is supplied to EPA which would warrant alternative conditions or actions on this permit application.

**Additional Information:** Questions, comments and requests for additional information may be directed to:

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A public hearing has been scheduled for December 11, 2012, at 7:00 PM, at the Highland Township Fire Hall located on Pennsylvania Avenue in James City, Pennsylvania. The Administrative Record for this action will remain open for public comment until December 18, 2012.