



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

STATEMENT OF BASIS

FOR

U.S. EPA UNDERGROUND INJECTION CONTROL (UIC) PROGRAM
DRAFT CLASS IID PERMIT REISSUANCE NUMBER PAS2D020BCLE

FOR

WINDFALL OIL AND GAS, INC.
305 CHAN ROAD
FALLS CREEK, PENNSYLVANIA 15840

FOR

A project consisting of one Class IID injection well used for the disposal of produced fluids (brine) associated with oil and gas production located at:

Zelman #1
Brady Township
Clearfield County, Pennsylvania
Latitude 41°04'55.00" Longitude -78°44'48.95"

On April 10, 2020, Windfall Oil and Gas, Inc., ("Windfall" or "the Permittee") submitted a UIC application for the reissuance of a permit that would allow for the construction and operation of the above referenced well. EPA has reviewed this application and has found the application to be acceptable.

The U. S. Environmental Protection Agency (EPA) issued an Underground Injection Control (UIC) permit to Windfall Oil and Gas, Inc. (Windfall) for a Class IID disposal well effective July 30, 2015. This issuance concluded a process that included an initial comment period on the draft permit, an additional comment period focusing on seismicity concerns, a Response to Comments document, and a public appeal to the Environmental Appeals Board (EAB), which eventually rejected the appeal. Following the appeal to the EAB, EPA issued the final permit.

EPA issued the Class II UIC permit for the Zelman #1 well for a period of five (5) years, originally set to expire on October 31, 2019. That permit was stayed due to the appeal to the EAB. EPA issued the final permit after the EAB denied the petition for review on July 30, 2015 with an expiration



date of July 30, 2019. However, it was discovered later that this was a typographical error and did not reflect the permit's intended five-year duration. To correct this typographical error, EPA issued a minor permit modification on May 7, 2019 to correct the expiration date of the permit to July 30, 2020.

Although the regulations allow EPA to issue UIC Class II permits for a period up to the operating life of the facility, 40 C.F.R. § 144.36, EPA exercised its right under this regulation to issue the permit for a shorter period – five years – to allow EPA to review well construction and operation information for reissuance of the permit after five years of operation. However, Windfall did not receive the Pennsylvania Department of Environmental Protection well construction permit until March 21, 2018, and the permit was subsequently appealed to the Pennsylvania Environmental Hearing Board. On February 18, 2020, the Board dismissed the appeal.

Pursuant to the federal Safe Drinking Water Act, 42 U.S.C. §§ 300f *et. seq.*, and its implementing regulations, 40 C.F.R. Parts 144-146, and § 147.235, the EPA UIC Program is responsible for regulating, through the issuance of permits, the construction, operation, monitoring and closure of injection wells that place fluids underground for disposal or enhanced recovery in oil and gas production. Today's draft permit specifies conditions for injection well construction, operation, monitoring, reporting, and plugging and abandonment which are specified to protect, and prevent the movement of fluids into, Underground Sources of Drinking Water (USDW). The Permittee's UIC project and the draft permit conditions specific to the project are described below:

Area of Review: Windfall has chosen a one-quarter mile fixed radius as the Area of Review around the proposed injection well and has provided documentation on the well population within the Area of Review. To determine the existence of wells located in the Area of Review, Windfall conducted research of Pennsylvania Department of Environmental Protection Bureau of Oil and Gas well records, conducted a field survey of the area, and contacted local surface owners. No wells were found which penetrate the injection or confining zones within this Area of Review. Windfall did locate one shallower oil and gas production well within the Area of Review. This well will not be impacted by the injection operation since it penetrates a shallower geologic formation at a depth of approximately 3,500 feet. If any other well, which penetrates the injection zone, is located at a future date, corrective action may be performed (e.g., permanent well 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. 40 C.F.R. § 144.3. The permittee has identified the lowermost USDW as the Mississippian aged Pocono Formation at a depth of approximately 800 feet below surface elevation. This well will be constructed with a ground water protective casing run from the surface to approximately 170 feet and cemented back to the surface, a second water protective string of casing run from the surface to approximately 375 feet and cemented back to surface and a third ground water protective casing from the surface to approximately 1000 feet and cemented back to surface. In accordance with 40 C.F.R. § 147.1955, surface casing must be placed at least 50 feet below the lowermost USDW and cemented back to surface.

Injection and Confining Zones: Injection of fluids for disposal is limited by the permit to the Huntersville Chert/Oriskany Formation in the interval between approximately 7300 feet through 7387 feet. This injection zone is separated from the lowermost USDW by an interval of approximately 6500 feet, while the confining zone, immediately adjacent to the injection zone, is comprised of approximately 14-18 feet of limestone. In addition, a series of low-permeability shale and limestone

formations are located above the injection zone and separate that formation from the lowermost USDWs.

Geologic and Seismic Review: The permittee submitted, and EPA Region 3 has also obtained, geologic information of public record which indicates the possible presence of faults within one-quarter mile of the injection well. These faults are documented as basement faults, meaning they originate in Precambrian, crystalline bedrock. The Precambrian rock is located at a depth of approximately 16,500 feet at the proposed Windfall injection well site. Because the faults in the Oriskany/Huntersville Chert do not extend to the surface, they are inferred from drilling records and cross sections showing displacement of bedrock. The depth of the proposed injection well is approximately 7300 feet, so if these faults exist, they originate approximately 9200 feet below the proposed injection zone.

The review of historic seismic events, from seismometers located in the vicinity of the proposed injection well, indicates that minor seismic events (magnitude 0-3), unrelated to injection operations, have been recorded in this area of Pennsylvania. Earthquake activity in Pennsylvania has been basement related, either from basement faulting or faulting at shallower depths induced by tectonic stresses originating from the basement. Historic gas production in the vicinity of the injection well site have shown that nearby faults appear to act as a geologic trap for gas production. Gas wells have been productive within the fault block, but wells drilled outside the fault block were plugged for lack of production. This would indicate that the faults are not transmissive and would also indicate good confinement of injection fluid and existing formation fluid.

EPA has included two permit conditions that will assist in the prevention of seismic activity and better characterize the injection reservoir. Pressure fall-off tests will be required on an annual basis. In addition, the permit does not allow the injection zone to be fractured or fractures that may exist in the injection zone to be propagated, during injection operations. By preventing fracture development or fracture propagation, migration and storage of fluid in the formation will be controlled by the primary permeability and porosity currently in place within the injection zone.

Injection fluid: The permit limits this well to the disposal of produced fluids associated with oil and gas production with an expected maximum volume of 30,000 barrels per month. Since this is a proposed commercial disposal well, the sources of the disposal fluids have not been determined. However, analysis of potential sources of fluid, which included analysis of specific gravity, was provided to EPA Region 3 to enable the calculation of the injection well's maximum injection pressure.

Maximum Injection Pressure: The maximum allowable surface injection pressure for the permitted operation will be 2593 pounds/square inch (psi) and the maximum bottom-hole pressure will be 6575 psi. These maximum pressures were developed using a specific gravity for the injection fluid of 1.26 and an injection well depth of 7306'. Injection pressure and annular pressure will be continuously monitored. These pressure limitations meet the regulatory criteria of 40 CFR § 146.23(a) and has been calculated using the depth to the top of the Huntersville Chert/Oriskany Formation near the facility location and the anticipated specific gravity of the injection fluid. The maximum injection pressure has been calculated to prevent the fracturing of the Huntersville Chert/Oriskany 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 two years and a pressure fall-off test annually. These tests will provide

EPA with an evaluation of the integrity of the casing, tubing and packer in the well, documentation as to the absence of fluid movement into or between USDWs and flow conditions that exist in the injection zone during operation, thus providing assurance 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 demonstration of financial responsibility that indicates adequate resources will be maintained for well closure.

Expiration Date: When issued, a final permit will be in effect for ten years from the date of the permit effective date. EPA will conduct an annual review of the Permittee's operation. The final permit will contain essentially the same conditions of this draft permit unless information is supplied to EPA which would warrant alternative conditions or actions on the permit application.

Additional Information: The Administrative Record for the draft permit is available for public inspection. All information submitted by the Permittee in support of the draft permit, unless deemed confidential, is included in the Administrative Record for the permit and is available to the public for review. Copies of the permit application, the draft permit, the statement of basis, and the administrative record index are available for review and inspection on EPA's website at <https://www.epa.gov/pa/epa-public-notice-pennsylvania>. Please direct any questions, comments and requests for additional information to the contact listed below. **The Administrative Record for this action will remain open for public comment until September 14, 2020.**

Tentative Public Hearing: EPA has tentatively scheduled a virtual public hearing on September 17, 2020. An in-person hearing will not take place. The call-in information for the teleconference is listed below:

Call-in Number: (866) 609-3139 6:00 PM – 8:00 PM Eastern Standard Time

There is no need to register in advance for the virtual hearing. You may call 15 minutes in advance of the start time or any time during the session to listen to the hearing. During the hearing, callers will receive instructions on how to join the queue to make a comment. The operator will call on people to deliver their oral comments. The virtual hearing is an audio-only teleconference. Participants who want to supply written or printed materials, should do so via email.

Requests to hold this public hearing must be received via email or telephone by EPA by September 10, 2020. When requesting a public hearing, please state the nature of the issues you propose to raise. EPA expressly reserves the right to cancel this hearing unless a significant degree of public interest is evidenced by September 10, 2020.

Submit comments or requests for a hearing or for additional information to:

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