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Summarized comments and questions received regarding the Stephan No. 1 class II disposal well permit application

Why was the Stephan No. 1 permit application reviewed under the rules that were repealed on January 13, 2022?

The Division received an application to reissue a class II disposal well permit to construct for the Stephan No. 1 on October 26, 2021. This was before the January 13, 2022, effective date of the revised Ohio Administrative Code 1501:9-3 rules. The Division has reviewed the application under the rules that were in effect at the time the Division received the application.

Why has this application been pending for multiple years now?

The Division's review process for Class II disposal wells includes correspondence with the applicant to gather the necessary information to review the proposed well application. The amount of time it takes the Division to complete its review of a permit application is not entirely within the Division's control because the time frame is dependent, in part, on how long it takes the applicant to provide requested information and complete other tasks.

How can an injection well be permitted near the city of Marietta's and other surrounding communities water fields?

Ohio Revised Code 1509.021(L) provides the setback distance requirements for a well from sensitive features such as water wells. This provision states: "The location of a new well or a new tank battery of a well shall not be within fifty feet of a stream, river, watercourse, water well, pond, lake, or other body of water...". The proposed location of the Stephan No. 1 Well is more than 1 mile away from the boundary of the mapped source water protection area of the city of Marietta, Ohio and Williamstown, West Virginia. The actual water wells located inside those source water protection areas are more than 1 mile away. The Stephan No. 1 proposed well location is compliant with the requirements of Ohio Revised Code Section 1509.021.

Injection wells are specifically designed and constructed to protect underground sources of drinking water (USDWs). Wells are required to be drilled through the lower-most

USDW with drilling fluids that are compatible with freshwater aquifers. After the well penetrates the lower-most USDW, it must be properly isolated with steel casing set at least 50 feet through the lower-most USDW and cemented to surface prior to penetrating oil and gas or brine bearing formations.

Why does DeepRock need another injection well?

Submitting an application for a permit to construct a class II disposal well is a decision of the applicant who wishes to construct a class II disposal well. The Division of Oil and Gas Resources Management has no role in the applicant's decision to construct additional class II disposal wells. The Division also has no role in the siting selection for a class II disposal well. The Division will review each application that is received to ensure the permit application is compliant with all requirements of applicable Ohio laws and rules.

Why does ODNR continue to permit new injection wells when there are examples of brine migration in Washington County?

In accordance with Ohio Revised Code 1509.06 (F), the Division is required to issue a permit with terms and conditions reasonably expected to prevent any threats to public health or safety or damage to the environment if such conditions may be imposed rather than deny a permit. The Division has imposed a requirement in the terms and conditions for this permit that the owner conduct a step rate test prior to requesting authorization to inject. The Division uses the step rate test results to determine whether to authorize injection and, if it does, to determine a safe maximum allowable injection pressure.

How does the Division of Oil and Gas ensure ground water is protected from injection wells?

The application for a permit to construct a class II disposal well requires the applicant to submit a detailed application for the Division's review. This review process provides for the protection of groundwater, surface water, and public health and safety, before making any decisions on a permit application, geologists evaluate the proposed site for injection. As part of the permit review process, geologists determine the depth of the deepest USDW to ensure that it is protected.

Geologists establish the depth of surface casing necessary to extend through and protect all USDWs. A USDW is defined as an "aquifer...that contains a sufficient quantity of groundwater to supply a public water system, and ... contains less than 10,000 milligrams per liter of total dissolved solids ...."[1] Most groundwater used for public drinking water contains less than 500 milligrams per liter of Total Dissolved Solids (TDS), and most water that is treated to be used as drinking water contains less than 3,000 milligrams per liter TDS. Therefore, the Underground Injection Control (UIC) Program ensures that water resources that could be treated and used as drinking water in the future are protected.

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[1] U.S. Environmental Protection Agency, 2002, Definition: Underground Source of Drinking Water (Section 146.3 of Part 146); U.S. Code of Federal Regulations, Title 40, Part 146, revised of July 1, 2002.

Division geologists also evaluate the proposed well construction plan. Class II disposal wells must be constructed with multiple layers of protection (cemented, steel casing strings) between USDWs and the injected waste stream. This includes surface casing to protect and isolate USDWs, an injection string that isolates the injection zone, and may include additional cemented casing strings.

The Division ensures that surface facilities and pipelines are constructed, tested, and maintained in a manner that will protect the land, surface and ground waters. In addition to a test prior to commencing operations, the Division requires each pipeline that transports brine or other waste substances to be pressure tested at least once every five years. The Division also ensures that surface facilities are designed and maintained to prevent escape of brine or other waste substances into the environment.

When the Division receives a class II application, what types of information are submitted and what types of evaluations are done during the permit application review?

An applicant must submit the proposed location, injection formation details, total depth, well construction details, testing information, stimulation program, injection pressure and volume details, and facility details. A Division geologist reviews the permit application to determine if required application details have been submitted.

After this review, Division geologists review the proposed well construction details. Each casing string and cementing detail is reviewed for compliance with applicable laws and rules. Generally, injection wells must be constructed with conductor casing to stabilize near surface sediments and isolate shallow ground water, surface casing to isolate underground sources of drinking water, injection casing to isolate flow zones and the proposed injection zone, and a tubing and packer assembly to allow for demonstration of mechanical integrity of the system.

A geologist will also perform a detailed technical review of the application. This review includes evaluation of the siting of the proposed well and surface facility to ensure that the well and facility are compliant with setback requirement. The Division of Geological Survey provides structure contour maps to the Division to aid in its review of the proposed location for any evidence of nearby faulting or geologic structure.

Next, a Division geologist will perform the area of review to evaluate all known artificial penetrations within a specified radius of the proposed location. Each well's construction and plugging details are reviewed and evaluated to determine if there is a pathway for injected fluid to migrate out of the injection interval. Wells that are identified as not properly constructed or not properly plugged and abandoned are addressed through corrective action requirements in order for the injection well to be authorized for injection.

The Division field staff performs a preliminary site review to confirm information submitted in the application is consistent with field observations and ensure that the proposed site and surface facility are located away from any sensitive areas. This site

review also determines if any special permit conditions will need to be added to the permit.

After the Division determines that an application is ready for public notice, the publication language is provided to the applicant. It is then the applicant's responsibility to publish notice in a newspaper of general circulation. The applicant must then submit the proof of publication to the Division. After the public comment and objection period is over, the Division will review all comments and objections. After evaluating all public comments and objections, the chief is required to rule on the validity of each. If the chief considers any objection to be relevant to the issues of public health or safety, or to good conservation practices, or to have substance, a hearing is to be called within 30 days of receipt of the objection. If, in the opinion of the chief, such objection is not relevant to the issues of public health and safety, or to good conservation practices, or is without substance, a permit shall be issued.

Why does DeepRock receive brine that comes from out of state?

DeepRock Disposal Solutions, LLC ("DeepRock") is a private brine disposal company, who can receive brine and other waste substances (as defined by OAC 1501:9-3-01) from any production facility in this state or any other state for disposal. The Ohio Administrative Code Section 1501:9-3-07(G) requires DeepRock to submit to the Division quarterly reports of brine and other waste substances that DeepRock has received for disposal. The Division reviews the reports to ensure that DeepRock has received and disposed of brine and other waste substance from lawful sources.

Why does Ohio accept Brine from Pennsylvania and West Virginia?

Pursuant to the Interstate Commerce Clause of the U.S. Constitution, Ohio's General Assembly cannot enact laws that restrict commerce between states. Therefore, the Division also cannot restrict brine from entering from other states. Any registered brine hauler may transport brine in Ohio to be disposed of at permitted injection wells. Ohio's General Assembly enacted laws (ORC 1509.21, ORC 1509.22, and ORC 1509.226) establishing the ways that brine may be disposed of in Ohio. Every state bordering Ohio has class II disposal wells; those states have not outlawed brine injection. However, the number of wells in each state varies.

Will the Division continue to investigate if injection wells affect drinking water?

Ohio Administrative Code 1501:9-3-06 states: "After a permit has been issued but before commencement of drilling a new class II disposal well or converting a well to a class II disposal well, a class II disposal well owner shall provide to the chief results of sampling of water wells within one thousand five hundred feet of the proposed location of the class II disposal well and five hundred feet of any associated pipelines utilized for the injection of brine. The class II disposal well owner shall provide a list and map that identifies the location of each water well sampled." These pre-construction samples serve as a baseline measurement of each water wells quality.

If a landowner is concerned that their water well might be impacted by oil and gas operations the Division encourages the landowner to fill out a complaint at https://ohiodnr.gov/discover-and-learn/safety-conservation/about-ODNR/oil-gas/contact-og/submit-info. The Division will contact the landowner and perform an investigation to determine if there have been any impacts to the water source. If water sources are determined to be impacted by oil and gas activities, Ohio Revised Code 1509.22(F) requires the well owner to replace the water source that has been substantially disrupted by contamination, diminution, or interruption proximately resulting from the owner's oil or gas operation.

In response to the brine migration that occurred in Dunham Township, Washington County, the Division contracted a third-party environmental contractor to conduct a water well investigation around the Washington County produced water study area. That investigation report can be found on the Division's website at the address below. https://dam.assets.ohio.gov/image/upload/ohiodnr.gov/documents/geology/FinalAssessmentRedbird4WashingtonOhio_GES_2021.pdf That investigation found no evidence of water well contamination caused by class II disposal well operations.

Similarly, the Division contracted a third-party environmental contractor to conduct a water well investigation around four injection wells in Athens County that the Division connected to nearby production well impacts. That investigation report can also be found on the Division's website at the address below. https://ohiodnr.gov/discover-and-learn/safety-conservation/about-ODNR/oil-gas/oil-gas-resources/kh-frost-water-study That study also found no evidence of water well contamination caused by class II disposal well operations.

How does the Area of Review work when the radius includes the Ohio River?

The area of review is a fixed radius surrounding the proposed class II disposal well. The area of review for the Stephan No. 1 well is a ½ mile radius from the well site. If the area of review extends across a body of water like the Ohio River, the Division will review its records to determine if there are any known wellbores within that radius. If any wellbores exist within the area of review boundary, regardless of whether that wellbore is inside a body of water, the well construction details are reviewed to ensure that the wellbores are properly constructed or properly plugged and abandoned so that they would not serve as a pathway for migration of brine.

Does the Area of Review include water wells?

The area of review does not include a review of water wells because they do not penetrate the injection zone. The purpose of the area of review process is to identify artificial penetrations in the injection zone and ensure they are properly constructed or properly plugged and abandoned. Because Class II injection wells inject into formations that are far deeper than underground sources of drinking water, water wells do not penetrate the injection zone and therefore are not included in the area of review.

However, the Division, does review water well information in the area of the proposed well site and surface facilities. The water wells are reviewed to determine what aquifers are utilized by the local population. This assists the Division in identifying the deepest underground source of drinking water. The Division uses this information to ensure required surface casing depths are protective of nearby underground sources of drinking water and seal off the wellbore from those drinking water sources.

In addition to the evaluation of the water well locations to determine the proper depth of surface casing, nearby water well quality is also measured and recorded prior to commencement of drilling operations. This requirement (OAC 1501:9-3-06(A)(3)(a)) states: "After a permit has been issued but before commencement of drilling a new class II disposal well or converting a well to a class II disposal well, a class II disposal well owner shall provide to the chief results of sampling of water wells within one thousand five hundred feet of the proposed location of the class II disposal well and five hundred feet of any associated pipelines utilized for the injection of brine. The class II disposal well owner shall provide a list and map that identifies the location of each water well sampled."

I am concerned about truck traffic related to this proposed well.

The Ohio General Assembly did not grant authority to the Division to regulate traffic or dust generated from truck traffic associated with an injection well. The Ohio Department of Transportation has regulatory authority over traffic on state routes in Ohio. Township and County roads are regulated by Township and County governments.

Will ODNR have a public hearing for the Stephan No. 1 well?

Pursuant to Ohio Administrative Code 1501:9-3-06(H)(2)(c), the chief is required to review each objection received during the public notice period and rule on the validity of each objection. If the chief considers any objection to be relevant to the issues of public health or safety, or to good conservation practices, or to have substance, a hearing shall be called within 30 days of receipt of the objection. The chief has reviewed all objections received during the public comment period and determined that a hearing is not necessary under the governing law.

Are there risks of induced seismicity associated with class II disposal wells?

Seismic events associated with Class II injection wells are rare. More than 180,000 Class II injection wells exist in the United States, with only a small percentage of these wells being associated with seismic activity. The Division understands the concern with the potential of injection-related seismicity and has taken proactive steps in this area. The Division has its own seismic monitoring network and staff dedicated to monitoring seismicity. Additionally, part of the permitting process is to review the proposed location to determine if seismic monitoring will be a requirement. Ohio's seismic monitoring network is the strongest it has ever been statewide, allowing the Division to better

understand seismic activity that occurs in our state. The Division currently has a robust monitoring network in the immediate area (10 seismometers within 20 miles). Because of this, the Division determined that it was not necessary to require a seismic monitoring plan for the Stephan #1 well. Ohio's rules governing Class II Disposal Wells (OAC 1501:9-3) were updated in January 2022. Under these new rules, for any Class II disposal well operating in Ohio, the Division can suspend operations if seismic activity occurs within three miles of the well and require the operator to implement a plan before resuming operations.

Does the Division have adequate field staff to ensure annulus pressure is monitored and violations are addressed?

Yes. The Division inspects each Class II disposal well at least once every quarter and takes appropriate enforcement action if wells are not in compliance with Ohio law, including annular pressure monitoring requirements. Additionally, annulus and injection pressures are required to be continuously monitored and recorded by the well owner.

What happens if there is a spill at the injection well?

Incidents such as spills at a class II well or facility are required to be reported to the Division by calling 1-844-OHCALL1 (1-844-642-2551) within 30 minutes of occurrence. The Division is prepared to respond to oilfield incidents with an Emergency Operations and Response team, should a spill occur. These individuals are on-call 24 hours a day, 7 days a week, 365 days a year. If a spill occurs, the Division will respond to the site, assess the situation, and ensure the company cleans up the spill. If the operator does not complete necessary remedial action, ODNR has the authority to take further action including issuing orders suspending operations, referring the matter to the Ohio Attorney General's Office to pursue criminal or civil penalties, forfeiting the operator's bond or financial assurance, and possibly revoking the operator's permit depending on the circumstances. In addition, if the operator fails to respond to a spill or other emergency situation at a well, the Division has the authority to enter into emergency contracts to respond and mitigate the emergent situation

Who is liable if injected brine water migrates from an injection well into an oil or gas production well?

The Division is the regulatory agency responsible for enforcing Ohio law governing injection wells. If the Division determines brine from an injection well is migrating in a way that violates Ohio law, it will take appropriate regulatory action. The Division does not have jurisdiction to adjudicate private disputes between injection well and production well owners arising from alleged brine migration.

DeepRock is applying for a Class I injection well permit near their proposed American Growers No. 4 well permit location. Will the Division and Ohio EPA collaborate regarding both wells?

Ohio EPA and the Division of Oil and Gas Resources Management have primary regulatory authority or primacy from US EPA to regulate injection wells within the State of Ohio. As part of a memorandum of agreement between US EPA and the State of Ohio, the parties agree to maintain a high level of cooperation and coordination between state and EPA staffs in a partnership to ensure successful and effective administration of the UIC program.

Does the Division have brine samples? Can you post them on the website?

The Division has many samples of brine that have been collected over many years for a variety of reasons. These records are not currently on the Division's website but may be requested via a public records request at any time. Pursuant to OAC 1501:9-3-07(K), the Division has the authority to sample brine or other waste substances at any time.