**Comments to ODNR on Arrowhead Road Services Application for Class II Injection Well**

I am responding to the request for public comments on the application from Arrowhead Road Services LLC for a Class II injection well (Arrowhead #2) in Belpre Township (Washington County).

I have reviewed the application from Arrowhead Road Services LLC and considered this application in terms of the Ohio Admin. Code !501:9-3-06 (H)., and I have objections to the application for this permit. The code states that objections must be relevant to public health, safety and good conservation practices. I believe all my stated objections relate to these three criteria.

Process Issues

 First, I would like to mention some issues that relate to the public announcement and the access and accuracy of the application materials. When I first saw the public announcement about this application in the Marietta Times on March 28, I went to the ODNR web site (Division of Oil & Gas Resources Management) and could not find the application. I sent Mr. Adam Schroeder of the Division a message asking for a copy of the application. He sent it to me, and in a subsequent message told me that the application was posted on the ODNRweb site on April 1. This means that anyone who, like me, wanted to review the application at the time of the public announcement (from March 25-March 30), they would not have been able to access the application.

 The public announcement lists a phone number for Arrowhead Road Services LLC in Rosedale, Virginia . When I called this number (the same listed on the application) and expressed my interest in knowing about the application for an injection well permit, I was given the name and phone number of Larry Cavallo. When I finally read the application, I noticed that Mr. Cavallo is the owner of the surface property and not the owner of the proposed injection well; the application notes that the owner of the proposed well is Tommy Shrader. .I am wondering how it would be possible for a member of the public—in the case of an emergency or otherwise—to get in contact with the owner of this well.

 The Code indicates that the Division needs to review the application within 15 working days of its submission. The submission was March 23, 2021. I do not know if the Division review occurred within the time specified, but it took the Division a full 12 months to send out the public announcement. I do not think it is fair that the Division gets 12 months to review the application and the public gets 15 days.

 **In light of these process issues, I would respectfully request an extension of the public-comment period (beyond the 15 days, i.e., April 14).**

Objections Based on Ohio Admin. Code

1. The application describes the geological formations (Clinton, Medina, Queenston) relevant to the proposed site. The Admin. Code states the requirement for a plan for seismic monitoring, but I did not see any such plan in the application. In light of historical issues of micro earthquakes with hydraulic fracturing, I would consider this a safety and public health matter.
2. In the application it is noted that there is one producing well within 0.5 mile of the proposed site of the injection well. A group of independent oil & gas producers in Washington County has organized in opposition to the proliferation of Class II injection wells in the county and has, in fact, pursued legal action for the alleged damage and destruction of their production wells from brine waste. I think that any further permitting of injection wells by the Division in Washington County be deferred until this legal matter is resolved—certainly for a permit within 0.5 mile of a producing well. The proposed well will inject 5,000/day –barrels or gallons not indicated-- (with a maximum of 10,000); given that there is another well, Arrowhead #1, nearby this huge amount of brine waste is a considerable risk to a production well. Given what happened in Veto Lake in summer 2021 (a blow out of a plugged old well—excessive brine waste a likely but as yet unproven cause), there is also risk of a blow out to the plugged Oriskany well mentioned in the application. This is an objection related to good conservation practices and safety.
3. The Admin. Code mentions a radioactive tracer in order to monitor radioactivity in the brine waste, something that is known to be common in this product. I did not see mention of this item in the application. This is also a public health issue.
4. The Admin. Code also mentions “any such other tests.” Observations and documents from other locations with injection wells are now being collected; there is much concern from people who live by injection wells about malodorous air and air pollution from these sites. It would seem appropriate for that matter to place VOC (volatile organic compounds) monitors near this site as well as other sites where injection wells are located. This is clearly a public health issue.
5. The application states that transportation of brine waste will be done by truck. There is no description of the amount of increase of trucking from this proposed well in the area and the impact of this increased truck traffic on roads. Was the Washington County engineer and was the District 10 office of the Ohio Department of Transportation consulted about the increased trucking traffic associated with this well? And were officials of the relevant local governments consulted about this higher level of trucking on city streets in Marietta & Belpre, township roads in Belpre Township and on the state highway (Ohio Route 7)? On what streets and roads in the county will the trucks be travelling with this brine waste and what are the origins of the waste to be transported? Another public health issue.

1. There is a reference to bottom-hole injection interval pressure. I did not see where this item was addressed in the application. Another safety issue.
2. The application indicates that there will be 1,000 gallons per day of water withdrawal for this proposed injection well. What is the source of this water (Belpre City, Little Hocking?) and have those responsible for this water and residents who rely on this water source approved this vast amount of water to be used at an injection well?
3. Some other details: The response to question #22 lists the emergency phone numbers but not the agencies involved. Location- other applications for injection wells have listed the geological coordinates for the location of the proposed well—I did not see this information in the application.

Following is a brief narrative I have provided about my research on injection wells in Washington County:

In 2019 Washington County had the second-highest level of injection well activity in the state at 8.1 million barrels of brine waste, 68% of which was from out-of-state (PA & WV) sources. Our county has among the highest number of wells in the state. In 2011 there were 1.9 million barrels of brine waste injected in our county.

I am aware that injection wells have cement casings and annulus controls and that they are customarily drilled to a depth of approximately 3,000-6,000 feet while aquifers, from which drinking water is obtained normally are drilled at 200-300 feet. This means that, if properly done, injection wells should not pose any risk to aquifers or surface water. The keyword in this conclusion is “properly.” Spills. leaks, discharges, excessive amounts of brine, and other potentially harmful events are not uncommon at injection well sites, especially given the vast proliferation of injection wells in Washington County and throughout eastern Ohio.

In a September 5, 2020 article in the Columbus Dispatch, there was a report on the Redbird #4 spill indicating that fracking waste had seeped into natural gas production wells but not into drinking water. But an article in Consumer Reports (December 3, 2020) stated: “The risk to drinking water comes in two major ways. First, water used in the hydraulic drilling process can leak into aquifers and other groundwater supplies. Second, the wastewater that fracking produces can contaminate supplies when waste leaks from landfills that accept oil remain when waste spills from trucks or pipelines moving it, when equipment fails, or when waste leaks from unlined disposal pits.”

There was a spill near Marietta in a Deep Rock injection well facility in January 2021. This is in addition to the RedBird Well spill a couple of years ago in western Washington County. There is also evidence that brine waste from injection wells is entering into oil& gas production wells, resulting in damage and even destruction of these wells. Owners of these production wells are taking action themselves and can speak on their own behalf about the risk of yet another injection well in Washington County.

Last summer there was a blow out of an old oil & gas well in Veto Lake in western Washington County. We have not yet seen a report on this event from ODNR, but many believe that the cumulative pressure of all these injection wells in the county (specifically in that area) is the cause of that blow out.

George Banziger