



June 3, 2024

To: Wisconsin Well Drillers

Subject: Modification and Clarification of Well Construction Requirements for the Arsenic
“Special Well Casing Depth Area” for Outagamie and Winnebago Counties

Dear Wisconsin Licensed Well Driller:

This letter is to inform you of changes to the Outagamie and Winnebago “Special Well Casing Depth Area” for portions of Outagamie and Winnebago County that was created to prevent arsenic contamination of drinking water. These changes are made after a review of well construction reports submitted since the creation of the “Special Well Casing Depth Area” in 2004.

As of the date of this letter, we are removing the special well casing depth requirements for portions of western Outagamie and northwest Winnebago County, as indicated in the attached memo and the enclosed maps. Please retain and consult these maps and the Well Driller Viewer to confirm whether there are special casing requirements before drilling anywhere in Outagamie or Winnebago counties.

In addition, several questions have come up regarding the construction requirements from well drillers that work in Outagamie and Winnebago Counties. We hope the answers we have provided below will help clarify these issues.

- **Question:** It has become difficult to impossible to order pre-mixed cement from batch plants when grouting wells with less than 200 feet of casing in Winnebago and Outagamie Counties. Can an exception be made for areas within Winnebago and Outagamie Counties that require less than 200 feet of grouted casing?

Answer: Yes, as of the date of this letter we are amending specification #4 of the attached casing and grouting requirements as follows:

4. For areas where more than 200 feet of cement grouted casing is required, the cement grout shall be ordered from a commercial concrete company, shall be ordered free of aggregate, and shall have a slurry density of at least 15.2 lbs./gallon, but preferably should have a density of 15.6 lbs./gal. The grout density shall be measured with a mud balance at the well site. **For areas where 200 feet or less of cement grouted casing is required, if cement grout can't readily be obtained from a commercial concrete company, cement grout meeting the requirements of NR 812.11 (15) (b) may be mixed on-site. The grout density of each batch of grout shall be measured with a mud balance at the well site and the number of batches mixed and the mud weight of each batch shall be recorded in the comments section of the well construction report submitted to the department.**

- **Question:** There are areas of Outagamie and Winnebago County where we frequently lose mud circulation in shallow limestone and we currently have to drill blind until circulation returns or we reach the minimum casing depth. Would the DNR allow the use of air or air and foam drilling to allow for the installation of temporary casing to return circulation of drilling mud?

Answer: DNR may allow the use of air and foam mixed according to manufacturer's specifications to allow for the installation of temporary casing after an evaluation on a case-by-case basis. Drillers should contact their regional Water Supply Specialist to discuss the geology and conditions encountered and obtain a variance per s. NR 812.43 (1), Wis. Adm. Code. Drillers should return to mud rotary drilling after installing temporary casing and restoring circulation. Drillers shall follow up with an email to the Water Supply Specialist documenting the depths that they drilled with air and foam. The DNR will not allow for air drilling due to the risk of introducing too much oxygen into the formation which can trigger geochemical reactions that release arsenic out of the sulfide minerals imbedded in these bedrock layers. These chemical reactions are self-enabling and can cause arsenic concentrations to increase with time.

- **Question:** Would the DNR allow for deeper total depth on shallow option wells in southeast Outagamie County where minimum casing depths for the deep option well is 400-600 feet? Drilling, grouting, and casing to those depths can be difficult and the cost of a well can be very high.

Answer: DNR may allow drillers to drill to a depth exceeding the maximum shallow well option requirements. However, this would require an evaluation of the request on a case-by-case basis. Drillers should talk with their regional Water Supply Specialist ahead of time and provide their reasoning and a specific maximum depth that they would anticipate drilling to. In no case would drilling to the anticipated depth of the St. Peter Sandstone be approved.

The DNR appreciates the thought and time you have all put into drilling wells in Outagamie and Winnebago Counties over the last 20 years since the "Special Well Casing Depth Areas" were created. We established these areas not only to help protect the drinking water of this region but also to protect the long-term safety of the aquifers that provide and store this water. The questions you provided demonstrate your professionalism and experience gained drilling wells in the counties. We look forward to working with you to further refine the special casing and drilling requirements in the future.

Sincerely,



Marty Nessman, Manager
Private Water Supply Section
Bureau of Drinking Water and Groundwater

encl. – Outagamie and Winnebago County Special Casing Area Maps