

**Information Paper for the Groundwater Advisory Committee:  
Comparison of Minnesota and Wisconsin for High Capacity  
Well Applications and Water Appropriation Permits  
June 1, 2006**

Wisconsin:

The Bureau of Groundwater and Drinking Water of the Department of Natural Resources regulates both well construction and groundwater withdrawal rates from wells. Thus, an application for a high capacity well is reviewed for both the ground water extraction rate and the well construction.

A high capacity well is any well on a high capacity property. A high capacity property is one property where the pumping capacity from all wells on the property exceeds 100,000 gallons per day.

Staff evaluate high capacity well applications for potential impacts to municipal wells, springs, trout streams, exceptional resource waters and outstanding resource waters. If the department does not anticipate a negative impact to any of these, an approval is granted. Of these analyses, at this time the only detailed quantitative analysis that is performed by the department is for a potential impact on a municipal well.

According to Section NR 812.09(4)(a)1., Wisconsin Administrative Code: *“Reduced availability of groundwater to a public utility well may be indicated when calculations using estimated values for aquifer characteristics result in 10 or more feet of water level drawdown in the public utility well based on 30 days of continuous pumping from the proposed high capacity well or well system.”* For this analysis, a simplistic one dimensional radial flow model is used. The critical input parameters are aquifer transmissivity, storage coefficient, pumping rate and distance to the municipal well. In some cases, a reasonably accurate transmissivity is available but gross estimates must be used in other cases. Measured storage values are almost non-existent, thus rule of thumb estimates are commonly used. The proposed pumping rate is taken from the application and the distance is readily calculated.

Minnesota:

In Minnesota, the Minnesota Department of Health (MDH) regulates water wells and the Department of Natural Resources (MDNR) regulates water appropriations. Unlike Wisconsin, water appropriations from groundwater and from surface water supplies use the same application procedure for a water appropriation. Thus, two regulatory agencies are involved in approving a high capacity well. The well must be approved by the MDH and constructed before an application for a water appropriation application is submitted to the MDNR because the water appropriation application must include the well construction record.

An appropriation permit is necessary when over 10,000 gallons per day or 1,000,000 gallons per year will be withdrawn. There are exemptions from permitting for domestic use by less than 25 persons, pumping tests or other specific situations where the water is reused.

The appropriation permit application lists 29 area hydrogeologists as MDNR points of contact, not including central office staff. On a site specific basis, the MDNR will determine if a pumping test from the well is necessary and if so how extensive that test must be. In some cases, it can be a short duration test where only the static and pumping level are measured. On the other extreme, the MDNR may require a thirty day test where water levels in other water user's wells are measured. In Minnesota, wells cannot cross connect multiple aquifers with open drillholes or well screens. Many more individual aquifers are specified to be separate aquifers in Minnesota than in Wisconsin.

Water users must report water usage and pay the appropriate fee for that usage. The fees range from a minimum of \$101 to \$7.50 per million gallons per year with a cap of \$750,000 per year.