

## MEMO

TO: Groundwater Advisory Committee, Technical Advisory Committee, DNR  
FROM: M. Carol McCartney, Bob Nauta, Andy Graham, Jodi Habush-Sinykin  
Ken Bradbury, Steve Born  
DATE: October 23, 2007

SUBJECT: Recommendations and Rationale for the GAC Draft Report--Section 2.4 Adaptive Management Issues

### BACKGROUND and SUMMARY:

Increased demand for water caused by economic growth as well as changing stresses from weather patterns have caused adverse impacts to water resources in areas of Wisconsin such as Brown County, Waukesha County, Dane County, and the central sand plains. Water resources targeted for protection (outstanding resource waters, exceptional resource waters and trout streams) are within designated groundwater protection areas (GPAs). To prevent the problems we see occurring elsewhere from affecting GPA resources, management of the state's water resources must adapt to increased demands. In particular, the approval process for high capacity wells—whose withdrawals mine groundwater that would otherwise feed these protected waters—must have adaptive management as its underpinnings to ensure that both our resources and our economic growth can be protected and, where they are in conflict, informed choices can be made.

Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operating programs. In the case of the approval process for high capacity wells, this means the applicant must provide data about water levels, stream flows, ecological quality, as well as the currently requested basics of pump capacity and well depth. The data and evaluation provided by the applicants should be used by the Department to approve or revise the application. The information would also be used to update a database that applicants could access to find the best locations for high capacity wells and that the DNR could use for the continued management of the resource. Open access by the regulated community and the regulators to this information will allow the best decisions to be made with the least delays, encouraging our economy and protecting our resources.

### APPROVAL PROCESS - GENERAL

We recommend that the Legislature direct the DNR to revise NR 820 to include a transparent and rational process for the regulated community to follow in applying for high-capacity well approvals. We recommend that the process require that applicants employ quantitative analyses beginning with screening by rudimentary hydrogeologic methods that are widely used and generally available and, if necessary, proceeding to more rigorous models with increased levels of sophistication. Applicants should be required to evaluate the cumulative impacts on groundwater and surface waters of high capacity wells that are in the vicinity of their proposed high capacity well and the DNR should review applications for completeness and accuracy. If necessary, DNR should advise applicants on how to revise their application to minimize or mitigate the effect of the proposed high capacity well and should only approve those wells that do not have a significant adverse effect upon the protected surface waters.

We recommend that the legislature direct the DNR to compile a database of input parameters for the quantitative analyses required for the approval process and that the database be updated from applications as they are received and reviewed. The DNR should prepare the rules and database with the assistance and input of a science advisory committee and the draft rules should be prepared within two years.

## APPROVAL PROCESS – SPECIFICS

1. High Capacity Well Approvals. Approvals should state the conditions of groundwater withdrawal, including but not limited to rate, duration, timing, cumulative withdrawal per unit time, and allowable water usage.

Approvals should generally be issued for periods of 10 years, at which time they can be reviewed and may be renewed. Approvals may be issued for shorter periods when necessary to meet groundwater management goals or emergency situations such as fire protection.

A new approval may be issued for a shorter period in order to facilitate periodic regional permit review.

Whenever possible approval reviews will be performed concurrently for wells in rational geographical areas.

2. High Capacity Well Approval considerations. The department shall determine prior to issuing or renewing an individual high capacity well approval that the proposed withdrawal will not result in a significant adverse environmental impact.

a. The department at a minimum must consider the proposed rate and timing of pumping, cumulative annual extraction, fate of extracted water, ecological impacts (including changes to water chemistry and temperature), what surface waters and reaches of surface waters might be affected, and the cumulative effects of other groundwater extractors.

b. The department may deny or condition a high capacity well approval to make it consistent with the standard. Conditions may include location of extraction; rate and timing of extraction; cumulative annual extraction; fate of extracted water; and requirements for monitoring groundwater elevations, surface water elevations, and streamflows where there is a reasonable need for this information.

3. Reporting. High capacity well owners are required to report annually the amount of groundwater extracted. The report should include the amount of groundwater pumped, location of pumping, water use, and water fate. The department may require more detailed reporting as a high capacity well approval condition, particularly if it will provide the data necessary to assess the effectiveness of mitigation measures.

4. Grandfathering. Existing approved high capacity wells may have their approvals reviewed and conditions revised, if necessary, 10 years from the enactment of the legislation.