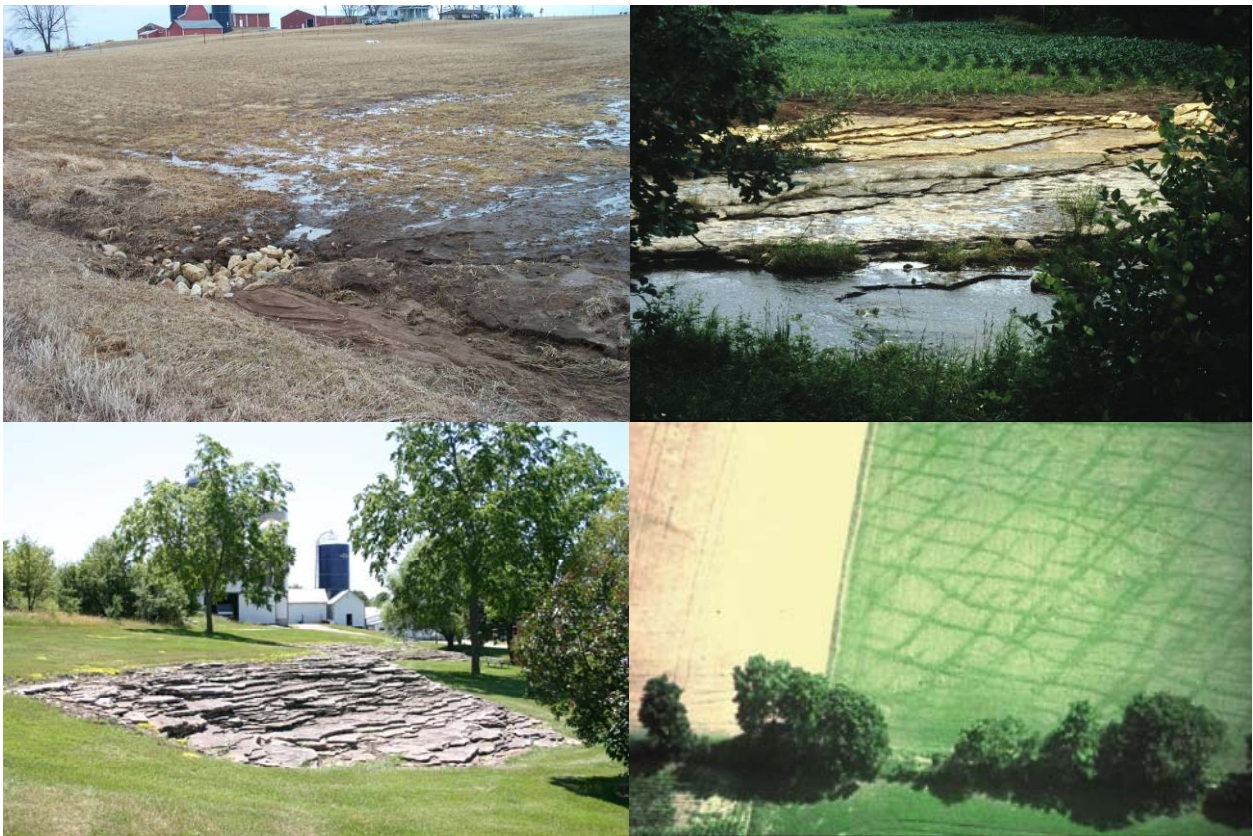


Final Report of the Northeast Wisconsin Karst Task Force



February 9, 2007

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Northeast Wisconsin Karst Task Force
Final Report
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Cover Photos: Field runoff (and manure) entering a sinkhole in a road ditch that the farmer has filled in with field stone. Shallow bedrock in a cornfield along a Bower Creek tributary (Brown County), showing how field runoff can enter not only surface water, but groundwater as well. Exposed bedrock near a farmstead in Brown County. Air photo showing fracture traces in an alfalfa field. Photos courtesy of WDNR, UW Extension, John Luczaj (UW-Green Bay) and the Calumet County LCD.

Northeast Wisconsin Karst Task Force

EXECUTIVE SUMMARY

February 9, 2007

Northeastern Wisconsin has experienced groundwater quality problems for many years. Both anecdotal and documented reports of water well contamination abound in the region. Voluntary homeowner well testing programs and sponsored research projects have indicated that a significant proportion of the water supply wells were contaminated at sometime during the year. For example, a voluntary program in Calumet County indicated that from 4.6% to 47% of the wells tested contained *E. Coli* or were unsafe for either bacteria or nitrate respectively. Recent incidents of spring manure runoff and well contamination further highlighted the problem and focused the public's attention.

In order to have a unified approach throughout the region, the UW Extension and County Conservationists in Brown, Calumet, Door, Kewaunee, and Manitowoc Counties convened a task force to consider the existing scientific data and make recommendations on how to address the problem. The Task Force included representatives of county and state agencies, the University System, and the private sector. A complete list of members can be found in the body of this report.

The goals of the task force were:

1. Determine where our impact on the karst aquifer begins.
2. Evaluate the best methods to reduce the impact of agriculture on groundwater quality.
3. Prioritize the implementation of available technologies to prevent future problems.
4. Determine where gaps are in our knowledge base.

Task force members quickly focused on agricultural issues and agreed that because of the aquifer type, overlying soils, and land use practices it would be impossible to prevent every instance of contamination but that landowners can take significant steps to reduce the potential for animal and human waste, and other materials from entering the groundwater. It also became clear that the physical environment can not be characterized, understood, or protected by merely locating and dealing with karst features at the surface. Rather, the controlling factor is the underlying fractured carbonate bedrock. The task force relied on the best existing scientific data or understanding available to make its recommendations. The members also unanimously concluded that a uniform approach to regulation and enforcement across the entire carbonate bedrock region of northeastern Wisconsin is critical to the development of a stable and effective framework for environmental protection.

The recommendations fall into the following six categories:

1. *Establishment by the legislature of a Carbonate Bedrock Management Zone similar to the existing Atrazine Prohibition Zones defined in ATCP 30.* This will create a framework for multi-county cooperation and local efforts, rather than a piecemeal approach to aquifer protection.
2. *Cooperation among federal, state and local agencies and units of government responsible for the regulation of agricultural and other types of waste to ensure uniformity of state codes based on current scientific understanding.* Current state codes have a variety of setbacks and separation distances for similar types of wastes, and vary significantly based on whether the generator has a WPDES permit. A uniform, science based approach is needed.
3. *The adoption of a Contamination Vulnerability Ranking for the Northeastern Wisconsin Carbonate Bedrock Region.* Subcommittees were formed to consider available Best Management Practices and to define Karst Vulnerability. A coordinating subcommittee combined those reports and developed the Vulnerability Ranking presented in the table below that was accepted by the task force.

Level of protection required	Criterion	Relative vulnerability to contamination
1	less than 5 feet (60 inches) to carbonate bedrock, <i>and/or</i> closed depressions or any drainage areas that contribute water to sinkholes/bedrock openings	Extreme
2	5-15 feet to carbonate bedrock	High
3	>15-50 feet to carbonate bedrock	Significant
4	greater than 50 feet to carbonate bedrock	Moderate

Specific recommendations detailed in the body of this report for practices and limitations in the following three groups are based on this scale:

- Land Application Of Waste In Shallow Carbonate Bedrock Areas
 - Waste Storage And Polluted Runoff From Concentrated Waste Sources In Shallow Carbonate Bedrock Areas
 - Karst Features (Sink Holes and Bedrock Openings)
4. *Implementation of a set of simple pro-active steps and management practices developed and endorsed by farmers and professional service providers that would reduce incidents of contamination to the aquifer.* A set of farmer-developed initiatives that have been incorporated into #5

5. *Implementation of a broad array of basic low cost actions and practices that can be initiated without modification of existing or enactment of new statutes or codes.* These include simple practices such as a visual well inspection, winter spreading plans, landowner identification of karst features, and enhanced citizen awareness that can be implemented immediately by farmers and rural homeowners at minimal cost.
6. *Implementation of enhanced longer-range actions and practices that require investment or action at the township or county level.* Actions range from improved training of farmers and professional service providers to better data management, and regular sharing of information among government agencies and departments. Examples include a multi-county database of well information, improved bacteria and nitrate testing programs, uniform township level ordinances and enforcement, and interactive web-based data management and sharing.

Any approach to reducing the impact of agriculture on the aquifer must include a strong emphasis on education and voluntary adoption, as well as regulation when necessary.

We recognize that other wastes such as those from industry and septic tanks also pose threats to groundwater quality. It is the position of the task force that separate groups of knowledgeable people should be formed to deal specifically with those issues.

The task force also recognizes that some of the existing technical standards and specifications are not adequate to protect groundwater and that additional research and requirements are needed. Improved understanding is needed of the physical factors such as groundwater flow in fractured rock, infiltration pathways through soils, and weather influences. Additional research on innovative manure handling and processing technologies, crop rotation and management practices, and the application of advanced subsurface investigation techniques will contribute to more specific and effective resource protection while continuing productive agriculture in the region.