Wisconsin Department of Natural Resources

Source Water Protection Contacts

WDNR Bureau of Drinking Water and Groundwater

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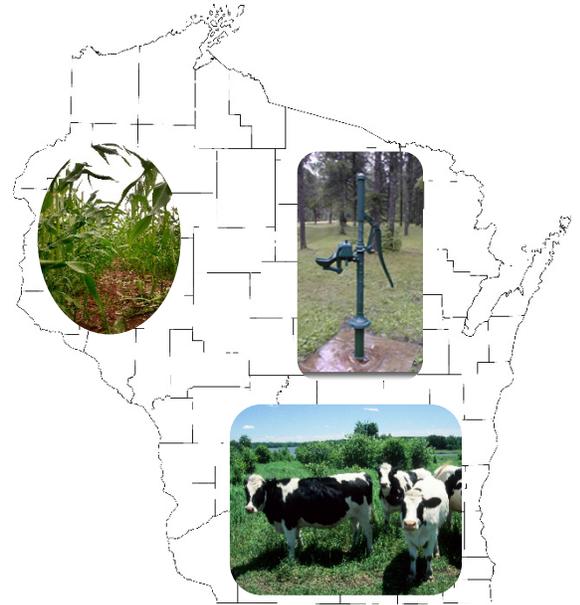
Strategies to improve statewide SWP

Wisconsin focuses on groundwater resources: All but 56 our 11,500 public water systems (and 70% of the state population overall) depend on groundwater sources of drinking water.

To advance source water protection across the state, WDNR **works with a range of partners** and has cultivated what is effectively a source water collaborative. **Partnerships highlights** include:

- Wisconsin Rural Water Association: writes wellhead protection plans, educates communities on conservation practice-based SWP land management opportunities and SWP ordinance writing
- Wisconsin Land and Water Conservation Association: actively cultivates SWP capacity through relationships with conservation districts (counties) across the state, implementing nutrient management and integrating groundwater protection into planning. WLWCA conducts groundwater training and workshops, and actively supports conservation department driven source water protection interventions within impacted wellsheds.
- New workgroup connecting County Public Health and conservation district (county) programs: a goal for the workgroup is to share information and strategies on source water protection. The group discusses private well sampling design and programs, methods for education and engaging with the public, and resources that can be shared between agencies.
- New NRCS partnership for SWP: WDNR provides targeting data and priority watersheds. WDNR will be working to quantify efficacy of BMPs intended to reduce nitrate loads (see reverse)
- USGS: partner in development of GW flow and transport "decision support tools" to aid owners of wells with rising contaminant levels (GW & Nitrogen Decision Support tools - see reverse)
- UW-Agronomy & UW Extension: partners in development of decision support tools to help reduce impacts from agricultural sources of nitrate (see reverse)
- CWA programs within the agency: watershed-based plans, including 9 Key Element plans; integrating GW into the State's NPS Management Plan; partnering with the TMDL process when possible; new effort to analyze Long-Term Trend (LTT) River water quality trends in baseflow dominated watersheds showing clear associations with groundwater transported contaminants such as nitrate
- Cultivating potential new partners through education and outreach to stakeholders, including publication of the annual Groundwater Coordinating Council report with newly added sections on

statewide nitrate trends and the aggregate costs to replace potable wells exceeding the MCL for nitrate.

WDNR also **funds research** and **special studies** to assess source water issues, impacts and vulnerabilities. An example is a study to determine recommended well depth elevations needed to provide safe drinking water in the Town of Armenia WI, which is impacted with nitrate and pesticide contamination rendering some private wells unsafe. Nitrate contamination from nonpoint sources will be modeled to determine appropriate well construction and improve water security in an agricultural area.

Research projects have included the geochemical characterization of radium in state groundwater resources and study of the timing and variability of enteric pathogen contamination in a carbonate bedrock aquifer system. In 2018 the Department provided approximately $100,000 to fund groundwater research projects.

WDNR is also leading Source Water Protection **problem solving initiatives** with our partners. Nitrate is Wisconsin's most widespread groundwater contaminant. Most nitrate in WI groundwater (90%) is due to agricultural inputs. Experience from pilot projects and partner inputs indicate the need for **Groundwater and Nitrogen Decision Support Tools**. We've started work with partners to develop a suite of tools for eventual use by community water supplies, conservation departments, agricultural leaders, and stakeholders to achieve groundwater quality improvements in targeted source water areas. The focus will be to provide reasonable estimates of predicted groundwater quality outcomes associated with traditional nutrient management practices. For example, Wisconsin, along with several midwestern states such as IA and MN use the "Maximum Return to Nitrogen" (MRTN) method to establish recommended N rates. What is the relationship of the MRTN curve to the "leaching curve"? Could this type of information be used to develop more effective conservation practices and cost sharing programs to protect groundwater sources of drinking water? A combination of field data and biophysical modeling will be utilized. A partnership coalition will share development responsibility and ownership of the tools, and the project will provide a framework for multi-disciplinary development of the decision support products, incorporating new research and data over time. These products will be used on a voluntary basis to inform locally implemented source water protection action plans.