

## Groundwater Issues

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### Short Descriptions:

**1) N1: Needed Update of the 1989 Groundwater Act:** In 1989, the Groundwater Protection Act became law. The Act solidified efforts to protect Minnesota's groundwater and set the future course for improved protections focused on preserving groundwater. The Act has been a positive influence. However, the Act is now more than 30 years old. Consequently, it does not address many of the emerging threats to groundwater. There is need to address emerging groundwater issues not recognized when the Act passed, as well as specific issues recognized in the Act that are yet to be accomplished. Priority actions are grouped into three categories that are shown below. A legislative request to update the Act is needed.

Ensured Stable Funding: Funding for critical groundwater activities must be ensured for the future. Reliance on the Clean Water Land and Legacy Amendment will be problematic if the Amendment sunsets in 2034.

Groundwater Sustainability: Sustainable groundwater management should be based upon water budgets, where thresholds leading to unacceptable effects are understood, the DNR defined groundwater sustainability in statute; this definition could be made more useful through adoption of operational definitions.

Water Governance: Coordination among water agencies has increased since the Act was passed. However, broader coordination is fundamental to sustainable use of the state's water resources.

**2) N2: Options for water scarcity in the Northeast Metro:** Funding for the construction and operation of a pipeline, and treatment facility, to provide water to augment the level of White Bear Lake is needed. This pipeline and plant's footprint could provide land for a more sophisticated treatment plant that might be needed, in the future, for augmenting municipal water supplies. The proposed facility would be operational only when White Bear Lake requires augmentation, while providing supplemental water as a source of water for the municipalities in the future.

**3) B1: Define Sustainable groundwater limits using technological advances.** Conduct a pilot in a one-water/one plan watershed. The Minnesota Geological Survey (MGS) has advanced the science of analyzing geologic data to the extent that it can now be used to efficiently define water bank accounts for aquifers and for watersheds. This kind of effort is a priority in the University's water sustainability report. Technological advances can now be used to enhance water management for the one watershed/one plan process being implemented across the state. The bill would support a pilot that would combine geologic data analyses, by the MGS, with modeling by the DNR. The product would increase water budget information to manage on a sustainable basis. It would serve as a pilot of watersheds and aquifers across the state.

**4) B5: Voluntary private well testing:** Water from domestic wells needs to be safe for all of Minnesota's Citizens. Private wells supply over a million Minnesotans with drinking water. Yet, there are no state requirements for water safety testing. A program is needed to support systematic testing of the water quality in private wells, including the notification of testing results, and education on possible actions. Periodic testing of private wells that provide drinking water to rental properties also is needed. The bill would provide minimal funding to assist non-profit organizations, who are volunteers, to conduct local testing. The bill could also provide funding for analyses of lead and arsenic, provide assistance for water treatment, and include well safety

education. Water safety for private wells is called out as a priority in a recent report to the legislature, by MDH and the UM. The allocation would be to the MDH, or the University of Minnesota, to support the cost of water testing, educational materials, and information storage.

**5) Bill 6: Ensuring the Safety of Private Wells by Identifying and Monitoring Vulnerable Aquifers Involves water safety for those using private wells.** This bill would identify and monitor aquifers that are vulnerable to being contaminated. Several state agencies have programs for groundwater monitoring. However, support is needed to coordinate water sampling and testing from those networks, and in some areas, expand the networks over the most sensitive aquifers. A plan is needed to identify areas requiring additional attention because the aquifers that supply water to private wells are particularly vulnerable to contamination. In these areas, increased monitoring, and education for well owners, is needed to ensure water safety. Funding, and a report from the MDA and MDH, is needed that outlines the need for additional testing and the development of a sentinel-well network to document trends and changes in water quality over time. The effort would identify aquifers that are most vulnerable to contamination and would design a sentinel monitoring well network in those areas, as an early warning system. The resulting effort, coordinated across the agencies (MDH lead) and the MGS, would provide a means to increase source-water protection safety of those using private wells. The bill simply directs the preparation of a plan.

**6) DW1: Assessing Emerging and Unregulated Contaminants in Drinking Water:** Contaminants of emerging concern (CECs) are synthetic compounds that unexpectedly occur in water. An example is the occurrence of perfluorochemicals (PFCs) across much of Washington County. Other examples of CEC contaminant groups include pesticide metabolites, endocrine disruptors, and pharmaceuticals. There is an ever-increasing number of drinking-water contaminants related to industrial, agricultural, and domestic sources. These chemicals threaten drinking water, and the problem is exacerbated by population pressure, climate change, and aging water infrastructure (University of Minnesota, 2020). Population shifts, from rural to urban areas, have created financial challenges for small communities which need to make purchases of sophisticated and costly water-treatment equipment. Because many emerging contaminants are not fully addressed at the Federal level, it is important to provide funds, to the MDH, to prioritize the contaminants and to develop a management plan to manage them in order to make sound decisions about optimizing treatment between the source and the tap.

**7) WP18: Emerging Contaminant Sentinel Monitoring Program:** We don't know the extent and threat of forever chemicals in drinking water used by citizens of the state. There is a great need to address drinking-water safety by expanding an LCCMR-MDH project into a program at the MDH, focused on emerging contaminants in drinking water. The occurrence and distribution of unregulated contaminants, including the forever chemicals (PFOA and PFOS), is mostly unknown outside of Washington County. It is likely that this suite of chemicals is widespread in groundwater. This proposed program would build on results from an on-going LCCMR- MDH project. The initial step would be the development of a sentinel network of monitoring sites that includes community and non-community (transient and non- transient supply wells) as well as lakes and river that are sources of drinking water to supplement the LCCMR project network. This network would test water that residents (particularly children by including schools) drink. By strategically developing an appropriate sampling network, and an appropriate list of chemicals for sampling, results could be extrapolated to identify and prioritize areas where contaminants may be found in other wells (sensitive areas). Results would be able to be used to identify sensitive aquifers where these emerging contaminants may be found in aquifers that supply private drinking wells. Therefore, the program would address the problem of water safety for those using private wells and municipal wells. Funding would be provided to the MDH to develop a program that supplements MDH monitoring efforts.

**8) B7: Water safety plans for cities– a pilot:** This bill involves water-safety planning for cities. It would involve an effort described, in detail, in the recent UM drinking water report to the legislature. Source-to-tap water safety assessments would provide a flexible approach to local drinking-water-safety planning, resulting in water safety plans that would be approved by the MDH. The bill would simply direct the preparation of a prototype plan for one city, coordinated by the MDH.

**9) WP14: Enhanced Groundwater Recharge:** Natural groundwater recharge occurs as precipitation falls on the land surface, infiltrates into soil, and moves to the water table. Groundwater levels in some parts of the state are declining because withdrawals exceed the rate at which aquifers are naturally replenished. In areas of groundwater depletion, artificial recharge could supplement natural recharge. This could be accomplished

using injection wells or surface infiltration. Artificial recharge is a common practice in many parts of the county. However, the practice has generally been discouraged in Minnesota. The legislature funded, through the Freshwater Society and the University of Minnesota, an effort to examine the feasibility of expanded groundwater recharge. In order to capitalize on this study policy and funding, to the DNR and MDH is needed to allow and to encourage groundwater recharge, where needed.

**10) WQ1: Groundwater Quality: GW Quality: Pesticide and Nutrient Policy and Management:**

**Pesticides and Nutrients in Groundwater:** Groundwater quality protection was a significant driver for the 1989 Groundwater Act (Act). As a result, the MDA proposed budget increases to fund the pesticide and nutrient rule development, following passage of Act. However, the Legislature funded only one chemical program. The MDA choose to continue development of a pesticide program. This meant that nutrients (nitrogen) lagged until Legacy funds became available. The ACT gave the MDA the opportunity to develop and establish additional rules, in addition to those that have been implemented. An agency review of policy plans is needed as related to a full management approach for pesticides and nutrients.

**11) WQ2: Chloride Reduction: Research, Policy and Implementation:** We overuse deicing salt, and it degrades the waters of the state. De-icing roads, parking lots, and sidewalks, water softening, and dust suppression each introduce chloride to lakes, streams and groundwater. Chloride degrades our waters, and it is very difficult and expensive to remediate. It is feasible to reduce the use of salt. Legislation would provide support for continued applicator training. There also is a one-time need to determine the significance of other sources of chloride, such as water softening and dust suppression. Legislation would do the following:

- Recommend continued general budget funding for long-term applicator training.
- Support and provide funding for a research plan to address alternatives to using salt (University of Minnesota)
- Policy to prepare a process for salt-use reporting for cities, counties, and agencies
- A legislative initiative to quantify the other significance sources of chloride to waters of the state (septic systems, water softeners, roadway dust suppression) Report to the legislature.
- Determination of the scope and impact of centralized softening. Require an assessment of the potential for central softening, primarily for small cities and towns, that could result in a recommendation for improvement. This evaluation is needed because central softening can create unintended consequences such as mobilization of lead in distribution lines and increased phosphorus in receiving streams.
- A plan is needed to explore feasibility of eliminating the sale of water softeners that cannot be programmed to reduce the use of salt.

**12) WP3: Address Disconnect Between Land Use and Water Quality Management Issue:** Land use planning and water policy and management are not well connected although they influence each other. Although the connection between land use and water quality has long been recognized, the effects of land use change on water quantity and quality are not fully understood (WRC, 2011). As statewide demographics shift, partially in response to climatic change, water quantity, quality and recharge will be affected. Current policy and management that we have does not recognize that land use affects water quality and quantity.

**13) WP4: Plan for Changes to Water Resulting from Climate Change:** All but two years since 1970 have been wetter and warmer than 20th century averages, and the 10 combined wettest and warmest years on record occurred after 1998. During 2019, more precipitation fell across the state than any other year on record back. Minnesota has experienced 11 mega-rains in the 20 years since 2000 as compared to six in the 27 years from 1973 through 1999. Minnesota has warmed considerably, but mostly during nights and winter. Annual temperatures have climbed 2.9 °F since 1895, but winter low temperatures have increased by 6.1 °F. Climate model projections made specifically for Minnesota generally suggest we will see more precipitation by the end of this century, with continued increases in heavy rainfall and lifter intervening dry spells. All for these changes will affect water resources and we need to plan for these continued changes. Climate change will likely affect groundwater quality and quantity. A plan is needed to address how climate changes will plan affect water across our landscapes. Funding, to the DNR is needed for this plan.

**14) WP8: Water Appropriations: Inter-basin Transport and Protections:** Inter-basin water transfers have become an important issue. The inter-basin transfer involving the Missouri River opened the discussion (Lewis and Clark). Recently, a Lakeville-based railroad company filed an application to drill wells in Dakota County. Water from the wells, 500 million gallons a year, was proposed to be shipped, by train, to the Southwest United States. The proposal was not approved because the aquifer involved (Mt Simon and Hinckley) has unique legislatively mandated protection. However, that may not be the case for other aquifers. The commerce clause may prohibit future appropriation denials. The proposal was the first of its kind in Minnesota and could set a precedent about similar projects that could be allowed based on state statutes and rules. There is a need to revise water appropriation policy based on the recent water train controversy. An examination of current statutes is needed to provide policy to protect the state from future similar initiatives with a report to the legislature (DNR).

**15) WP11: Adjusting water appropriation priorities for commercial entities with conservation plans:** Golf courses, and other commercial entities, who focus on water conservation and water-quality improvement, should be allowed to water for operations during times of drought. The Minnesota golf industry has been working to financially support the University of Minnesota's research to develop drought-resistant and water conserving turf varieties, pursue new technologies to reduce the need for irrigation, to conserve water and to develop drought management practices. A bill could change the appropriation permit hierarchy to "water conservation" commercial entities during times of drought.