

Topics with the greatest stakeholder support will be discussed on September 16 as follows:

- A) **Safe Drinking Water**
 - **Section 1: Support for Voluntary Private Water-Well Safety Testing**
 - **Section 2: Ensuring the Safety of Private Wells, Identifying Vulnerable Aquifers**
- B) **Water Safety Planning Pilot for Cities**
- C) **Safe and Sustainable Drinking Water for the Future**
- D) **Promoting Healthy Soil and Healthy Water**
- E) **Encourage and Fund Research and Outreach that Promotes Precision Agriculture**
- F) **Tax Credit for Riparian Buffer Lands Compensation for Agricultural Buffers**
- G) **Forever Chemicals (PFOA and PFOS) in Food Waste Compost**

The following topics are those with the greatest stakeholder support. There also are similar groups of topic on water governance and water policy that were discussed at recent meetings. This document is a draft. The content has not been endorsed by the Subcommittee on Water Policy

Brief explanations of the topics follow:

Bill (Other A) Safe Drinking Water

Section 1: Support for Voluntary Private Water-Well Safety Testing

Issue, Background and Need: Private drinking-water wells supply 750,000 Minnesotans with water. The safety of water from private wells is unregulated and attention is needed to ensure water safety for those who drink water from private wells. The Minnesota Water Well Construction Code regulates well construction and initial minimal testing. Private wells are otherwise unregulated (University of Minnesota, 2020.) This leaves half of Minnesota's population without support regarding drinking water safety.

There is a great need to provide ensure safe drinking water for private well owners. It is called out as a priority in the UM/MDH Future of Drinking Water report. Two non-profit organizations (Minnesota Groundwater Association and the Minnesota Well Owners Organization) are organizing a voluntary program of water testing clinics. These clinics would provide protection for safe drinking water. Additional state support is needed to make this effort complete.

Path Forward and Legislative Request: Non-profit organizations, in cooperation with the UM, are developing a program to provide voluntary private-well testing. These local clinics would provide well owners with information about the safety of their wells in addition to cost-effective water treatment options. Legislative support is needed to for this effort by providing testing supplies and educational materials. The program would provide homeowners with information about water safety, water treatment options and the implementation of private well owner water safety plans.

University of Minnesota Water Resources Center, 2020. "Future of Minnesota drinking water." 46 pp. Digital link: https://www.wrc.umn.edu/sites/wrc.umn.edu/files/future_of_drinking_water_2020feb3.pdf

Section 2: Ensuring the Safety of Private Wells, Identifying Vulnerable Aquifers

Issue, background and need: A plan is needed to identify shallow drinking water aquifers that are most vulnerable to contamination. In those areas, increased monitoring and education for well owners would ensure domestic well drinking water safety.

Path Forward and Legislative Request: A legislative report, from the MDNR, MDA, MPCA and MGS, should identify areas where additional monitoring is needed and would lead to the development of a multi-agency sentinel-well network to document trends and changes in water quality over time. In many areas this network already exists—it needs to be coordinated and, in some areas, expanded. The report would present a plan for increased source-water protection for private wells. It also 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.

BILL (Other B): Drinking Water Safety Planning Pilot for Cities

Issue, Need and Background: Localized source-to-tap drinking water safety assessments and management plans (water safety plans (WSP's)) are needed for public drinking water protection. These plans would provide a transparent and flexible approach to locally tailored drinking-water-safety planning and management. A detailed approach is presented in the recent UM/MDH report to the Legislature: “The Future of Drinking Water” (University of Minnesota, 2020). WSP's could provide drinking water protection for all sources of municipal drinking water. The plans would result in source-water intake protection plans with implementation activities for review and approval by the MDH.

Path Forward and Legislative Request: Legislative support is needed to direct the preparation of a prototype plan that would combine source-water protection plans, water supply safety plans, emergency response plans, treatment options, distribution-network diagrams, and best operating procedures. This support would produce a plan template and to fund a pilot study.

University of Minnesota Water Resources Center, 2020. “Future of Minnesota drinking water.” 46 pp. Digital link: https://www.wrc.umn.edu/sites/wrc.umn.edu/files/future_of_drinking_water_2020feb3.pdf

Bill (Other C) Issue: Ensure Safe and Sustainable Drinking Water for the Future--Enhanced Regional and Digital Groundwater Atlas derivative products.

Issue, need, and background: As a state, we need to plan for safe and adequate water resources for the future. Water sustainability is important. It is the focus of a report to the Legislative, by the University of Minnesota (Swackhamer and others, 2007). Water sustainability is also defined in state statute: “... the use of water for the needs of society, now and in the future, without unacceptable social, economic, or environmental consequences. The potential impacts from water use must be considered when planning for development of new water sources or increased water withdrawals”. Although we have a definition of sustainability and a statutory mandate, we do not have an operational understanding of sustainable use limits for our aquifers in most areas. This pilot would produce that mechanism.

Path Forward and Legislative Request: We now are able to apply emerging science and technology to synthesize Atlas products into a complete statewide database (much as Google Maps has assembled road maps). The MGS/MDNR County Geologic/Groundwater Atlas Program is

widely recognized as a success that lays the foundation for enhanced water protection, statewide. The completion of Geologic Atlases, for every county, is within sight. However the Atlas products do not define our water bank accounts. This critical addition to Atlas products is needed to assess sustainable withdrawal limits for our aquifers

A second step would be to enhance the assembled mapping with improved specification of material properties on an ongoing basis. These new database products could be powerful tools for managing aquifers and watersheds across county boundaries, as well as supporting priority efforts such as the One-Watershed/One Plan process. By better facilitating the application of the Atlas Program products, new tools can be developed for the future groundwater management needs of the state. Using these new tools, a pilot for an enhanced Atlas product would consist of the following steps and actions:

A pilot study area would be selected that would include a regional aquifer or multi-county watershed in counties with completed county atlases. The area would coincide with a one-watershed, one-plan project area. The effort would be coordinated with work being conducted by the One-Watershed/One Plan program, recognizing that water budgets can provide the foundation for effective water sustainability planning and management. The MGS and the MDNR, in cooperation with others, would conduct a pilot (proof of concept) study plan for the following activities.

The steps would include:

- Synthesizing Atlas data across county boundaries
- Compiling recharge and discharge data for the area
- Preparing a plan and budget to construct and calibrate a flow model based on existing data. This model would be capable of defining water budgets for a multi-county aquifer and/or watershed as well as defining limits for groundwater pumping

A legislative report would be prepared that would:

- Summarize the work, results and benefits of the effort
- Present a plan for an data synthesis covering major aquifers and watersheds of the state
- Present a plan and funding proposal to complete the pilot and for work, statewide.\

University of Minnesota Water Resources Center, 2011. "Minnesota Water Sustainability Framework: Water Resources Planning for Minnesota's Future." University of Minnesota Water Resources Center, <https://conservancy.umn.edu/handle/11299/182382>.

Bill (Other D) Funding: Promoting healthy soil and healthy water

Issue, Background and Need: Soil improvement is good for agriculture and for our water. Legislative support is needed for the UM Office of Soil Health. This would include recognition and funding needs needed for long-term research as well as support for a state-wide soil-health action plan. Support is needed from the General Fund beyond the current Clean Water funding. Policy also is needed to provide recognition for the long-term nature and need for improving soil health by the preparation of a state-wide soil-health action plan. The plan would be a cooperative effort among the University of Minnesota, BWSR and MDA. It would incorporate long-term research, outreach and implementation to improve soil health and would recognize the long-term nature of soil-health improvement. It would include implementation and outreach activities such as irrigation management and fertilizer management options. This funding would supplement and be coordinated with work being done by the USDA.

Path Forward and Legislative Request: Building healthy soils is a long-term process requiring commitment from citizens across the state, and a holistic approach to agricultural land cover, tillage practices, and other aspects of the agronomic operation. The Minnesota Office for Soil

Health, at the University of Minnesota, needs to increase collaboration with state and local agencies, agricultural businesses and organizations, and farmers to lead outreach and research to build statewide expertise and information networks for incorporating soil health management into agricultural systems. Long-term Legislative support is needed for the Office for Soil Health (UM) that includes recognition and funding for the development of a state-wide soil-health action plan with increased outreach for implementing practices that build soil health and an evaluation of effectiveness.

Details regarding support might include the following specific items:

- Policy to endorse and to provide long-term funding for soil health programs for the University of Minnesota's Office of Soil Health, supported by the General Fund, beyond the current Clean Water funding. Policy that recognizes the long-term nature and need for improving soil health by providing funding for the preparation of a state-wide soil-health action plan. The plan could be a cooperative effort by the University of Minnesota, the BWSR and MDA. Based on a report to the legislature, propose that the plan be funded in subsequent years.
- The plan would include long-term research, outreach and implementation to improve soil health across the state. The plan also would reference the long-term nature of soil health improvement, document soil improvement resulting from these activities and include implementation and outreach activities. Financial support would be required to develop the plan and report to the legislature
- Long-term funding would support activities at the University of Minnesota, BWSR and the MDA. This funding would supplement and be coordinated with work being done by the USDA.

Bill (Other E) Encourage and Fund Research and Outreach that Promotes Precision Agriculture

Background, Issue and need: Precision agricultural practices increase agricultural productive, saves water and improve water quality. Self-managing and sustainable farming is imperative to ensuring agricultural competitiveness and to protect our waters. This requires modern and emerging technologies such as satellites, advanced data analytics, automated sensors, and robotics. Precision agriculture research is multidisciplinary, involving collaboration between agricultural scientists and engineers. Research teams are most effective when they involve individuals from diverse backgrounds such as soil scientists or entomologists working with computer scientists or agricultural engineers. Multidisciplinary research teams are generally more successful and innovative (leading to significant breakthroughs) when they involve a combination of science, engineering, and data analytics. Precision Agriculture Research, Outreach, and Evaluation Priorities and Funding Requests (pilot studies) are described below:

Path Forward and Legislative Request: Develop a plan for additional support and funding of a pilot effort at the University of Minnesota that focuses on research and outreach for precision agriculture. Provide policy that includes plans for data privacy, public-private partnerships, research, evaluation and technical assistance focused on the greatest challenges related to agricultural and water issues. Policy would consider economic cost and benefits, soil health, irrigation management and nutrient and pesticide management. Funding would be provided for research and outreach in the following areas: variable rate nitrogen and phosphorus, variable rate irrigation, estimation of nitrogen mineralization from soils to make better fertilizer recommendations, remote sensing for early detection of crop stress (nutrients, insects, disease), delineation of management zones, and extension programming to promote accelerate adoption of precision agriculture. Legislation should consider policy, and a legislative initiative, that provides additional resources for research and outreach through the UM Precision Agriculture Center.

Other Information: Research and outreach are particularly important on the following topics:

- Variable rate nitrogen and phosphorus
- Variable rate irrigation
- Estimating N mineralization from soils to make better N fertilizer recommendations
- Remote sensing for early detection of crop stress (nutrients, insects, disease)
- Delineation of management zones
- Extension programming to promote accelerate adoption of precision agriculture

Bill (Other F) Tax Credit for Riparian Buffer Lands Compensation for Agricultural Buffers, Q7, T1 56

Issue, Need and Background: The buffer law provided a major step in improving the waters of the state. It required buffer strips along lakes, rivers, streams and some ditches to filter phosphorus, nitrogen and sediment. The requirement has resulted in some dissatisfaction among farm organizations and farmers because of the costs associated with taking land out of production, the effectiveness of the regulations, and the implementation process. Agricultural trade groups support an option to be paid for land lost to agriculture for buffers. Other options include a tax credit or subsidies for the loss of tillable lands.

Path Forward and Legislative Intent: Propose a tax credit for land lost to farming from buffers as well as policy to propose a compensation mechanism and a process

Bill (Other G) Policy--Forever Chemicals (PFOA and PFOS) in food waste compost P22

Issue, Need and background: Forever chemicals in food packaging threaten the organic composting industry and present a threat to organic recycling. There is a long list of these chemical that are used in food packaging. As a result, they contaminate food and food packaging waste at composting sites and make the food packaging compost unusable for land application. The chemicals are in the process of being phased out by the food industry. However, the problem at composting sites likely will continue for some time. There are options to keep from derailing efforts to compost food waste and to keep the composting industry viable. These options would include limited sampling to determine whether compounds are leaching into groundwater at compost-application sites in order to determine the extent of the problem. This would help to determine whether there is a significant problem at these sites. If so, a temporary ban on food containers containing these compounds may be needed.

Path Forward and request: Provide funding and policy to support the food compost industry and the continued recycling of food waste. This would include water sampling at selected and a temporary ban on the composting of food packaging materials

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