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Senator David J. Tomassoni
Chair, Finance - Environment, Economic Development and Agriculture Division
75 Rev. Dr. Martin Luther King Jr. Blvd.
Capitol, Room 317
St. Paul, MN 55155-1606

In re: Fisheries protections in Senate File No. 796

Dear Senator Tomassoni:

I write to urge your support for Senate File No. 796 and its protections for the world-class trout fisheries located in the southeast Minnesota. These coldwater fisheries draw anglers from across Minnesota, the region and the nation, and help support thousands of existing jobs in a booming recreational economy. Since busy legislative calendars have prevented us from talking, I am writing to further explain the necessity and wisdom of the measured approach which Senator Schmit has taken to protect these fisheries and existing jobs, while providing useful guidance to an emerging industry.

Trout fisheries in southeast Minnesota are completely dependent upon the flow of cold groundwater from natural springs. If groundwater flows are disrupted by industrial silica sand mining, which would be a new activity in this area of the state, the streams could cease to support trout. Without legislative action many millions of dollars already invested by the State and conservation organizations to improve trout habitat and purchase stream access easements for Minnesota anglers could be wasted, and a vibrant segment of the local economy damaged. Trout fishing regulations and bag limits are meaningless if the fisheries perish due to diminished groundwater flows.

Senator Matt Schmit of Red Wing has listened to anglers' pleas for action and worked with geologists and hydrologists to craft three commonsense restrictions needed to preserve trout fisheries. To ensure the continued existence of these coldwater fisheries, vital groundwater can be protected by steering future sand mining away from harmful locations and methods. Senate File No. 796 accomplishes this through these restrictions:

1. Silica sand mines may not be located within one mile of any spring, trout stream, or perennial tributary of a trout stream (so that subsurface flows to springs and trout streams are not disrupted);
2. Mining of silica sand may not be conducted within 25 feet of the water table (to prevent removal of groundwater through construction dewatering); and
3. No more than 1 million gallons per year of groundwater may be pumped from any single site for washing, sorting or processing industrial silica sand (thereby directing new businesses to readily available alternatives).

These restrictions would apply only to the unique corner of southeast Minnesota known as the Driftless area or Paleozoic Plateau, and not to areas where existing sand mines are located, such as the Minnesota River Valley. Since coldwater fisheries cannot exist without cold groundwater, these restrictions are essential fisheries protections.

Proposed silica sand mining bills face an uncertain fate, and in any case do not contain substantive restrictions. The three fisheries protections contained in S.F. 796 would likely become part of minimum standards eventually developed but, if enacted immediately, would save businesses expense and permitting delays due to poor site selection and protect existing jobs dependent upon the world-class trout fisheries in southeast Minnesota.

Attached is a map of the area contained within the Paleozoic Plateau showing coldwater streams and locations where silica sand is readily accessible. The Minnesota Geological Survey has calculated that mining just 367 acres (approximately one half of one square mile) of land per year would supply 40 million tons of industrial silica sand. Current annual U.S. demand for fracking sand is around 30 million tons. The map shows numerous locations within the roughly 4,000 square mile Paleozoic Plateau where silica sand mines can operate well away from any trout stream. Also attached is a diagram that illustrates how groundwater moves underground to spring outlets in karst areas. The third attachment highlights the fact that virtually all of southeast Minnesota is dominated by active karst features, which include subsurface flows that emerge as springs.

Preservation of fisheries through preserving groundwater flows.

The steady flow of cold groundwater is the lifeblood of these fisheries. Fishing regulations are meaningless, and the millions of State dollars being spent here to improve trout habitat will be wasted, if the Legislature does not act this session to protect groundwater flows. Groundwater is water which has seeped into the ground from the surface, over a period of days, months, years or even centuries. In the karst area of southeast Minnesota it even flows as underground streams, and pools between confining layers of rock or clay, forming underground reservoirs of clean water referred to as "aquifers". Groundwater flows from cracks in the confining bedrock as natural springs and seepage areas. Due to the cooling effect of the earth it issues from springs and seeps at consistently cold temperatures. This cold spring water is the lifeblood of our trout streams. It is no

coincidence that these streams are typically referred to as spring creeks. Without the stable base flow of cold groundwater southeast Minnesota trout fisheries will disappear. No cold groundwater; no trout. It is that basic. Since less than 6% of Minnesota's streams and rivers can still support trout, steelhead or salmon, the public can ill afford to lose more. Industrial silica sand mining and processing activities have the potential to disrupt flows to springs and trout streams, but they need not do so. What is needed are some basic protections for the fisheries, which also will serve as useful guidance to the industry concerning mining locations and methods to avoid.

Need for setback to prevent disruption of groundwater flow patterns.

Even mines or quarries which stay above the water table can nonetheless disrupt the hydrology of an area and irreversibly impact trout streams. It is possible in this karst area for mines to alter groundwater and surface water flow patterns, disrupt the recharge of the aquifers, diminish the quantity and timing of groundwater discharges into springs and trout streams, and diminish the quality of nearby fisheries.

Each mine and quarry has the potential to have profound impacts on the local groundwater flow system, water temperatures in nearby springs and streams, and trout populations in those streams. A MNDNR study of the Big Spring quarry near Harmony, Minnesota in Fillmore County provides a good illustration of how quarries can seriously disrupt groundwater conduit flow paths and cause great environmental harm. Although the Big Spring quarry is located above the water table, quarrying operations penetrated the conduit system, causing ground water that formerly discharged at the Big Spring on Camp Creek to instead discharge in the quarry. This water either sinks back into the limestone to re-emerge (warmer) at the Big Spring or flows overland to Camp Creek. Dye tracing at the site demonstrated that approximately 90 percent of the ground-water basin is now being routed through the quarry. Without any dewatering occurring, this quarry has permanently altered groundwater flow paths. This water is exposed to thermal impacts and is more vulnerable to pollution from quarrying activities. Temperature measurements indicate that the Big Spring was 8 degrees Fahrenheit warmer in July than the water that first discharges in the quarry, and the stream flowing out of the quarry to Camp Creek was 17 degrees warmer! Temperature changes of this magnitude can have significant negative effects on trout populations in nearby streams. Hydraulic Impacts of Quarries and Gravel Pits, J.A. Green, J.A. Pavlish, R.G. Merritt, and J.L. Leete, Minnesota Department of Natural Resources, Legislative Commission on Minnesota Resources Report, 2005, pp. 53 – 56.

In a telephone conversation with the study's author, Jeff Green, he indicated that the conduit system severed by mining activity was approximately 3,000 feet from the spring! He also indicated that it was advisable to include an additional safety factor of two thousand feet or more in any setback. He and other experts have noted that underground conduit systems can be far longer than one mile. Consequently, a one mile set back from springs, groundwater seeps, trout streams and

perennial tributaries of trout streams is well justified and probably adequate to prevent the piracy of vital groundwater flows in most instances.

Mining below the water table needlessly depletes groundwater.

The State currently allows mining and quarrying of industrial silica sand below the water table. If an individual landowner or company chooses to mine sand below the water table (the level corresponding to the top of the uppermost layer of groundwater in an area) then the operation would need to “dewater” the surrounding area. While this term seems innocuous enough, what is involved is the pumping out all of the groundwater from a large area surrounding the mine site. Groundwater is pulled from a large “cone of depression” in the surrounding aquifer and discharged overland to surface waters – but much warmer and potentially laden with fine silt, sediments and any chemical used in the operations.

A common sense restriction.

Minnesota TU believes that the State should not permit this valuable, finite public resource - clean, cold groundwater - to be needlessly wasted in this way. Instead, State law should prohibit the mining or quarrying for industrial silica sand within 25 feet of the water table in the Driftless area in far southeast Minnesota. A map of the Driftless area, also referred to by the MNDNR as the Paleozoic Plateau, is attached. Fillmore County enacted such a restriction, but public waters remain unprotected in the other counties. This common sense protection can be enacted without needless study or delay. Geologists have indicated that a restriction which extends to 25 feet above the water table will be sufficient in most cases to account for swings in water levels due to large rain events or longer term precipitation patterns.

Current law creates an incentive to waste precious groundwater to sort sand grains.

The hydraulic fracking industry prefers to use certain sized grains of sand. Recent proposals indicated that some individuals and companies may be willing to target sand deposits with very low concentrations of the preferred grain sizes, because state law currently permits them to use vast amounts of groundwater merely to sort grain sizes. The State still operates as though our groundwater were limitless, essentially giving it away (\$140 for 50,000,000 gallons). Industry experts have assured us that in target areas in southeast Minnesota there are several alternatives to using groundwater, which will allow them to operate very profitably. However, as long as the State lets our groundwater be wasted in such a silly way, and essentially for “free”, there is little incentive for businesses to use these alternative approaches.

Ban on use of groundwater for sorting and processing needs to extend off site as well.

While operators often prefer to sort or process sand on-site using groundwater, we are concerned that the MNDNR will issue groundwater appropriation permits allowing water from these same aquifers to be pumped out at off-site processing facilities. There are other readily available sources

of water for processing, including warm surface water, treated wastewater, and recycled water, but state law has created a disincentive for businesses to use them. Why bother doing thoughtful planning if the State will let you drill a high capacity well anywhere you want? Since the industry has viable, profitable alternatives, the State should remove the current disincentive and set a clear public policy in favor of protecting our groundwater (drinking water reserves) in this special area.

The three restrictions contained in Senate File No. 796 ensure the continued existence of our world-class trout fisheries and the thousands of existing jobs they support. Industry geologists have assured us that these commonsense restrictions will not impede the industry, but in fact will provide useful guidance on locations and methods to avoid in order to avoid long and expensive delays in permitting and environmental review.

Again, I urge your support for the protections for southeast Minnesota trout fisheries found in Senate File No. 796. I would greatly appreciate the opportunity to meet with you briefly to address any concerns and answer any questions you might have.

Thank you in advance for assisting Senator Schmit in his effort to preserve these important fisheries and the many jobs they support.

Sincerely,

John P. Lenczewski

Attachments (3)