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To the MPCA NRS Draft Committee,

These comments are being submitted in response to the Minnesota Nutrient Reduction Strategy – DRAFT. Throughout the draft report, a rosy picture of the improvements to Minnesota's water quality is provided. It is true that phosphorus and nitrate-nitrogen (nitrate) pollution from urban localities has decreased, due to increased regulations, the same is not true for rural sources of pollution. While there have been some small improvements in achieving lower phosphorus concentrations in surface waters, the same cannot be said for nitrate concentrations across most of Minnesota, which is a concern as approximately 72% of nitrate in Minnesota can be traced back to agricultural sources. In my response, I will primarily focus my comments on the lack of progress in dealing with pollution from agriculture.

In the executive summary the progress of the Nutrient Reduction Strategy is a bit overstated as most of the progress in lower phosphorus concentrations has been achieved by improvements from urban sources, due largely from improved regulations, as shown in Figure ES-6. There have been some declines in phosphorus from agriculture, but not enough to achieve the 2040 goals, as suggested by the overly optimistic trend. The small improvements in the lower levels of phosphorus pollution form agriculture are the result of improved regulations, especially with municipal stormwater permits, and to a lesser extent due to volunteer conservation measures. Without meaningful regulations on agricultural activities, it is unrealistic to think that appreciable changes to phosphorus pollution from agricultural practices will improve.

Throughout the report, the improvements in lower nitrate concentrations in surface waters and groundwater in the agricultural areas is overstated Furthermore, the scale of the overuse of fertilizer, both natural and artificial, is vastly understated. For instance, in 2023, the US Environmental Protection Agency (EPA) advised the state of Minnesota to decrease nitrate concentrations (resulting from agricultural practices) in the impaired karst aquifers of southeastern Minnesota to protect the health of residents who use these aquifers as a source of their drinking water. This request was made by the US EPA in part due to the stable or increasing nitrate concentrations in not only groundwater but surface water. Recently published research indicates that nitrate concentrations not only have not reached a point that they will stabilized, but may in fact increase (Kuehner et al., 2025). Kuehner et al. (2025) also indicated that understanding the slow spread of agricultural best management practices would be complicated by legacy nitrate pollution, primarily from agricultural practices.

The role of climate change, i.e., wetter springs and stronger precipitation events, was acknowledged. However, the chances of more precipitation occurring and nitrate being "flushed" during so called "weather driven events" from the soil or the aquifers to the Mississippi or

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Minnesota Rivers is more likely to occur than not (Shrestha et al., 2023). Indeed, in section 2.5.1 the authors acknowledge that when annual river flows were not normalized, higher nitrate loads have been recorded during the most recent round of monitoring. This means that even with drastically improved conservation efforts, a wetter climate will result in higher nitrate loads leaving Minnesota and not lower loads.

As mentioned in section 2.7.2, the adoption rate of best management practices to reduce nitrate pollution in agriculture has been slow. In fact, 39% of the original 45% total nitrogen, which nitrate is the majority, reductions still need to be achieved. This slow decline of nitrate concentrations has resulted in streams having nitrate concentrations that are elevated and largely not declining, as indicated in section 3.3.2. This lack of progress is a result of the volunteer conservation that is used to address ethe excessive amounts of nitrogen fertilizer applied to the landscape. While true that agricultural pollution is non-point source pollution, there are regulatory steps that can be taken to reduce the amount of excess nitrogen fertilizer applied (Mandrini et al., 2022). If the current approach of volunteer conservation continues to be the main mechanism used to reduce nutrient concentrations, then, and as acknowledged in section 2.8.1, the expected changes to land management practices will have limited ability to achieve the desired outcomes. In fact, the expansion of drain tile in the agricultural regions of the state, in part to manage the larger amount of precipitation due to climate change, will result in greater amounts of nitrate pollution entering streams.

In conclusion, while there has been some progress in the reduction in phosphorus and nitrate concentrations in Minnesota's waters, most of these improvements have been the result of regulations placed on point sources managed by municipal stormwater permits. Meaningful reductions of nitrate from agriculture have not happened during the nutrient reduction strategy. Legacy pollution from agriculture makes any reductions in nitrate pollution difficult, but not impossible. However, for Minnesota to achieve its nutrient reduction strategy goals, meaningful regulations of agricultural practices will need to be enacted.

Sincerely,

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Sources

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