

Township Testing Program Update-February 2021

The Minnesota Department of Agriculture (MDA) conducted a major revision of the Nitrogen Fertilizer Management Plan (NFMP). The plan calls for an assessment of nitrate conditions at the township scale. The MDA determines current nitrate-nitrogen concentrations in private wells, through the Township Testing Program. The MDA has identified townships throughout the state that are vulnerable to groundwater contamination and have significant row crop production. More than 90,000 private well owners have been offered nitrate testing in 344 townships since 2013 (Figure 1).

How does it work?

The MDA works with local partners such as counties and soil and water conservation districts (SWCDs) to coordinate private well nitrate testing using Clean Water Funds.

Each selected township is offered testing in two steps, the “initial” sampling and the “follow-up” sampling. In the initial sampling, all township homeowners using private wells are sent a nitrate test kit and the homeowner takes the sample. If nitrate is detected in their initial sample, the homeowner is offered a follow-up nitrate test, pesticide test and well site visit. Trained MDA staff visit willing homeowners to resample the well and then conduct a site assessment.

The assessment helps to identify possible non-fertilizer sources of nitrate and to see the condition of the well. A

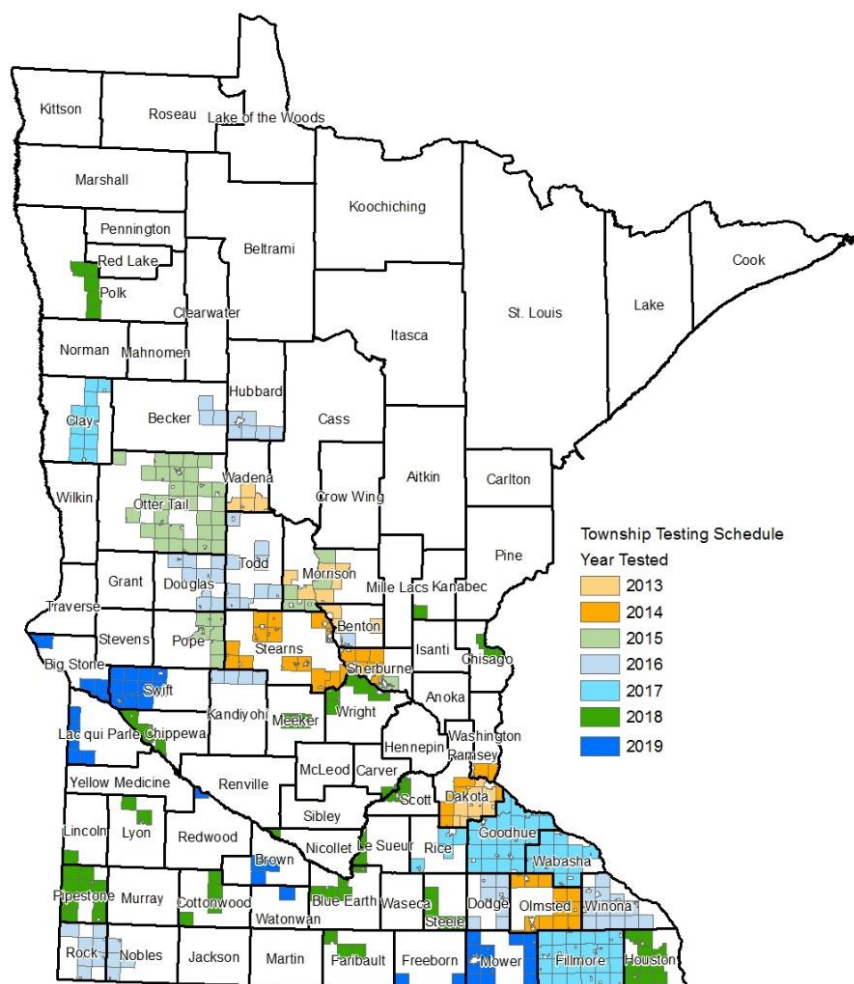


Figure 1. Township Testing Schedule

well with construction problems may be more susceptible to contamination. It is common for the TTP to sample 50 to 150 wells per township.

Initial Results

Since 2013, 344 vulnerable townships from 50 counties participated in the TTP and was completed in 2019 (Figure 2). In the 344 townships tested, 143 (41%) have 10% or more of the wells over the Health Risk Limit (HRL) for Nitrate-N. In contrast, it was determined that in 133 townships less than 5% of the wells were over the HRL for Nitrate-N.

Overall, 9.1% (2,925) of the 32,217 wells exceeded the HRL for Nitrate-N (Table 1). Figure 2 shows the percentage of wells over the HRL for each township during the initial sampling. These results reflect nitrate concentrations in private well drinking water regardless of nitrogen sources, or well construction. The final percentage of wells over the HRL may change based on follow-up sampling and site visits.

Figure 2. Initial Number and Percent of Townships in Each Nitrate Criteria

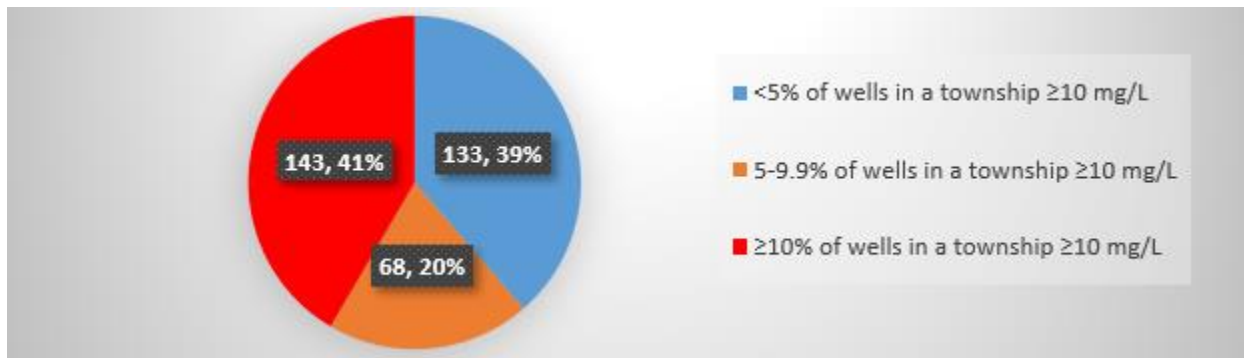


Table 1. Townships Tested Initial Results of Nitrate-Nitrogen 2013-2019

Total Wells	<3 mg/L* Number of Wells	3<10 mg/L* Number of Wells	≥ 10 mg/L* Number of Wells	≥ 10 mg/L* Percent
32,217	24,791	4,501	2,925	9.1%

*Nitrate-Nitrogen mg/L or parts per million (ppm)

Next Steps

Once the follow-up sampling is completed, the MDA conducts an analysis of the results and prepares a final report for each county. In Figure 4, townships with hash lines are not yet final (first year) and townships without hash lines are final. Final results are determined using two rounds of sampling and a process to remove wells with construction concerns, insufficient construction information and those near potential non-fertilizer sources of nitrate. Wells are also removed from the final data set if homeowners do not participate in the second round of testing. Final results represent wells that are potentially impacted by a fertilizer source, while initial results represent private well drinking water regardless of source or the condition of the well. Detailed sampling results are available at: www.mda.state.mn.us/townshiptesting.

The MDA uses the results to prioritize future work to address nitrate concerns, as described in the NFMP. Find more information about the NFMP at www.mda.state.mn.us/nfmp.

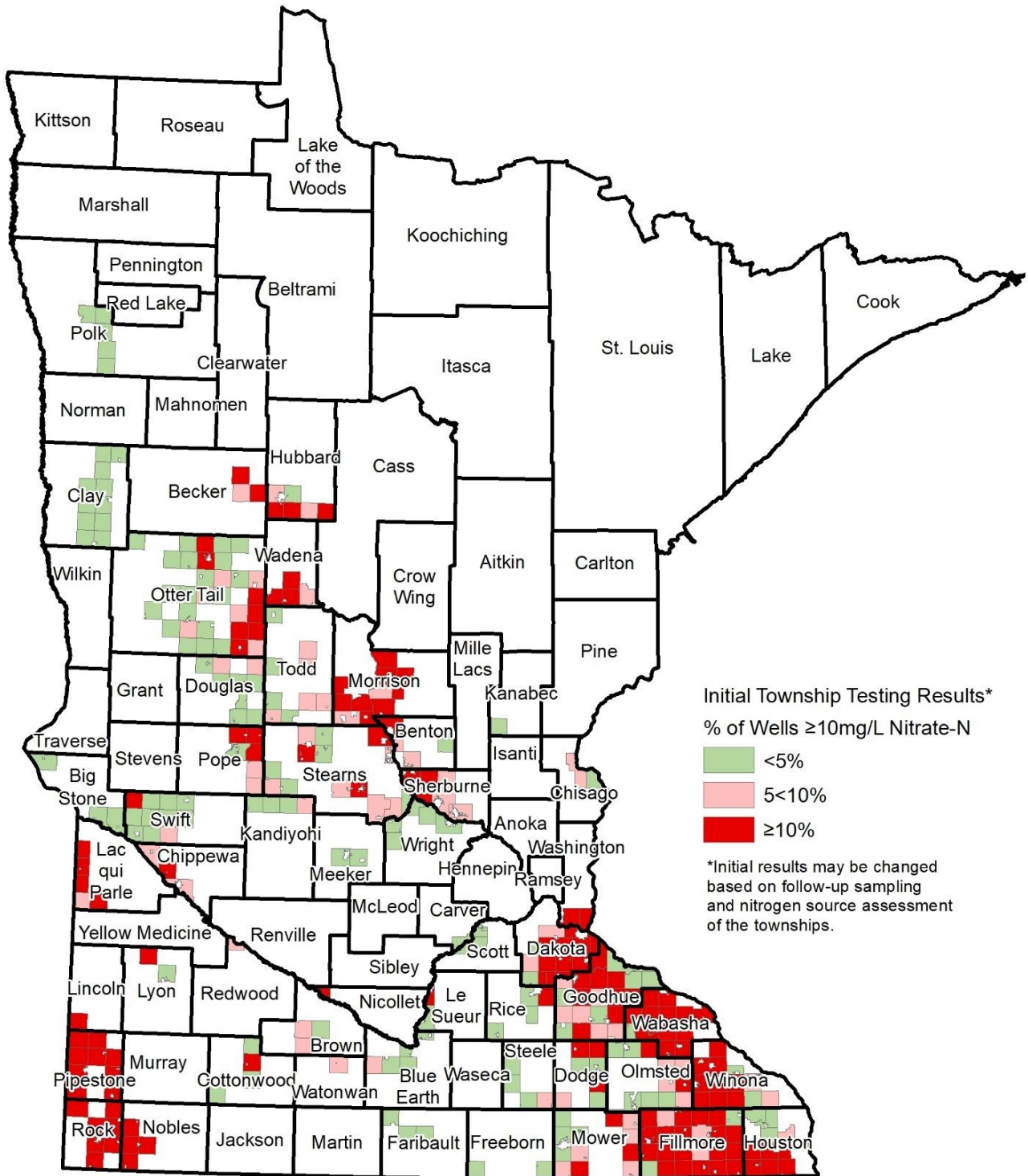


Figure 3. Initial Results

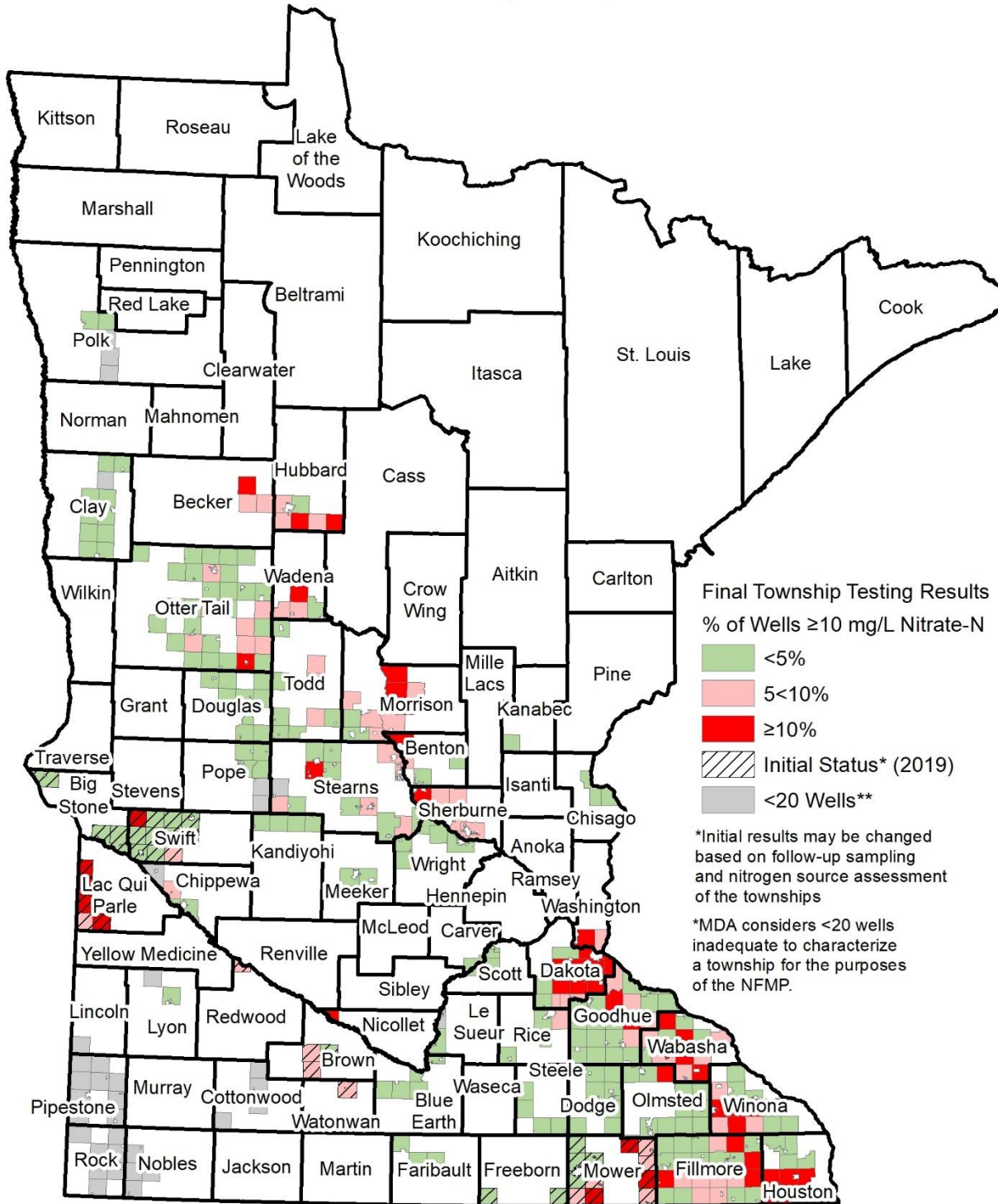


Figure 4. Combined Initial and Final Township Results