

Morrison County: Final Overview of Nitrate Levels in Private Wells (2013-2016)

The Minnesota Department of Agriculture (MDA) determines current nitrate-nitrogen concentrations in private wells, on a township scale, 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. The MDA plans to offer nitrate testing to more than 70,000 private well owners in over 300 townships by 2019.

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. 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 well with construction problems may be more susceptible to contamination.

The MDA and the Morrison Soil and Water Conservation District worked together to select townships and implement the nitrate testing project. The following townships were selected: **Agram, Belle Prairie, Bellevue, Buh, Culdrum, Swan River, Elmdale, Little Falls, Ripley, Two Rivers, and Swanville**. The initial sampling in Morrison County started in 2013 and follow-up sampling ended in November 2016.

Results

Two datasets are used to evaluate nitrate. The initial well dataset contains 1,222 wells; the final dataset contains 1,104 wells. Wells that had nitrate-nitrogen results over 5 mg/L were removed from the initial dataset if a non-fertilizer source or well problem was identified, to form the final well dataset. A total of 118 wells (10%) were removed. The results from the initial and final well datasets are summarized in the table below.

In Agram, Belle Prairie and Ripley Townships, more than 10% of the wells were at or over the Health Risk Limit of 10 mg/L of nitrate-nitrogen (map below). The percent of wells at or over the Health Risk Limit in each township ranged from 3.1% to 47.3% percent. The Morrison County Final Report will be available on the MDA website: www.mda.state.mn.us/townshiptesting.

Next steps

The MDA uses the final well dataset to determine if additional action is needed, as described in the Minnesota Nitrogen Fertilizer Management Plan (NFMP). The MDA uses the assessment process and prioritization guidelines in the NFMP to determine next steps. Find more information about the NFMP on the MDA website at www.mda.state.mn.us/nfmp.

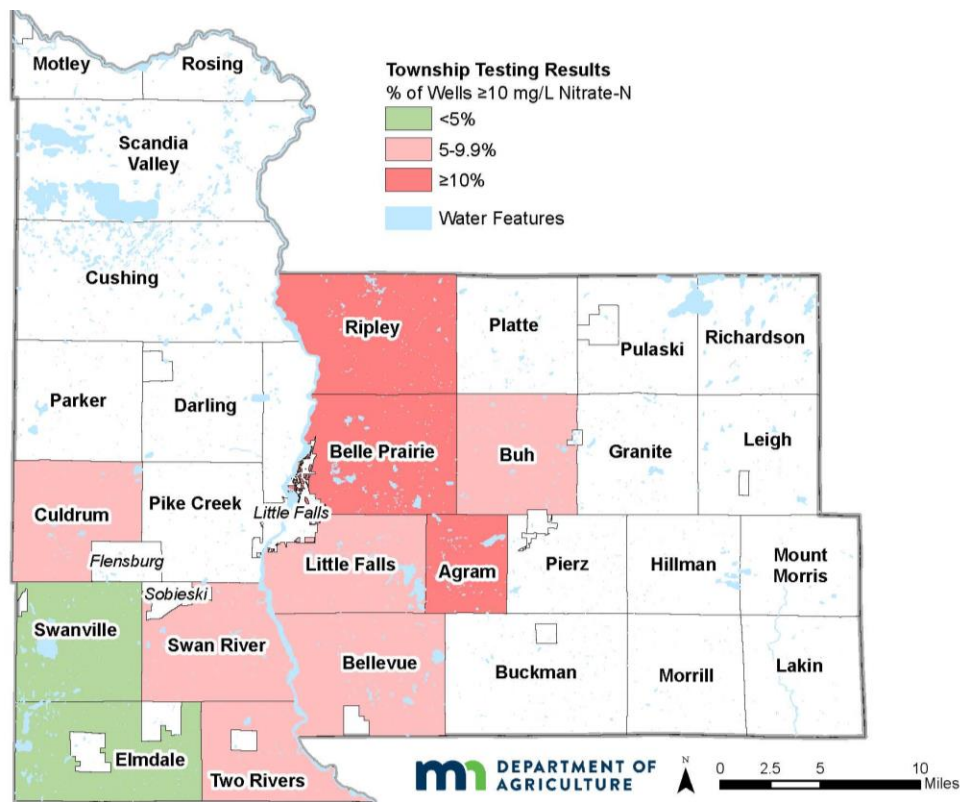
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Table: Morrison County Private Well Nitrate Results, 2013-2016.

Township	Year Tested	Initial Well Dataset		Final Well Dataset	
		Total Wells	Percent of Wells ≥ 10 mg/L Nitrate-Nitrogen	Total Wells	Percent of Wells ≥ 10 mg/L Nitrate-Nitrogen
Agram*	2013	109	52.3%	93	47.3%
Belle Prairie*	2013	101	17.8%	87	11.5%
Bellevue*	2013	135	11.1%	126	7.1%
Buh*	2013	52	11.5%	44	6.8%
Culdrum*	2013	58	13.8%	55	9.1%
Elmdale**	2015	148	8.8%	131	3.1%
Little Falls**	2015	281	7.5%	265	5.7%
Ripley**	2015	106	16.0%	94	12.8%
Swan River*	2013	70	11.4%	61	8.2%
Swanville**	2015	49	12.2%	44	4.5%
Two Rivers**	2015	113	11.5%	104	9.6%
Total		1,222	14.9%	1,104	10.8%

* Hand dug wells were not included in earlier analysis of these townships (tested 2013). **All well types were included in these townships (tested in 2015) for initial analysis. All hand dug are removed for the final results.

Figure: Morrison County Final Well Dataset Map, 2017.


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