

Dakota County: Overview of Nitrate Levels in Private Wells (2013-2015)

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 Dakota County worked together to select townships and implement the nitrate testing project. The following townships were selected: **Castle Rock, Coates (city-not being evaluated as a township), Douglas, Empire, Eureka, Farmington (city), Greenvale, Hampton, Marshan, Nininger, Randolph, Ravenna, Rosemount (city), Sciota, Vermillion and Waterford**. The initial sampling in Dakota County started in 2013 and follow-up sampling ended in 2015.

Results

Two datasets are used to evaluate nitrate. The initial well dataset contains 1,389* wells; the final dataset contains 1,184 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 205 wells (15%) were removed. The results from the initial and final well datasets are summarized in the table below.

In Castle Rock, Coates (city-not being evaluated as a township), Douglas, Empire, Hampton, Marshan, Nininger, Ravenna and Vermillion 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 0% to 44.2%. The Dakota County Final Report will be available on the MDA website in 2017:

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.

Dakota County Final Highlights

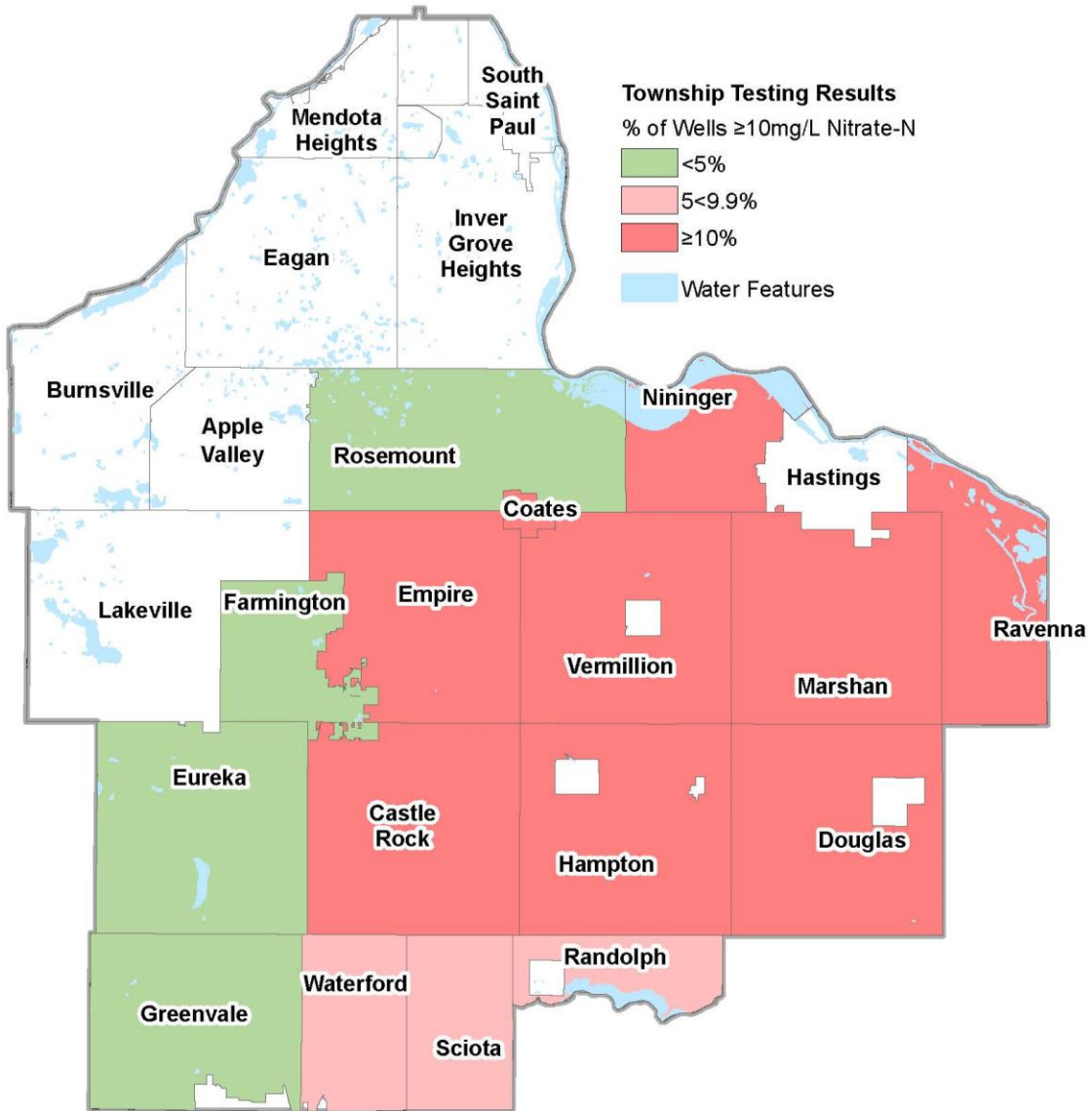
- **Number of townships with 10% of wells over the HRL: 8**
- **205 (15%) wells were removed from initial data set.**

Table: Dakota County Private Well Nitrate Results, 2014-2015.

Township	Initial Well Dataset		Final Well Dataset	
	Total wells*	Percent of Wells \geq 10 mg/L Nitrate-Nitrogen	Total wells	Percent of Wells \geq 10 mg/L Nitrate-Nitrogen
Castle Rock	101	14.9%	93	10.8%
Coates (city)**	11	54.5%	5	60.0%**
Douglas	68	33.8%	50	16.0%
Empire	58	31.0%	49	22.4%
Eureka	123	6.5%	110	1.8%
Farmington (city)	18	0.0%	18	0.0%
Greenvale	58	3.4%	56	1.8%
Hampton	80	28.8%	67	23.9%
Marshan	115	52.2%	95	44.2%
Nininger	88	35.2%	72	26.4%
Randolph	55	10.9%	47	8.5%
Ravenna	297	38.0%	243	31.7%
Rosemount (city)	165	6.1%	154	3.2%
Sciota	29	13.8%	26	7.7%
Vermillion	82	45.1%	70	38.6%
Waterford	41	26.8%	29	6.9%
Total	1,389	26.4%	1,184	19.3%

* All well types included. **Not being evaluated as a township.

Figure: Dakota County Final Well Dataset Map, 2017.



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