

# CENTRAL SANDS PRIVATE WELL NETWORK FOR NITRATE 2018 RESULTS

The Minnesota Department of Agriculture developed the Central Sands Private Well Network in 2011 because of concerns about high nitrate levels in private drinking water wells. Drinking water high in nitrate can cause serious health effects in infants. The state's Health Risk Limit for nitrate-nitrogen is 10 mg/L.

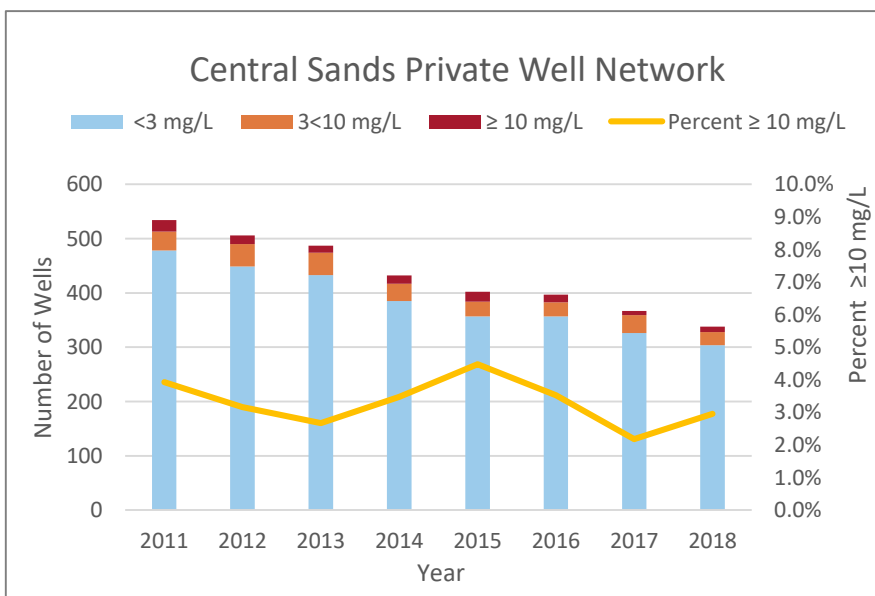
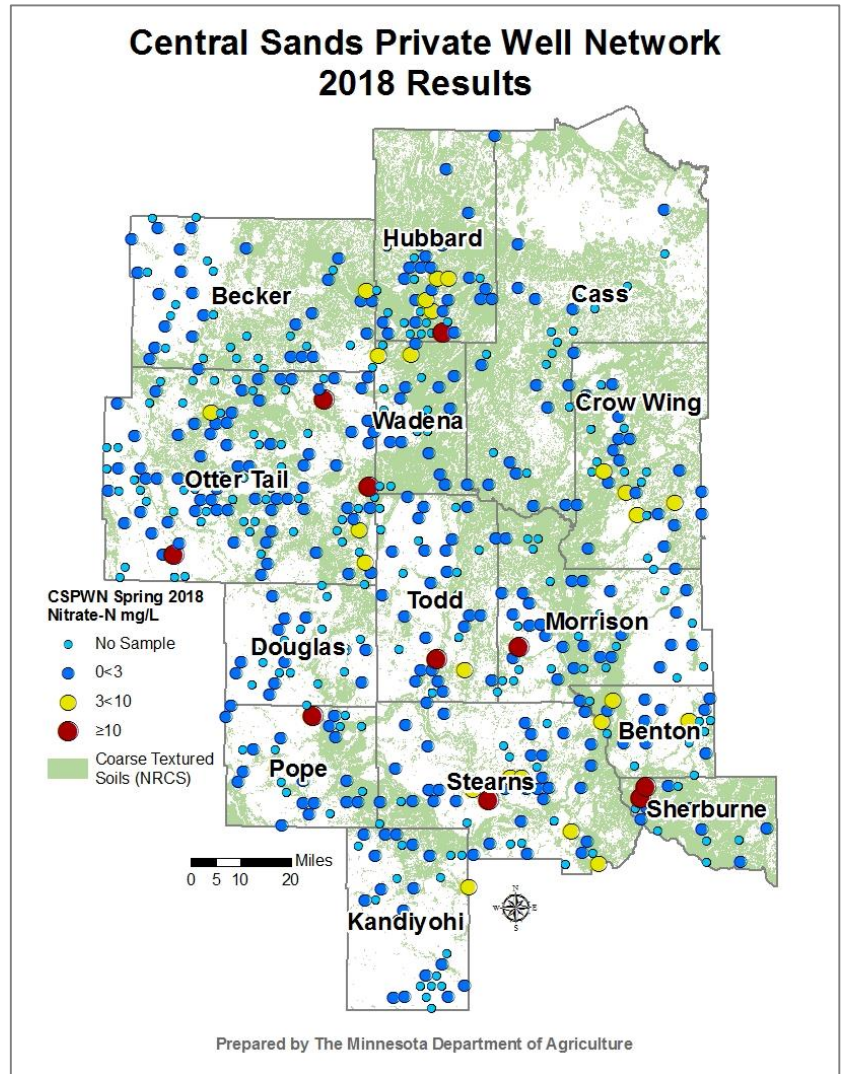
The Central Sands region has soils that may be vulnerable to groundwater contamination. The long-term goal of the network is to determine nitrate trends in the region. To the greatest extent possible, the same households have been tested since 2011.

In 2018, 338 private drinking water wells were sampled for nitrate.

## 2018 Nitrate-N Results

- 89.9% of results were <3 mg/L
- 7.1% of results were 3<10 mg/L
- 3.0% of results were ≥10 mg/L

On a regional scale, 97% of participating wells have water that is below the Health Risk Limit for nitrate-nitrogen.



Results from 2018 are similar to previous years with 90% of nitrate results <3 mg/L, 7% in the 3<10 mg/L range, and 3% ≥10 mg/L. There is a statistically significant downward trend in the network this year.

There is a decline in participation rates since 2011, however, the overall picture is still representative of the network as the proportion of wells in each nitrate category remains nearly the same. The occurrence of lower nitrate wells leaving the network is consistent each year. As of 2018, over 80% of dropped wells previously had results <3 mg/L.

# 2018 NITRATE RESULTS BY COUNTY

Counties	Total Wells	Nitrate-N Summary Statistics					Percentage of Wells		
		Min	Max	Mean	Median	90th <sup>1</sup>	<3 mg/L	3<10 mg/L	≥10 mg/L
		Nitrate-N mg/L or parts per million (ppm)					Percent		
Becker	25	<0.03	4.3	0.3	<0.03	1.2	96.0%	4.0%	0.0%
Benton	13	<0.03	7.5	1.2	0.1	4.4	84.6%	15.4%	0.0%
Cass	15	<0.03	1.8	0.3	<0.03	1.4	100.0%	0.0%	0.0%
Crow Wing	22	<0.03	5.3	0.9	<0.03	3.7	81.8%	18.2%	0.0%
Douglas	13	<0.03	0.4	0.0	<0.03	0.1	100.0%	0.0%	0.0%
Hubbard	26	<0.03	13.3	1.5	<0.03	5.6	80.8%	15.4%	3.8%
Kandiyohi	19	<0.03	4.4	0.3	<0.03	0.9	94.7%	5.3%	0.0%
Morrison	27	<0.03	22.5	1.3	<0.03	2.3	96.3%	0.0%	3.7%
Otter Tail	73	<0.03	14.8	0.8	<0.03	2.1	91.8%	4.1%	4.1%
Pope	17	<0.03	33.7	2.0	<0.03	0.2	94.1%	0.0%	5.9%
Sherburne	9	<0.03	35.7	7.2	<0.03	32.1	77.8%	0.0%	22.2%
Stearns	39	<0.03	14.4	1.5	<0.03	6.4	82.1%	15.4%	2.6%
Todd	25	<0.03	12.0	1.1	<0.03	2.6	92.0%	4.0%	4.0%
Wadena	15	<0.03	4.5	0.6	<0.03	3.6	86.7%	13.3%	0.0%
Total	338	<0.03	35.7	1.1	<0.03	3.0	89.9%	7.1%	3.0%

<sup>1</sup>The 90th Percentile means that 90% of reported results are below this value.

Nitrate concentrations varied between counties in the Central Sands region. Sherburne County had the highest percentage of wells (22.2%) greater than 10 mg/L. However, Sherburne County has the smallest sample size (9 wells), so one high result can disproportionately affect the mean for a county. An important aspect of the Central Sands Private Well Network (CSPWN) is that it was statistically designed to look at long term trends as a whole region and not on a county by county basis.

Wells with results in the range of 3 to 10 mg/L are considered impacted but safe for drinking; the water is above natural levels of nitrate but below the Health Risk Limit. Groundwater in this range is being impacted by activities on the land surface. Crow Wing County (18.2%) has the highest percentage of impacted wells. Benton County, Hubbard County, and Stearns County are tied with the second highest percentage (15.4%).

The Minnesota Department of Agriculture will continue to offer free nitrate sampling kits to participating well owners on an annual basis. Wadena Soil and Water Conservation District will continue to provide local coordination for the entire network. Efforts are underway to assess which wells have dropped out of the network and where replacement wells are needed.

This could not be done without the help of homeowner volunteers! Thank you for making this program possible. Your participation is helping to protect local groundwater. If you have any questions, please contact Kimberly Kaiser at [kimberly.kaiser@state.mn.us](mailto:kimberly.kaiser@state.mn.us) or by phone: 651-201-6280.

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