

CENTRAL SANDS PRIVATE WELL NETWORK FOR NITRATE 2015 RESULTS

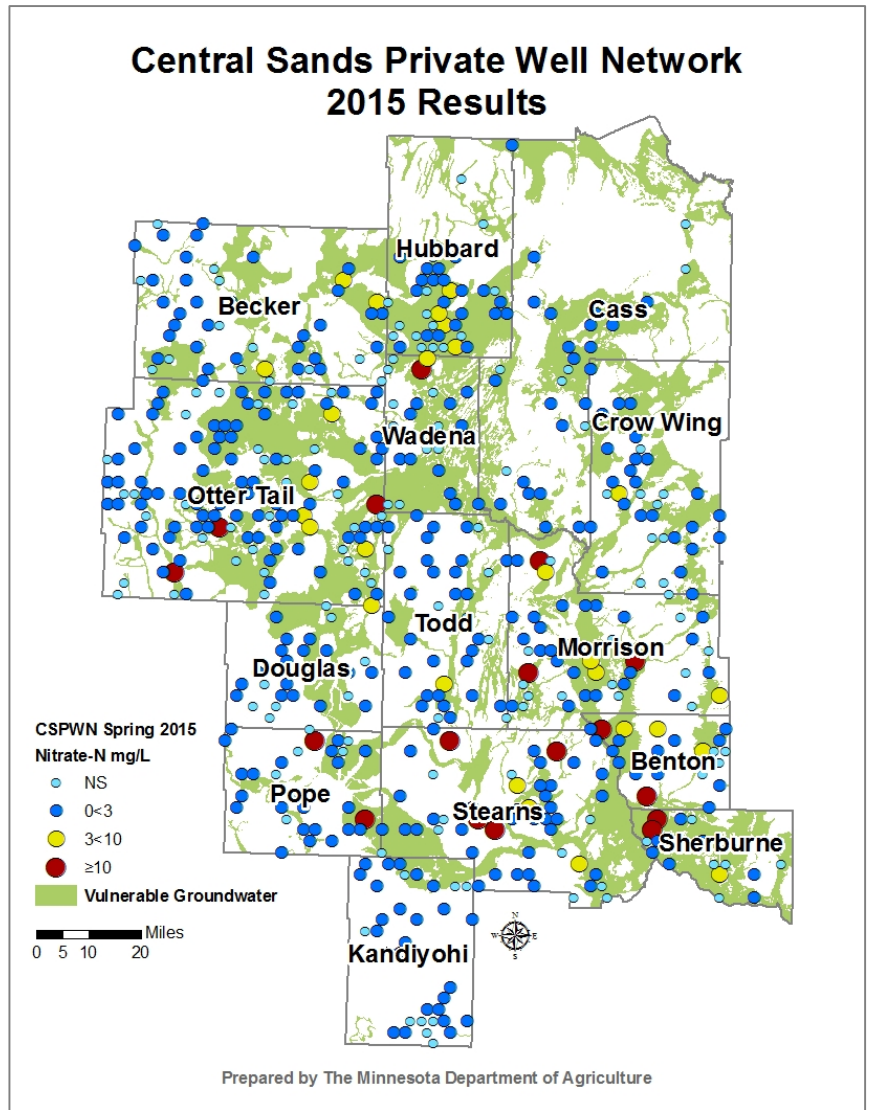
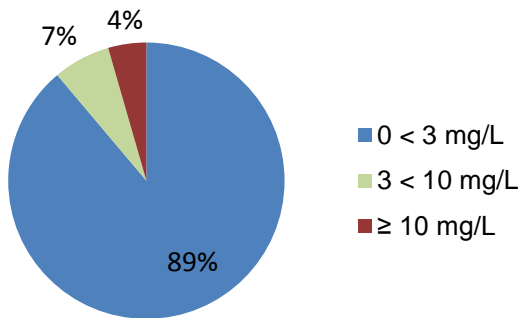
The Minnesota Department of Agriculture developed the Central Sands Private Well Network in 2011 because of concerns about high nitrate levels in private drinking water wells. Drinking water high in nitrate can cause serious health effects in infants. The state's Health Risk Limit for nitrate-nitrogen 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 in 2011, 2012, 2013, 2014 and 2015.

In 2015, 402 private drinking water wells were sampled for nitrate.

2015 Nitrate-N Results

- 89% of results were < 3 mg/L
- 7% of results were 3<10 mg/L
- 4% of results were ≥10 mg/L



On a regional scale, 96% of participating wells have water that is below the Health Risk Limit for nitrate-nitrogen.

Results from 2015 are similar to previous years, however fewer overall samples were returned. It is likely that well owners with results less than 3 mg/L have dropped out of the network because their results were low and they did not feel the need to continue sampling. Most well owners that have high nitrate levels in their well have stayed in the network.

Nitrate-N mg/L	2011	2012	2013	2014	2015
Total Samples	534	506	487	432	402
0 < 3	478	449	433	385	357
3 < 10	35	41	41	32	27
≥ 10	21	16	13	15	18
Percent ≥ 10	4%	3%	3%	3%	4%

2015 NITRATE RESULTS BY COUNTY

Counties	Total Wells	Nitrate-N Summary Statistics					Percentage of Wells ²		
		Min	Max	Mean	Median	90th ¹	<3 mg/L	3<10 mg/L	≥10 mg/L
		Nitrate-N mg/L or parts per million (ppm)					Percent ²		
Becker	33	<0.03	8.8	0.5	<0.03	1.5	91%	9%	0%
Benton	17	<0.03	11.4	2.5	0.1	10.0	71%	18%	12%
Cass	21	<0.03	1.4	0.2	<0.03	1.1	100%	0%	0%
Crow Wing	24	<0.03	3.8	0.6	<0.03	2.4	96%	4%	0%
Douglas	19	<0.03	5.8	0.3	<0.03	0.2	95%	5%	0%
Hubbard	25	<0.03	9.9	1.4	<0.03	6.8	84%	16%	0%
Kandiyohi	26	<0.03	2.2	0.1	<0.03	0.3	100%	0%	0%
Morrison	32	<0.03	25.9	2.3	<0.03	8.3	78%	13%	9%
Otter Tail	88	<0.03	15.3	0.8	<0.03	2.4	91%	6%	3%
Pope	22	<0.03	25.0	1.9	<0.03	5.7	91%	0%	9%
Sherburne	10	<0.03	31.8	6.1	<0.03	27.8	70%	10%	20%
Stearns	41	<0.03	16.3	1.9	<0.03	8.4	83%	7%	10%
Todd	29	<0.03	14.4	1.0	<0.03	1.9	93%	3%	3%
Wadena	15	<0.03	10.4	1.0	<0.03	3.2	87%	7%	7%

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

²Percentages are rounded-up to the nearest whole number.

Nitrate concentrations varied between counties in the Central Sands region. Sherburne County had the highest percentage of wells (20%) greater than 10 mg/L. However, Sherburne County has the smallest sample size (10 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. Benton County (18%), Hubbard (16%), Sherburne County (10%), and Morrison County (13%) have the highest percentage of impacted wells.

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. If you have any questions, please contact Kimberly Kaiser at kimberly.kaiser@state.mn.us or by phone: 651-201-6280.

Updated June 2016.



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