Pipestone SWCD targets nitrates

In ongoing effort to reduce levels within drinking water supply management areas, farmers are planting cover crops and perennial vegetation such as alfalfa

CLEAN WATER LAND & LEGACY AMENDMENT

PIPESTONE COUNTY — The cover crop greening up in Tom Griebel's field just outside Holland will reduce nitrate levels in the shallow aquifer that supplies drinking water to some of Lincoln Pipestone Rural Water's 4,700 customers.

The 114-acre field is part of Pipestone Soil & Water Conservation District's (SWCD) nitrate reduction effort targeting 1,912 acres of ag land here and in other highly vulnerable drinking water supply management areas affecting Edgerton's municipal treatment systems.

> **"There is no right, wrong, definite way to do it. You've just got to try what you think will work with your mind-set, operation, money — and then adjust as you go."**
>
> — Tom Griebel, Pipestone County farmer, on tailoring cover crops, no-till to his operation

A Clean Water Fund grant from the Minnesota Board of Water and Soil Resources (BWSR) offset the cost for Griebel to buy seed and hire someone with the expertise and specialized equipment to plant cereal rye and winter wheat in different parts of the field after last fall's soybean harvest.

"I was interested in trying it anyway, and the funding just pushed me over the edge," Griebel said. The reason: "Of course to improve profits, but also to improve soil health and to keep the nutrients such as nitrates out of the water system."

For their three-year commitment, farmers who plant cover crops receive $40 per acre per year; those who plant perennial vegetation such as alfalfa or Kernza receive a one-time $200-an-acre payment. The $299,520 grant runs through 2023.

To date, 17 producers within Holland and Edgerton's drinking water supply management areas have enrolled 22 parcels ranging from 6.7 acres to 263 acres. All told, farmers enrolled 875 acres in perennial vegetation and 746 acres in cover crops. Another 291 acres were slated for cover crop enrollment this spring.

"The ultimate goal would be to have the majority of these drinking water supply management areas in some sort of soil health practices," said Laura DeBeer.

A Pipestone SWCD-based water resources technician, DeBeer's position is partly funded by the Minnesota Department of Health (MDH) for one-on-one work with producers and water suppliers in the six-county region.

Pipestone County farmer Tom Griebel planted cereal rye in a field within Lincoln Pipestone Rural Water's Holland Drinking Water Supply Management Area. On March 31, Griebel, who is also a member of the Pipestone County Farm Bureau, checked on the crop with Laura DeBeer of Pipestone SWCD, right. LPRW serves about 4,700 customers. Its Holland treatment plant, center, draws from a shallow aquifer.
Photo Credits: Ann Wessel, BWSR

Griebel's cereal rye grew March 31 in a Pipestone County field outside of Holland.

"Nitrates are quite mobile in the soil profile," DeBeer said, explaining the value of perennial vegetation and cover crops.

Nitrates that aren't taken up by growing root systems can leach into the groundwater. Shallow aquifers beneath gravely soils are more susceptible. Perennial crops use nitrogen as they grow. Cover crops use nitrogen and then, as plants decompose, release it to fertilize the next season's cash crop.

"Ultimately we just would like to see more growing roots in the area, being it either perennial vegetation or cover crops between cash crops," DeBeer said, "and really having the producers in the area know and understand their role in drinking water protection."

MDH links nitrates to blue baby syndrome. The U.S. Environmental Protection Agency's standard for nitrates in drinking water is 10 parts per million (ppm). For treatment to stop, levels must remain under 7 ppm.

Edgerton spends about $5,000 a month to remove nitrates from drinking water. Levels have fluctuated — decreasing when land was in permanent cover through the federal Conservation Reserve Program (CRP), increasing when it was farmed. With more land back in perennial cover, and with less rain, nitrate levels have decreased from about 20 ppm to 12 ppm over the past year.

Lincoln Pipestone Rural Water (LPRW) took four of its eight wells at Holland and North Holland offline in 2017 because a byproduct of its nitrate treatment had the potential to cause a different type of pollution. An experimental treatment that reduced nitrate levels to zero was discontinued because it was cost-prohibitive, and Minnesota Pollution Control Agency funds were available to help connect to South Dakota-based Lewis & Clark Regional Water System.

Overby

Closing the four wells reduced production from the Holland water treatment plant by about 40%. Customers nearest that plant off U.S. Highway 75 still get their drinking water from the wells that don't require nitrate treatment. Some customers farther south receive water from other sources.

LPRW buys water from Lewis & Clark, South Dakota's Brookings-Dueul Rural Water System and Iowa's Osceola County Rural Water System.

"Water keeps people in the region," said Jason Overby, LPRW general manager.

Growth in agriculture and in towns drives demand. LPRW connects about 50 new rural customers a year. It recently connected an entire community. Other communities with aging infrastructure or compliance concerns have expressed interest.

"It's a hard pill to swallow," Overby said, "if the water that is available can't be supplied without treatment."

The closed wells could reopen if a cost-effective nitrate treatment emerges, or if changes on the landscape sufficiently reduce the nitrate load in the aquifer.

"What this grant is hoping to achieve is to have positive impacts before necessary treatment costs," Overby said. "If all the producers were to participate in this and there is huge impact, the nitrogen load lessens, the benefit would be that Lincoln Pipestone would not have to necessarily seek treatment, would not have to incur huge costs for developing a new treatment process to eliminate nitrates."

Edgerton land acquisition protects city water supply

The city of Edgerton this spring bought 37.2 acres within its drinking water supply management area to ensure the nitrate-reducing benefits of perennial vegetation remain intact.

A Clean Water Fund wellhead protection partner grant from BWSR covered 90% of the $360,000 purchase price. The transaction between the city and Carol Brands Living Trust was finalized April 12.

"Our goal is to get it (the nitrate level) back below that 7 ppm, but the main reason that we're really after this is because it's been in wellhead protection for so long that we didn't want to lose it and find out what would happen if the wrong person did end up with the property," said Edgerton Water Supervisor Doug Brands, who is the seller's nephew.

The land lies upslope from the city well, which supplies 550 residential and business customers. It's been part of Edgerton's wellhead protection efforts since 1991. Previously, the city had received MDH grants to supplement CRP payments to the landowner. That brought nitrate levels down from about 20 ppm to 15 ppm.

When the city rented 10 acres from an adjacent landowner and enrolled it in CRP for 10 years, nitrate levels met EPA standards. Nitrate levels climbed within a few years after farming resumed. The city in 2018 rented 125 acres from that landowner and planted Kernza on 40 acres. Last year, the entire field was planted into Kernza.