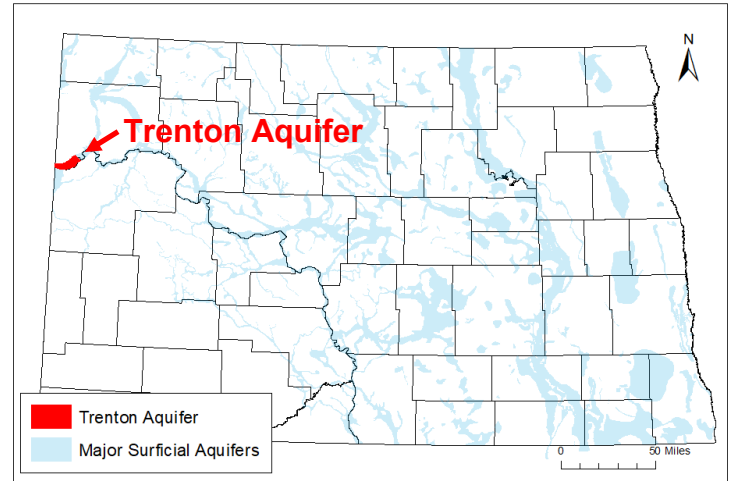


Trenton Aquifer

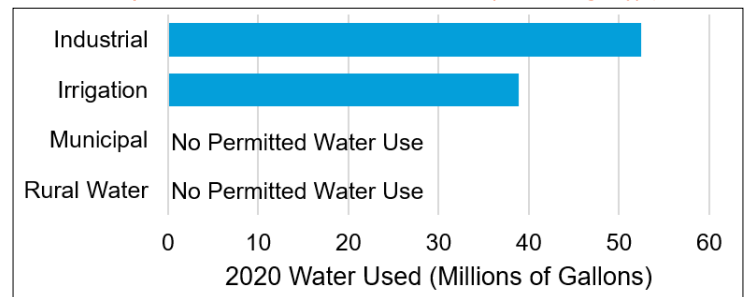
McKenzie and Williams Counties

Aquifer At-a-Glance	
Area	54.2 square miles
Aquifer Type	Unconfined Surficial
Major Land Uses over Aquifer (percentage of aquifer area covered in 2017) ¹	Open Water/Wetlands (47%) Crops (44%)
Depth to Water (2021)*	3-15 feet
Total Unique Wells Sampled	30
Wells Sampled in 2021	12
Samples Collected in 2021	13
Years Sampled	1996, 2001, 2006, 2011, 2016, 2021

*Depths to water may vary seasonally, year to year, and across the aquifer



2020 Trenton aquifer permitted water use (from North Dakota Department of Water Resources (dwr.nd.gov))↓



- Aquifer materials consist of sands and gravels. Pockets of silty clay are interspersed. Most of these materials were deposited by the Yellowstone and Missouri Rivers when they were blocked by glaciers north of Williston during the last ice age.²
- The aquifer is estimated to average 50-70 feet thick.²
- Domestic wells are common in the aquifer. Irrigation and stock wells are also installed in the aquifer.
- In North Dakota, permits are required to withdraw large quantities of groundwater. In 2020, 91 million gallons of permitted water were drawn from the aquifer; industrial use consumed the largest quantity of water. For more information on water use and permits, contact the North Dakota Department of Water Resources (dwr.nd.gov).

About the Agricultural Groundwater Monitoring Program

- The North Dakota Department of Environmental Quality monitors a network of wells in approximately 50 surficial aquifers that are at elevated risk of agricultural contamination.
- Aquifers are sampled on a 5-year rotation.
- Monitoring began in 1992.
- The vast majority of these aquifers are located in central and eastern North Dakota.
- Water is tested for 21 general chemistry parameters, eight trace metals, and 64 pesticides.

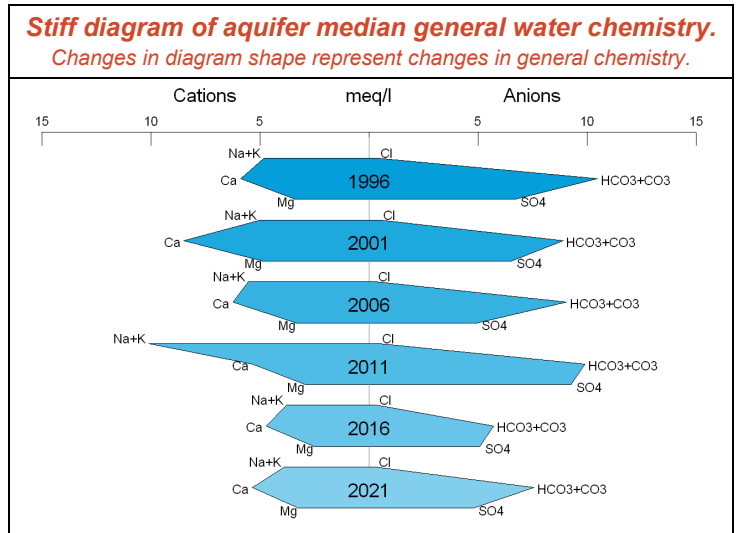
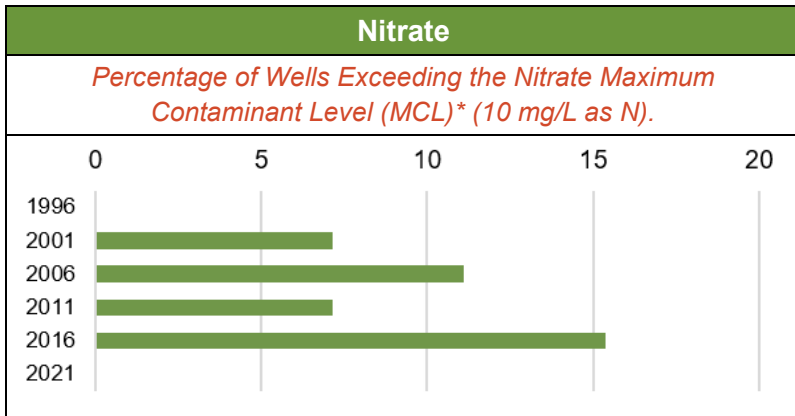
References

- (1) US Department of Agriculture, 2017, National Agricultural Statistics Service Cropland Data Layer.
- (2) Armstrong, C.A., 1969, Geology and Ground Water Resources of Williams County, North Dakota, North Dakota State Water Commission County Ground Water Studies 9-Part 3, North Dakota Geological Survey Bulletin 48.

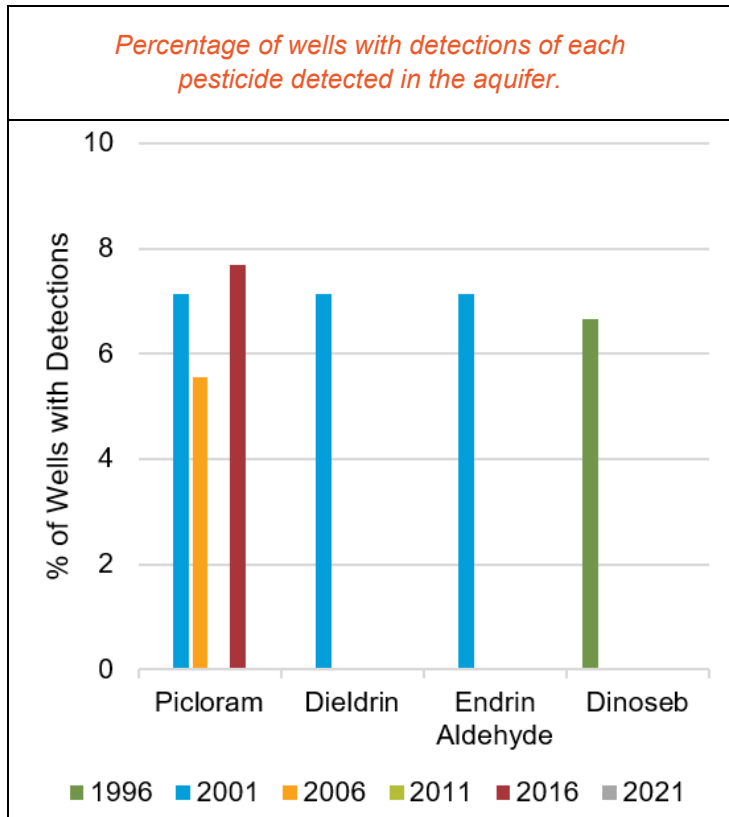
Water Chemistry

Is Aquifer Water High in...?	Analyte	Result	2021 Median Concentration	Potential Effects
	Arsenic	YES	0.015 mg/L	Skin or circulatory system damage, increased cancer risk
	Iron	YES	9.14 mg/L	
	Manganese	YES	0.67 mg/L	Metallic taste/odor, discoloration of surfaces
	Sodium	Locally	85.1 mg/L	
	Sulfate	Locally	230 mg/L	Taste, people with certain health conditions may need to limit intake
For more information about Maximum Contaminant Levels (MCLs), health effects, and treatment options for these contaminants and more, see the NDDEQ's fact sheets (deq.nd.gov/wq/1_Groundwater) or visit the US EPA website (epa.gov/ground-water-and-drinking-water).				

Dominant Water Type	Water Hardness
Calcium-Bicarbonate	Very Hard



Pesticides



State Pesticide Management Plan	
Agricultural Groundwater Monitoring Program aquifers are monitored as a part of the State Pesticide Management Plan. A Prevention Action Level (PAL) threshold of 25% of the pesticide's Maximum Contaminant Level (MCL)* or Health Advisory Level (HAL) is used to identify whether action is needed to prevent further contamination.	
Prevention Action Level Exceedances	None
MCL or HAL Exceedances	None

Number of Unique Wells with Pesticide Detections since 1996	3 of 30 Total Wells
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2021 Pesticide Detections
No Pesticide Detections

*Note that MCLs are for public drinking water systems; private wells are not regulated in North Dakota. MCLs still provide guidelines for drinking groundwater.

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