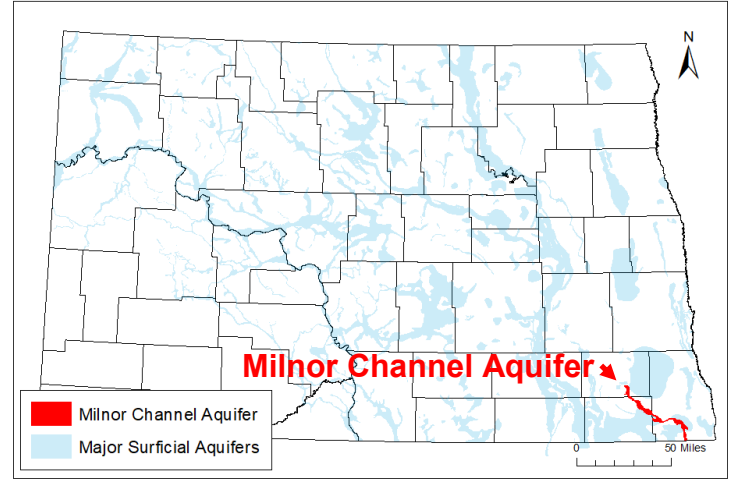


Milnor Channel Aquifer

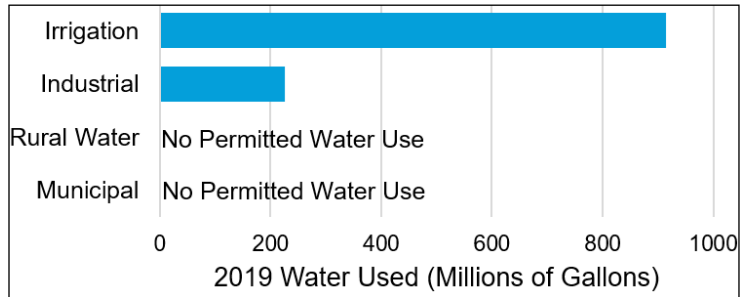
Ransom, Richland, and Sargent Counties

Aquifer At-a-Glance	
Area	90.4 square miles
Aquifer Type	Unconfined and Confined Surficial
Major Land Uses over Aquifer (percentage of aquifer area covered in 2017) ¹	Crops (45%) Open Water/Wetlands (36%)
Depth to Water (2019)*	2-30 feet
Total Unique Wells Sampled	65
Wells Sampled in 2019	24
Samples Collected in 2019	31
Years Sampled	1994, 1999, 2004, 2009, 2014, 2019

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



2019 Milnor Channel aquifer permitted water use (from North Dakota State Water Commission (swc.nd.gov)) ↓



- Aquifer materials range from sandy silts to coarser sandy gravels. This long, skinny aquifer sits in a shallow valley that was occupied by a river which flowed along the edge of a glacier during the last ice age. This river is the source of the aquifer deposits.^{2,3}
- The aquifer ranges in width from 1 to 3 miles. It has an average thickness of 30 to 40 feet. Aquifer deposits are typically at the surface except in the far northwest, where they are buried under up to 70 feet of clay.^{2,3}
- Domestic and irrigation wells are the most common types of wells in the aquifer. Irrigation is concentrated in the northwestern part of the aquifer.
- In North Dakota, permits are required to withdraw large quantities of groundwater. In 2019, 1.1 billion gallons of permitted water were drawn from the aquifer; irrigation use consumed the largest quantity of water. For more information on water use and permits, contact the North Dakota State Water Commission (swc.nd.gov).

References

- (1) US Department of Agriculture, 2017, National Agricultural Statistics Service Cropland Data Layer.
- (2) Armstrong, C.A, 1982, Ground-Water Resources of Ransom and Sargent Counties, North Dakota, North Dakota State Water Commission County Ground Water Study 31-Part 3, North Dakota Geological Survey Bulletin 69.
- (3) Baker, C.H. Jr & Paulson, Q.F, 1967, Geology and Ground Water Resources, Richland County, North Dakota, North Dakota State Water Commission County Ground Water Study 7-Part 3, North Dakota Geological Survey Bulletin 46.

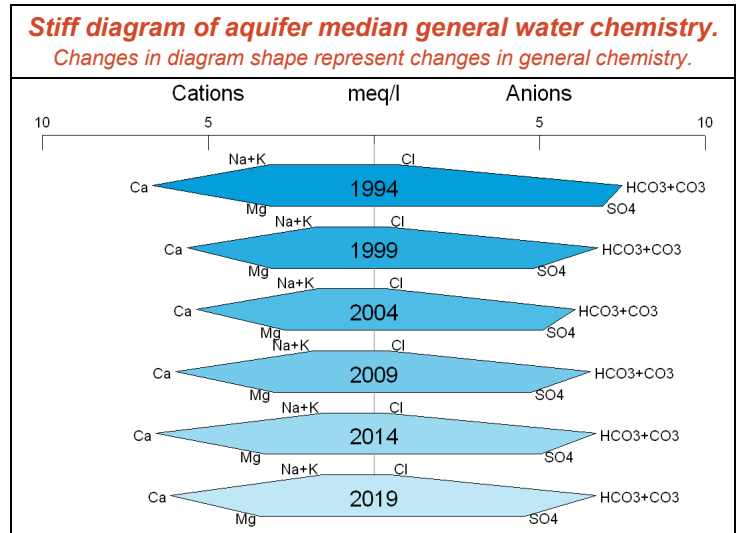
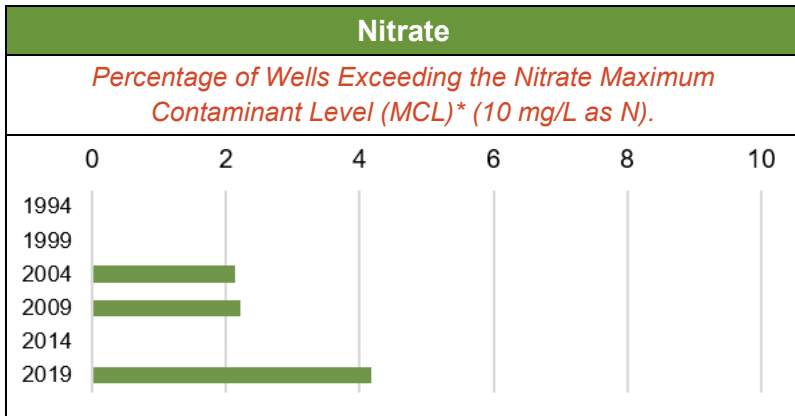
About the Agricultural Groundwater Monitoring Program

- 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.

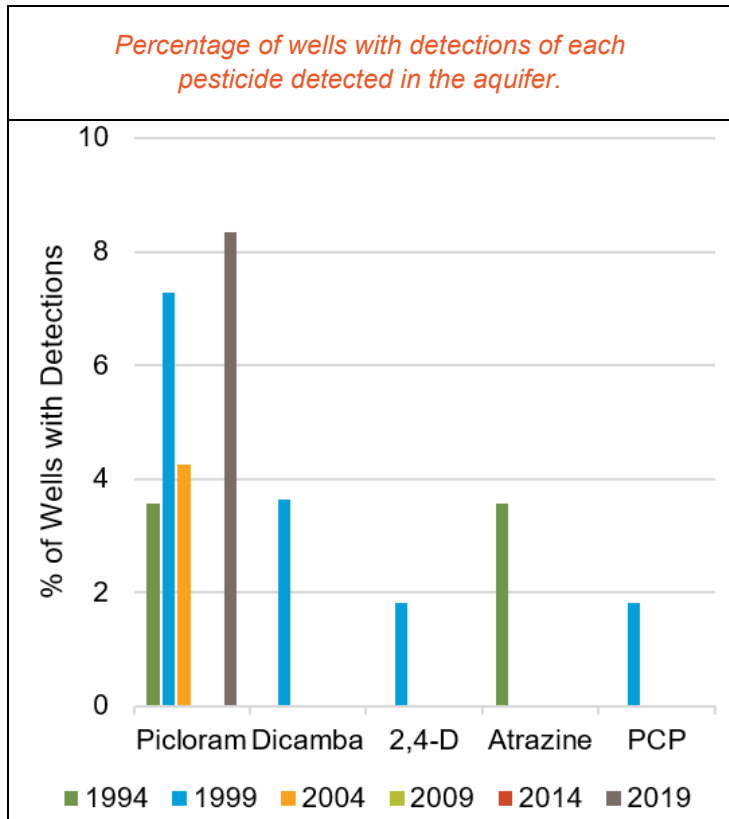
Water Chemistry

Is Aquifer Water High in...?	Analyte	Result	2019 Median Concentration	Potential Effects
	Arsenic	YES	0.029 mg/L	Skin or circulatory system damage, increased cancer risk
	Iron	YES	1.52 mg/L	
	Manganese	YES	0.71 mg/L	Metallic taste/odor, discoloration of surfaces
	Sodium	NO	30.9 mg/L	
	Sulfate	NO	219 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 1994	11 of 65 Total Wells
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2019 Pesticide Detections		
Picloram	2 Wells	Herbicide applied to crops and roads/rights-of-way

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

Feel free to use this information, but please credit the North Dakota Department of Environmental Quality.