

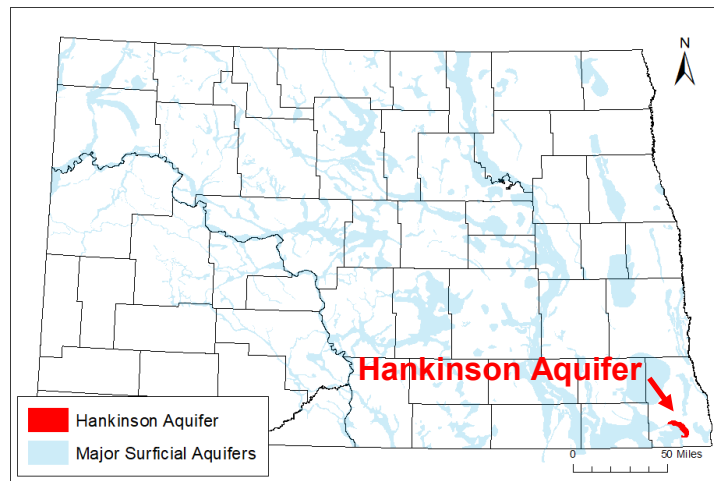
Hankinson Aquifer

Richland County

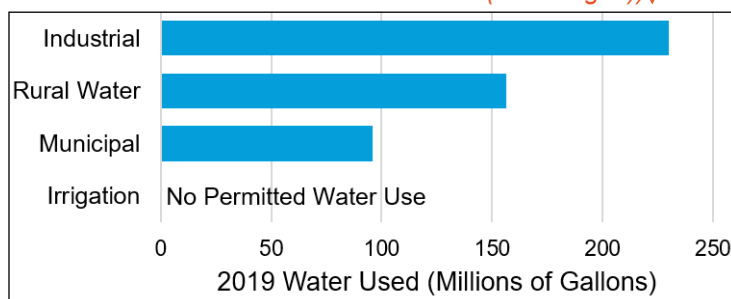
Aquifer At-a-Glance

Area	40.34 square miles
Aquifer Type	Unconfined Surficial
Major Land Uses over Aquifer (percentage of aquifer area covered in 2017) ¹	Crops (64%) Grassland/Pasture (22%)
Depth to Water (2019)*	5-10 feet
Total Unique Wells Sampled	19
Wells Sampled in 2019	8
Samples Collected in 2019	14
Years Sampled	1994, 1999, 2004, 2009, 2014, 2019

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



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



- Aquifer materials consist of sands and gravels that are remnants of beaches along the former shoreline of Glacial Lake Agassiz, which covered much of far eastern North Dakota around 10,000 years ago.²
- The aquifer is thickest (~100 feet) near the city of Hankinson and thins to the southeast. On average, the aquifer is 40 feet thick.²
- Domestic wells are the most common type of well in the aquifer. A few stock and irrigation wells also draw from the aquifer.
- The Southeast Water Users District rural water system draws their water supply from the Hankinson aquifer.
- In North Dakota, permits are required to withdraw large quantities of groundwater. In 2019, 492.5 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 State Water Commission (swc.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) 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.

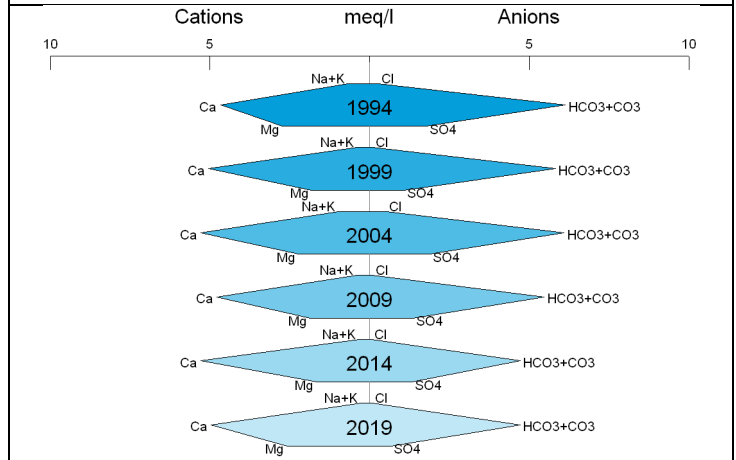
Water Chemistry

Is Aquifer Water High in...?	Analyte	Result	2019 Median Concentration	Potential Effects
	Arsenic	YES	0.02 mg/L	Skin or circulatory system damage, increased cancer risk
	Iron	YES	1.17 mg/L	
	Manganese	YES	0.87 mg/L	Metallic taste/odor, discoloration of surfaces
	Sodium	NO	3.8 mg/L	Taste, people with certain health conditions may need to limit intake
	Sulfate	NO	31.4 mg/L	
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).				

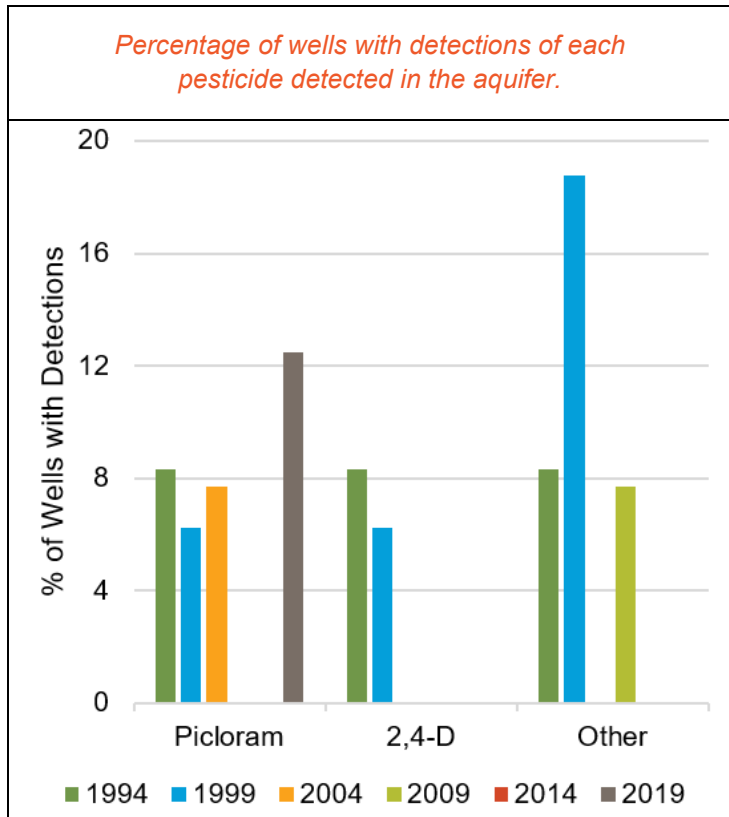
Dominant Water Type	Water Hardness
Calcium-Bicarbonate	Very Hard

Nitrate
<i>Percentage of Wells Exceeding the Nitrate Maximum Contaminant Level (MCL)* (10 mg/L as N).</i>
No Nitrate MCL Exceedances

Stiff diagram of aquifer median general water chemistry.
Changes in diagram shape represent changes in general chemistry.



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	Cyanazine at 71% of HAL in 1999; not detected in 1999 resample
MCL or HAL Exceedances	None

Number of Unique Wells with Pesticide Detections since 1994	7	of 19 Total Wells
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2019 Pesticide Detections		
Picloram	1 Well	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.

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