



City of Big Lake Environmental Education Newsletter

Special Edition: World Water Day

We are at a crucial moment – we can continue to let water quality become worse or we can work together to reverse the damage that has been done and prevent future water degradation.

Governor Mark Dayton, June 2017

March 22nd has been designated as World Water Day. Here in Minnesota, especially in Big Lake, we have many reasons to be grateful for water. What would Minnesota's nickname be without our 10,000 (or for the more literal, 11,842) lakes? What would this small area of land in central Minnesota be called? Not only is water integral to our landscape, but it is essential for any form of life on Earth. So on this, World Water Day, take the opportunity to learn a bit more about the substance that shapes your daily life.

History

- Big Lake is in the Mississippi River -St. Cloud Watershed. Rivers and creeks in the watershed drain surface water to the Mississippi River. Thus, land use, including farming and urban development, affects the water quality in all of the streams, lakes, and wetlands of the watershed.
- Watershed quality is important because water from the lakes, rivers, and streams (in addition to rainwater) is what populates the aquifers and supplies groundwater to the City.
- Big Lake is spilt between two groundwater provinces (according to the Department of Natural Resources): the metro province and the central province. The geologic formation affects water quality in all cities and is thus important information to understanding water quality.



- Metro province: Sand aquifers in generally thick (greater than 100 feet) sandy and clayey glacial drift overlying sandstone, limestone, and dolostone aquifers.
 - Central province: Sand aquifers in generally thick (greater than 100 feet) sandy and clayey glacial drift
 - Big Lake is built upon sandstone, siltstone, and minor shale. It is primarily in the Cambrian-Ordovician Aquifer.
- Most of the soils in and around Big Lake are very sandy, which allows surface water to drain easily to the aquifer. An aquifer is an underground layer of rock and gravel that holds water and may be tapped for drinking or crop irrigation. Near Big Lake, the aquifer may be as close as 50 feet to the surface and easily produces large amounts of water. Because of that geology, the groundwater in the vicinity of Big Lake is rated by the Minnesota Department of Natural Resources (DNR) as being Highly to Very Highly Sensitive to pollution from surface sources.
 - In contrast, soils near the Elk River and to the north of that stream tend to be "hydric," meaning that they hold much water. This is a result of their geologic history and the high ground water level.

- Until 1981, all of the housing and businesses in Big Lake used on-site, private wastewater treatment systems. These systems, in combination with small lots and soils that are either too well or too poorly drained, (particularly near the lakes and in the north), may have posed health risks. Now, a municipal sanitary sewer system has mitigated most of that problem.

Wetlands and Groundwater

In addition to our plentiful and beautiful lakes, Big Lake is also home to a respectable number of wetlands. But how does one really classify a wetland? And why are wetlands as important as groundwater?

What is a wetland?

- Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season.

What is groundwater?

- Groundwater is fresh water (from rain or melting ice and snow) that soaks into the soil and is stored in the tiny spaces (pores) between rocks and particles of soil. This is where a lot of drinking water comes from.

There is a long history of draining and filling Minnesota wetlands to accommodate settlement and development. Nearly 40% of the state was some form of wetland 150 years ago; now that percentage has been cut in half. The loss of wetlands has meant a loss of water quality benefits and has contributed to the degradation of streams, lakes, and groundwater.

Plans for the Future

- Public Input from the 25 by 25 Town Hall Meetings
 - In February 2017, Governor Mark Dayton asked Minnesotans for their input on how to increase the pace of progress to clean water, setting a goal of 25 percent improvement in water quality by 2025.
 - Between July and October 2017, the Governor and other state agency leaders traveled across the state to hear from Minnesotans in town hall meetings.
 - These are the proposals that came out of those meetings:
 - Education, communication, and engagement
 - Build statewide water literacy through K-12 education
 - Share knowledge among farmers and others working in agriculture to spread new approaches like cover crops, low till farming, and controlled drainage
 - Create broad media campaigns to build a water ethic and promote shared values
 - Reducing runoff by holding more water on the land
 - Agricultural Areas: expand cover crops, reduce tillage, increase crop diversity, increase perennial crops, improve drainage management for better water retention, improve soil health
 - Urban Areas: expand rain gardens, improve stormwater management, expand green and permeable infrastructure, increase native landscaping
 - Working together across levels of government with the public

- Locally led watershed planning
- Pollutants and drinking water
- Salt pollution
- Septic systems
- Funding
- Incentives and regulation
 - Voluntary programs
 - Regulations
 - Systemic change
 - Further study
- The state is just beginning to implement these suggestions, as the report on the town hall meetings was just released at the beginning of 2018

Water is important, as it is the basis for all life on Earth. Today, and into the future, only take what you need, protect what we have, and maintain safe and clean water for future generations.

This information on Big Lake's water is only a portion of an ongoing project to educate residents on water in their community. The complete document will be available in late summer on the City of Big Lake's website.