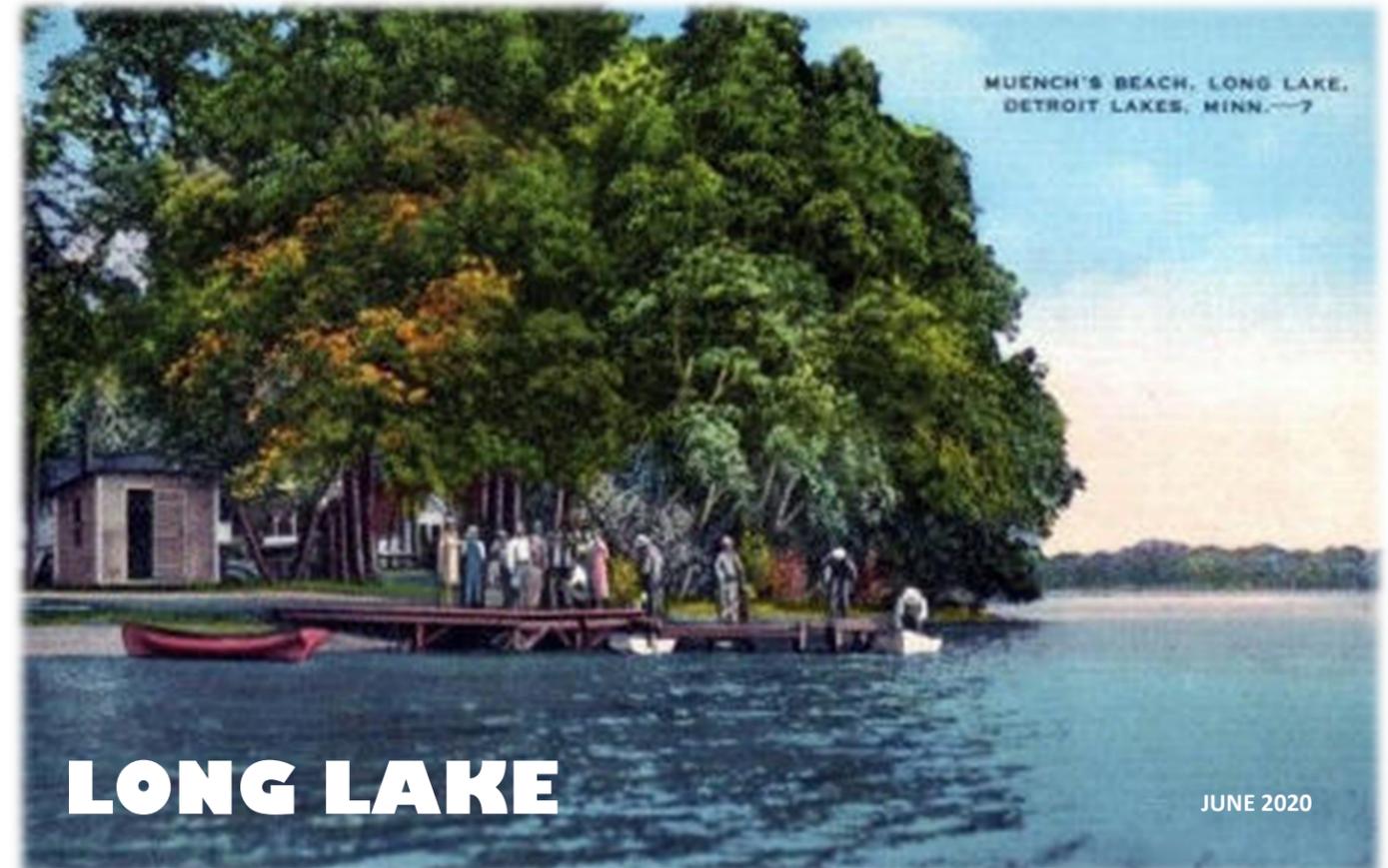
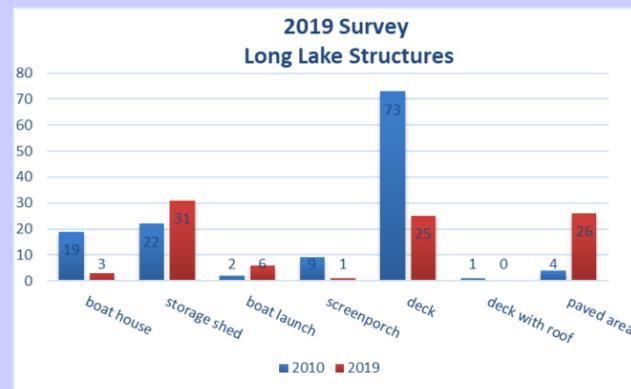
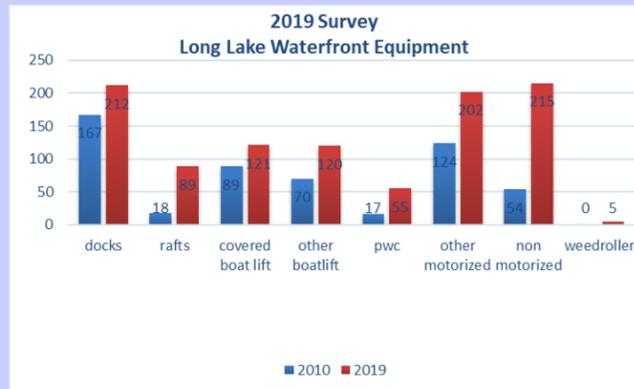


2019 Long Shoreline Survey- 180 Parcels

The 2019 shoreline survey compared modifications to the shoreline, nearshore, structures, and waterfront equipment presently observed to the last survey completed in 2010. Over the past decade, some notable changes on Long include a resort conversion to single family homes on the south end and the addition of City water and sewer services on the north, east and south areas.

Long's shoreline is 6% natural, 7% minimally altered, 19% moderately altered, and 68% greatly altered. Greatly altered shoreline increased by 230% from the 2010 survey, mostly due to removal of natural trees, shrubs, and vegetation and replacing with lawns, sand blankets, and rip-rap. Waterfront equipment changes over that past decade include increases in docks, rafts, lifts, but the most notable were the increases in personal watercraft, including kayaks and boats. Waterfront structures saw a marked decrease in the number of boat houses and decks, however there was an increase in storage sheds, stairways and paved landing areas.



Although 2020 has been full of challenges and we have all had to change the way we go about our daily lives, we wanted to reach out and let you know that the Watershed District office is open. Although we can't say "business as usual", we can say we are here if you need us. We are always only a phone call away, (218) 846-0436, and would be happy to set up an appointment for a site visit or any other issue. We hope that you are all well and enjoying the lake life as much as possible.

Permitting, Plantings and Pollinators

Planting for clean water is part of the solution of water pollution! Stormwater runoff is the number one threat to our water quality according to the U.S. Environmental Protection Agency. Pollutants from our lawns and streets—vehicle emissions, oil residue, grass clippings, pesticides, leaves and pet waste—are swept away by rainwater runoff to our lakes and streams. Using water-friendly landscaping like native plants, raingardens and shoreline stabilization helps minimize runoff, keeps our water clean, and creates pollinator habitat.

As native vegetation is replaced by roadways and manicured lawns, pollinators lose the food and nesting sites that are necessary for their survival. The improper use of pesticides can also negatively impact pollinators and their habitats. Pesticides such as weed killers and insecticides are used in nearly every home, business, farm and park in the United States and are found almost everywhere in our environment.

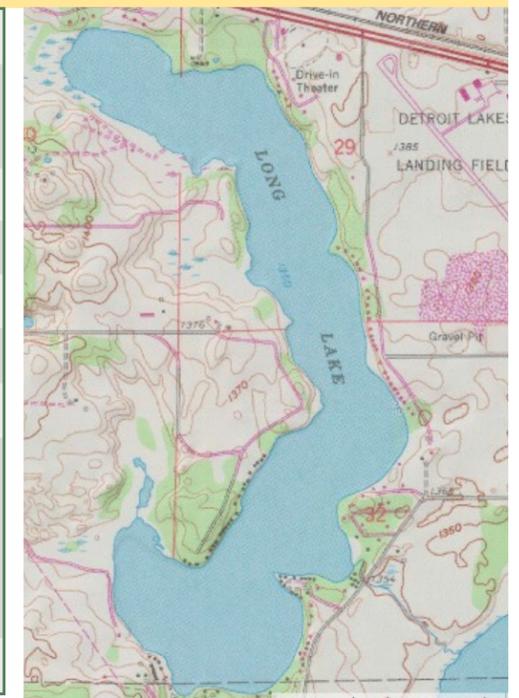


Before you begin any work on the shoreline **remember to contact the Watershed District for a PERMIT.** We would be happy to discuss our **Cost Share Program** and environmentally friendly ways to enhance your property. Permits can be found on our web page at www.prwd.org.



Contact Information:
Wells Fargo Bank Building
211 Holmes St. West, Suite 201, Detroit Lakes, MN 56501
(218) 846-0436 * prwdinfo@arvig.net * www.prwd.org

SIZE	408.73 Acres
LITTORAL AREA (less than 15 ft.)	152 Acres
WATERSHED SIZE	2,761 Acres
MAX DEPTH	61 ft.
INLET	Stream from Wetland
OUTLET	Stream to St. Clair Lake
ORDINARY WATER HIGH	1,351.2 ft.
COMMON FISH	Black Crappie, Bluegill, Largemouth Bass, Rock Bass, Northern Pike, Walleye.
INVASIVE SPECIES	None



10-Year Monitoring Schedule

In-Lake—2019, 2023, 2028
Aquatic Vegetation—2019, 2023, 2028
Shoreline Surveys-2024, 2029.

Raina & Warren 2019 District Interns

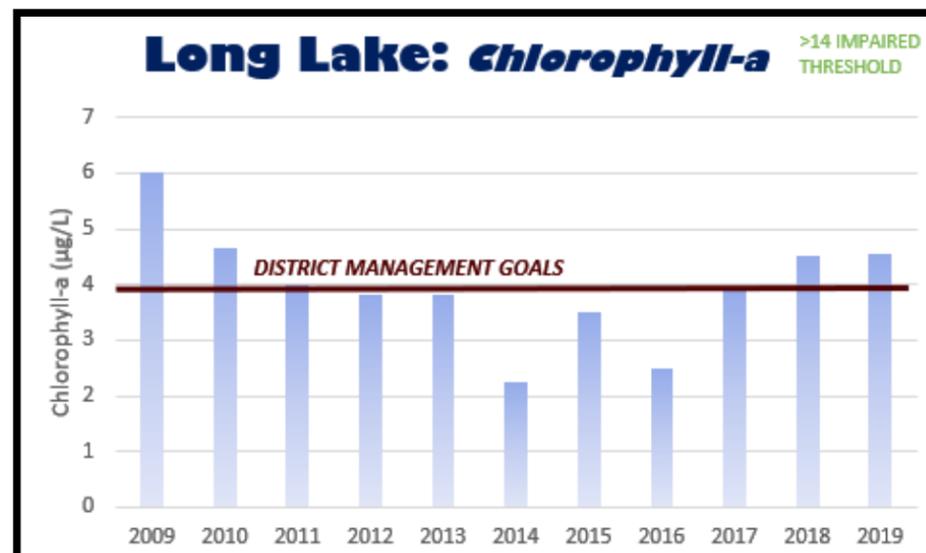
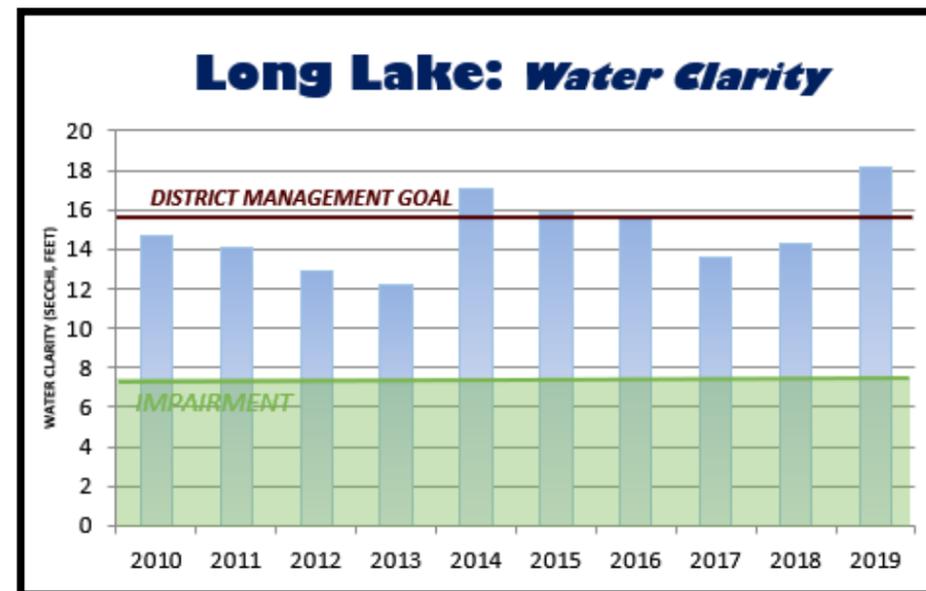
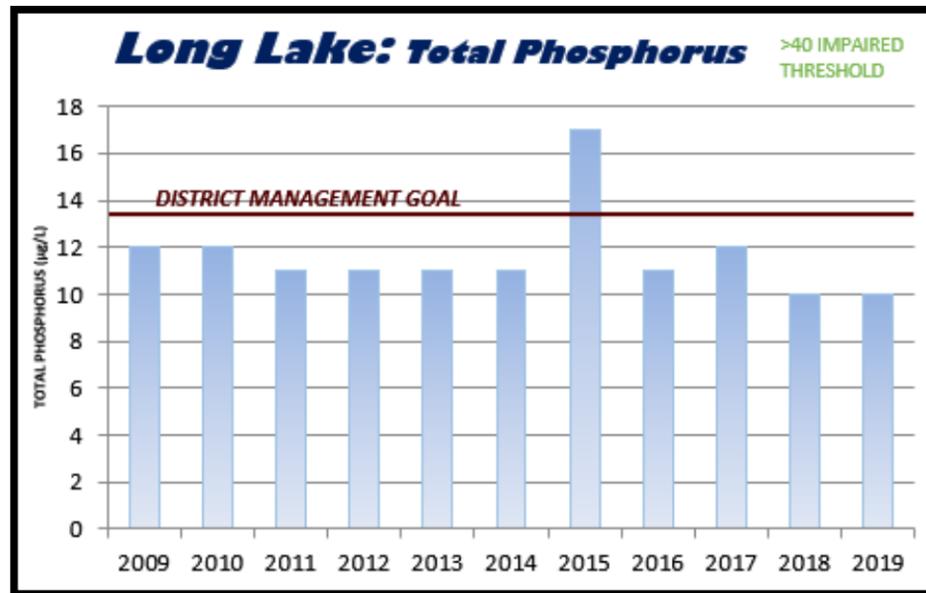


Bee Friendly

Invite pollinators to your neighborhood by planting a pollinator friendly habitat in your garden.

At www.pollinator.org you will be able to find a planting guide for our region so that you can attract birds, bees, butterflies and other small mammals that pollinate plants.

- ◆ Plant in clusters to create a “target” for pollinators.
- ◆ Plant for continuous bloom throughout the growing season.
- ◆ Plant in an area out of the wind, in partial sun, and can provide water.



INTO THE DEPTHS...

Water Quality—a good year!

In 2019, average phosphorus concentrations were lower in Long lake with a summer average of 10 ppb, the 20 year average is 13.5 ppb. Water clarity was also better in 2019 with a summer average of 18 ft—4.5 ft. clearer than the long term average of 13.5 ft. Long remained thermally stratified during the summer, limiting algal growth. In mid-September, lake water mixed and the phosphorus-rich bottom water rose to the surface provided food for a significant algae bloom. Chl-A average for the summer was 4.5 ppb, a slight increase from the long-term average of 4.0 ppb, mainly due to the September algae bloom.

Spring 2019 Diatom Bloom

In late May, the District received reports of brown colored water and poor water clarity (2-3 ft.) from Long Lake residents. MPCA and PRWD staff sampled the water and it was determined that the most likely cause was a different type of phytoplankton called Diatoms.

The cooler spring temperatures created an optimal growth environment for the diatoms to thrive. These plankton species lay dormant within lake sediments over winter and germinate in spring where they rise to the surface and continue to multiply. Diatoms are most common in cool, clear lakes. As area lake water temperatures rise, the brown diatoms will die off.

The Diatom bloom did not have any immediate effects to the biotic community, but may have led to decreased dissolved oxygen in the lake throughout the summer. When compared to the last temperature/dissolved oxygen profile for the lake in 2017, dissolved oxygen was slightly decreased in 2019.



Zooplankton Study on Long Lake

In coordination with Concordia College in Moorhead, a study of the effects of Zebra Mussels on the populations of zooplankton communities was started on Long Lake in 2019 and will continue for 5+ years to identify any trends.

PRWD Summer Intern, Connor Haugrud, is shown using a specialized net collecting a sample from the water column. Samples are taken from June—September and analyzed by Concordia College students.

2019 Weather & Lake Water Levels

The first three months of 2019 experienced above normal snowfall with colder than average temperatures. The warmer temperatures in April were very welcome, however, April 12th dumped ten inches of fresh snow in the area, which delayed April 23rd ice-off event.

Heavy summer rains kept the lakes and streams at high levels. In July, 4.72” of rain fell, followed by August with 5.71” and September saw 4.88”. However, Long lake water level in September 2019 was at 1350 ft, or 6 inches below the ordinary (OHW) water level of 1351.2 ft. Of note, the Pelican River was up to it’s bank and lakes along its chain were as much as 10” above 2018 averages throughout the summer and fall.

October 10th brought the first snowfall dropping 3” on the area. This was the first of multiple snowfall events during the last three months of 2019. Long lake ice-on occurred around November 11th. On November 30, 8.5” fell with an additional 12” falling on December 28th and 29th. With several smaller events during this period, the year-end total amounted to 31.39”.

