

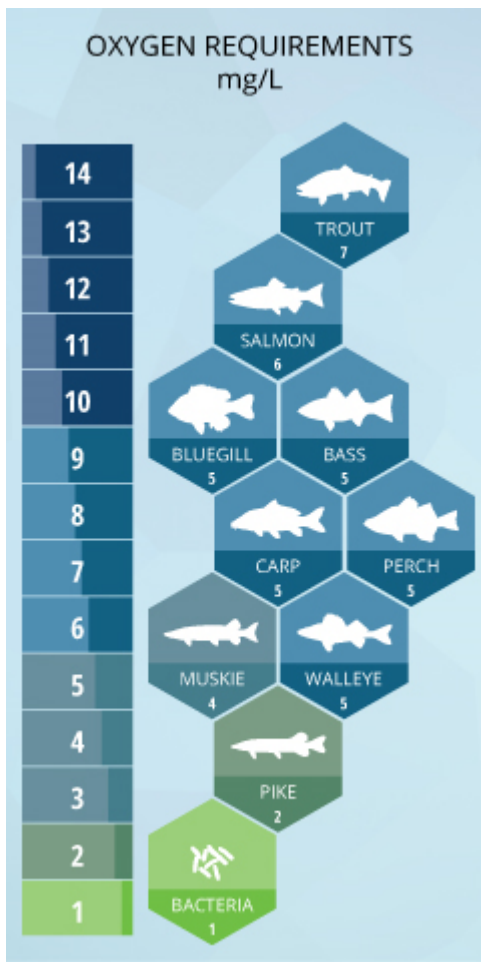
# Wall Lake Water Quality Report - 2017

## Dissolved Oxygen

The Greater Wall Lake Association recently began participating in water quality testing through the Cooperative Lakes Monitoring Program of the Michigan Clean Water Corps. This testing data assists water resource management and protection programs with the Michigan Department of Environmental Quality.

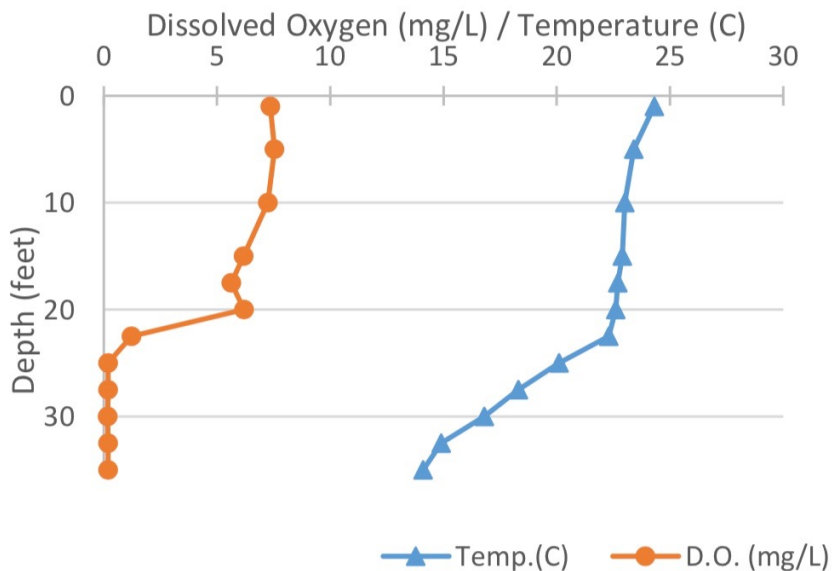
One of the water quality tests we perform is Dissolved Oxygen monitoring. Dissolved Oxygen is a very important parameter of water quality, second only to having water itself, because lake organisms need oxygen to live.

The following graphic show how much Dissolved Oxygen different species of fish need to live.



Dissolved Oxygen is measured every two weeks using a meter supplied by the DEQ throughout the summer from mid-May until mid-September. The graphic below shows Wall Lake's Dissolved Oxygen in mid-July 2016. Wall Lake has minimal Dissolved Oxygen below 20 feet in the spring, and close to zero dissolved Oxygen below 20 feet during the hottest months. This is reason for concern. Life cannot be sustained without oxygen.

## Dissolved Oxygen and Temperature Profile 8/26/2017



Oxygen enters a lake from above the water through the atmosphere, or from below the water by plants and sunshine through photosynthesis. There are four reasons for low Dissolved Oxygen in Wall Lake.

The first is excess algae growth due to phosphorous. Even though Wall Lake has phosphorous levels lower than the threshold normally needed to produce noticeable algae blooms, it still has enough phosphorous to produce excess algae. The algae die and decompose and this consumes oxygen.

The second is that we have a layer of "muck" on the bottom of parts of Wall Lake. This muck is organic material (primarily decomposed plants) that needs to be decomposed by bacteria and fungi. The bacteria and fungi use oxygen when decomposing the muck. When the deep water lacks oxygen, the muck can't be dissolved.

The third is lack of native plant life in Wall Lake. While we do need to eliminate aquatic invasive plant species, we also need to preserve and add native plant species in Wall Lake. This is why wise shoreline management is so important. Every time native plants are removed from a shoreline to make a beach or seawall, this reduces oxygen-producing plant life.

The fourth is stagnation. Deep water in lakes receives little aeration.

What can we do? Preserve, or add native plant life to shorelines. Use environmentally friendly (phosphorous-free) fertilizers.

Clear water isn't necessarily PURE water, or life sustaining water.

It should be noted that our lake management company, Professional Lake Management (PLM) states that no inland lake of the 100+ they sample that is deeper than 20' has any dissolved oxygen deeper than 20', as this is an entirely common finding below the thermocline in late summer.

Many thanks to Alan Freid, former GWLA President, for performing water quality testing in Wall Lake and contributing much of this information.