



ENVIRONMENT BULLETIN

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White Lake: What It Is

It's obvious that White Lake is a lake; but what is a lake? A popular definition is that “A lake is an area of land that is filled with water. Aside from the streams and rivers that flow in and out, a lake is completely surrounded by land and can be formed in basins or depressions.”¹

In Canada, our lakes contain about 20% of the world's fresh water. The total number of lakes in Canada is not exactly known, but there are estimated to be over 2 million. About 250,000 of these are in Ontario.

There are at least 15 different types of lakes depending on their origin. There are even more types if they are classified according to factors such as water chemistry, and thermal stratification (layering) to name just two.

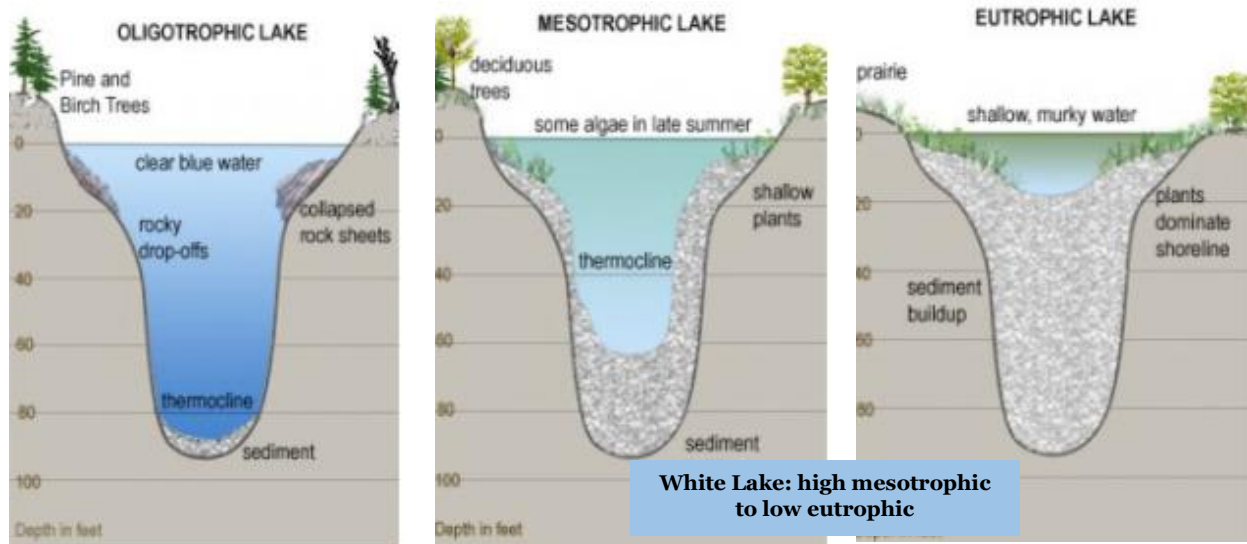
White Lake is classified as a **Glacial Lake** because it was created by the direct action of glaciers and continental ice sheets scraping and grinding across a rocky landscape. The shape of the lake is influenced by the direction of movement of the ice sheet, the hardness of the rocks worn away by the ice and also the presence of geological faults (cracks) in the earth's upper crust.

Many scientists like to classify lakes in another way to make it easier to explain the status of a lake and to compare one lake with another. They do this using trophic states. The word trophic derives from a Latin root meaning *nutrients*. There are three trophic states:



¹ <https://basicbiology.net/environment/freshwater/lakes> ; A. Purcell in 'Lakes'

Oligo (meaning very low in nutrients), Meso (meaning mid or average in nutrients); and Eu (meaning very rich in nutrients). These states are graphically described below.



Lake scientists as far back as 1985 have classified White Lake as between high mesotrophic to low eutrophic. This makes White Lake especially sensitive to increases in nutrient inputs and more prone to algal blooms. There has been at least one algal bloom in White Lake in each of the last 9 years.

No lake is permanent. Lakes actually begin filling up with sediment as soon as they are created. Deep lakes however can exist for millions of years. White Lake is a very shallow lake and so is filling up and will eventually disappear. Do we need to worry about this?

The sediments in the main part of White Lake have been measured to be from 5 to 6 metres thick. The rate at which a lake 'fills up' is not a constant and is likely increasing with lake use and as a result of climate change. We do know that since White Lake was dammed, the rate of infill is about 1 mm/year. White Lake is probably about half way through its lifetime, but in only 3 or 4 thousand years, you will likely be able to take your dog for a walk across Three Mile Bay during the summer.



photo credit: Sue Munro