

Two grants for studies under the state of Wisconsin's Lake Planning Grant Program were received by the Pipe Lakes Protection and Rehabilitation District Board. Learn about these studies. [Click here.](#)

This year Pipe and North Pipe Lakes Protection and Remediation District Board applied for and received two grants for studies under the State of Wisconsin's Lake Planning Grant Program. The focus of these studies is described below:

#### North Pipe Lake Internal Loading Study

The first study is designed to collect additional water quality data to help determine what is causing North Pipe Lake to have excess algae growth. The study is designed to help determine if the sediments within North Pipe Lake are contributing more phosphorus to the upper portions of the lake than would be expected.

Professor Bill James from the Center for Limnological Research and Rehabilitation, University of Wisconsin Stout will lead this study. Sampling for this study is scheduled to be done every two weeks throughout the growing season of May – September. There will be a buoy deployed in the center of the deepest part of North Pipe Lake. This buoy will remain in-place throughout the growing season. The buoy has instrumentation suspended down into the lake which will gather some of the data necessary to accomplish the goals of the study. The goal of this study will be determining the best future management options for North Pipe Lake.

#### Pipe and North Pipe Lake Geochemistry Study

This study will be done under the direction of Joe Magner, Research Professor in the Biosystems and Agricultural Engineering Department of the University of Minnesota. The study will gather additional water quality data from surface and groundwater sources entering and leaving both North Pipe Lake and Pipe Lake. This data will be used in developing a water balance for the lakes and to determine the geochemical composition of the various water sources entering and exiting the lakes.

One of the questions the study will seek to answer is: are there sources of phosphorus entering the lakes that are at levels high enough to cause the excess algae growth observed in North Pipe Lake and higher than would be expected entering Pipe Lake. Understanding the hydrologic pathways into and out of the lakes will set a foundation to then evaluate biogeochemical processes that likely drive aspects of lake water quality and trophic status. Having this data will help guide future management decisions.

By way of background, *Eutrophication* is the process of lake enrichment by nutrients which causes increasing levels of algae and weed growth. Lakes are classified into three main categories or trophic states:

- **Oligotrophic:** low productivity due to the low nutrient content in the lake. The waters of these lakes are usually very clear due to the limited growth of algae in the lake.
- **Mesotrophic:** These lakes have medium-level nutrients and are usually clear water with submerged aquatic plants. Pipe Lake is classified as mesotrophic.
- **Eutrophic:** Lakes that are eutrophic in nature have high levels of biological productivity. An abundance of plants is supported by such lakes due to the rich nutrients concentrations, especially nitrogen and phosphorus. North Pipe Lake is classified as eutrophic.

There are two pathways by which nutrients enter a lake system and impact eutrophication. One pathway is from *external* sources such as runoff both surface and subsurface from the lake's watershed or directly through precipitation. The other pathway is *internal* to the lake itself, whereby nutrients within the sediments in the bottom of the lake are resuspended into waters above.

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