

Spring Lake Improvement Program An Historical Overview

January 2023

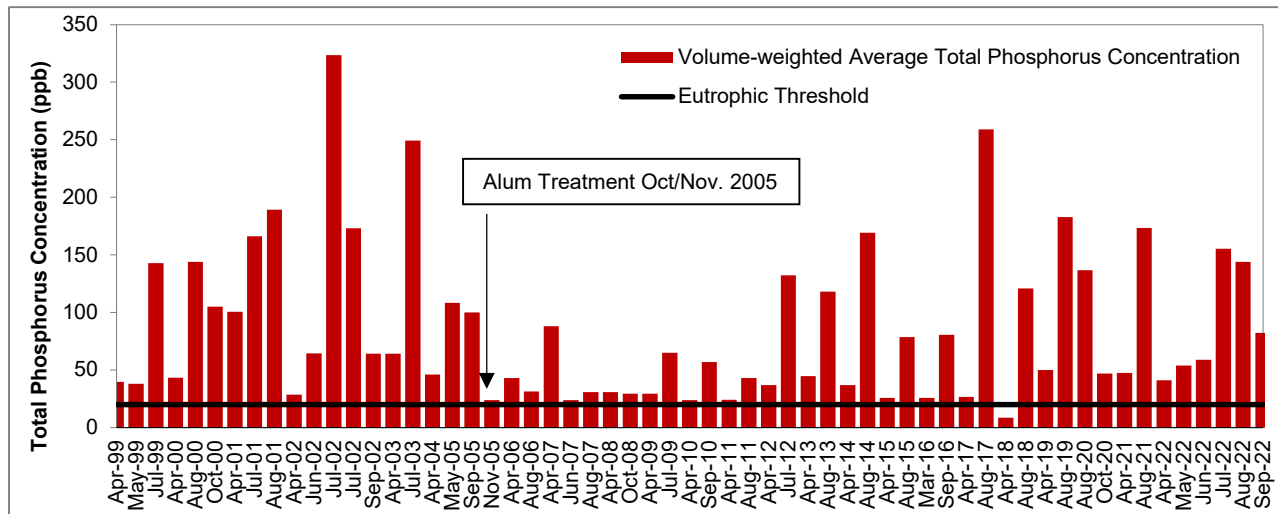
The Spring Lake – Lake Board was established in 1997 in accordance with Michigan’s Natural Resources and Environmental Protection Act (PA 451 of 1994). By statute, the Lake Board includes a lakefront property owner, representatives from each of the municipalities bordering Spring Lake, and representatives from both Ottawa and Muskegon Counties. Several board members are lake residents. Since its establishment, the Lake Board has implemented several programs to improve conditions in Spring Lake. Funding for the projects has been derived through special assessment of benefitting properties around the lake.

Program Components

Key components of the program have included water quality monitoring, nuisance aquatic plant control, a lake alum treatment, and information dissemination focused on watershed management.

Water Quality Monitoring

Since 1999, samples have been collected on an annual basis from the surface to bottom at multiple locations in Spring Lake to evaluate baseline water quality conditions. In recent years, water quality has declined. The lake has elevated nutrient levels, poor transparency, and is prone to persistent algae blooms. Of particular concern is the nutrient phosphorus in that it is the nutrient that most often stimulates aquatic plant growth and accelerates the natural lake aging process. Reducing phosphorus levels in Spring Lake is essential to improving water quality.



Total Phosphorus Concentrations in Spring Lake from 1999 to 2022.

Nuisance Aquatic Plant Control

Aquatic plant control work in Spring Lake is coordinated under the direction of the Lake Board's environmental consultant. Each year, GPS-guided surveys of the lake are conducted to identify invasive plant locations. Detailed treatment maps are then prepared and provided to a licensed herbicide applicator. A primary focus of the treatment program is a plant called Eurasian milfoil, a non-native (exotic) plant species that spreads rapidly by fragmentation. While treatments to date have prevented milfoil from gaining dominance throughout the lake, the control of algae growth has been a different matter. In Michigan, aquatic herbicide treatments require a permit from the Michigan Department of Environment, Great Lakes, and Energy (EGLE). The permit lists herbicides approved for use, dose rates, and areas of the lake where treatments are allowed. Of special concern is the use of copper-based products commonly used to control algae. In recent years, EGLE has restricted treatments of algae to avoid the potential for adverse environmental impacts associated with large-scale treatments. The elevated nutrient levels in Spring Lake create conditions ideal for algae growth and the effectiveness of algae treatments is short-lived.

The Lake Alum Treatment

The compound aluminum sulfate (commonly called "alum") is a chemical that has been used successfully to improve conditions in lakes, such as Spring Lake, with high rates of sediment phosphorus release. Once applied, alum binds with phosphorus in the water column and settles to the bottom as a floc. The floc inhibits the release of phosphorus from lake sediments. Alum is commonly used to treat wastewater and drinking water. Over the last half-century, there have been hundreds of lake alum treatments. An alum treatment of Spring Lake conducted in 2005 improved water quality for many years. However, recent sampling of the lake and its deep-water sediments indicates that the effectiveness of the treatment is beginning to wane. Currently, it appears that about half of the phosphorus entering Spring Lake comes from the watershed (external loading) while the remainder is coming from the deep-water lake sediments (internal loading).

Information Dissemination/Watershed Management

Most of the Lake Board's watershed focus to date has been on the developed shoreland areas around Spring Lake. The Lake Board has conducted several mailings and provided guidance on lakeside landscaping practices, lake-safe fertilizers, and the importance of preserving natural shoreline areas.

Information regarding the Spring Lake Improvement Project is posted on the Spring Lake – Lake Board website (<https://www.springlakeboard.org/>). The website has information about the physical characteristics of Spring Lake and its watershed, ongoing project activities, lake water quality, historical studies and reports, watershed management, and useful links.

What's Next?

The current improvement program for Spring Lake will end in 2023 and, as required by statute, the Lake Board will schedule hearings to receive public comment on the continuation of an improvement program for Spring Lake. All lake residents will receive a written notice of the hearings and information about the proposed scope and cost of the improvements. Moving forward, it will be imperative that both internal and external loading sources to Spring Lake be addressed if conditions in Spring Lake are to be improved over the long term.