

**ASSESSMENT STUDY AND IMPROVEMENT RECOMMENDATIONS FOR WEST LAKE
FOR THE WEST LAKE IMPROVEMENT ASSOCIATION, KALAMAZOO, MICHIGAN**

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Project Costs: **\$8,000**

Project Completion: **1999**

West Lake is a 329 acre lake located in Portage, MI and is part of a chain of lakes system including Austin and Long Lakes. It is also connected to Sugarloaf Lake to the south by a diversion channel called the Sugarloaf Drain. In addition to interactions with the adjoining Austin Lake, inputs to West Lake come from overland flow, atmospheric deposition and storm sewers draining directly into West Lake during wet weather events.

There have been concerns over nuisance algal blooms and excessive aquatic macrophyte growth in West Lake. While the lake can be classified as “mesotrophic” (moderately productive), additional nutrients and other pollutants entering the lake via the storm drains are contributing to the overall pollutant loads. To address these concerns, K&A conducted a study, which began in September 1997, which included the following tasks:

In 1997, the West Lake Improvement Association (WLIA), through the City of Portage, retained KIESER & ASSOCIATES (K&A) to conduct a study of West Lake to assess the following:

- current water quality conditions in the lake
- historical water quality data
- alternatives for potential water quality improvement management strategies for control of aquatic macrophytes and blue-green algae in the lake

The study found that West Lake can be classified as a “mesotrophic” lake based on measured total phosphorus and chlorophyll *a* concentrations. Drains discharging into West Lake include Sugarloaf, Barberry Avenue, John Street, Portage Road ‘North’ and Portage Road ‘South’. Sugarloaf Drain contributes an estimated 88 lbs. of phosphorus to West Lake each year, making this drain the single largest external contributor to the lake. Increased phosphorus loadings from storm drains are suspected to contribute to nuisance blue green algal blooms. An estimated 30-40% phosphorus load reduction could potentially be achieved with the disconnection of the three subdivision stormwater drains currently discharging to Sugarloaf Drain: Oakview, Gingham and South Shore Drives.

The study further finds that fecal coliform bacteria have been observed at elevated levels during storm events in the John Street and Portage Road North Drains. Based on the ratio of fecal coliform to fecal streptococcus bacteria, the source of these bacteria is likely of non-human origin (pet waste, wildlife and waterfowl).

Based on the above findings, K&A recommended the following:

- Reductions in total phosphorus, sediment and bacterial loading could be accomplished through the disconnection of storm drains currently discharging into West Lake. As an alternative to direct storm water runoff to surface waters, leaching basins could be installed at some of these sites to promote infiltration.
- Catch basins and leaching basins currently installed prior to drain outlets should be cleaned and maintained on a schedule that optimizes their pollutant removal capacity.
- Continue the current weed treatment program to control nuisance species of aquatic macrophytes in the lake. While reductions in the phosphorus loading may help control the algal blooms, it is unlikely that these reductions would greatly affect rooted macrophyte growth.