West Lake Management Newsletter

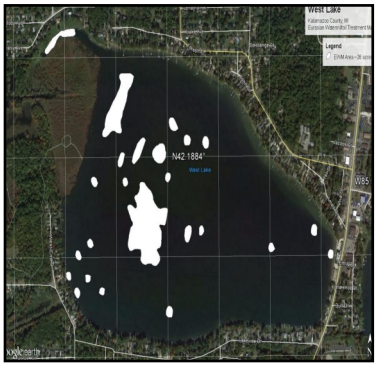
Spring/Summer 2015

2015 Agenda For West Lake

INSIDE THIS ISSUE:

RLS surveyed West Lake in late May and found nearly 26 acres of Milfoil which was spot-treated with systemic herbicide on June 3. An additional 23 acres of nuisance and dense native pondweed was also recommended for treatment BUT the MDEQ is making it very difficult this year to treat ANY native pondweeds and we are having to apply for yet another special permit. This year, Professional Lake and Land Management will be conducting the lake treatments and we hope to have this additional permit soon. This pondweed treatment has never been an issue in the past when the permit was issued by a different MDEQ reviewer. RLS will be measuring the water quality of the lake and making professional recommendations to the Association Board regarding any improvements. RLS will also be using bottom-scanning technology to map the lake bottom that records the biovolume of aquatic vegetation.

RLS will also be monitoring the water quality of the Sugarloaf Drain and comparing data to baseline data collected last season. This will help lake scientists with further water quality improvement recommendations.



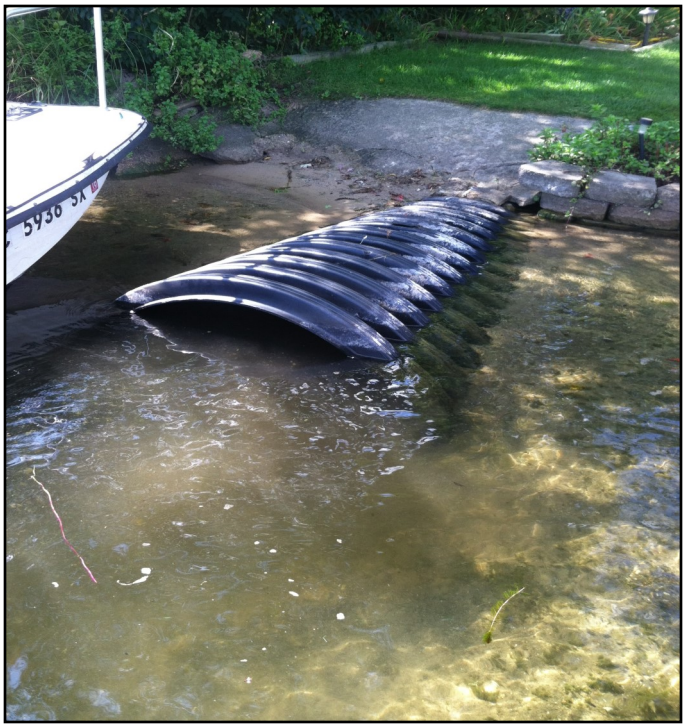
EWM locations in West Lake in 2015

West Lake Improvement Association Board Members:

Doug Brewer, President
Ralph Colwell, Vice President
Mike Marshburn, Treasurer
Mike Granchi, Secretary
Nick O'Brien
Pat Duggan
Gary Heinrich
Larry Lutz
Brad Thompson
Fred Welser
Michael Osgood

Monitoring of the Sugarloaf Drain

The scientists at RLS have been keeping a close eye on the inputs from drains such as the Sugarloaf Drain that may contribute sediment and nutrient loads to the lake during heavy rainfall. In general, the water quality of this water is high in nutrients such as phosphorus and nitrogen and low in dissolved oxygen compared to the lake water. The drain water is also slightly higher in conductivity. Now that baseline data has been collected, we can continue to monitor the drain water quality and make recommendations if further water quality impairments are noted or if the water quality of West Lake declines and is suspected to be from drain inputs.



What really happens when a lake is inundated after snowmelt?

Spring snow melt can drastically affect water levels in a lake. Depending on the proximity of a lake to any roads may also create higher conductivity in lake from salt runoff from those roads. Road salt can impact water quality and thus the species located within the lake. Within road salt, the primary agent used is sodium chloride with other components in salt like ferrocyanide, which is used for anti-caking, and impurities like phosphorus and iron, can represent up to 5 percent of the total weight. These elements can make their way into lakes through the runoff from rain, melting snow and ice, as well as through splash and spray by vehicles and by wind. Chloride is toxic to aquatic life and impacts vegetation and wildlife. There is no natural process by which chlorides are broken down, metabolized, taken up, or removed from the environment. Contamination of sodium in drinking water is a concern for individuals restricted to low-sodium diets due to hypertension. Wildlife is also prone to high sodium levels by ingesting salt or drinking water runoff from snow and ice melt.

Increases in sodium and chloride have been shown to decrease the biodiversity in wetland areas, altering the development of amphibians, decreasing the number and types of fish available, and increasing mortality rates of organisms that rely on an aquatic system. Increases in sodium and chloride have also been shown to increase mobilization of heavy metals in the soil along major highways. In Minnesota, a large study found that the lakes studied in the Minneapolis/St. Paul area showed a marked increase from 1984 to 2005, which if continued would double salinity in these lakes in about 50 years. Compare this with a near zero concentration in the 1950s, when road salt application began. The study also found that 70% of the road salt applied stayed in the local watersheds (University of Minnesota 2009).

Other nutrients from surrounding land-use practices can also wash into lakes from nearby fields, especially agricultural areas. Elevated phosphorus concentration is often the main driver of loss of biodiversity and ecosystem function. Increased nutrient concentrations can also affect water chemistry, allow for increased overall plant growth, and increase chances of potentially harmful algal blooms.

The presence of wetlands attached to a lake can buffer the effect of flooding and lessen it. Runoff can also increase sedimentation in a lake and also add nutrients. These can eventually lead to a lake becoming more nutrient rich and shallow. Wetlands can absorb many harmful nutrients, but can also introduce new organic material through plant matter decomposing each year.

IMPORTANCE OF WATER QUALITY AND IMPACT TO RARE AND ENDANGERED SPECIES

Certain species are affected by lower water quality. Their requirements to survive may include adequate sunlight, space, and nutrients. If any of those requirements is disrupted, that species may decline or even become absent within a lake. One common technique around lakes, especially those with paved roads, is the use of road salt in the winter months. Road salt can impact water quality and thus the species located within the lake. Chloride is toxic to aquatic life and impacts vegetation and wildlife. Other nutrients such as extreme levels of nitrogen and phosphorous may also adversely affect sensitive rare species in a lake. Elevated phosphorus concentration can often be the main cause of loss of biodiversity and ecosystem function, as well as rare and endangered species, but sometimes the effects of phosphorus and nitrogen can cause similar detrimental effects.

Invasive species can also affect rare and endangered species. Approximately 42% of threatened or endangered species are at risk primarily due to invasive species. Invasive species can prey on native rare species, outcompete them for food, cause or carry disease, prevent native species from reproducing or kill their young, change food webs, decrease biodiversity and quality of species, and alter ecosystem conditions. These species can degrade water quality by raising pH, decreasing oxygen and increasing temperature (Lambert and Davy 2010). However, the underlying cause of dense plant growth can be complex. Most often, it is attributed to increased nutrient input from around the lake or in the watershed from sources such as failing septic systems, fertilizer runoff, or agricultural waste. A healthy diversity of native plants, including rare ones, can also help to reduce invasion of other species, such as Eurasian Watermilfoil.

Many species are considered naturally rare and can thus be affected by very small changes in water quality. The presence of rare and endangered species in a lake can indicate a high water quality lake and one that is considered in a mainly natural state.

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Native Aquatic Plant Species Can Still Be Considered Invasive

Native plants are considered beneficial species because they can provide food, habitat, cover, erosion control, recycle nutrients, and resist invasion by non-native species. However, many native plants are considered invasive because they can outcompete other plants for nutrients, light, and space. These invasive plants can either be native or exotic. In fact, many potentially problematic plant species are native species and include lily pads, pondweeds, coontail, naiads, and sometimes even bladderworts. They become a problem when they produce dense mats that interfere with navigation and recreational activities such as boating, swimming, fishing and water-skiing. The dense mats may also impact power generation and irrigation by clogging equipment, create stagnant water providing good breeding ground for mosquitoes, and degrade water quality by raising pH, decreasing oxygen and increasing temperature. In addition, invasive species may prevent other native species from reproducing, can carry diseases, change food web dynamics, decrease biodiversity, and alter environmental variables such as soil chemistry. Many invasive species may not have natural predators to control the species.

In addition to the impact from exotic species such as Eurasian water-milfoil, local economies and can impact lakeside property values (Sakai et al. 2001). Much of our commercial, agricultural, and recreational activities rely on native species ecosystems that are in equilibrium, however, when one species increases beyond that equilibrium then it can become a problem.