



What's Up with the Lake Saving Efforts? - 2015

Comprehensive Efforts Continuing

The effort to restore Maple Lake continues with a variety of efforts. Some of the efforts address long-term benefits, some address intermediate-term benefits, and some are focused on short-term benefits. This booklet will describe all. But first a little background.

Background

Maple Lake was created in 1906/07 when the Paw Paw River was impounded to harness hydro-electric power. Until then, there was only a river running through town. The lake bottom was scooped out and the dam filled the new lake. Maple Island was created by when the lake was scooped out. Our friends, in the Township (Paw Paw Township and Antwerp Township that now enjoy Ackley Lake, also had no lake until the Paw Paw River was impounded and the hydro-electric dam built.

Aside: The power dam at the North end of the Lake still stands. At it are the controls that maintain the level of the lake. The hydro-electric motors could only generate less than one mega watt of electric power. The dam ceased to operate in 1963 when it could not generate enough power to meet the demands of the Village. Today the Village uses more than 48 mega watts of power. The Village purchases electric power wholesale from the Indiana Michigan Power Company and distributes it to its customers. Purchasing wholesale and reselling it means Village electric rates are among the lowest in the State of Michigan.

We know that one things dams do is slow down the water flow. When the water slows down, the sediments (soil, dirt, silt) settles out. The Paw Paw River watershed drains a large area. The south branch (also called the west branch) of the Paw Paw Rivers runs down to and drains lands as far south as Hamilton Township and Decatur. Unfortunately, the soils in much of this watershed are very fine. These fine sediments get into the Paw Paw River in a number of ways; erosion, road run off, development, and old farming practices. These fine, silty sediments flow in the river channel and do not settle out - fall to the bottom - until the speed (velocity) of the water slows way down. Sand particles are heavier and do settle out at weirs and other places along the river. But, the fine, silty, particles don't settle out until the velocity of the river water slows. This happens in the

Village of Paw Paw. They first settle out in what we call Briggs Pond (also called Ismond Pond). This is the pond that is created by the dam off Michigan Avenue - where one can see the two tubes and the walk bridge over. They next settle out in Maple Lake.

Below are a couple of pictures taken when the Maple Lake level was lowered in 2007. They show the collection of sediment over the past 100+ years.



In the picture above on the left, sediment that flows into Maple Lake from the LaCantina Basin is evident. Sediment has filled the south basin so that the average depth is about 6 inches. This photo indicates a great amount of sediment comes in annually. That area was excavated in 1993/1994. It has filled with sediment since.

In the picture above on the right the build up of sediment in Briggs Pond and the LaCantina Basin is evident as you can see the exposed sediment.

More on these two pictures follows:

The LaCantina Basin is what we call the area off Michigan Avenue where the South Branch of the Paw Paw River and the East Branch of the Paw Paw River meet; the confluence of the two branches of the Paw Paw River.

Fortunately the East Branch of the Paw Paw River runs through lands that are not subject to sediment loading. It runs through less developed areas and areas with different soils. The water that comes from the East Branch and on into the LaCantina Basin and Maple Lake is greatly sediment free.

The Troubles with Sediment

Sediment is the number 1 pollutant of waterways and water bodies. Sediment certainly causes problems for us. For example:

Both Briggs Pond and Maple Lake are now shallower. A shallower water body is warmer. Warmer water changes the fishery. Maple Lake was once a cold water fishery. Today it is a warm water fishery. When made, Maple Lake used to have depths greater than 10 feet. Aquatic plants need sunlight to thrive. They cannot grow in deeper water; generally at 10 feet or deeper. Now, as sediment has filled the lake bottom, the average depth is about 6 feet. Now photosynthesis takes place throughout most of the lake. To make

matters worse. The sediment that comes in carries nutrients that aquatic plants need to grow. Now, Maple Lake is great for growing aquatic plants and algae.

The growth of aquatic plants and algae reduce the water quality. As water quality declines, so does the use of the lake. As water quality is harmed, so are the property values around the lake. As property values drop, the tax burden is felt by all properties in Paw Paw.



As water quality declines, so does the economic vitality of the town as many of Paw Paw's businesses & employers are benefited by the lake and all its visitors. More importantly, as water quality declines, there is a negative impact on the social, health, and psyche of the community and its residents. Something must be done. Something is being done. Read on...

It is the Right Things to Do!

It goes without saying, being a good steward of our our natural environment is the right things to do.

So, what are the long-term, intermediate-term, and short-term efforts.

LONG-TERM EFFORTS

Maple Lake Management Plan

The Village developed and adopted a comprehensive Lake Management Plan. We are the only lake in Van Buren County with such a plan. This plan guides us in our efforts to restore Maple Lake's water quality. We engage a professional limnologist (lake scientist) to advise and oversee the implementation of the plan.

319 Grant

The Village, along with our partners, the Southwestern Michigan Commission, VB County Soil Conservation District, Maple Lake Association, Two Rivers Coalition, and the VB County Drain Commissioner, received a grant. The grant's main focus is to reduce the very high volume of sediment & nutrient loading coming into Briggs Pond and transferring into the LaCantina Basin and on into Maple Lake. As we know, the sediment loading comes primarily from lands upstream. In this effort, several properties that contribute significant amounts of run-off were identified. The grant funds the effort to install best management practices that restore wetlands and reducing the sediment loading. The Village provides a cash match for the grant funds received. Our \$60K brings in approximately \$250K for educational and installation of practices.

VB County Drain Assessments

The Van Buren County Drain Commissioner is also helping. The Drain Commissioner reduces the drain assessment on property owners that install cover crops, return farmland to fallow ground, or implements other best management practices which reduce sediment and nutrient loading into the Paw Paw River.

Dredging

The Village of Paw Paw dredged almost 10,000 cubic yards of sediment out of the LaCantina Basin in 2012. The Village also dredged just under 10,000 cubic yards of sediment around Maple Island and the boat launch. This is a very expensive process and cannot be done on a continual basis.

Laminar Flow (Aeration)

The bubblers (diffusers) in the Lake are part of what is called laminar flow or aeration. The diffusers add oxygen to the water so the 'good bugs' can eat the decayed material in the sediment. These 'good bugs' (enzymes) do eat the material but in the process they use up the oxygen in the water and then die off. The aeration, provides them enough oxygen so they don't die off and continue eating. The diffusers are located where the decayed plant material is more than 1/2 of the sediment. Over time, the depth of sediment is reduced. However, in Maple Lake, this is made difficult because new sediment keeps coming in.



SHORT-TERM EFFORTS

Chemical Weed Treatment

The Maple Lake Association has an assessment on properties around the lake that funds their effort to chemically kill aquatic plants in some areas of the lake. This is permitted by the State of Michigan. Regulations restrict areas of the lake where chemicals can be applied.

Aquatic Weed Harvesting - 2 Methods Employed

The Village uses a weed cutter boat to harvest weeds in certain areas of the lake. This cannot be used in all areas of the lake because some aquatic weeds, Eurasian Milfoil for example, cannot be cut because the fragments will grow anew and the problem is increased.

The second harvesting method is by suction. The Village has a suction harvester that is used in shallower areas where workers can suck aquatic plants out by their roots.

Neither method is successful at removing algae as the algae slips through containment.

Winter Drawdown

An effective method at controlling aquatic weeds is to expose their roots to freezing temperatures. The Village obtained a State permit to lower the lake level four feet. This exposes the lake bottom around the shoreline. Once exposed, the freezing winter temperatures kills many aquatic plant roots and seeds.

Another booklet tells how you can help restore Maple Lake.