

Forestville Millpond Management Options

– Updated December 2018

In the fall of 2018 the Door County Soil and Water Conservation Department (SWCD) assembled a Stakeholders group to further vet some of the management options that are preferred, feasible, effective, and achievable to improve the water quality in the Millpond and the Ahnapee River. The goal was to narrow the list of options and then prioritize the remaining options for future decision making by the Land Conservation and Facilities and Parks Committees.

This document contains the original text of the June 2018 Final Report for the Comprehensive Lake Management Planning Grant for the Forestville Millpond in black font. A summary of the Stakeholders group discussion is listed in red font after each management option.

The following list of options represents potential management options to address the identified issues in the Forestville Millpond. This list of options was developed in the 1996 study and once again brought forward for discussion at the meeting held in 2016. A selection of a management option, or a combination of options, should be based on a clear set of goals that represent the resource needs and the desired uses of the waterbody. Each of these options will require input from a variety of sources including local and state agencies, resource professionals, political figures and the general public.

1. Do Nothing

This option will not require any further spending or action. It is highly likely that water chemistry and clarity will continue to decline. Existing carp populations would stabilize at a sustainable level with occasional winter kills. Sport fish would suffer frequent winter kills and, unless restocked, could vanish completely. Aquatic vegetation might eventually be controlled by the carp. Enhanced turbidity would likely result from the rooting activity of the carp. The pond would remain habitat for amphibians and waterfowl while being utilized for recreational activities such as hunting, canoeing and limited sport fishing for the short term. The limited impact of human activity encourages wildlife to utilize the Millpond for habitat. The Millpond currently functions as a sediment basin; the pooling of the Ahnapee River behind the dam allows sediments to settle out. This is a function which may somewhat improve water quality downstream and reduce the volume of sediment delivered to Lake Michigan.

Pros	Cons
Least Cost Management Alternative	Does Not Address Current Loading
Maintains Status Quo	Does Not Address Current Nutrient Levels
Maintain Current Level of Wildlife Benefits	Less Acceptable to Public
Next Steps	
This Option Requires No Further Action	

2018 Stakeholder Discussions:

Not considered as to be a management option because no improvement would be realized and conditions in the Millpond would likely continue to deteriorate.

2. Dredge

Addresses sediment removal, excavation for beach preparation or fisheries improvement. Dredging would be a high cost, high impact alternative. An important consideration in this option is the extent of which dredging would be utilized. On a large scale, dredging could be used to reduce aquatic vegetation and sediment to increase depth over a large portion of the waterbody. It could be used on a limited scale to address specific uses, such as creation of a suitable swimming beach. Depending on the source of funding or permitting process, dredging could require an environmental analysis or impact statement. A combination of dredging with some type of drawdown could reduce the costs of sediment removal.

Pros	Cons
Temporary Solution to Sediment Accumulation	Potentially High Cost
Temporary Reduction of Aquatic Vegetation	Need for Disposal Site
Increase in Millpond Capacity	Does Not Address Nutrient and Sediment Loading
Next Steps	
Locate and Secure Funding and Professional Services	
Locate Suitable Disposal Site	
Acquire Permits	

2018 Stakeholder Discussions:

Removed as a management option primarily due to the high cost of large scale dredging, even if completed as part of drawdown of Millpond. This option is of questionable feasibility because of limited options for stockpiling and disposing dredged materials. Similar benefits would be obtained through an extended drawdown at significantly less cost.

3. Harvest Aquatic Vegetation

This option involves mechanical or chemical treatment to reduce or eliminate nuisance water weeds. Harvesting by hand is likely the most feasible method for the Millpond. Water depths are inadequate for most mechanical harvesters and use of herbicides in an aquatic environment, especially one that provides a high quality habitat to waterfowl and amphibians, is undesirable. Removal and disposal of vegetation is required by state statute and would be necessary regardless of the method used to kill the vegetation to prevent decaying plant material from leading to a future fish kill. Hand harvesting would likely be best conducted in conjunction with some form of drawdown. Some vegetation is necessary to provide cover in support of a sport fishery; therefore, total elimination of aquatic plants would be undesirable. The excess of vegetation contributes to oxygen deficits in the winter months encouraging conditions which foster winter fish kills. In order to sustain some form of sport fishery, the population of Eurasian water milfoil must be greatly reduced and controlled.

Pros	Cons
Temporary Reduction of Aquatic Plants	Limited to Accessible Plant Populations
Reduced Risk of Low Dissolved Oxygen and Winter Kills	Does Not Address Nutrient and Sediment Loading
	Potential High Cost
	Introduction of Chemicals Could Have Negative Impact
Next Steps	
Locate and Secure Funding and Professional Services	

Locate Suitable Disposal Site
Acquire Permits

2018 Stakeholder Discussions:

Not considered as a management option because of limited feasibility of hand removing on a 94 acre impoundment. An extended drawdown would control nuisance aquatic vegetation more effectively and efficiently than this option.

4. Reduce Agricultural Runoff

This option would be used to enhance water quality over a long period of time by installing agricultural best management practices at livestock facilities and on cropland in the watershed. It is necessary to reduce nutrients entering the Millpond in order to slow down the eutrophication process. Agricultural activity is the primary source of human enhanced nutrient and sediment enrichment. Installing best management practices can reduce nonpoint sources of pollution which in turn will add longevity to the implementation of a management plan. Regardless of the objectives for long-term use of the Forestville Millpond, the Door County SWCD is committed to implementing this management option in the Millpond Watershed, and all watersheds throughout Door County. The advantage of implementing agricultural best management practices is that they improve the land’s productivity while protecting ground and surface water resources. Continued implementation of these measures will contribute to improved water quality in the Millpond, the Ahnapee River and Lake Michigan.

Pros	Cons
Long-Term Reduction of Nutrient and Sediment Loading	Long-Term Benefits Not Immediately Perceived
Will Also Benefit Lower Ahnapee River and Lake Michigan	Potentially Low Participation
Potential Grant Funding to Assist Landowners	Potentially Costly
Will Also Benefit Groundwater Quality	
Next Steps	
Continue Development of 9-Key Element Plan and Support Steps for Future Designations of the Ahnapee River	
Locate and Secure Funding	
Outreach to Landowners to Encourage Reduction of Soil Erosion and Protection of Water Resources	

2018 Stakeholder Discussions:

Not considered as a discrete management option to be completed instead of the others, but a necessary component of each of the other preferred management options. Efforts to reduce agricultural runoff will continue through existing programs and initiatives. SWCD completed a preliminary draft of a 9-Key Element Plan for the Door County portion of the Ahnapee Watershed and expects to finalize and obtain EPA approval of the plan in 2019. The Wisconsin Department of Natural Resources is conducting water quality monitoring in preparation for development of a Total Maximum Daily Load (TMDL) for the Ahanpee as part of the Lakeshore TMDLs. Once complete, this analysis will identify necessary reductions in loading to reach water quality standards.

5. Develop a Lake Management District or Voluntary Lake Association

This option provides local residents with greater decision making influence. It also provides the Millpond with another potential source of revenue to fund the implementation management options. This option could provide a consistent source of revenue for management of the Millpond. Public lake management organizations include special districts, like public inland districts, town sanitary districts, and commissions formed by local governments. Voluntary lake management organizations include unincorporated associations and nonprofit corporations. A lake management association or a local civic organization (such as a sports club or a “Friends of the Forestville Millpond” could take a lead role in order to make the implementation of future management options successful. Technical support could be provided by the Wisconsin DNR, Door County SWCD, the Fish and Wildlife Service, and nearby universities. Decisions made at the local level are more likely to be acted on. Outreach and education provided by those who live in the community tends to be more effective than from a governmental body. This option invests the local community in the outcome of future management.

Pros	Cons
Increased Local Influence on Lake Management Issues	Potentially Low Participation
Organized Structure for Future Management Planning	Revenue for Administration Could Increase Taxes
Opportunity to Generate Revenue	
Members Have a Vested Interest and Share Costs	
Next Steps	
Determine Structure of Organization	
Develop Public Support	
Delineate Boundaries Articles of Incorporation and/or Bylaws	

2018 Stakeholder Discussions:

Not considered as a management option because of the time frame to organize and unknown roles for immediate benefits to improve water quality. This would be a more realistic option for a fully developed waterbody with hundreds of potential members. The existing “Friends of Door County Parks” group may be an option to serve in this role in relation to the Forestville County Park.

6. Conduct Intensive Education Effort

This option would incorporate activities such as development of a newsletter, continuation of monitoring efforts, developing an informational bulletin board at the county park, community picnics and sponsoring watershed/shoreline trash clean-up day. This would be executed largely in conjunction with option 4 and/or 5. This option would likely be implemented by a local civic organization or a lake management association with technical support from the Door County SWCD, Wisconsin DNR, and the Fish and Wildlife Service. This is an indirect approach relying on the efforts of the community to make it effective.

Pros	Cons
Opportunity to Keep Landowners Informed of Issues	Indirect Approach – Might Not Be Effective
Provide Education to Those with Greatest Impact for Resource Management	
Promotes Local Ownership	
Next Steps	

Identification of a Lead to Carry Out Information and Education Activities
Identification of a Funding Source to Carry Out Information and Education Activities

2018 Stakeholder Discussions:

Not considered as a management option because education has been, and will continue to be, a component of SWCD watershed efforts. This option is not an immediate solution for the current water quality conditions in the Millpond

7. Remove the Dam, Eliminate the Millpond and Return the Ahnapee River to an Uninterrupted Stream

This alternative could include the removal of the entire dam structure or just a small portion to allow the stream to return to its natural course and conditions. This may be the least cost management option for greatest impact. Many communities have used this alternative to return their streams to a natural state. This action would eliminate the pond completely and eliminate future management expenses. The Millpond’s ability to trap sediment would also be lost, as well as the capacity to support certain aquatic habitats. Removal of the dam would also remove a barricade to invasive species reaching the watersheds of the Upper Ahnapee River. This option would create a dramatic change to the landscape as much of the aquatic habitat would transition to terrestrial or riparian areas. The initial cost of eliminating the dam could be high but removal of a section of the dam would be less costly.

Pros	Cons
Recreates the Ahnapee River’s Natural Conditions	Less Acceptable to Public
No Further Maintenance Cost for Dam	Higher Technical Degree of Planning and Permitting
Easier to Manage the County Park	Increased Downstream Sedimentation as Part of Removal Process
Greatly Reduces Human Impacts on the System	Does Not Address Nutrient and Sediment Loading
Return the Ability of Fish to Reach the Upper Ahnapee Watersheds	Disruption of Current Wildlife Habitats
	Disposal of Excavated Dam Materials
	Removal of Barrier to Invasive Species Reaching the Upper Ahnapee River Watersheds
Next Steps	
Detailed feasibility study, planning and design	
Identify location disposal of removed materials	
Permitting process with Wisconsin DNR and Army Corps of Engineers	
Locate and Secure Funding	

2018 Stakeholder Discussions:

This was one of the top two options identified by stakeholders. Expected benefits of a free-flowing river system would be improved water quality in the former Millpond location through reduction in summer water temperature and reduction of accumulation of low oxygen water. Fish species such as suckers, salmon, trout, walleye, and northern pike would benefit from free migration. A barrier would be required to limit invasive fish species migration. These environmental benefits would be sustained over time.

A permit, fee, and public hearing to amend and adopt new Flood Plain maps would be required. Costs are unknown, but other similar removals ranged from \$425,000 to \$560,000. DNR competitive grant funding may be available every other year for 100% of removal costs up to \$400,000 (first application opportunity in 2020).

8. Full-Year Drawdown of The Millpond – Extended Drawdown

This action would allow bottom sediments (not in the stream channel) to encrust and compact and would be based on a predetermined schedule. Undesirable aquatic vegetation would be greatly reduced for the short-term and rough fish species may all but die out for the short-term. Weed harvesting and/or dredging activities may be undertaken while the pond is drawn down at a reduced cost. When the pond is refilled, the quality of the water and the available capacity would be improved. Rates of a drawdown would be strictly regulated according to Wisconsin DNR standards. Restocking the Millpond with selected fish species would be a necessary measure after the drawdown if an enhanced sport fishery is a desired objective. Reductions of aquatic vegetation, compaction or removal of bottom sediment and control of the rough fish population would be the greatest benefits of this measure. The elimination or reduction of the carp population resulting from drawdown would improve water clarity.

Pros	Cons
Eradication of Undesirable Fish and Plant Species	Visually Unappealing During Drawdown
Sediments Would Compact and Increase Capacity	Potential Odors as Plant Material Decays
Improvement of Millpond Aesthetics	Disruption/Destruction of Aquatic Habitats
Low Cost Management Option	Potential Downstream Impacts During Drawdown and Refill
Next Steps	
Detailed Planning	
Permitting process with Wisconsin DNR and Army Corps of Engineers	

2018 Stakeholder Discussions:

This was one of the top two options identified by stakeholders, however “Extended Drawdown” more accurately conveys the recommended length to maximize benefits. Drawdown through two summers and two winters is recommended to thoroughly compact sediments and kill undesirable aquatic vegetation (Eurasian Water Milfoil). Undesirable fish (carp) could be removed by netting or rotenone during the drawdown. Benefits to water quality, depth, and improved diversity of desirable aquatic vegetation could be expected to last between 5 and 10 years dependent on the level of compaction and decomposition achieved. Drawdowns would need to be repeated over time to sustain environmental benefits long term.

No permit or fee is required by the state or local agencies. Anticipated costs are loss in revenue from boat launch fees, possible vegetation control before refilling, restocking of desirable fish species once refilled, and staff time to periodically monitor the status of the drawdown. Unknown and unpredictable costs are subsequent repairs to the dam structure either revealed or caused by the drawdown. Safety hazards and odors are possible as sediments dry out, decay and compact until vegetation is established.

9. Winter Season Drawdown of The Millpond

This option would have similar impacts as option 8, with the exception of the compaction of the accumulated sediments. This option may be more acceptable to the local community because the

Millpond will not be drawn down during the summer months; however, a winter-season drawdown would not be as effective as the full-year drawdown.

Pros	Cons
Eradication of Undesirable Fish and Plant Species	Visually Unappealing During Drawdown
Improvement of Millpond Aesthetics	Potential Odors as Plant Material Decays
Low Cost Management Option	Limited Disruption/Destruction of Aquatic Habitats
	Potential Downstream Impacts During Drawdown and Refill
Next Steps	
Detailed Planning	
Permitting process with Wisconsin DNR and Army Corps of Engineers	

2018 Stakeholder Discussions:

Removed as a management option because the water quality benefits will be much less than an extended drawdown.

10. Reconstruct Bottom Gates and Spillway

This option would change the current configuration of the dam to drain through the bottom. Excess sediments would be allowed to flow downstream. Support of this option seeks to more closely replicate the conditions of the original dam structures. Older community members recall the unregulated short-term drawdowns that would occur when community members would remove gate planks which discharged bottom sediments. They urged that this practice was the reason for a better sport fishery than exists today and attributed the perceived decline in the fishery on the existing dam. Observations of the 1984 draw down indicated that flushing of bottom sediments occurred in areas immediately adjacent to the dam and in the stream channel itself; water movement in pooled areas was at too low of a flow rate to re-suspend settled sediments. It is unlikely that reconstructing the dam would better management the sediments.

Pros	Cons
Potential Greater Rate of Water Turnover	Expense of Retrofitting Existing Structure
Some Flushing of Sediment Near Gates	Negative Impacts Downstream from Sedimentation
May Reduce Aquatic Vegetation Near Gates	
Next Steps	
Detailed feasibility study, planning and design	
Permitting process with Wisconsin DNR and Army Corps of Engineers	
Locate and Secure Funding	

2018 Stakeholder Discussions:

Removed as a management option because the dam is currently constructed in a way that could serve this purpose. Little benefit to the millpond would be expected as a result of potentially daily management of the sluice valve.