

Friends of the Lower Wisconsin Riverway (FLOW)



Comments on the Crystal Lake/Fish Lake/ Mud Lake Regulatory Requirements for (Flood Management) Options Under Consideration

October 2019

FLOW Science Committee members attended the October 7th Roxbury Town Hall meeting and appreciate the opportunity for FLOW to comment on flood mitigation options. As you are aware, FLOW is a 501c3 nonprofit conservation organization and has been a long-term Friend's group for both Wisconsin DNR and Lower Wisconsin State Riverway Board. Over the years FLOW has also been very active in providing assistance to flood victims who suffered during the 2008 Lake Delton Dam breach, the 2008 Spring Green terrace aquifer flood, and of course the chronic long-term Fish/Crystal Lake high water level issues. Since the organization's inception, FLOW has been a major partner for protecting and managing the Lower Wisconsin State Riverway.

Background of the FLOW Science Committee

The FLOW Science Committee includes six DNR retirees with over a century worth of collective experience in water resources management. The retirees share significant regulatory, resources management and scientific experience related to the Lower Wisconsin River, Crystal Lake and Fish Lake. In 1990, for instance, a former DNR science professional (and now FLOW Science Committee member) prepared a feasibility study and environmental analysis toward establishing the Fish Lake Watershed Protection and Recreation Area. The goal was to expand public ownership around the lake that was threatened by agricultural runoff pollution. Fish Lake is deep water seepage lake and a very rare type of lake in southern Wisconsin. While this proposal did not advance since the state was in the process of focusing on northern Wisconsin Stewardship acquisitions, other significant Fish Lake management projects did advance and greatly enhanced our understanding of the lake. By the early 1990s, Fish Lake had become the focus of a major joint UW Madison – DNR research project (Integrated Management of Macrophytes and Fish) that was designed to investigate ways of managing Eurasian watermilfoil to improve fish populations. Coinciding with this project, Fish Lake had been selected as a United States Environmental Protection Agency (USEPA) Clean Lakes Phase 1 Diagnostic and Feasibility Study. The study was designed to determine the causes for long term water quality decline and assess options for lake restoration. Partners in the Clean Lakes Project included Dane County, USEPA and DNR. The combined findings from the research and lake management studies resulted in one of the most

comprehensive lake management plans developed in Wisconsin. Since the completion of these studies, Dane County Department of Land and Water Resources has continued to actively manage the lake.

History of Rising Lake Levels, Lake Pumping and Litigation

Before commenting on current proposals for managing lake levels, it is useful reviewing the recent water level management history of Fish Lake (includes "Mud Lake" bay) and Crystal Lake.

Long term records demonstrate that Fish Lake water levels had been steadily increasing for decades. In the early 1980s, Dane County and DNR file records mentioned concerns over seasonal use septic systems that were susceptible to flooding. Fortunately, nearshore bacteria sampling data (sanitary surveys) did not reveal human health threats around the lake. As early as 1981 DNR had also received complaints of seasonally flooded basements in some of the permanent residences. The trend of rising lake levels continued in both Fish Lake and Crystal Lake throughout the 1990s and by then citizens were proposing lake pumping. At public meetings held to address the issues, the common rallying cry was "tell DNR to get their water off our land". By the early 2000s, DNR had funded a Lake Planning Grant to cost share a United States Geological Survey (USGS) hydrological study. Completed in 2002, the study model predicted that pumping water from Fish Lake, at a rate of 500 gallons per minute, could reduce the lake levels in Fish Lake by about one foot. Crystal Lake water levels were predicted to drop about 0.2 ft. The model also predicted a rapid water level rise if pumping stopped. The model predictions were strongly influenced by 1990's climate data. At public informational meetings, DNR and Dane County staff cautioned that model predictions could not be guaranteed given the uncertain future associated with Global Warming (Climate Change).

The Federal Emergency Management Agency (FEMA) and Dane County had offered to buy flood prone properties through the mid-2000s. About half of the property owners who owned houses or cottages along Fish Lake Road, a low-lying area of the lake with hydric soils, accepted buyouts. Among those accepting the buyout was an engineer who was also one of the original advocates for lake pumping. He mentioned his decision to accept a buyout was based on uncertainty whether lake pumping could actually solve the problem. Other property owners were resolute in not accepting buyouts, even after Dane County had suggested potential swapping for properties close to the lake that weren't flood prone.

The Crystal, Fish, Mud Lakes Management District became established in 2003 in an effort to fund a lake pumping program. Initial proposals focused on pumping from Fish Lake until information revealed that gravity inflow from polluted Mud Lake bay would degrade the larger Fish Lake basin. Mud Lake was polluted from decades of manure runoff that had been mostly contained within the bay. The bay was partially severed from the rest of the lake by the construction of Fish Lake Road. As a response to this concern, the proposals then shifted to pumping Mud Lake water with a discharge to the Lower Wisconsin River.

While the main Fish Lake basin would be protected from inflow of polluted water, piping untreated water to the Lower Wisconsin River raised several regulatory issues. Of particular significance, DNR officially designated the Lower Wisconsin River as Exceptional Resources Water (ERW) in 1991 under the

antidegradation clause of the Clean Water Act. The classification analysis was based on work completed by a DNR staff person who is now a member of the FLOW Science Committee. This ERW classification requires that any new discharge to the river must meet background water quality criteria. The degraded water in Mud Lake exceeded and continues to exceed Wisconsin River background pollutant concentrations.

Despite concerns expressed at the time by then current and retired DNR water resources specialists, DNR decided to issue a WPDES permit in 2009 to allow the Mud Lake pumping and discharge to the Lower Wisconsin River. The justification was based on lake pumping goals described as “restoring shoreline buffers to protect lake water quality” and to eliminate a “public health emergency”. FLOW members testified against the permit due to likely Clean Water Act water quality standards and antidegradation violations. FLOW members considered the public health emergency decision to override antidegradation spurious since data was not collected or available to support the justification. FLOW members also provided historic aerial photos that demonstrated that shoreline buffers were rare since cropping and pastures typically followed the changing water levels, remaining close to the lakes. Members also objected to DNR environmental analysis that used the entire assimilative capacity of the river to calculate effluent limits for a discharge that would flow along the east bank.

Following the official public release of the DNR permit issuance, FLOW members submitted verified petitions, objecting to the project based on both Public Trust Doctrine Chapter 30 (water management) concerns and that the discharge would degrade the classified ERW river. The petitioners argued that the proposed structures on the bed of navigable waterways and floodplain would harm the public interest. The arguments were bolstered after the discharge eroded State Riverway property; an issue that violated State Riverway law. The petitioners provided scientific evidence that a freshwater mussel bed, that included numerous Federal and State Threatened species, was destroyed. The untreated discharge also rendered a popular State Riverway beach unusable due to nuisance algae and bacteria growths (photos 1, 2 and 3). Additionally, the petitioners demonstrated that young of year bluegills and water was transferred from a separate unconnected basin (Fish Lake) into the Wisconsin River that constituted an emergency Viral Hemorrhagic Septicemia (VHS) rules violation.

Ultimately, a contested case hearing was avoided and a settlement was reached that required relocating the intake pump from polluted Mud Lake bay into Fish Lake; a necessary step to end the degradation of the Lower Wisconsin River. The settlement also guaranteed no new lake pumping proposals would be pursued, including surface water pumping from Crystal Lake.

Unfortunately, at least from the petitioner’s perspective, the Lake District had violated their agreement and applied for a new permit to pump water from Crystal Lake in 2012. DNR soon issued the Chapter 30 and WPDES permits despite the settlement agreement. Consistent with the Mud Lake pumping situation, DNR based their decision on emergency public health concerns. And similar to Mud Lake, Crystal Lake is very degraded and hypereutrophic. FLOW petitioners objected to both the new discharge and the calculated effluent limits. The latter was significant since DNR again used the full assimilative capacity of the river (~4,000 cubic feet per second - cfs) for an untreated discharge to a slough (“Second

River”) with a lowflow rate less than 10 cfs. The slough was noted for supporting the State Endangered starhead topminnow (*Fundulus dispar*) and other rare fishes that were threatened by the pollution.



Photo 1 – Above: Mud Lake discharge to the Lower Wisconsin River September 2009.



Photo 2 – Below: Downstream of Mud Lake discharge September 2009



Photo 3: Close up of pollution downstream of Mud Lake Discharge.

Recommendations Moving Forward

DNR was mentioned frequently in the history brief above since various program permits were required by law. Any criticism toward DNR permit decisions should be measured given the political pressures that directed the department to facilitate lake pumping proposals. Fortunately, we now benefit from the lessons learned over the past two decades and any new proposals must consider the uncertainties and impending severity of Climate Change.

FLOW proposes that new flood mitigation strategies minimize or eliminate expensive and ineffective pumping. For Fish Lake, perhaps it is time to dust off the 1990 Fish Lake Watershed Protection and Recreation Area proposal. If adopted, additional funding may become available to assist with relocation of chronic flooding victims. This proposal would also be an opportunity to protect a deep-water seepage lake, a very rare resource in southern Wisconsin. Rising and falling seepage lake levels would no longer be an issue without encroaching development. In an effort to protect Fish Lake from polluted water flowing out of Crystal Lake, efforts should be taken to isolate the two seepage lake basins, that could include raising culvert elevations or constructing a separation berm. It is important to note that the

remaining Fish Lake Road homes that were not part of the buyouts have now been vacated due to persistent high water.

Below are suggested additional steps for consideration:

1. Immediate action to protect infrastructure and property and road improvements to allow access for land owners and emergency vehicles.
2. As an intermediate approach, consider property buy outs and develop an updated hydrological model to improve on long term water level projections.
3. Water withdrawals from Crystal Lake to the Wisconsin River must respect the ERW status and meet background water quality. This could be accomplished by constructing a well buffered drainage swale with treatment cells. Alternatively, a gravity piping system could also be used to avoid polluted runoff from entering a given swale drainage system, but treatment cells are still recommended. Hybrid systems could be considered as well.
4. The previously proposed Fish Lake Watershed Protection and Recreation Area Project could be considered here as a way to protect and restore water quality in a lake that has shifted from mesotrophic to eutrophic (more degraded) status due to runoff pollution. Active management could focus on reducing common carp numbers that increased within the polluted Mud Lake bay. Phosphorus inactivation using Aluminum sulfate could be assessed to reduce algal blooms in both Mud Lake bay and the Fish Lake hypolimnion.

LAKE PUMPING SETTLEMENT REACHED; LOWER WISCONSIN RIVER PROTECTED

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SPRING GREEN -- After several years of intensive negotiations and impending contested case hearings, a settlement has been reached between the state Department of Natural Resources, a lake district and Friends of the Lower Wisconsin Riverway (FLOW) to continue pumping water from seepage lakes in northwest Dane County.

The Fish Crystal Mud Lake Rehabilitation District has been pumping lake water into the Lower Wisconsin River in an effort to reduce high water levels.

FLOW has a long record of assisting flood victims, but members had objected to pumping polluted water from Mud Lake to the Wisconsin River. In 2009, FLOW environmental scientists documented substantial impacts to the river, including severe erosion of Lower Wisconsin State Riverway property, destruction of a native mussel bed that contained rare and endangered species, water quality degradation and nuisance growths of algae that rendered a popular beach unusable.

"FLOW members never objected to Lake District efforts geared toward reducing water levels, but we have been concerned about the degradation of the Lower Wisconsin River that is so important to our state", said FLOW Chair Timm Zumm.

"In fact, FLOW had been recognized for their efforts with assisting flood victims throughout southwest Wisconsin, including victims of the 2008 flood", noted Zumm.

Lead attorney Betsy Lawton, of Midwest Environmental Advocates (MEA), Madison, the law firm that represented FLOW members in the settlement said, "this (settlement) is a win-win scenario since the Lake District can continue their pumping project but in a manner that protects the valuable ecological and recreational resources of Lower Wisconsin State Riverway."

The settlement includes moving the water intake from polluted Mud Lake to much cleaner Fish Lake. The Lake District agreed not to pump from Crystal Lake, which has pollution levels similar to Mud Lake. As an alternative, the Lake District plans to install a high capacity well and pump clean groundwater instead.

Since the seepage lakes levels are primarily affected by rising groundwater levels, pumping from a well should achieve the same result without threatening the unique resources of the Lower Wisconsin State Riverway, according to Zumm.

"While uncertainty exists over the effectiveness of lake pumping as a method for reducing seepage lake levels, our main focus has been to protect the Lower Wisconsin River. With this new settlement, the Lake District can continue pumping without frequent shut-offs due to permit violations and degradation to the river", said Zumm.

"As this long chapter closes, I appreciate the collective efforts of the DNR and Lake District to help us reach the settlement and avoid costly hearings. I especially appreciate MEA for their diligent counsel and appreciate the FLOW members who participated in this process," he added.