

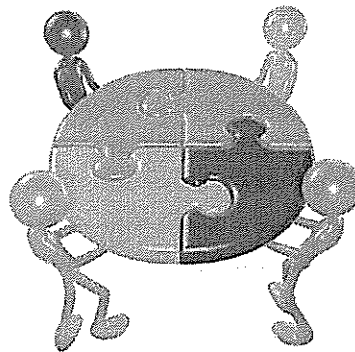
Welcome

Public Meeting #2

July 18th, 2010

11:00 – 1:00

*Progress is
made when
we find
common
ground and
move
forward
together.*



The following List of Questions were raised at the May 13, 2010 public meeting at Fort Atkinson High School. This document attempts to answer those questions. Please note the questions are in no particular order and some similar questions were combined to minimize redundancy.

Water Level & Flood Control Questions

- 1. How do we improve water level management throughout the seasons?** Currently, water levels on the lake are controlled both by the dam operation, which is mandated by the operating order, as well as flow in the Rock River, which is outside the District's control. If better water level control is desired the dam could be reconstructed to provide more gated capacity and allow the lake levels to be managed more closely to the operating order.
- 2. Does the increased sediment loads in the river and lake increase flooding?** No. The section of the Rock River that comprises the Lake is large enough that even during large floods with heavy sediment loads, there is no difference in the flood level than if the lake was a few feet deeper (i.e. no sediment has filled in the lake).
- 3. What does the increased sediment in the lake have to do with water level control?** It is likely that if the lake was not impounded at all, more sediment would tend to move through the system. Since the basic purpose of the dam is to impound water, there is little that could be done with water levels to alter patterns or rates of sediment trapping, migration, re-suspension or transport within and through the lake.
- 4. Why is there a water level fluctuation during the summer?** The Indianford Dam has limited "regulatable" capacity compared to the flow in the Rock River. For example, when the flow in the Rock River goes up, once the slide gates and wicket gates are fully open, the only way to add more capacity is for the water to build up behind the dam (and hence in the lake) to push more water through. On the flip side, when flow in the Rock River is low during a drought, once all the gates are closed, water will continue to pour over the concrete spillway and slowly draw the lake down until the flow starts to increase again (as in after rain events).
- 5. The marshes are freezing to the bottom affecting turtles and other amphibians can we change this with water level control?** Timing of water level manipulation during the fall and winter are the factors that affect the amphibians and reptiles (herps) in and around the lake. Stability is generally the key for hibernaculum success. The water levels need to reach their winter level before freezing so the herps can find their respective hibernation habitat. Those types of issues are already addressed in the existing water level order.
- 6. If the lake were deeper would more sediment be carried down the river?** No, in fact the opposite would likely occur because the effect of wind and waves would be reduced with a deeper lake.
- 7. What control does Indianford Dam provide during flooding? Can you explain?** One of the ways to visually evaluate the effect that a dam has on water levels and flooding is to look at the water level upstream and downstream of the dam and see what the difference is. The larger the difference, the larger the effect of the dam likely is. During 2008, the dam was completely underwater with little difference upstream and downstream of the dam. Therefore, the effect of the dam during flood conditions such as what occurred in 2008 is negligible.

8. **Tributaries to the Rock River through Lake Koshkonong get backed up can we do anything for that?** Yes. Tributaries do back up to some extent during periods of high water in Lake Koshkonong. To reduce this the dam could be reconstructed to provide more gated capacity and better water level control. During times of very high water, like 2008, the dam becomes submerged which means that the channel downstream of the dam is controlling water levels instead of the dam.
9. **What can we do about flood control?** Without implementing large and widespread practices throughout the Rock River watershed (which are lands outside the District's control), there is little that can be done about flood control at Lake Koshkonong or Indianford Dam.
10. **Will introducing 1 foot flash-boards on Indian Ford dam help during low water?** Although flashboards could increase water levels, the operation and maintenance for flashboards on a spillway as large as Indianford Dam is not feasible in terms of financial or human resources.

Dredging Questions

11. **I have 20 feet of mud in front of my house before I reach the lake. Can this be removed?**

Removing this material would be subject to DNR and Corps of Engineers approval. One of the goals of this comprehensive project is to identify these areas for possible dredging. One of the key questions that needs to be answered is understanding how long it would take for the mud to fill back in.

 - a. **Can we add fill to that mud or excavate it?** Anyone can apply for a department permit to dredge. The decision is based on whether the proposal is expected to cause direct or cumulative harm to public interests such as fish and wildlife habitat, water quality, recreation, etc. Adding fill to the mud would need to be evaluated carefully as part of a larger shoreline restoration project. It depends on where the property is, how much fill and whether the design, maintenance and monitoring resources exist to ensure an outcome that would benefit public interests rather than detract.
12. **Can some dredged material be used to fill low residential areas around the lake?** It depends on the site. The material cannot be placed in any wetlands or any other waterways and would also need to be in compliance with applicable county zoning standards.
13. **Would it help to dredge in front of our homes and the further out build a wall that stopped the wave action?** Dredging and wall creation would likely help in the short term. However, because we cannot significantly reduce the source of sediment coming into the Lake (Rock River) and it is not practical or feasible to completely isolate areas in front of homes from the rest of the lake, by reducing the wave action, areas behind the wall would tend to fill in with sediment faster than if the wave action were present to resuspend and move soft sediment from the shoreline. This option can be evaluated, however, there are significant logistical issues to take into consideration. Are we privatizing part of the lake? How big would this wall need to be? How much would it cost in comparison to other options being considered?
14. **How much dredging will be needed to be done forever to keep any improvement from going back to what it is now?** As with any project, any proposed dredging project would have a lifespan. One of the difficulties with dredging a water body such as Lake Koshkonong is that the sediment source (Rock River watershed) is largely outside the District's control. Further, because Lake Koshkonong is so large, wind-driven waves can easily transport sediment that has settled out in one part of the lake

to another part (such as an area that has been dredged). One example of this is that the Department attempted dredging at Dallman's Landing and Town of Sumner Boat launch in 1991. Those areas were silted back in the very next year. DNR attempted another dredge of those areas but was unsuccessful because the material was very flocculent and light it couldn't be removed manually. The poor results create another argument for small scale experimental projects (to attempt small scale dredges on various portions of the lake to see what stays open)

Island Creation Questions

15. What projects of similar type have been done in other places that can be examined as models?

The Lake Butte des Morts project involving the reestablishment of barrier type islands to protect and restore a shallow marsh community has been deemed successful by many and is similar to the Section 206 projects that were under consideration in the early 2000's. The dredging at Lake Sinnissippi may be of value for evaluation and costing.

16. If dredging is done, how long before the islands drift back into the lake? If islands were constructed and not armored, over time they would likely be eroded by floods and waves. In order for the islands to be a long-term fixture on the lake, the shore of the islands would likely have to be armored in some way so as to extend the life of the created islands.

17. Can we create rows of islands to deflect and channel the Rock River through the lake thus moving sediments along? Although this alternative is theoretically possible, this approach would create substantial floodplain impacts upstream and downstream of Lake Koshkonong, as well as likely limit access to the lake from boaters coming up and down the Rock River and vice versa.

18. Wave action encourages particles to become re-suspended, if you can cut down the wave action, will there be more sedimentation? Yes, so understanding the trade-off between reducing waves and increasing sedimentation rates is a critical aspect of evaluating the benefits and impacts of proposed projects.

19. How many Islands will it take to reduce the wave action on the Lake? The issue is not so much how many islands, but rather where should they be placed to provide the biggest benefit for wave reduction.

20. How close do the islands or breakwaters have to be to the shore to reduce wind driven waves? One and half foot waves can be generated within a mile. The wave is measured from the back of the wave, so the front or face can appear 3 feet. Islands or break waters would need to be less than a mile from shore to be an effective.

21. What structure does an Island have to have to provide habitat in the lake? Islands, if constructed properly to allow vegetative growth, can provide relatively safe nesting and loafing habitat for birds and other species. Barrier structures attached to land provide predator traps for birds. With respect to fish, they will be attracted to substrate and structure that is different. For example, if most of the lake bed is silt or sand, placing rock structure could attract various fish species which might modify the location of fishing "hot spots" but wouldn't otherwise change fish numbers or species composition in the lake.

22. Who owns and is responsible for the islands that are created and can they be sold? Because Koshkonong is a flowage lake, the potential of island ownership would need to be investigated after the details of potential island locations are fleshed out. At that time a chain-of-title would be

completed to verify whether the site is part of the original lake bed and therefore held in trust by the state or whether the location was flowed due to dam construction and is therefore owned by a private entity. Because the concept of filling public waters to create private land has not been supported in Wisconsin case law, these structures will likely have some sort of public access associated with them. In addition, there would need to be an agreement with either the RKLD and/or the riparian landowners to maintain the structures in good condition. How big they are and how far out they are in the lake will help determine who owns them and who's responsible for their long term care.

Shoreline Erosion Questions

23. **Can we establish floating barriers to decrease wave action, similar to natural conditions with aquatic vegetation?** This is probably a feasible alternative on a small scale; however, implementing this on a large enough scale that would reduce wave action for a large section of lake would be less practical. One of the key logistical issues to overcome is ensuring that these floating barriers would remain in place over a wide range of water level, wave action, and ice conditions.
24. **What can we do about the Ice pushing the sand and gravel onto the beach, southwest end of lake near Koshkonong Drive?** Installing breakwaters or armored islands has the potential to reduce the ice shove.
25. **How can we control lake shore erosion?** There are two fundamental approaches to reducing shoreline erosion. 1) Reduce the energy that is causing the erosion (waves, ice, etc.) by creating breakwaters or islands and/or 2) armor the shore to resist the energy and forces that are causing the erosion. Depending on the type of shoreline, lake use in the vicinity of the shoreline, one of these methods (or a combination of the two) may be the most appropriate. Identifying these areas that are being eroded and developing approaches to reduce that erosion is one of the goals of this project.
26. **What percentage of the lake shore is rip-rapped?** A substantial fraction of the shoreline with residential properties is rip-rapped. In addition, there are several small breakwaters near the shore in front of several of the wetland areas.
27. **Can the DNR rip rap its property?** This has been investigated previously and Department engineers assigned to the task were not confident that riprap would be effective considering the significant impact ice has on the shoreline.
28. **Over 30 years we have lost at least 20 feet of shore can you predict how much more we will lose?** If nothing has been added to the shoreline, it is likely that erosion will continue; however, the rate and the extent to which it will stop eroding is dependent on many site specific factors. See also the shoreline restoration question #33

Water Quality Questions (Phosphorus, Algae, Aquatic Plants, Carp)

29. **How do we improve water quality?** Improving water quality on the lake is one of the primary objectives of this project. Water quality in the lake is a very interrelated issue, and improving water quality will likely require improvements throughout the entire Rock River watershed as well as in-lake improvements.

30. **How do we remove the great algae blooms?** Remove the carp, Reduce the amount of nutrients being suspended by the carp as well as being transported to the lake from upstream sediment sources
31. **How does the phosphorous affect the vegetation?** Phosphorus comes from upstream sources of surface water runoff and accelerates algal and plant growth. The growth of plants, algae and the decomposition of dead plants and animals all require oxygen to the extent that it starts to deplete oxygen in the water. As a result, living things start to die off because there's no longer enough oxygen in the water. That said, despite the fact phosphorus is present and accelerates plant growth, the presence of carp undermines the success of plant growth because the carp root around in the lake bed churning up the sediments and uprooting plants. In addition there's a significant amount of sediment being deposited in the lake from upstream which also helps undermine plant growth. If the plants can't grow, the phosphorus will be used by the algae and accelerate its growth.
32. **How do you control phosphorous in the lake?** Polluted runoff is the single greatest threat to water quality. That means it's necessary to minimize the phosphorus coming into the lake as a result of surface water runoff including manure, ag field runoff, construction site runoff, etc.. It's also necessary to control the turbidity in the lake (carp).
33. **How do you increase vegetation on the shoreline areas?** Increasing vegetation could be accomplished in a number of ways. On a typical millpond, mid-Summer draw downs can encourage near-shore plant growth; however, on Lake Koshkonong, this is not practical given the limited capacity of the dam relative to the flow in the Rock River. Improving water clarity by significantly reducing the Carp population and reducing wave action that can erode the shoreline would also stimulate vegetation growth. Encouraging and implementing near shore aquatic plant restoration and shoreline buffers. Examples of shoreline buffers can be found in "**Lakescaping for Wildlife and Water Quality**" created by MnDNR. There are also agency websites with examples and resources such as:
- <http://dnr.wi.gov/org/water/wm/dsfm/shore/>
<http://www.dnr.state.mn.us/restoreyourshore/index.html>
- Considering what needs to be done versus the hurdles faced (carp, wave action, etc) this appears to be an argument in favor of small scale environmental projects.
34. **How can we get plants to grow on the bottom? What are the limiting factors?** The littoral zone or potential littoral zone of the lake covers the majority if not all of the lake bottom but is limited by the flooding events and water clarity impediments of algae blooms and suspended solids. Aquatic restorations that have been most successful have been ones that started in the near shore areas with some type of protection from wave/wake energy and/or carp exclosures.
35. **Tell us about the Carp factories? Where are they?** Carp factories is a colloquial term used to describe where the carp spawn. Carp spawn pretty much everywhere – the lake, the wetlands, the river, the millponds.
36. **If there were no carp and all the nutrients remained what would the lake look like?** An example is Blue Spring lake prior to treatment was 99% carp and poor water clarity. Once the lake was treated and the carp eliminated, the lake became very clear and aquatic plants grew to a depth of 12 feet. In fact the aquatic plants have been growing so well, one might argue they've become a nuisance.

We believe it's very possible the same could happen on Koshkonong if it were possible to get the carp under control.

Fisheries & Aquatic Life Questions

37. **Can we use the old fish hatchery on the North west end of the lake?** To our knowledge there is no old fish hatchery on the lake. The Bark River Hatchery is upstream of Lake Koshkonong at the confluence of the Bark and Rock Rivers.
38. **Why are the sand flies so prevalent? What is their life cycle? Can we get rid of them?** We assume you mean "lake flies." Unfortunately as long as there is a lake (or river) you will have lake flies. The lake flies are part of an extremely large family of dipterans (flies) known as Chironomidae or "midges." There are over one hundred species of Chironomids in Wisconsin. Many are found in Lake Koshkonong. The larvae of the Chironomids are often red colored. These "red worms" are an important food for all fish species in the lake, especially young fish. When minnows are in short supply, walleyes will readily revert to eating midge larvae to sustain themselves. Carp also thrive on the midge larvae, as do crappies, bluegills and white bass. We have noticed a possible inverse relationship between carp abundance and lake fly abundance. Seeing lots of lake flies may indicate that the carp population is low. A healthy midge population indicates a healthy lake, but the numbers would be reduced if nutrients through the lake were reduced.
- The midge larvae live in the soft mud on the bottom of the lake for one to two years. Many times vast numbers will emerge on the same night. Extremely windy weather will often suppress emergence until a calm night. When the insects emerge, the larvae molts into its "pupal" stage and swims to the surface. Then it pops out of the pupa and flies off to mate. The flying adults do not feed and only live for about a day. They lay their eggs and die.
- The adults are attracted to lights and light colors. Keeping your outdoor lighting to a minimum will help reduce accumulations on your home.
39. **What can we do for mollusks?** This lake isn't suitable for mollusks, although zebra mussels have been confirmed in the Rock River and the Lake.
40. **What kind of shoreline habitat is good for fish?** Shoreline habitat that contains emergent and submergent vegetation is good for many fish species including northern pike, walleye, smallmouth and largemouth bass, muskellunge, perch, bluegill, sunfish, crappie and various minnow species. Riprap armored shorelines can provide limited habitat for minnow species and crustaceans and invertebrates.
41. **How do we improve fishing on the lake?** Manage the lake and river fishery using biomanipulation management methods and maintain or increase removal efforts of common carp.

General Questions

42. **Do we know where the original channel of the Rock River is in the lake?** No. In the original surveys of the lake, the area is shown as a large lake / wetland. Subsequent surveys have not shown a definitive channel either.
43. **Can the lake ever have a long flowing channel?** The original surveys of the Lake Koshkonong area prior to the dam being installed show Koshkonong as a lake and not a river. There would be

astronomical costs and logistics involved in trying to create a long flowing channel where one never existed before.

44. **Can you tell me the whole process as you see it?** This project will evaluate the feasibility, cost, benefits, and impacts of a wide range of projects that would improve Lake Koshkonong as a resource. Once this project is completed, to actually implement specific projects, detailed design and permitting would have to be completed for that specific project. The understanding is that the projects developed as part of this project would be implemented over several years, if not decades.
45. **Is Lake Delavan similar to Lake Koshkonong and can we learn from what they did?** Unfortunately not. Delavan is 3000 acres and 60 feet deep. It has a small watershed of 5-10 square miles whereas Koshkonong is over 10,000 acres, about 7 feet deep and has a watershed of 2600 square miles. The lake characteristics and contributing watershed issues are not very comparable.
46. **Can we ring natural springs that would provide clean cool water for different fish species?** The most prevalent springs are located along the shoreline, most notably near Sunset Tavern. We strongly recommend leaving the springs in a natural state because of the tendency for spring flow to find a new path when "improvements" are attempted.
47. **Are springs in the lake blocked by sediment?** It is highly unlikely that springs in the lake have been blocked by sediment. The Rock River and Lake Koshkonong is a discharge point for regional groundwater flow. Although it is possible that spring flow discharge locations could be altered to a minor extent, large alterations are not likely.
48. **How many old septic systems are around the lake?** At this point, we do not know the exact number of old septic systems around the lake. The county zoning agencies may know.
49. **Can we get a map with all the creek names on them?** Yes. The smaller creeks that drain into the lake may not have official names, so if this would be useful, we would need to talk with the local landowners and see if there are commonly accepted unofficial names.
50. **Are there costs to help with windmills?** Probably, although exploring this option in detail is outside the scope of this plan.
51. **Can the community erect wind power turbines to create an income?** The income generated from wind turbines are typically to pay for the large capital investment on constructing the wind turbines. Therefore, it would be years before a positive return on that investment were realized, and likely delay the implantation of many other projects on Lake Koshkonong.
52. **What effect do wind turbines have on ducks and other bird life?** There is ongoing research on this topic. There are several studies that indicate that there is a detrimental effect.
53. **How do we fund all these activities?** Dredging activities would be based on recreation needs and would not be funded by the Army Corps of Engineers. Ecosystem Restoration Projects could be funded through USACE Section 206 Ecosystem Restoration, that is a 35% partner cost and 65% federal cost.
 - a. **Do we have a budget?** No section 206 funds have been budgeted
 - b. **What are the priorities?** The community will determine the priorities for projects that they fund and also ecosystem projects, cost shared under the section 206 program.

Comprehensive Plan Proposed Project Features

Comprehensive Plan Proposed Project Features were created to address the multiple goals for the improvement of Lake Koshkonong.

Goals:

Increase depth (through dredging) for navigation – recreational boating and access areas.

Reduce shoreline erosion. (Not only to protect and stop the current eroding of wetland areas but also residential areas.

Provide sheltered areas for reestablishment of aquatic vegetation and wetlands.

Reduce carp.

Potential Projects

Dredging

Shoreline Protection Measures (on shore)

Island/Breakwater Creation (off shore)

Carp Control

Best Management Practices (on Lake)

Present and Future Needs: Rock River Watershed Best Management Practices

Note: Please keep in mind that each project will need to be site specific, there is no one project fits all. So projects and their design would be individualized.

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