**Notes from Dam Meeting August 9, 2023**

Attendees: Lisa Frantzis, Dennis and Tammy Fortune, Steve Magoun, Peter and Jinnie Russell, Jim Potter, Pepper Denman

**Objectives of Call**

Provide knowledge transfer from Peter Russell to others on the background and history of the pond, as well as dam operation. Peter Russell was a former President of the TPCA and lived on the pond his entire life. In the 1980’s, he refurbished hydroelectric dams in New England.

**General History**

The dam was built in the 1820s or 30s for mills in Peterborough. There was a system of roughly 7 – 8 dams flowing into West Peterborough. Initially the water was used for mechanical power, but then it was converted to make electricity for their own use. Historically ponds were drawn down in dry weather to provide a steadier stream of water to the mills and each year to create space for Spring run-off. In the 1960s the mill went out of business and the water rights were “purchased” by the Thorndike Pond Association (TPA), now TPCA, formed to own and manage the dam. In 1968 the original timber crib dam was replaced with today’s concrete structure. The crest of the new dam is higher than the old dam so the normal elevation of the pond was raised. The TPCA spent many years debating how best to manage water levels. By the 1980’s a compromise two year-one board/one year- three board rotation was instituted and is still in place. There were, and still are, opposing desires and goals for managing the dam.

**Regulations and Water Level Management**

There was a study done of the hydrology and flow of Thorndike Pond in 2012 (Prior to renovations in 2013), this was input needed for the changes to the dam. TPA received a letter from the state in 2011 saying we were out of compliance and that there was a need for a study to look at 50- and 100-year floods, and requiring the TPA to design for a 50-year flood event. Because there was not much difference in cost/work to modify the dam for a 100-year event, the dam was designed modified to address a 100-year flood event.

*Pepper:* Three things are needed:

1. how to control levels in the lake,
2. how to draw down the levels;
3. how to modulate the outflow for relatively steady levels and protect downstream flooding.

*Peter:* The flow studies that were done do the above. There are three parts to the spillway sections of the dam: basic spillway – water goes out here during normal flows; secondary spillway section (on the right) with a long 2x10 board that is taken out every year for drawdowns; and the stop-log section - one to 3 boards removed during winter months. All the stoplogs can be removed to lower the pond by roughly 8’ in order to inspect or work on the dam.

The wing walls extend out from the spillway on either side of the dam. These wing walls were originally designed to be additional spillway in major storms. The 2013 construction raised the wing walls approximately 18” to hold water back in major events. The dam was not designed to make it easy to take boards in and out on a regular basis.

*Tammy*: Water has come over the spillway and over the walking bridge.

*Peter*: In 2021 though, the flooding was below the 100-year event. 1’ of freeboard was still available on the new wing walls.

*Steve:* The flooding in 2021 was below the design capacity of the dam, but the water was high enough to interfere with the properties on the pond. Attenuating the flow was one of the key roles of the safety board.

*Peter:* The study only looked at the dam, not the impact on property owners. The Army Corp focus was flood control to keep more water in the watershed by holding water back.

*Dennis*: Can we do what we want with the dam? Only make adjustments in Spring and Fall?

*Peter*: Not sure. We have a flexible operating policy with our permit that we have with the state. We should not be chasing or anticipating storm events.

*Lisa*: We could hire someone to assess the potential impact on the properties around the pond, but then we may be required to do things and trigger state action.

*Steve*: Is there a deed for the dam?

*Tammy*: Yes, TPCA owns the dam. If others get involved in any modifications to the dam though the state has to get involved, triggering potentially a lot of work/cost.

*Pepper*: Three boards are ~10” in height. If you make one 6” could that solve the concern of flooding of some of the properties? In other words, this would result in a slightly lower level of the lake through the summer. If we keep the lake three inches lower, is that a viable option? For the majority of the time, it is usually only running over the spillway on the right.

*Peter*: The right spillway is the secondary spillway. The stop-log section is next to the primary spillway. After Columbus Day, TPCA takes the long secondary spillway board out and either one or three of the stop-log boards. The long board is taken out in Fall and put back in Spring. If you do not put the long board in for the summer the pond would be about 12” lower.

*Lisa*: We have three options: 1. Conduct a study to assess the potential impact of flooding on properties around the pond; 2. manage taking out boards more often if there is enough warning of a severe weather event; or 3. leave things as they are.

*Dennis*: Maybe we should try to find out what other ponds are doing.

*Lisa*: Is the board liable for any flooding of people’s property?

*Peter*: We have a dam management plan in place. If we are operating the dam in the manner that the state suggests we are fine.

*Jim*: The weather is too much of an unknown and it is unsafe to remove boards when water levels are high. We should Leave things as they are. There is no silver bullet.

**Conclusion**

The knowledge transfer was successful thanks to Peter, and no decisions were needed to be made. The TPCA should decide if we need a dam sub-committee. We already have a dam lead – Jonathan Birge and Steve is on the dam paperwork as the President. Steve will provide Jonathan a download of our discussion, Lisa will summarize the meeting notes and circulate, and Steve will also provide others with a recording of the meeting.