

Group Rallies to Save West Harbor Pond (Sue Mello, *Boothbay Register*, August 17, 2016)

West Harbor Pond is one of Boothbay Harbor's few freshwater gems. It is a year-round destination for many locals and visitors, who swim, boat, fish, ice skate and cross country ski there. But residents who have been monitoring pond water quality for years say the pond is in trouble.

According to historical records, it was created in the 1880s, when a local ice merchant dammed what was then a tidal river to increase ice production. The ice company installed two siphons (one was later removed) to discharge salt water that seeped through the dam into the newly created pond.

Since salt water is denser than fresh water, sea water sinks to the bottom of West Harbor Pond while the fresh water that flows in from the watershed floats above, creating two distinct layers. The siphon's inlet, located about 22 feet below the pond's surface, sucked water from the bottom briny layer, transported it across the dam and discharged it into the sea at ebb tide. According to local residents, this simple siphon system worked well for about 130 years.

As part of the Maine Volunteer Lake Monitoring Program and with help from the Boothbay Harbor Sewer District, West Harbor Pond Watershed Association (WHPWA) volunteers have been measuring pond water quality on a regular basis. In 2008, the West Harbor Pond siphon pipe failed and according to WHPWA President Gary Arnold, water quality in the pond began to decline. Arnold said water quality monitoring shows that while the surface water remains relatively healthy, the layer of salt water below is devoid of oxygen and high in hydrogen sulfide, making it unsuitable for fish and other aquatic life. Arnold said recent sampling indicates the unhealthy salt layer may be extending upward.

"There is a strong feeling that we have reached the tipping point. Historic records show the density interface (between fresh and salt water layers) was below 24'; now it's 11-12'. The concern is as this layer gets closer to the surface, storms could mix that lower water and pull that stuff to the surface. And it is nasty. Unless the siphon gets fixed, we're going to continue accumulating (sea water)," Arnold said.

Faced with these troubling findings, WHPWA has been trying to find a way to have the siphon repaired. The association has applied for four grants and has reached out to the Maine Department of Transportation (DOT), Department of Environmental Protection (DEP), town government, State Sen. Chris Johnson, and the governor. So far, none of these efforts to get the siphon back in action has worked.

"Nobody disagrees with the water quality issue," Boothbay Harbor Town Manager Tom Woodin said. "We have been one hundred percent behind this but the town of Boothbay Harbor doesn't have jurisdiction on it."

Woodin said prior to the siphon's failure, town public works did maintain the siphon. "We, at times, worked on the valve and we could control water flow. But once the siphon failed, we realized there was nothing we could do to fix it."

Woodin said the town first became aware of the siphon problem when residents complained that the pond's high water level was flooding basements. He said the town worked to find a solution to the problem and eventually entered into a formal agreement with Maine DOT in 2011.

Under the agreement, the DOT removed a portion of the concrete dam at the box culvert/fish passage and replaced it with a wooden gate that the town can remove to release pond water. By removing the wooden gate, the town can keep water levels in West Harbor Pond from becoming "unacceptably high." Although the gate solved the flooding problem, the gate structure and the fishway release water from the surface fresh water layer — unlike the siphon that removed the lower salt layer.

DOT owns the road and causeway but also claims no responsibility for the siphon, and has made it clear that maintaining water quality in West Harbor Pond is not in its jurisdiction. In a response letter to WHPWA board member Margaret Connelly, DOT Region Engineer James Andrews writes, "Though we are sympathetic to your concerns, the Department may not use transportation funds on projects, such as a siphon, that are unrelated to our transportation mission."

Woodin said the town and DOT also concluded, as stated in their agreement, that siphon repair or replacement would be costly and might result in a catastrophic breach in the dam.

Arnold feels concerns of a breach may be overblown and that the existing siphon break is actually destabilizing the dam.

"Prock Marine (who provided an estimate for siphon repair in August 2015) certainly noted the weakening of the dam structure caused by the siphon leaking water down from the broken part of the horizontal pipe. They and Rideout Marine recognized the problem but noted it was easily dealt with by strengthening the dam on the seaward side on both sides of the siphon. Once this area is strengthened to assure a breach can't occur, then the project becomes one of excavating and replacing pipe," Arnold said.

Prock Marine's 2015 estimate proposed replacing the horizontal pipe under the roadway and connecting the new pipe to the vertical siphon pipes on either side of the dam. The preliminary cost estimate ranged from \$55,000 to \$75,000.

DOT Assistant Planning Director Scott Rollins said Tuesday that if the siphon were to be repaired, the DOT would need assurance that the causeway and roadway would not be adversely affected.

"Our concern is that the causeway is a crib work and cobble structure and if there were damage to that structure in a worse-case scenario we would lose the road. If they (WHPWA) move forward, we will want to be sure our asset is protected. We would require engineering plans and probably a bond as insurance against damage," Rollins said. Permits from the Army Corps of Engineers and DEP will probably also be required, he said.

WHPWA members are focusing on two avenues right now, raising awareness about the water quality problem and seeking various avenues of funding for the siphon repair. To keep in

touch with the project, visit the West Harbor Pond [Facebook page](#). Arnold says he is enthusiastic about the large recent boost in the association's membership.

“Now we have 50-plus people to talk about this problem.”

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