



CRYSTAL WHITECAPS

The Newsletter of the Crystal Lake & Watershed Association

Protecting Crystal Lake Now for Generations to Come.

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CRYSTAL LAKE'S UPS AND DOWNS

The Crystal Lake community couldn't help but wonder what was happening last summer as the lake level began falling and kept going lower right through autumn. By late October, the surface was nearly a foot below the court ordered level. Water was so shallow that riparians had difficulty bringing boats to their docks or getting vessels off their lifts.

The underlying cause was a severe drought that gripped all of Northwest Michigan, reducing stream flows into the lake and increasing surface evaporation. In nature's long battle with Crystal Lake's water-control infrastructure, nature was winning.

The lake level is controlled (to the extent possible) by the Crystal Lake Outlet Dam, a steel-and-concrete structure across the Outlet stream near Molineaux Road on the South Shore. A set

of five boards or "stop-logs" in the dam can be raised to let water flow out of the lake, or lowered to block the flow. This dam was built in 1977, replacing a badly deteriorated structure that had been in place since 1911.

Under Michigan law, the Circuit Court can set legal lake water levels. With this new dam in operation, property owners petitioned the Circuit Court to establish legal summer and winter lake levels. After a study and several public hearings, they asked that control of the new dam strive for a difference of six inches between summer and winter levels. The previous practice had been to try to maintain a single level throughout the year, and that had proven to be impossible.

In December of 1980, Judge Charles Wickens signed an order specifying that the boards should be managed to "attempt"

to keep the lake level at 599.75 feet above sea level in winter (November 1 to April 30) and six inches higher – 600.25 feet – in the summer (May 1 to October 31). The tight 6-inch limit sought to minimize both "too-high" and "too-low" issues.

Even the Judge seemed cautious in his expectations, adding to his order "...the Road Commission shall have no obligation to attempt to control the level of the lake other than through changing the elevation of the dam, and shall not be responsible for damages caused to surrounding property owners as a result of carrying out the order of the Court." [The full order can be found on the CLWA website.]

Initially the Benzie County Road Commission managed the dam. In the 1990s, Benzie passed a population threshold requiring election of a Drain Commissioner who then took responsibility.

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Outlet dam 1930s (Benzie Area Historical Society)





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Outlet dam March 2017 (boards raised)



Outlet dam control mechanism

Crystal is a huge, windswept body of water with a very deep center and broad shallow areas around the perimeter. When water is high, storms can cause significant erosion, especially on the North Shore. When it's low, docks may become inaccessible in some shallow segments.

Typically, the boards are raised to let water flow out without restriction from November 1 to April 30. The dam is then closed off beginning May 1, and adjusted through the summer as the water level changes. Rains usually keep the lake at or above the target level in May and June. By mid-July, the level often begins falling naturally, even if the dam is closed off.

This was never totally successful. Over the years, heavy rains or snowmelt sometimes pushed the spring level above the target, while dry summers resulted in low water. In 2009, the autumn level sank to 599.25 – a full 12 inches below the target. Both 2013 and 2014 briefly saw water levels 6-12 inches too high.

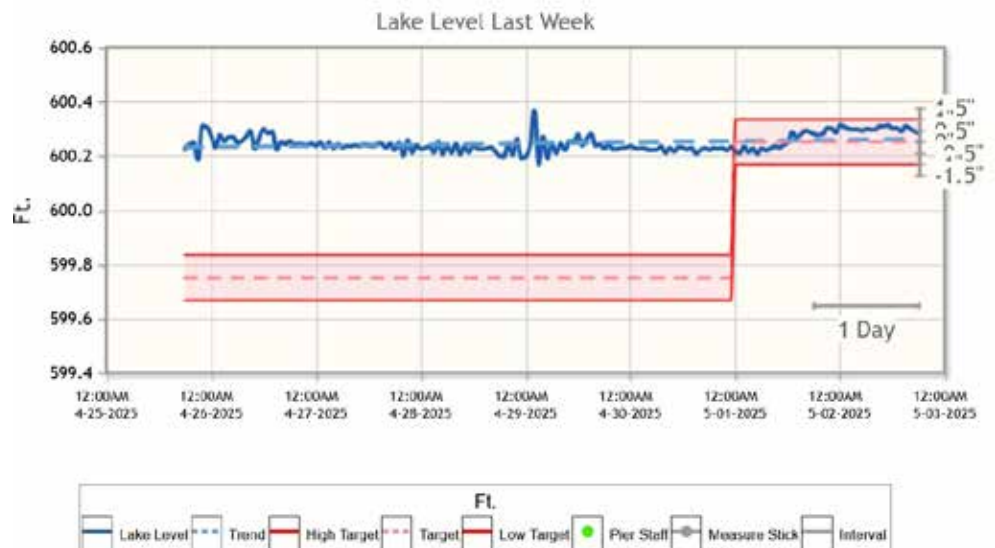
In order to provide better oversight of lake level fluctuation and enable

more timely action to control extreme changes, CLWA installed an automated lake level monitoring station at the Outlet in 2014. (The public can view the real-time readings on the CLWA website: <https://crystallakewatershed.org/lake-level-monitoring/>)

In a typical year, management of the dam helps keep the water at levels that satisfy most lake users. Last year, unfortunately, was not typical. Rain and snowmelt kept the lake above

the prescribed level through June, even with the Outlet flowing freely. On June 27, 2024, the surface elevation was measured at 600.50 feet – three inches above the prescribed level.

And then the rains stopped. All the boards were closed off in July, with the lake an inch above the target. By October, Northwest Michigan was in severe drought conditions. Weeks of sunny weather increased evaporation, and the lake level dropped to 599.34 – 11 inches below the target!





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At nearly 10,000 acres, Crystal is too large to react quickly to changes in the dam, which has a maximum spillway width of 50 feet. Fully open, the dam is believed to reduce the lake level by about an inch a week. Natural conditions such as rainfall, snowmelt and evaporation often have a much larger impact. While those natural forces pose the largest challenges in lake-level management, other factors also have some impact.

The build-up of sandbars above and below the dam may reduce flow through the structure and also limit its effectiveness as a barrier to sea lampreys. In addition, culverts carrying the Outlet below Mollineaux Road and M-115 are undersized and restrict the downstream flow.

The design of the dam – and the area's popularity as a picnic spot – have left it susceptible to vandalism when individuals attempt to pry up the boards to let water through, often so that they or their children can play in the flow. This is dangerous in addition to being illegal, but it has been a long-standing issue.



Outlet dam with low Lake level September 20, 2020

In Michigan qualified engineers must inspect water-control structures every third year. The 2024 inspection confirmed that the Outlet Dam is showing its age, though the main structure remains sound. It will likely need updates or repairs within the next several years. Some of the access and sand-build up issues may be addressed at that time. But Mother Nature will likely remain the one who ultimately controls the water levels of Crystal Lake.

Ed Hoogterp

Ed Hoogterp served as the Benzie County Drain Commissioner from 2016 to 2024

WHAT'S NEXT FOR THE OUTLET?

As mentioned in the preceding article, the Outlet has long been a spot for informal recreation. Never designated as an official “park,” its location adjacent to the Betsie Valley Trail and the Railroad Point Natural Area puts it in the middle of some of Benzie County's prime attractions.

Now after decades of discussion among the Michigan Department of Natural Resources, the Grand Traverse Regional Land Conservancy, the Michigan Department of Environment, Great Lake and Energy, and Benzie County, the area is slated for development as a public ADA-compliant launch site for unmotorized watercraft (especially kayaks).

Funds are in hand and working plans are in development. Construction should start in spring 2026, aiming for completion in late summer 2026. A meeting for public comment on the plans will be scheduled this coming summer. **Watch for further details and plan to express your views!**

The CLWA is committed to the right of public access to Crystal Lake. We intend to work closely with the County planners to insure that the new facility will conform to practices that protect the water quality of

Crystal Lake. Specific concerns include minimization of impervious surfaces, maintenance of vegetative cover, and provisions for craft cleaning to prevent the introduction of aquatic invasive species.



Crystal Lake Outlet Access Site (original concept plan)