

# Watershed Events

## Historic Rainfall in West Bend by Linda Mutschler

The second half of August brought an unusual amount of rain to our mission area, reminiscent of the flood of June 2008, about which CLCF reported in its newsletter (Water Line Vol. 10, No. 2). According to the National Weather Service, rainfall between August 16 and September 5 measured 12.98 inches in West Bend, nearly 40% of the annual total. Due to the unusually high lake levels that resulted, we wanted to explore a number of topics, including:

- A review of recent events
- How water flows from Big Cedar Lake (BCL) to Little Cedar Lake (LCL) and beyond
- A review of Big Cedar and Little Cedar dam history and operation
- Possible next steps to mitigate future high water level issues

### A Review of Recent Events

On Sunday, Aug. 26, there was a downpour in West Bend, bringing the total rainfall to over seven inches in just 10 days. In the week following, it continued to rain.

On Monday morning Aug. 27, because the water was flowing over the LCL dam and had reached or covered the top of piers, the Little Cedar Lake Protection and Rehabilitation District (LCLPRD) imposed a Slow No Wake (SNW) restriction which was posted at the Ackerman's Grove boat launch and was communicated to lake residents via email. In addition, because BCL was five inches above the Ordinary High Water Mark (OHWM) set by the Railroad Commission in 1931 (Order #WP-385-31), Tod Maclay, the BCL Dam Operator, removed five sluice boards from the BCL dam.



*BCL dam with boards removed.*



*Sluice boards*

On Tuesday, Aug. 28, Tod removed the last (of eight) sluice boards from the BCL Dam. On Tuesday evening, the Commissioners of the BCLPRD met to discuss SNW on BCL.

On Wednesday morning, Aug. 29, the BCLPRD implemented a SNW restriction on BCL. Also on Wednesday, as a result of unsafe launch and navigation conditions, the Washington County Planning and Parks Department temporarily closed the boat launch at Ackerman's Grove County Park.

On Saturday, Aug. 30, the BCLPRD lifted the SNW restriction because the lake level had decreased to two inches over the OHWM. Meanwhile, the water level on LCL remained 19 inches above its dam boards. Removal of the LCL dam boards was not attempted, as it was felt to be too dangerous, given the force and magnitude of the water flowing over the dam.

On the morning of Tuesday, Sept. 4, BCL's water level was approximately 1.5 inches above the OHWM, and three boards were replaced in the dam. However, after receiving another 1.5 inches of (cont'd. on page 2)

## Historic Rainfall in West Bend, continued



Map 1

rain the following day, the level increased to two inches above the OHWM, and the three boards were removed so that all boards were again out of the BCL dam.

Late afternoon on Thursday, Sept. 6, a very determined group of volunteers removed all three sections of boards at the LCL dam. At that point, the water level was approximately 17 inches above the boards, and there had been no precipitation for over 24 hours. By Friday, Sept. 7, given clear skies and the removed boards, the water level in LCL was receding.

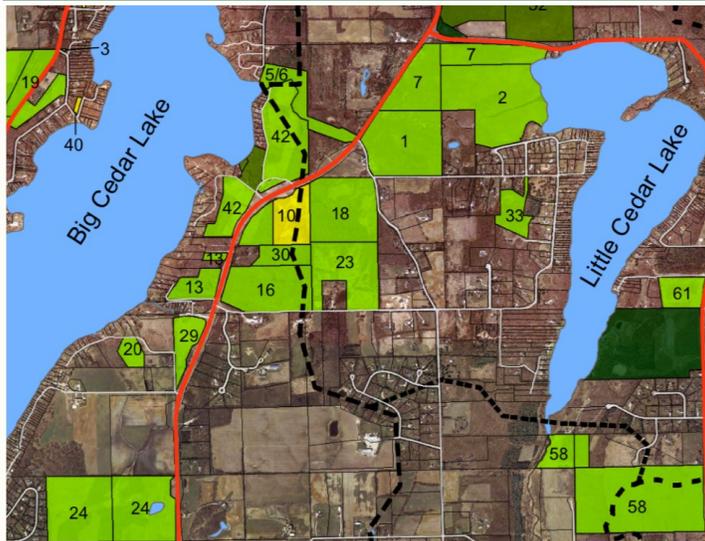
By that evening, BCL was nearly at its OHWM, and five boards were replaced. The remaining boards were replaced the afternoon of Sept. 12. Likewise, the lateral sides of the LCL dam boards were replaced on Sept. 12. The middle third was replaced the following day. By the time of this writing, both BCL and LCL had returned to their pre-downpour levels.

**How Water Flows Between Big and Little Cedar Lake:** Map 1 shows the location of the dams at the two lakes. As you can see, water flows from BCL to Cedar Creek, east to Hwy NN, then under the highway and into the LCL kettle. From there, the water flows through LCL to its dam at the south end, where it empties into Cedar Creek, which ultimately flows into the Milwaukee River in Grafton. Causes of elevated water levels for both BCL and LCL are multi-factorial and include precipitation, runoff, and the rate and volume of outflow. There is an additional factor influencing water levels on LCL: the rate and volume of inflow from BCL. Big Cedar is a 932-acre lake, and the outflow rate, according to the Wisconsin Department of Natural Resources (WDNR), is 200 cfs (cubic feet per second), while Little Cedar is a 246-acre lake with an outflow rate at the dam of 143 cfs.

**Big Cedar Lake Dam History and Operation:** In 1867, a number of mill owners downstream from LCL formed the Cedar Creek Hydraulic Company and were granted approval to build a dam across Cedar Creek. In 1875, the Cedar Creek Hydraulic Co. was granted approval for another dam further upstream at BCL. CLCF will address the history of these early operations in more detail at next summer's kayak event in June. In 1930, the Cedar Creek Hydraulic Co. and the property owners of BCL paid to replace the wooden dam at BCL with a concrete one. In February 1931, the Railroad Commission of Wisconsin (which regulated water powers at that time) established mandated water levels for the BCL dam in document WP-385-31. These mandated levels stand to this day.

According to WP-385-31, the mandated water levels on BCL are a maximum of 90.75 feet or four inches above the concrete crest. The summer minimum (May 1 to Sept. 1) is 90.25 feet or two inches below the concrete crest, and the winter minimum (Sept. 1 to March 1) is 89.59 feet or 10 inches below the concrete crest. At the dam, there is a brass plaque indicating the OHWM. Tod Maclay measures the water level relative to this groove in order to establish how many inches above or below that mark the lake level is. When the water level exceeds the OHWM, the Dam Operator removes boards in order to allow water to flow downstream. In addition, the BCLPRD has a policy that states that when the water is four inches over the OHWM, the Commissioners will meet to impose a SNW restriction. When water levels are high, a SNW restriction will help to mitigate shoreline erosion. On December 31, 1985, CLCF acquired 10 acres of land adjacent to both sides of Cedar Creek from the lake to Highway NN. Across Highway NN, CLCF owns over 150 acres of land to the east of the Little Cedar kettle.

## Historic Rainfall in West Bend, continued



Map 2

The light green portions highlighted in **Map 2** show CLCF's land ownership from the area near the BCL dam over to LCL. The good news about this protected land is that it remains in its natural, permeable state. Imagine what might occur during heavy rainfalls if these properties had been covered with roof tops, driveways and paved access roads.

**Little Cedar Lake Dam History and Operation:** In 1931, a permit was issued to construct a dam across the outlet stream on LCL at the south end of the lake. The Washington County Fish and Game Protection Society undertook the construction of the dam. In 1971 a carp grate was placed on top of the dam without formal authority.

In 1982, a complaint was filed with the WDNR by a LCL resident stating that the lake levels were too high. Quite a bit of controversy ensued (e.g., lawsuits), which ultimately resulted in a ruling on May 2, 1994 before the State of Wisconsin Division of Hearings and Appeals. This ruling (3-SE-93-154) established some key points regarding the ownership and operation of the LCL dam, including:

- Transfer of dam to the LCLPRD.
- Removal of the carp grate at the time of dam reconstruction.
- Installation of 1.05' of flashboards in three sections.
- Establishment of a new maximum water level for LCL at 1014.15 NGVD (the national geodesic vertical datum), with the water level being actively managed by board removal as needed.
- Coordination between the LCLPRD and the BCL Dam Operator with regard to maintaining lake levels.
- Establishment of a staff gauge about two feet from the end of the dam for the recording of weekly water elevations.

According to the LCLPRD's 2012 Annual Meeting Minutes, a board was removed from the LCL dam by a vandal in the spring of that year, resulting in lower than average water levels. The Minutes from the 2013 Annual Meeting state that the boards were subsequently 'set and secure', hence the reluctance to attempt removal when water was flowing over the top of the boards with considerable force. As mentioned above, by Sept. 13, all dam boards had been replaced at both lakes, and water levels had returned to normal.



*LCL dam with water over the OHWL and boards in place*

### Working Together

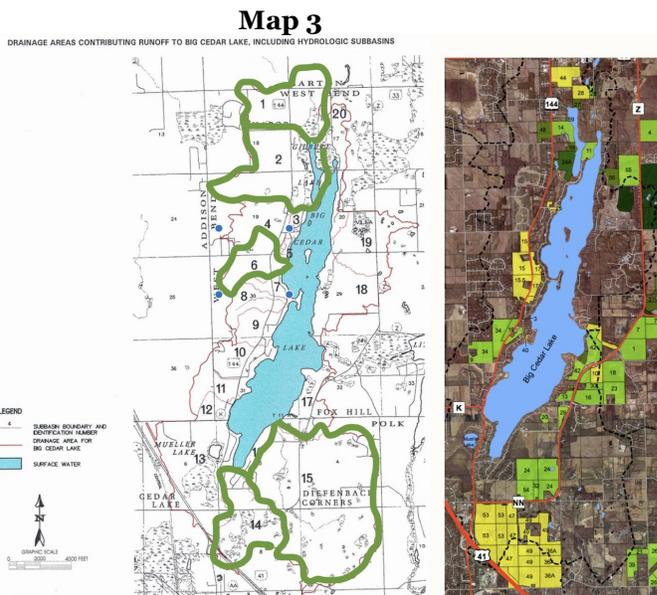
Going forward, as discussed at the LCLPRD Annual Meeting on Sept. 4, 2018, there are a few possible steps that could help with lake level management. First, CLCF and the BCL Dam Operator (Tod Maclay) will communicate intended board removal and replacement to the LCLPRD. It's important to note that board removal isn't subjective; it is mandated by the different orders, WP-385-31 (cont'd. on page 4) Page 3

## Historic Rainfall in West Bend, continued

at BCL and ruling 3-SE-93-154 at LCL. Second, a mechanism for coordinated communication and action between BCLPRD, LCLPRD, and the BCL Dam Operator (Tod Maclay) will be considered. And, third, LCLPRD will explore options to increase outflow from LCL when water levels exceed those established by the DNR mandate.

Over the past four decades, CLCF has taken steps to preserve natural areas, to plant trees and native plants, to have the Dam Operator monitor the BCL Dam, and to install retention ponds. The retention ponds help prevent the flow of excess water, pollution and debris from going into BCL. In addition, CLCF is actively preserving land in areas that directly affect sediment loads in the lake. In 1995, the Southeastern Regional Planning Commission (SEWRPC) issued a report, entitled *A Water Quality Protection and Stormwater Management Plan for Big Cedar Lake, Washington County, Wisconsin*. In **Map 3**, the left image shows the five sub-basins that were the biggest sediment contributors to BCL according to that study—accounting for nearly 64% of the total sediment load to BCL. The image to the right shows CLCF protected lands. As you can see, CLCF has tried to focus its efforts on some of these critical sub-basins. In fact, it would be interesting someday to see a follow-up study that quantifies the impact that this has had. On a positive note, neither BCL nor LCL were considered impaired waters by the WDNR in its 2018 report, while Oconomowoc Lake, Lac LaBelle, Okauchee and North Lake (among others) were.

In conclusion, it is CLCF's hope that with active dam management at LCL and BCL along with CLCF's overall conservation of permeable land, some of the flooding issues that we have experienced during these unusual periods of rainfall will be alleviated. The good news? These rainfall events have only been occurring approximately every ten years. Let's hope that the next event is at least ten years from now and that we will see evidence that lake level management between Big Cedar Lake and Little Cedar Lake is working.



Have you renewed your annual membership to the Cedar Lakes Conservation Foundation?



Our goal is to protect more key properties in our watersheds so that we can maintain both water quality and the rural character of our lake area for generations to come. With your contribution, we hope to build upon our Land Trust legacy and to preserve the natural beauty, clean water, and diverse wildlife of the area.

Please use the enclosed envelope to submit your donation, or donate online at:

[www.conservecedarlakes.org](http://www.conservecedarlakes.org)

Thank you in advance for your support!

**CLCF Nordic Ski Pass  
2018-2019 Season Membership Application**



Name (last, first): \_\_\_\_\_  
Additional Family Members: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Cell: \_\_\_\_\_  
Email: \_\_\_\_\_  
(email address will be used exclusively for communications related to CLCF Nordic and the Cedar Lakes Conservation Foundation)

**Individual/Family Membership:**  
**\$60 before Dec. 1**  
**\$70 thereafter**

To download or view a map of our trails, visit our website at [www.conservecedarlakes.org/activities-events/](http://www.conservecedarlakes.org/activities-events/). The GPS coordinates of our Sleeping Dragon parking lot are 43°22'10.0"N 88°14'48.1"W



\_\_\_\_\_ **Membership** (includes CLCF Nordic and CLCF annual donation)  
\_\_\_\_\_ **Additional Donation**

\_\_\_\_\_ **Total enclosed**

**Checks Payable to:** Cedar Lakes Conservation Foundation, Inc. (CLCF)  
P.O. Box 347, West Bend, WI 53095

***THIS RELEASE MUST BE SIGNED AND RETURNED WITH YOUR DONATION AND APPLICATION TO COMPLETE YOUR MEMBERSHIP.***

***I (and my family and guests) recognize that skiing, snowshoeing, and related activities inherently have some risks. I agree to hold harmless the Cedar Lakes Conservation Foundation (CLCF), its officers and members from any liability and any and all claims for damages I (or my family and/or guests) might suffer from the use of CLCF trails and participation in activities of the CLCF Nordic.***

**SIGNED:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_

***You will receive a membership card shortly. Please place the card on the dashboard of your car while in the parking lot.***

Check out ski and snowshoe condition updates for CLCF Nordic at [www.skinnyski.com](http://www.skinnyski.com) or [www.laphampeakfriends.org](http://www.laphampeakfriends.org).

For questions, please call: Bob Bodensteiner (262)339-5912, Jerry Gensch (262) 644-6561, or Russ Sobotta (414) 507-5635.



## Kayak Tour of Indian Springs

On Saturday, June 2, a group of 30 CLCF adventurers toured Gilbert Lake and the Indian Springs by kayak. CLCF's Community Relations Committee organized this event, and Sue Meinerz hosted the launch from her Big Cedar Lake home. Doc Olsen, who owns the property near the springs, gave an informational briefing on the natural history of the area to each group. Kayaks left in small groups of four to six. Bruce Reynolds met each group at the Springs to answer questions and talk about the hydrology of the site.



The groundwater flowing to Gilbert Lake represents a significant portion of the lake's water supply and provides a clean source of water that helps contribute to the

health of Big Cedar Lake, Little Cedar Lake and Cedar Creek. The maintenance of this groundwater flow is crucial to the watershed. CLCF and the WDNR provide protection to approximately 4,000 feet of uninterrupted shoreline on Gilbert Lake. Tamarack trees, water lilies, wild iris, skunk cabbage, and other plants provide habitat for a host of species on the lake. This is truly a natural jewel to admire from the water. Many thanks to the guides and hosts of this exciting event!



## Thoma Land Purchase



On May 30, CLCF closed on the purchase of 11.89 acres of land adjacent to Ackerman's Grove County Park near Little Cedar Lake. Washington County sold this park property to CLCF ensuring that this green space will remain undeveloped and that the lake will be protected from damaging storm water run-off, while keeping wildlife habitat intact.

## Somewhere In Time XII



CLCF's Somewhere In Time XII was a delightful party, a record-setting success, and an exciting springboard to future goals. Over 200 supporters from Big Cedar Lake, Little Cedar Lake, Silver Lake, and other places in the Cedar Lakes watershed gathered at the West Bend Country Club on Saturday, June 30th to meet and support the mission to conserve the natural environment of this unique and special place.

The West Bend Country Club was a perfect setting for an evening that included a view of rolling glacial hills and woods, a jazz combo from Brew City Big Band, a smorgasbord of silent auction items and hors d'oeuvres paired with wines, a literal boatload of wine bottles at the Wine Pull, and a delicious three-course dinner with wine. During dinner, our photographer went from table to table taking group portraits. These group photos and more are posted on the Cedar Lakes Conservation Foundation Facebook page.

The fundraising focus of the evening culminated in a Raise the Paddle challenge with donations up to \$200,000 being matched by the Thomas J. Rolfs Family Foundation. The Raise the Paddle resulted in pledges of over \$260,000. With the matching grant, the total for the Raise the Paddle portion of the evening came to over \$460,000. These funds are designated for the recent Thoma acquisition (see article at left), and for other land acquisition. Total net proceeds for the event, including the Raise the Paddle, were over \$587,000, which will help CLCF continue to protect the natural environment of the Cedar Lakes region.

CLCF is overwhelmed and grateful for the generosity of our members and guests and by the committed support of our volunteers. Special thanks to our Committee Chairs, Mary Beth & Buzz Carr, the committee members, event sponsors, event volunteers, auction item donors, Cedar Lake Yacht Club youth volunteers, West Bend Country Club and so many others who made this a memorable and outstanding occasion.



Cedar Lakes Conservation Foundation

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West Bend, WI 53095

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**Watershed Events** is published by the Cedar Lakes Conservation Foundation, Inc., a public non-profit organization committed to the preservation of wetlands and woodlands within the tri-lakes region of Washington County.

**Our most sincere thanks to all those who make this work possible!**

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[www.conservecedarlakes.org](http://www.conservecedarlakes.org)

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### Calendar of Events

**Tuesday, November 13, 5:00 - 6:30 p.m.**

**“The Dark Side of Birding” with Doc Olsen at West Bend Country Club**

**Saturday, December 1, 9:00 - 11:00 a.m.**

**CLCF Annual Meeting at Jo Ann Mann Lodge, Camp Silverbrook, West Bend**

**Saturday, December 15**

**Thomas J. Rolfs Foundation Matching Grant pledges due**

**Sunday, February 10 , 2019 - Snowshoe Shuffle (Time TBA)**