



# Crystal Shorelines

The newsletter of the Crystal Lake Watershed Fund

UPDATE #13

WINTER 2000

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*Last Spring we cautioned about the low water level in Crystal Lake. This year, we have just the opposite as a result of plentiful Spring rains. The year 2000 started with the lake down about six inches from the normal winter level which is six inches below the summer level. Consequently the difference of one foot was quite apparent. With the excessive rains in May of this year the lake rose six inches above the summer level. Measures were then taken to drain the lake back to the summer mark which is about where it is as of this writing (see the separate article on the history data of the lake level). Providing we receive an average rainfall the next few months the lake level can be expected to drop slowly until the fall rains begin.*

## CLEAR-CUT UPDATE

The Crystal Lake Watershed Fund has continued to address the clear cutting issue on one of the bluffs surrounding Crystal Lake that it featured in its Winter 2000 newsletter. The CLWF has retained Mr. James Olson, a noted attorney for his work in environmental law, in regards to the following objectives:

1. To require that a proper corrective action be taken in the area that had been clear-cut and damaged.
2. To discover if any punitive action is appropriate for the violations that have occurred.
3. To prevent further clear-cutting.
4. To prevent the project from expanding across a stream bed and the potential of soil erosion from entering the lake through this tributary.
5. To address the current violations of existing ordinances as well as potential future conflicts.
6. To strengthen certain clauses in the Crystal Lake Overlay District zoning ordinance.

The CLWF has also expressed its concern to the County Zoning Administrator. There appears to have been a systematic cutting of this area over a period of about four years with the final cuts at the top of and over the bluff, that completed the clear cutting, occurring in the fall of 2000. All without permits.

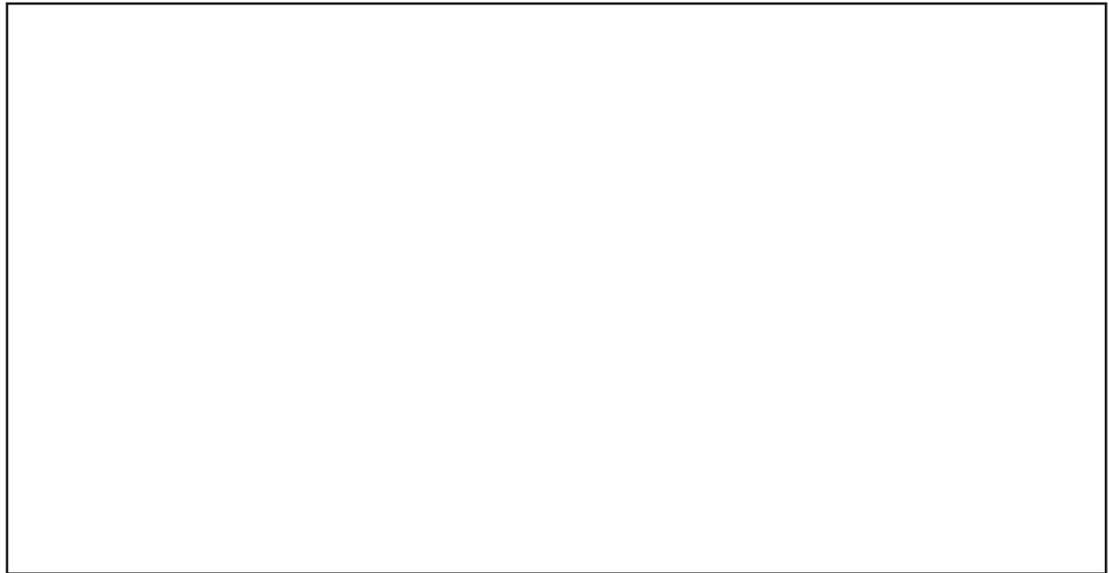
There is no illusion that the area can be restored to what it was, but there can be an effort to hasten new growth in the damaged area. The initial re-vegetation planned for this area, in the CLWF's opinion, is inadequate. The CLWF, through its attorney, has requested of the property owner that the plan be improved and evidence be forthcoming of the measures taken to prevent soil erosion while addressing the improvement of the aesthetics of the bluff area. A written plan and compliance is a legal requirement.

These have been some of our initial steps as the process continues to ad-

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dress this situation. We are working on other initiatives in regards to zoning and compliance issues including furthering the public education. We will continue to keep the concerns in the forefront of our efforts. The intention to develop in the vicinity of the subject clear-cut area and over a stream bed remains active and has tremendous potential for an adverse impact on Crystal Lake. A stop work order has been placed on the project but erosion has occurred from the initial excavation.

We are pleased that our efforts have heightened concern about proper zoning and zoning compliance. As we indicated in the previous newsletter, good zoning measures exist but they are not worth anything if they are not heeded. Owners, builders, excavators, and neighbors have to be aware of the regulations and have to care enough about the aesthetics of this area in order that the goals of preserving the quality of Crystal Lake and its watershed are met. The bad example that we have addressed needs to be etched in the people's minds as something that should not happen again.



*View of Clear-cut  
from Lake*

## Zoning Boards

Members of the CLWF attended recent zoning board hearings in the Lake Township. We would like to commend the township's Zoning Board of Appeals on its thoroughness and deliberation in addressing the variance requests. One request which required a substantial cut into the hill on the north shore, was denied due to existing better al-

ternatives. Another request was scaled back. This process can work well and we believe the interest of the public helps make that the case. Please consider attending any hearings in your township or in the county on variance requests or land use issues. Your physical presence will have a positive effect on the board members.

## Recommended Reading

*Ruin and Recovery* by Dave Dempsey The University Press, Ann Arbor, 2001.

Dave Dempsey, a former environmental advisor to Governor James Blanchard and a professional in environmental policy since 1982 traces the evolution of the public movement to conserve Michigan's forests, fish and wildlife in the late 19th and 20th centuries. He believes Michigan has been a great leader in environmental protection and has been recognized as such nationally.

Former governor William G. Milliken, an active participant in getting laws enacted to protect our environment, wrote the forward.

The book is in soft and hard cover and now available at local bookstores. Copyright by the Michigan Environmental Council.

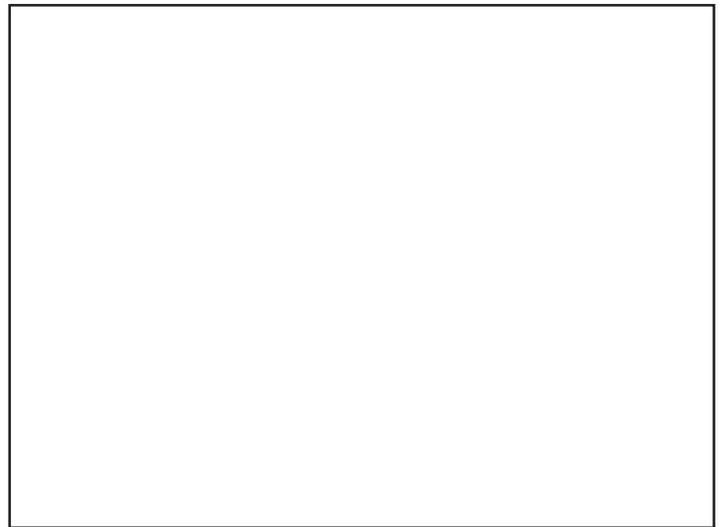
## ***Crystal Lake Walkabout***

The Crystal Lake "Walkabout" is an educational program designed to teach young adults about the Crystal Lake Watershed and its unique hydrology (how water moves about the watershed). The "Walkabout" is a hands-on educational program of observational monitoring and environmental exploring for young adults. On alternating years, teams walk about four interpretive sites, each rep-

resenting different geological parts of the watershed. If you would like to learn more about the Crystal Lake Watershed, you can participate in one of the two "Walkabouts" scheduled for 2001. The summer "Walkabout" will be held on July 25. For details and registration, please contact the CLWF at 231-882-5149 or Stacy Daniels at 352-7043.

## ***Awareness Signs***

A sign seen downstate is not a bad idea. In the last few months all the trees buffering the Martin Speedway from US 131 (south of Grand Rapids) were cut down. Now the entire track can be seen from the highway. Recently official looking signs were erected along this frontage which read: "These trees were illegally cut."



## ***Crystal Lake Outlet***

# TECHNICAL PAGE

## *Historical Data – Crystal Lake Water Level*

*By Stacy Daniels*

The level of Crystal Lake has been high this year due to unusually heavy spring rains. The level of Lake Michigan in comparison has risen and fallen as much as 17 feet over the years of record (1819-1999). It is currently near a 30 year low of 578 feet above mean seal level which is 22 feet below the legal level of Crystal Lake (600+/- 0.25 feet). Crystal Lake, once called Cap Lake for its whitecap waves, can expect some high winds and shoreline movement of sand due to waves and ice. The level of Lake Michigan is controlled by nature, but the level of Crystal Lake is controlled by regulating the

water discharged at the Outlet dam. It is a delicate balance between retaining enough water for recreational use in the summer and releasing enough water to limit erosion in the winter.

A drop of water falling the Crystal Lake Watershed flows into Crystal Lake, either as surface runoff in its tributaries, such as Cold Creek, or as groundwater beneath the surface. The water from Crystal Lake then flows on to Lake Michigan, either through the Outlet to the Betsie River, or underground beneath the dunes toward Pt. Betsie.

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### **CRYSTAL LAKE LEVELS: 1993 - 2001**

Year	Crystal Lake Level (feet above mean seal level)
1993	
1994	
1995	
1996	
1997	
1998	
1999	
2000	
2001	

Snow and rain also fall directly on the lake, and water evaporates from the land and lake surfaces. We have little direct control over the weather, but we can maintain greenbelts and trees along the ridges to reduce evaporation, limit sediment runoff to assist in providing good water quality.

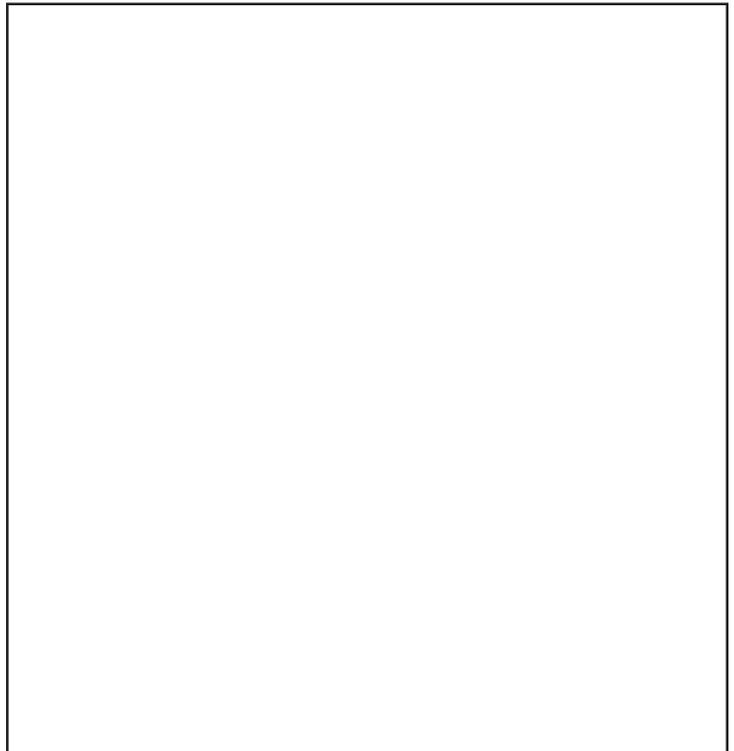
In 1873, an ill conceived project of dredging the Outlet to float logs to market became known as the "Tragedy" of Crystal Lake. The lake level abruptly dropped about 15 feet and a wide stretch of beach around the entire lake was exposed, making possible the development of Crystal Lake as a resort and residential area. In 1909, the first Outlet dam was built and the legal limit was set at 600.48 feet. Before this time, the lake level rose and fell by as much as 2-1/2 feet. Rises and falls of more than six inches were still occurring in the 1940's. In 1980, after much public debate, a two tiered legal limit was set: a summer level of 600.25 feet from May 1 to October 31 and a winter level of 599.75 feet from November 1 to April 30.

The area of Crystal Lake is 9,854 acres, the area of its watershed (lake and land) is 27,889 acres. A one inch rain on the entire watershed would contain more than 100,000,000 cubic feet or 760,000,000 gallons of water. It would take almost 12 days, discharged at a rate of 100 cubic feet per second, to release this much water from the lake.

The Outlet dam was high and dry in the fall of 2000. On October 30, 2000, the lake was 5.5 inches below the summer level. In contrast, the lake was full and overflowing in the spring of 2001 due to the unusually heavy spring rains. On May 1, the lake was only 1.68 inches above the summer level, but by May 30, it was 6.24 inches above the summer level. Riparian owners have raised concerns about the high water level and the effects of ice and waves on the shoreline and structures. The Benzie County Road Commission took weekly readings of the water level from 1970 through 1999 and the County Drain Commissioner has continued from 1999 to the present.

In 2000, the CLWF acquired two state of the art probes for monitoring water level and temperature in Crystal Lake and its tributaries. Each unit contains a computer, memory, sensors, and internal power source and is fully certified by the manufacturer. Lake level is automatically measured every 30 seconds and averaged every ten minutes. Each week, 1008 values are collected and downloaded to a personal computer. Data are processed, referenced to a surveyed benchmark, and compared with data compiled by the Drain Commissioner. Temperature is accurate to +/- 0.1 degree C. Water level is accurate to 0.21 of an inch. Changes as small as 0.039 inch can be observed.

The highest level recorded by CLWF in 2001 has been 600.83 feet (1:00 p.m. on June 2). The highest level recorded over the past 30 years by local government was 600.96 feet in 1976. A level of 601.13 feet was recorded by the Geological Survey in 1942. During May, Crystal Lake rose 4.56 inches due to 8.34 inches of rain, about four times the average of 2.3 inches over the past 30 years. The level of 600.26 as of 8:00 a.m. on July 2 represents a net drop of .57 feet (6.8 inches) since June 2. For current information visit our website at <http://rorykate.ce.utep.edu/CLWF>.



## **Please support the CLWF!**

Funding the cost of our educational and water study programs as well as our operational cost has generally been accomplished by contributions from individual supporters. We are a non-profit organization comprised almost entirely of unpaid volunteers. We have stepped up our efforts to address land use regulations and zoning enforcement issues that you see in this and the previous newsletter. Land use has a direct bearing on our primary interest of the water quality of Crystal Lake. When we put this type of emphasis on land use, however, it requires legal assistance which requires additional funding. This is money well spent as bad practice and irregularities must be challenged in order that we operate on a controlled, rule of law basis. We need your usual and now additional support in the form of a tax deductible donation to continue. Please feel free to offer any comments or suggestions as well. Your donation should be sent to: CRYSTAL LAKE WATERSHED FUND, INC. P.O. Box 104, Beulah, MI 49617. Telephone/fax number 231-882-5149.

### ***Summer Schedule***

Wednesday, July 25  
Crystal Lake Walkabout  
Summer program at four sites – Time TBA

Wednesday, July 25  
7:00 P.M. at the Congregational  
Summer Assembly, a seminar on Land Use and Zoning.  
Guest Speaker is noted environmental attorney, James Olson,  
(a Crystal Lake resident with a law firm in Traverse City).  
Bring questions with you.

## **Additional Projects**

Work continues on many fronts and we will update news of these projects in the fall/winter issue of Crystal Shorelines. Some of these include:

- Remote and automatic recording of level and temperature of the lake and Cold Creek;
  - Continued baseline data acquisition of Crystal Lake water conditions;
  - Core sample research;
  - Water plants/foreign species, zebra mussels;
  - Homeowners hints and responsibilities;
  - New septic tank data - very positive.
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