

# Crystal Lake Association

Since 1932, working for the preservation and  
improvement  
of Crystal Lake and its watershed for future generations.

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## “Team Work,” Works!

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### “TEAM WORK WORKS “

Our headline statement is “*Team Work ,Works,*” a testimony related to the removal of the recreational vehicle from the small island, better known as, “Snake Island.” The presence of this small trailer on the island for the past year and half, was voiced as the number one concern of CLA membership. The concern evolved around eventual sewage pollution to the lake and the violation of several zoning rules and regulations. Some considered the presence of the unit to not be, attractive to the eye. Through diligent pursuit of your CLA leadership with the Township and Zoning Board and with interaction of the Health Department, the trailer was removed by the owner in late February.

Using TEAMWORK to solve a problem, the Township and Zoning Boards, with the friendly intervention of the CLA, an end to the pesky situation was obtained.

The CLA leadership publically thanks the Township and Zoning Boards for their positive action in this matter.

### AQUATIC SURVEY REPORT

In January of 1999, *AAT Labs* was retained by the Crystal Lake Association to conduct an aquatic Survey of Crystal Lake. The Objective of the survey was to assess the water quality indicators of Crystal Lake. At the onset of this survey, it was determined

by examination of the United States Geological Survey topographic map of Crystal Lake. Pertinate information on volume maximum and mean depths were derived from a Department of natural Resources depth contour map. The following physical characteristics are indicative of Crystal Lake;

*Lake Surface Area.....724 Acres*  
*Maximum Depth.....70 Feet*  
*Mean Depth.....13 Feet*  
*Lake Volume.....9,465 Acre-Feet*  
*Shoreline Length.....4.7 Miles*

Water quality testing is the first step to obtain data on water condition in the lake. Determining the physical and chemical characteristics of the lake serves to identify trends in the lake condition, and helps isolate the cause and source of the water quality problems. Some key parameters used to evaluate the limnological (*the scientific study of life of lakes, streams, and water ways*) condition of the lake include temperature, dissolved oxygen, nutrients (nitrogen and phosphorus), chlorophyll-a, and transparency. A brief description of associated terms follow.

### TEMPERATURE;

Temperature can determine the types of organisms that are favored for growth in a particular Lake. It also determines how water mixes in a lake.

### DISSOLVED OXYGEN;

An important factor influencing lake water is the quantity of dissolved oxygen in the water column. Major inputs of dissolved oxygen are the atmosphere and photosynthetic activity by aquatic plants and algae.

### NUTRIENTS;

Nutrients, particularly nitrate and phosphorus, are the most important parameters to monitor in inland lakes. Together, these nutrients promote aquatic plant and algae growth in the lake. Nitrates have many natural sources such as atmospheric deposition, blue green algae, bacteria and other micro-biota. The concentration of phosphorus present in the water column is particularly important since phosphorus is the nutrient that most controls aquatic plant and algae growth.

#### **CHLOROPHYLL-A;**

Chlorophyll-a is the primary photosynthetic pigment that imparts the green color to plants and algae. An estimate of the quantity of algae present in the water column can be made by measuring the amount of Chlorophyll-a.

#### **TRANSPARENCY;**

Algal growth and turbidity (suspended solids) can both result in reduced transparency. The measurement is made by lowering a round, black and white disk on a calibrated line. The disk is lowered over to the deepest point of the lake until it is no longer visible and the depth is noted. The disk is then raised until it reappears. The average of these two depths is the Secchi transparency.

As a summary to the above terms, as the phosphorus loading in a lake increases, the amount of algae the lake can support increases also. Thus, the lake will exhibit increased chlorophyll-a levels and decreased transparency.

Also evaluated in these tests for water quality are Conductivity, Fecal Cloriform and pH.

#### **CONDUCTIVITY;**

Conductivity is a measurement of how well water conducts electricity because of the presence of dissolved inorganic salts (ions). The more dissolved salts present, the higher the conductivity will be. Sources which will increase conductivity levels in the lake include road salts, chlorinated com- pounds, fertilizers, and domestic sewage.

#### **FECAL CLORIFORM;**

The State of Michigan Public Health standard for *E. coli* bacteria in single zebra mussel (*Dreissenia polymorpha*) was found attached to a plant during the aquatic plant survey. At the time of the fall sampling zebra mussels were observed on docks, boats, rocks,

waters used for total body contact recreation (e.g., swimming) requires that no more than 130 *E. coli* per 100 ml may be present as a 30-day geometric mean of 5 or more sampling events. For a single sampling event, the number of *E. coli* may not exceed a maximum of 300 per 100ml.

**pH;** Pure water consists of an equal number of hydrogen (H+) and hydroxide (H<sup>-</sup>) ions. pH is a measure of the number of hydrogen ions in solution. Potential problems to the lake organisms can be indicated by a pH reading that is too high or too low.

#### **RESULTS OF WATER QUALITY ANALYSIS**

To evaluate the water quality in Crystal Lake, samples were collected from the surface to bottom of the 50 foot portion (sampling only went to 40 ft. Due to the inability to locate the 50 ft. spot) of the Central Basin and the Inlet on July 13 and November 10, 1999 and May 19, 2000. In addition to the lake sampling spring runoff samples were collected from the Inlet and drain at the Township Park on March 20, May 9 and 11, 2000. Sampling indicate that levels in the lake basin exceeded the eutrophic threshold in the summer sample but were below threshold levels in the spring and fall. A significant source of phosphorus was located at the Township Park drain. Nitrate concentrations at the lake basin are below level, however, at the Township Park drain, inlet and boat launch area's concentration was increased to a high level. All samples analyzed for pH were within the 6.0 -9.0 range that is ideal for most aquatic organisms. Since, hardness determined Crystal Lake as a hard water lake, conductivity readings should remain fairly constant throughout the year. The Township Park drain, inlet at the boat launch both had slightly elevated readings in the runoff samples, but are not too high and are probably attributed to salts from fertilizer runoff. Fecal coliform (i.e. *E. coli*) was detected in Crystal Lake at some site during each sampling event. The surface of the central Basin had fecal coliform present in the spring and fall. native clams, trash and any other substitute they could find. Zebra mussel are related to oysters, clams, and native freshwater mussels, whom feed on suspended particles, ( algae, bacteria and

The SE Public Beach did have fecal coliform present in high numbers (potential beach closures levels) in the spring, but had low levels in the summer. The inlet also had high levels in the spring sample. The township park drain and the inlet at the boat launch had fecal coliform present in the run off samples. At the inlet at Stanton Rd. high levels of fecal coliform, that were filtered out as the water traveled downstream to Crystal Lake. Total phosphorus levels were above the threshold indicating there is significant phosphorus in Crystal Lake to support aquatic plant and algae growth. Crystal Lake is in a mesotrophic state. Which is very good for an inland Michigan lake with all of the agriculture that occurs.

#### **BIOTA OF CRYSTAL LAKE AQUATIC PLANTS**

Although aquatic plants are necessary to the ecosystems of a lake, to many undesirable plants can limit recreational and enjoyment of a lakes use. They produce oxygen during photosynthesis, provide food and habitat for fish and other organisms, and help stabilize the shoreline and bottom. An aquatic survey conducted July 13, 1999, located four main areas of plant beds. Those being, the old boat launch at the Township park, the small shallow bay to the west of the Township park, the western shore and the final bed at the area extending from the mouth of the Inlet to the DNR boat launch. Exhibited were the normal plant life specimens with the exception of two separate beds extending from each dock at the DNR boat launch site. Which among other plant life contained **EURASIAN** water milfoil (*Myriophyllum spicatum*). Of most interest is the presence of the exotic **EURASIAN** water milfoil. Researchers claim that the Eurasian milfoil reproduce by fragments that break off of the plant and produce new roots. If this is true, it is no surprise this plant was found at the DNR boat launch.

#### **ZEBRA MUSSELS**

During the summer sample a

fine organic detritus). Filter feeding by zebra mussels could reduce plankton and decrease the food base for planktivorous fish. Large numbers of mussels could cover the spawning areas used by fish in

the lake.

#### **LAKE MANAGEMENT RECOMMENDATION**

**PHOSPHORUS:** Phosphorus overloading can be categorized in two types, internal and external. External comes from surface runoff from agriculture, residential, other ground use types, underground seepage, precipitation, and or waste water. The second is from natural physical, chemical and biological actions natural to the lake. Local management of such items as fertilizer can aid in the control

**WATERSHED MNGT.** With watershed mngt. Control or elimination of sources of nutrients that adversely effect the water quality of the lake. Although management is required areas such as the Inlet and Drain at the Township Park watershed would greatly aid the problem.

**INLET:** The inlet begins at a wetland North of Stanton Rd. in a wooded undeveloped, agriculture area. Employment of practices such as BMP, with assistance from USDA, CPR, WRP, FSA, can share in conservation that would protect against these problems. A 2<sup>nd</sup> solution could be a Detention Basin in the tributary upstream. Allowing the sediment to fall out into the basin previous to arrival at the lake.

**TOWNSHIP PARK DRAIN:** South Shore Dr. has drain gates that collect runoff diverts such to the lake. Could be cause of nutrient & fecal coliform as could the public restroom (sewage holding system) at the park.

**IN-LAKE MANAGEMENT TECHNIQUES:** It is recommended that Crystal Lake continue with lake analysis. The more data that is acquired on the lakes water quality the better. One years data is just a blink in the geological life span of a lake. Multiple years of data collection is required before any trends will be revealed. Continued monitoring will give advance notice of any lake problems developing. If notice is taken that phosphorus levels are rising action can be taken to slow this down before algal bloom takes over the lake. It is suggested that the CLA could purchase a Secchi disk and a temperature/dissolved oxygen meter and w/instruction make weekly transparency, temp. and dissolved oxygen readings, although this is not much it would for warn of changing conditions.

**ZEBRA MUSSELS:** At this time there is nothing that can be done. Follow the DNR's suggestion for slowing them down by cleaning off boat bottoms and etc.

**EURASIAN WATER MILFOIL** Recommend that the two small beds be eradicated  
(To be coved in next news letter)

Anyone wishing a complete copy of AAT Labs, 32 page, Crystal Lake Aquatic Survey may obtain it by sending a request to Buck Last, Plus \$3.20 to cover the copy cost.

#### **RICHARD REMSBERG COMMENTS**

For the last two years the CLA has requested that speed limits be reduced on Sidney Rd., West of Sloan Rd. To Pine Grove Rd. (The area is abounding with walkers, joggers, and bicyclers.) Changes were also requested for Waldron Rd. To the boat launch site. The recent passage of Michigan Law make changes in speed laws a lot less complicated and relatively automatic with a mere request of the governing body, (Township) to the County Road Commission.

"My understanding is that the State Police found something in the new speed limit law that they were required to clarify. They have requested that implementation be delayed while they study the problem. They are not at this time defining the problem. Two weeks ago today (17Feb01) I tried to discuss it with, State Representative, Larry Devuyt, and he appeared to not know what I was talking about. I have also e-mailed his office about this question and have not as yet received a response. Mr. Devuyt did request that we keep in contact with his office and that he was sure that they would have a conclusive answer. I will continue to do this."

If anyone is interested in contacting their state

#### **A LOOK INTO THE FUTURE**

**Article By: John C. Bird Jr.**

There are a number of areas in our township that a slight change in direction will produce a significant improvement in the quality of life for everyone. They are Police coverage and public safety, road conditions, the Downtown Development Plan, Park and Recreation Plan, and Community Promotion.

First lets talk about Police coverage and public safety. Unfortunately Crystal has developed the reputation as a place where anything goes. During certain times hostile groups move about town and the park area overindulging and looking for unsavory activity giving you the "I dare you to do anything about it stare." The latest fad seems to be howling in the dark etc. This is hardly the environment we want our children and grandchildren and elderly to be exposed too and it is easily remedied. We need a small increase of Police coverage in conjunction with a neighborhood watch initiative getting the community involved taking back control of our town making it a safer and more comfortable place to live.

Our paved roads need some attention, which will require working with the County Commissioners and Road

Commission. While we are addressing the Township infrastructure we need to revitalize the Downtown Development Project. Several years ago some good work was done but for the last number of

Two bright spots are the Park and Recreation Committee and the Crystal Township Planning Commission. The Park and Recreation Committee has received the go ahead for the park revitalization project thanks to the hard work of Garret Bakker, The Planning Commission is working towards protecting the rural character of our community, maintaining the local village and its unique appeal. This plan also protects our natural resources, lakes, streams and wetlands. While encouraging economic development in our downtown business area.

The lake community need to help improve the business climate in Crystal by working with the Township Board, Chamber of Commerce, the Lions Club, Crystal Lake Association, Crystal Arts Council, Crystal Lake Association and others to promote our many resources. They include Motor Sports, Golf, an excellent Sailing Club, Boating, Water Sports, Dining, Ball Field Activities and Community Events like the Jamboree and Arts Fest and Car Show. These are just a sample and I apologize in advance for any activities I've not mentioned. We must be working together and getting involved instead of waiting for someone else to do it. We must promote the entire community. We must support a robust local economy, finding uses for the empty or abandoned buildings, requiring owner action on the burned out houses and other community eye sores.

We need to encourage and hold accountable the Township Board, to facilitate all these activities and encourage more. (They need your support and participation) We have lots of creative people, that would like to develop dinner theater, bible studies, cooking classes, weight loss clubs and activities, an active historical society etc.. etc., but someone has to start the ball rolling.

What is the first step towards developing Crystal Township into the kind of township we can all be proud of, the kind of Township we can take our kids downtown for ice cream or swimming or a picnic in the park, the kind of township

years instead of updating the project and funding request and improving it we just slapped a cover sheet on the old request submitting the same old plan and taking a wait and see approach. We have some that maintains the unique *VILLAGE* atmosphere? It is,

**Getting Personally Involved,  
CRYSTAL LAKE NEEDS YOU!**

**CRYSTAL TOWNSHIP TAX BASE**

**ARTICLE BY: JOHN C. BIRD JR.**

Crystal Township has a solid tax base as reported in the 2000 year Assessment Roll Certificate. The Board of review indicates that the source of tax funds is as follows:

Agriculture	10%
Commercial	4 %
Industrial	0%
Residential	82%
Personal	4%
Total	100%

(It is interesting to note that trailers pay *NO TAXES.*)

The 1990 Census recorded 1467 dwelling units in Crystal Township. We see from the potential Crystal Lake Membership roll of almost 600 and recognizing that lake property is at a premium that lake property contributes well over **65%** of the Township Tax revenue.

Based on this analysis, a source and use of Tax funds study would be very interesting. We should be asking the Township Board for this kind of information and holding them accountable for spending 65% of their budget on lake issues.)

Why then do the concerns of the Lake Association go unheeded? Police protection lacking where it is needed, the burned out eyesores, and the lack of Nuisance Ordinance are prime examples. The answer is apathy on "*OUR*" part. We must get involved in community affairs and fulfill our civic duty in order to turn Crystal Lake into the kind of place it was 30 years ago!

**THE POTENTIAL IS THERE, BUT THE OUTCOME IS IN OUR HANDS. THE LAKE ASSOCIATION CAN HELP, BUT WE CAN'T DO IT ALONE.**

**CLA BOARD NOTES**

**ZONING:** If YOU favor zoning for the Crystal Township Area, it is time to rally YOUR support, to make zoning perma-

excellent talent right here in our own community to help work on these Grants but we need to mobilize these people and aggressively seek State and Federal funds.

ment. Zoning is now in it's 3<sup>rd</sup> Year, and through petition, referendum and vote, zoning could be voted out in the next year to 18 months. The importance of zoning effect all of us who live in the Township as well as those of us whom live on the Lake. It is very evident that there is a vocal minority (15-20) group of people that attend every Planning Commission meeting, Township Board Meeting and Public Hearing, etc. Who oppose everything relative to future planning.

**BLIGHT / NOISE ORDINANCE:** A committee has been formed to study the proposed ordinance which is standard in the majority of Michigan counties and townships. Again there is a group of people whom are opposed to any positive zoning laws to prohibit or control the blight and adverse noise with in the township.

Rena Ray, Carole Bird, Buck Last, and the Township Officials, Trustees, Clerk, and Assessor, as well as the new Township Supervisor offer an even, positive balance to both Zoning and Blight/Noise Ordinances. The Township Officials, Trustees, Clerk, Assessor, and newly elected Township Supervisor appear to have CLA/Lake friendly ear, as well.

**NEW TOWN HALL:** There have been three Public Hearings on this issue. One faction envisions a 400 to 500 seat auditorium, to accommodate the Crystal Jamboree. The estimate for this structure would likely *exceed 3/4 million dollars.* Another group prefers a completely new town hall at a new location with offices for the Township Clerk, Treasurer, Supervisor and Police Department, plus meeting/seating space for 100 people. The estimate of \$150,000.00 to \$500,000.00. Others favor researching the cost and the practicability of renovating the current town hall. This option is being studied. *Whatever option is chosen, is subject to TAX PAYER (Resident) approval and will result in additional millage to pay for the project.*

**CRYSTAL LAKE ASSOCIATION 2001  
MEMBERSHIP**

Please see the attached 2001 membership slip. Please *feel free* to fill out the *optional info.* Area previous to sending in your membership. This will help us, your **CLA Board** better to understand, *WHAT* it is you would like us to add to our 2001 agenda.