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Campaign to Improve Rush Lake's Water Quality

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The Minnesota Clean Water Legacy Act (2006)

As all of us appreciate, pollution in Minnesota's lakes, rivers and streams degrades the quality of life and damages ecosystems. Because these facts are well known by a majority of MN residents, the reduction of pollution in MN waters has become a major goal for the state. The 2006 Clean Water Legacy Act launched Minnesota into an accelerated program to identify "impaired" waters by requiring that the state assess all its waters to:

- Identify and list impairments;
- Conduct TMDL studies of "impaired" waters in order to set pollutant reduction goals; and
- Implement corrective measures to meet a TMDL's pollutant reduction goals.

An "impaired water" is a lake, river, or stream (creek) that does not meet water quality standards and, as a consequence, is "impaired" for its use under the federal Clean Water Act.

Once a water body is added to the federal impaired waters list, Minnesota has 15 years to complete a TMDL report on each pollutant impairing the water body. Until a TMDL report is completed and approved by the EPA, the federal Clean Water Act restricts any new or expanded discharges of the pollutant of concern that would contribute to the problem.

Today there are 1,480 waters on the MN State "impaired" list, 297 of which were new this year. The major lake contaminant in MN is Phosphorous accumulation from fertilizer and farming.

Rush Lake and Rush Creek Impairments

Based on data collected between 1997 and 2002, both Rush Creek and Rush Lake were recently added to the Federal Clean Water Act's 303(d) list of "impaired waters".

In the case of Rush Creek, the impairment classification is due to a "low Index of Biological Integrity (IBI)" which is a measure of a stream's biological condition (i.e., health). For Rush Lake, the impairment classification is a result of "elevated levels of Phosphorous & Chlorophyll-*a*" for which the former is largely responsible for algae formation and the latter is a measure of the extent of algae presence.

The criteria for a body of water being in the "impaired" category is based on calculated quantities collectively called the Total Maximum Daily Load (TMDL). The TMDL is the maximum amount of a pollutant that a water body can receive and still meet water quality standards. A TMDL incorporates the loads of a single pollutant from all contributing sources and includes a margin of safety to ensure that the water body can be used for the purposes the state has designated.

Our Decision to Initiate Major Projects to Improve Water Quality

The RLIA Board, in conjunction with members attending monthly meetings, considers improving the water quality in Rush Lake (and correspondingly Rush Creek because it drains Rush Lake) to be the top priority problem to be addressed by the Association for the next few years. In addition, we have learned that the Chisago County SWCD also considers that improving the water quality in Rush Lake and Rush Creek is a high priority and will work with the RLIA to make improvements.

As we know from personal experience, Curley Leaf Pondweed [CLPW], present in *at least* 720 MN lakes, in 68 of the 87 MN counties, has a very major negative impact on boating, fishing and recreation in lakes. This invasive weed is connected to the Phosphorous-algae cycle in that it grows during the winter, forms surface mats in early spring, and then stimulates green algae growth by releasing Phosphorous when it dies back in early July. Although the CLPW is recognized by the DNR as a major problem in MN lakes, there appears (at the moment) to be no single method to reduce its negative impact other than a full-lake herbicidal treatment, which would be very costly for a lake the size of Rush Lake.

Because there is currently no known method for reducing the Phosphorous levels in a lake (or stream) other than physically removing the sediment (far too expensive for a lake the size of Rush Lake), members of the Board have been exploring innovative technologies that would deactivate the Phosphorous that has accumulated in the lake sediment over the past 100 years. It is also hoped that any such new technology will also be effective in disrupting the CLPW-Phosphorous-algae cycle that plagues Rush Lake and many other lakes in MN.

One such innovative technology to deactivate the Phosphorous already present in Rush Lake (and

Rush Creek) was summarized by a consultant to the RLIA (Steve McComas) during a meeting in December 2007 that also involved the DNR, MPCA, and Chisago County-SWCD. This technology involves the use of modest amounts of iron fillings to deactivate the Phosphorous by forming a chemical compound that is insoluble in the lake water and precipitates into the sediment. A summary of this report by Steve McComas has been posted on the RLIA website [www.rlia.com].

Since that December 2007 meeting, RLIA Board members have been conducting a campaign to garner support for conducting a Pilot project to test the feasibility of using iron fillings to reduce the active Phosphorous levels in Rush Lake, the channel connecting East and West Rush Lake, and Rush Creek. It is planned that this Pilot program will be initiated sometime before the end of 2008.

As part of this campaign to improve the water quality of Rush Lake, members of the RLIA have participated in the following planning and information exchange events:

- Seven members of the RLIA participated in a two-day Initiative Foundation workshop with six other Lake Associations in September 2007, which was designed to help Lake Associations institute programs to improve their lakes.
- Members of the RLIA Board hosted a meeting in December 2007 with the DNR, MPCA, CC-SWCD, and Steve McComas (Blue Water Science) to discuss new technologies that might deactivate the Phosphorous present in lakes.
- Members of the RLIA Board have met with the State Legislators from our district (District 17) during the past 6 weeks to insure that they are fully informed as to the goals of the RLIA project to improve the water quality in Rush Lake and Rush Creek.
- Members of the RLIA organized, and participated in, an information exchange with four other Lake Associations at the Pokegama Lake Association building on February 2. These other Associations are watching, with great interest, the progress we make in addressing the Phosphorus and CLPW problems because all of them have the same problems.
- Board members met with the MPCA and CC-SWCD on January 15 and again on February 8 to discuss Work Plans for the RLIA to both address Phosphorous sources that might flow into Rush Lake and Rush Creek (the TMDL) and also conduct a pilot program to test the effectiveness of iron fillings. Individuals from the MPCA and CC-SWCD have been helping the RLIA formulate the TMDL project and a Work Plan for this first project should be submitted to the MPCA before the end of February.

The key components of this TMDL project are:

1. To perform a Total Maximum Daily Load (TMDL) Study of the Impaired Waters of Rush Lake and Rush Creek and, if appropriate, prepare a Load Reduction Work Plan.
2. These two bodies of water will be studied simultaneously because Rush Creek drains Rush Lake directly into the St. Croix River.
3. The TMDL study and pilot program embody a cooperative approach in which the MPCA will assist Chisago County in its data collection and analysis programs, and the County will pursue administration of the TMDL Implementation Plans.

The second phase of our plan to improve the water quality in Rush Lake and Rush Creek, the Pilot project to test the effectiveness of iron fillings to sequester the Phosphorus already in these bodies of water and to reduce the CLPW, will take a little longer to initiate because background studies will need to be performed prior to depositing iron filings in the test regions. That is, it is essential to document the state of the local environments in the test regions in order to be able to identify the positive effects and also to be able to recognize if there are any detrimental effects associated with the iron filings. The MPCA, DNR, and CC-SWCD all support the concept of performing these Pilot projects and all that remains is performing the preparation work so that the Pilot project is conducted in a scientifically credible manner.

Stay tuned because we will need your support and participation to make this campaign a success!