12,000 Years Old

The inland lakes of Michigan were formed during the glacial period about 12,000 years ago. Until very recently they were "aging gracefully" as the saying goes – a very slow and natural process of change in which man played only a moderate part.

Since about the 1940's however, it seems everyone wants to have either a permanent home or a vacation place on a lake, and our shorelines have become intensively developed. The quality of our lakes has made us realize that we can't fool with Mother Nature without cost.

…even in natural circumstances a lake will eventually fill up with the residue of plant and animal life which grew in the lake itself, or similar materials transported to it from higher elevations in the watershed by wind, water, gravity, or animal life. It will get smaller and smaller, shallower and shallower, and eventually close over completely as a marsh or bog.

Reprinted from the

NORTHEAST MICHIGAN COUNCIL OF GOVERNMENTS

Lake Management Manual-December, 1978

Memorable Quotes

"Lake is the landscape's most beautiful and expressive feature. It is earth's eye; looking into which the beholder mesures the depth of his own nature."

Henry David Thoreau, from the chapter "The ponds" in Walden.

"It is man's depth to imagine the pleasures of lifting one's personal water craft hoist into the next foot of water and experience the drifting downward, controlled by Newton, into the muck rising above your swim suit; realizing there was a bottom you could touch and feel and know you could lift the hoist."

Charles Ross Winger, Inspired by Henry David Thoreau

Lake Manuka Association, Inc. Annual Member Meeting 2005 Agenda

Call To Order

Roll Call

Reading of the Minutes

Treasurer's Report

Officer Report

1. **President**
2. **Others**

Committee Reports

1. **Communications-Janet Ferguson**
2. **Government-Bob Gurchiek**
3. **Preservation-Larry Patritto**

Ad Hoc Committees

1. **Lake Wequas-Terry Jans**

Unfinished Business

New Business

Election of Board of Directors

Adjournment

Presidents Report

Robert Rules

Introduce Board of Directors

Introduce Chair Persons

First Year BOD Action

Michigan Lake & Stream Conference


Manuka Lake
satellite images taken on May 13, 1994
(http://terraserver.homeadvisor.msn.com/)

Your Board 2004-05

Chuck Winger-President

Kay Winger-Associate Exec. Secretary

4564 Manuka Trail

Gaylord, MI 49735

989-731-3324

5255 Rymoor Drive

Sylvania, OH 43560

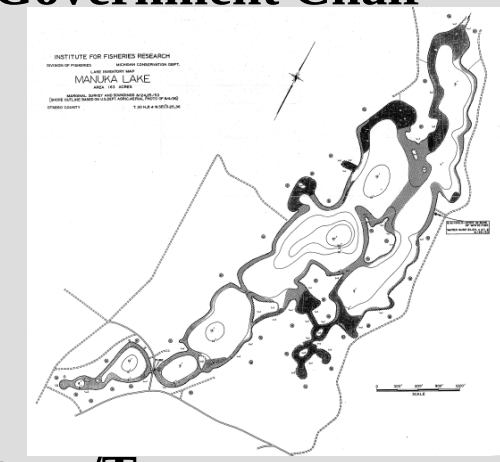
419-882-1083 H

419-841-7499 W

419-841-7690 Fax

wingman2@sev.org

Bob Gurchiek-VP/Government Chair



3672 Walnut Drive

Gaylord, MI 49735

989-732-7891

Gurckik@lcc.edu

Jack Crusoe-Secretary/Treasurer

4489 Manuka Trail

Gaylord, MI 49735

989-705-7688

2112 Linwood Avenue

Royal Oak, MI 48073

248-398-5847 H

248-398-0538 Faxj

jacar@core.com

BOD 2004-05

Larry Patritto-Lake & Preservation Chair

4754 Manuka Trail

Gaylord, MI 49735

989-732-7260

patritto@stellardirect.com

Ernie Bourdage

4046 Lake Manuka Road

Gaylord, MI 49735

989-731-0312

sebourdage@stellardirect.com

Chris Zarichney

4527 Manuka Trail

Gaylord, MI 49735

989-731-5359

Northend.cz@core.comh

Janet Ferguson-Communications Chair

3680 Walnut Drive

Gaylord, MI 49735

989732-9850

54 Cloverly Road

Grosse Pointe Farms, MI 48236

313-884-8817

lowellferguson@comcast.com

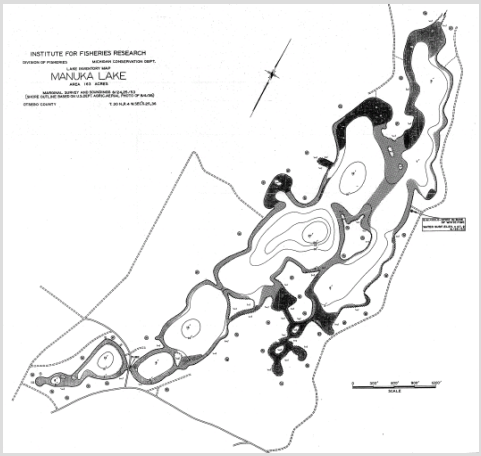
Marvin Priami

4050 Manuka Lake Road

Gaylord, MI 49735

989-732-9031

act4@freeway.net



BOD 2004-05

Russell Lesser

4868 Manuka Trail

Gaylord, MI 49735

989-732-6572

bcleser@glakes.com

Wayne Jaycox

4528 Manuka Trail

Gaylord, MI 49735

989-732-4184

z_wjacox@yahoo.com

First Year BOD Activity

Grew from 7 to 10 members

Conducted 7 meetings

Adopted By-laws

Conducted the Member Vote of By-laws 219

Organized Membership Drive 92-107-98(4)113

Incorporated as Non-Profit Corporation 89/3/5

Provided Guidance to Lake Preservation Committee

1. **Agreed upon most important lake quality issues**
2. **Approved contacting engineering firms**

Attended Michigan Lake & Streams Association Annual Conference at Boyne Mountain

MICHIGAN LAKES & STREAMS ANNUAL CONFERENCE
April 18-20, 2005
Boyne Mountain Conference Center

The MLSA is a not-for-profit organization, which mission is to educate and help Lake Associations such as ours learn how, and how to act to improve the quality of the Tota Lake Environment. The Annual Conference is organized so it educates, trains and advises attendees, most who serve on Lake Association Boards.

I asked for and received the vote from your board to join the ML&SA and attend the conference. The membership is for me as an individual. To join as an organization, our Association's dues would be $700 annually. An individual membership is $35. The cost of the conference is $65 per individual.

At the conference one is treated to a room set up with Open Booths. Some booths are sponsored by Lake Associations such as Houghton Lake's booth, which offered advice on eradicating Eurasion Millfoil from their 20,000 acre lake. Crystal Lake's booth addressed the importance of having a Lake Association and how it combined Two Associations into One.

ML&SA CONFERENCE

Several booths were sponsored by companies, which specialize in Lake Quality Improvement. They included…

- **Dredging**
- **.Chemical Weed Control**
- **Biological Weed Control-(Weevils)**
- **Sewers**
- **Aeration for Muck Control**
- **Water Quality Engineering Firms**
- **Water Quality Management Firms**
- **Silent Auction-Wine was a popular item**

ML&SA CONFERENCE

There were a variety of symposiums or lectures one could attend. Because many of these were happening at the same time, you had to make a choice of which one might pertain to your situation or satisfy your interests.

I chose to attend the following…

- **Water Testing Training-Secchi Disk, Chloryphyll, Disolved Oxygen, and Phosphorus**
- **Glen Lake Association-On "Greenbelts"**
- **Crystal Lake Association-Importance of Lake Associations**
- **East Twin Lake-Aeration Project for Muck Elimination**
- **Managements of Lakefronts Through Planning and Zoning-Speakers included a zoning expert, a Township Trustee from a Lake Community and an Attorney who's firm deals with Lake Association and Riparian owner issues.**

The information I received at this conference will be valuable as our Association pursues ways to improve our lake. I have two things to share with you.

ML&SA CONFERENCE

“The purpose of a Lake Association is to be 90% for education of its Riparian Owners and 10% taking Action.”

“The number of weeds in your lake is controlled by the amount of Phosphorus in your Lake.” 7-0-7

Cooperative Lakes Monitoring Program CLMP

CLMP Goals

- Provide baseline information and document trends in water quality for individual lakes.
- Educate lake residents, users, and interested citizens in the collection of water quality data, lake ecology, and lake management practices.
- Build a constituency of citizens to practice sound lake management at the local level and to build public support for lake quality protection.
- Provide a cost-effective process for the DEQ to increase baseline data for lakes state-wide.

CLMP Measurements

- Secchi disk transparency
- spring total phosphorus
- summer total phosphorus
- chlorophyll *a*
- dissolved oxygen and temperature

CLMP1

EUTROPHICATION

The gradual increase of lake productivity from oligotrophy to eutrophy is called lake aging or *eutrophication*. Lake eutrophication is a natural process resulting from the gradual accumulation of nutrients, increased productivity, and a slow filling in of the lake basin with accumulated sediments, silt, and muck. Human activities can greatly speed up this process by dramatically increasing nutrient, soil, or organic matter input to the lake. This human influenced, accelerated lake aging process is known as *cultural eutrophication*. A primary objective of most lake management plans is to slow down cultural eutrophication by reducing the input of nutrients and sediments to the lake from the surrounding land.

Oligotrophic

Mesotrophic

Eutrophic

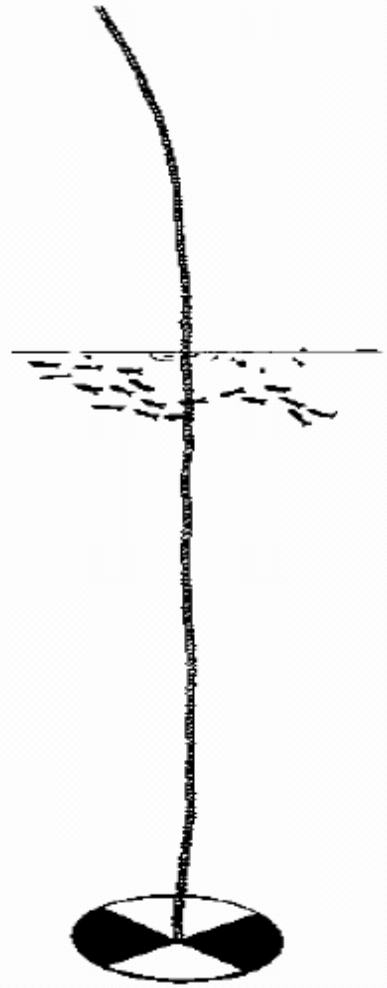
CLMP2

Important Measures of Eutrophication

Nutrients are the leading cause of eutrophication. Nitrogen and *phosphorus* both stimulate plant growth. Both are measured from samples of water and reported in units of ug/l (micrograms per liter), or ppb (parts per billion). *Phosphorus* is the most important nutrient, and is often used directly as a measure of eutrophication.

Plants are the primary users of nutrients. *Chlorophyll a* is a component of the cells of most plants, and can be used to measure the concentration of small plants in the water, such as algae. *Chlorophyll a* is measured from samples of water and reported in units of ug/l. Macrophytes are aquatic plants with stems and leaves. The location of different species of plants can be mapped, and the density can be measured in pounds of plants per acre of lake.

Transparency or the clarity of water is measured using a device known as a *Secchi disk*. This is an eight inch diameter target painted black and white in alternate quadrants. The disk is attached to a marked line, or measuring tape, and lowered from a boat into the lake. The distance into the water column the disk can be seen is the transparency, measured in feet or meters. A short distance of visibility means that there are suspended particles or algae cells in the water, an indication of nutrient enrichment.



CLMP3

Dissolved Oxygen (DO) which is oxygen dissolved in the water, is necessary to sustain fish populations. Fish, such as trout, require more DO than warm water species. Eutrophic lakes occasionally have levels of DO below the minimum for fish to survive, and fish kills can result.

Sediments can be measured to determine how fast material is depositing on the bottom. This may indicate watershed erosion, or a large die-off of aquatic plants.

Fish can be sampled using nets. In an oligotrophic lake there are likely to be cold water species, such as trout. A sample of warm water fish, such as sunfish, bass, bullheads, and carp is more typical of a eutrophic lake.

Temperature affects the growth of plants, the release of nutrients, and the mixing of layers of water in the lake. Temperature measurements can determine if mixing occurs, moving nutrients from the lake bottom up into the surface waters promoting algae blooms.

CLMP4

CLMP Contacts

- Michigan Lake and Stream Associations, Inc.
  P.O. Box 249
  Three Rivers, MI 49093
  Telephone: 269-273-8200
  http://www.mlswa.org

- Michigan Department of Environmental Quality
  Water Division
  Inland Lakes and Remedial Action Unit
  P.O. Box 30273
  Lansing, MI 48909-7773
  Telephone: 517-335-4211
  http://www.michigan.gov/deq

DEQ

Michigan Department of Environmental Quality

Jennifer M. Granholm, Governor
Steven E. Chester, Director
www.michigan.gov/deq

MICHIGAN LAKE AND STREAM ASSOCIATIONS

Things Riparian Owners Can Do to Support Lake Quality

Do you have grass? HAVE YOUR SOIL TESTED. Use 7-0-0/Slow release N

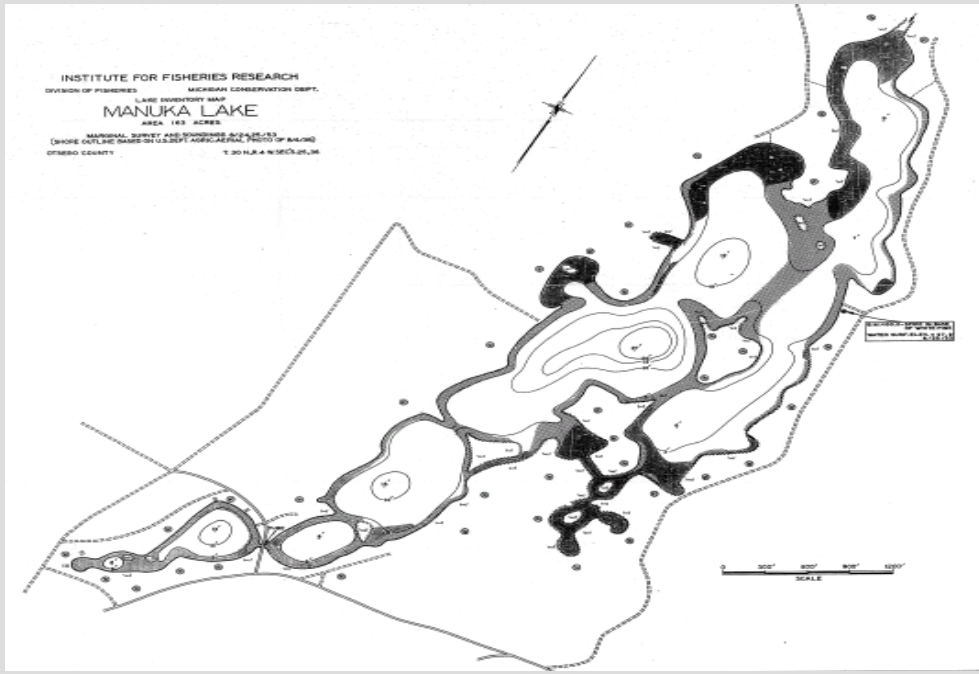
Have your septic system cleaned regularly. Use it wisely.

Plant a Greenbelt

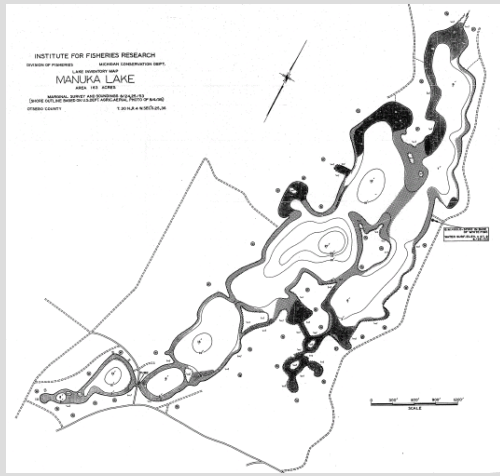
Avoid drawing water from the lake. (It is your right.)

Eliminate run-off

Support your Lake Association



Committee Reports



Lake Wequas-Terry Jans

Communications-Janet Ferguson

Government-Bob Gurchiek

Lake Preservation-Larry Patritto

To: Tony Groves
Progressive AE
1811 4 Mile Road
Grand Rapids, MI 49525

4/1/05

From: Lake Manuka Association, Inc.
P.O. Box 891
Gaylord, MI 49734

Subject: Request for Quotation

Background

Lake Manuka is a 150 acre spring fed lake located in Otsego County, Michigan that has lost approximately 4 feet of depth over the last 7 years. This loss of water depth has aggravated an already aggressive weed growth problem in select areas of the lake, and exposed muck along areas of the shoreline. The resulting combination has limited the use of the lake by many types of powered watercraft. The resulting loss of recreational uses such as swimming, water skiing, and fishing has adversely affected property values.

Your firm has been recommended as one which, has experience in dealing with many of the issues affecting our lake. The Lake Manuka Association, Inc. is requesting a two-part quotation and statement of work aimed at providing remedy to these situations.

Part One of the quote will contain costs and timing required to provide an analysis of the lake and recommendations of possible remediation techniques for the-above-described problems.

Part Two of the quote shall contain the costs and timing required to carry out the remediation work recommended in Part One.

We are also interested to know if you will be able to present your firm and your ideas to our membership at our annual meeting to be held May 28, 2005 in Gaylord, MI. Please respond to this latest request no later than April 25th.

Thank you for your attention to this matter.

Sincerely,

Charles R. Winger
President, Lake Manuka Association

Details

When submitting your Quote, please include a detailed statement of work describing at minimum:

•Specific engineering experiences for similar projects, qualifications of technical staff, and a company profile. Include project references and contacts.

•Detailed billing information including billing rates

Detailed scope of services for:

Water level: Specifically augmentation wells, but other concepts are encouraged. This should include definition of an "acceptable" level, and monitoring techniques to maintain that level.

Weed control: Address Chemical, Biological, and/or Mechanical methods.

Muck control/removal: Address Aeration, Dredging, Biological, or Chemical methods.

Dredging sand bars for improved navigation.

(CONT)

•Each topic covered will also address:

Effectiveness of each concept alone.

Effectiveness of concepts used in combination.

Estimated implementation costs.

Estimated on-going maintenance methods and costs.

Clearly define all possible consequences to the lake and the surrounding environment, both positive and negative. Also include how these consequences would be monitored and evaluated.

Outline Legal implications and requirements for each course of action. These should include both current and future riparian rights.

Your estimate of our chances for approval from the DNR / DEQ and local regulatory agencies for any one of these projects.

A detailed timeline showing the start, milestones and end dates needed to complete Part One of the quote.

•A list of personnel, equipment and any other resources your company will assign to assure successful completion of the project. Include detailed information for subcontractors.

(CONT)

Other requirements:

- **Provide details of Insurance Coverage.**
- **Final report to be in electronic form, unless otherwise agreed upon by the Lake Manuka Association, Inc.**
- **All quotes are due to the Lake Manuka Association, Inc. by COB May 28, 2005.**

Should you decide to participate in this quote process, the Lake Manuka Association will provide the following documents:

- **A current map of the lake and the surrounding watershed.**
- **The 1980 report: "Water Quality Assessment and Management Strategy for Manuka Lake".**
- **The 2001 report: "Sediment Sampling of Proposed Dredge Area for Lake Manuka".**
  - **Both reports will contain a description of the study area and photographs of the lake.**
- **A 2004 Aerial Photo focusing on sandbars.**
- **A copy of our application to become a legal lake association with the Michigan Lakes and Stream Association, Inc.**
- **Copy of State of Michigan Non-Profit Registration**

(CONT)

Please address any questions regarding this quote to:

Larry Patritto
4754 Manuka Trail
Gaylord, MI 49735

989-732-7260
patritto@stellardirect.com

Funding of Projects

Voluntary Funding

Utilizing a Lake Improvement Board

Forming a Lake Improvement Board

Old Business

Records from 2004 Organizational Meeting

New Business

Election of Board Members

Chuck Winger (3 years)

Jack Crusoe (3 years)

Bob Gurchiek (3 years)

Larry Patritto (3 years)

Marv Priami (3 years)

Ernie Bourdage (3 years)

Russ Lesser (2 years)

Chris Zarichney (2 years)

Janet Ferguson (2 years)

Wayne Jaycox (1 Year)

Nominations

Wayne Jaycox

Jeff Drukker