

Problems with Current Watershed Programs

1. Non-Uniformity

Four separate watershed inspectors enforcing different laws. Laws vary from archaic (1950's) to good (for septic systems). Non-uniformity results in a disparity in system cost (to owner) and effectiveness because the laws and inspectors are not coordinated under one program.

2) No Professional Oversight

Current system has no professional oversight to ensure that laws are adequate, inspectors are properly trained and enforcing laws and the results are protecting the lake and the public health.

Keuka Lake Watershed Project

Mission

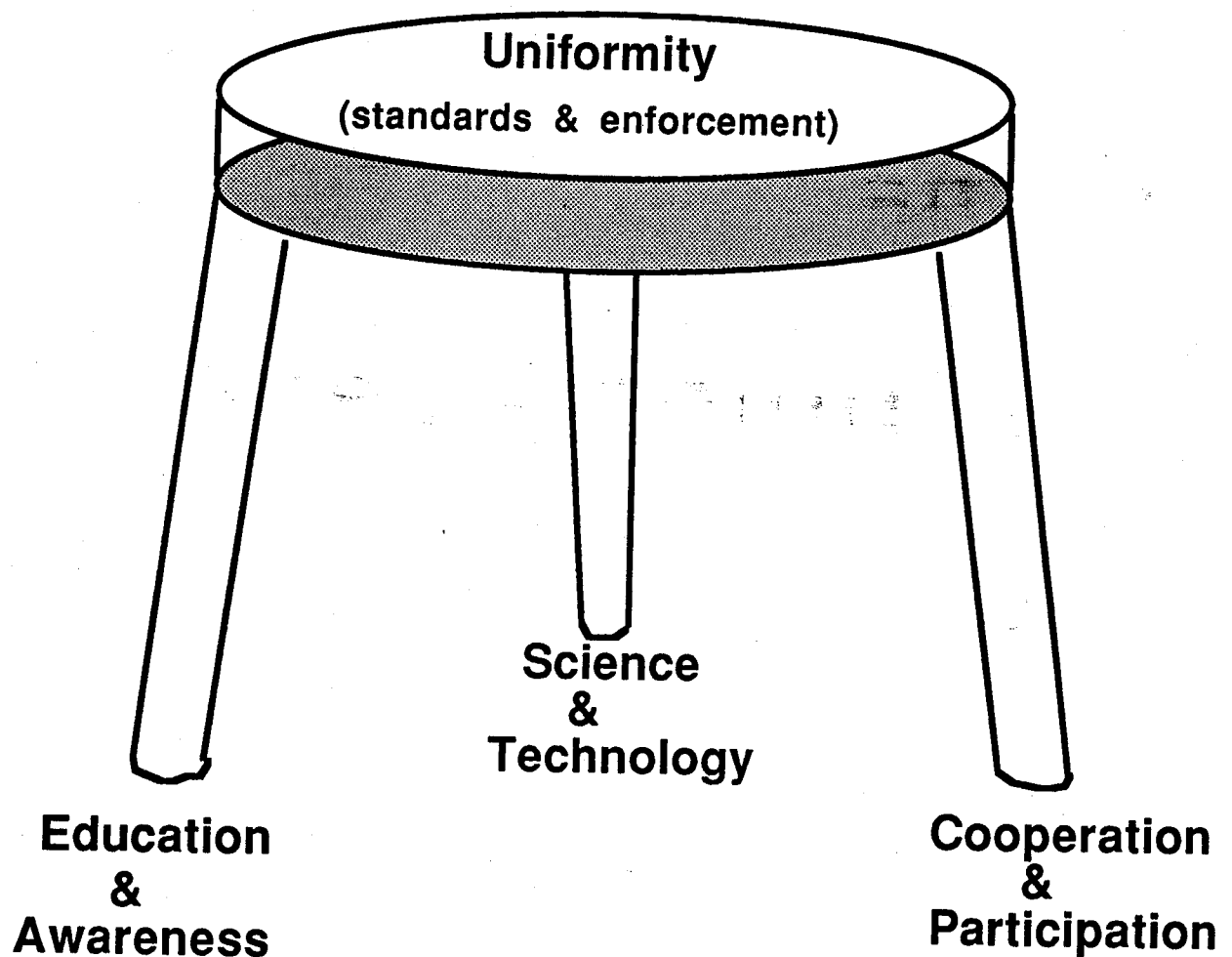
To help develop a uniform watershed program with towns and villages to protect and improve Keuka Lake.

Keuka Lake Watershed Project (KLWP)

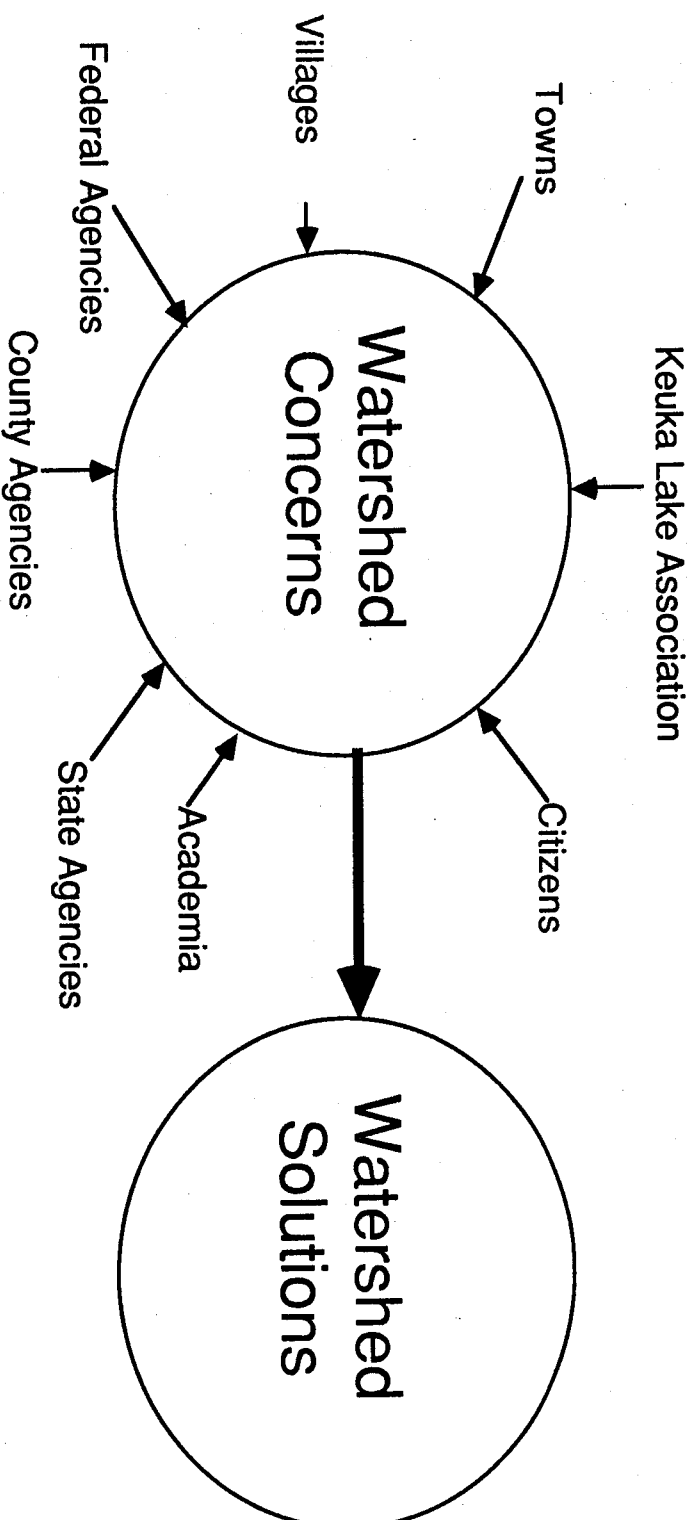
Project Status

- 1) Consulted w/ many groups and formed Task Force.**
- 2) Hired a water resources consultant, Peter Landre, 2/91.**
- 3) Raised funds to support the project for two to three years.**
- 4) Expanded water testing program.**
- 5) Developed "Listen to the Lake" awareness program.**
- 6) Strengthening working relationships with towns, agencies, and academic institutions.**

Keuka Lake Watershed Project Approach



Participatory Approach



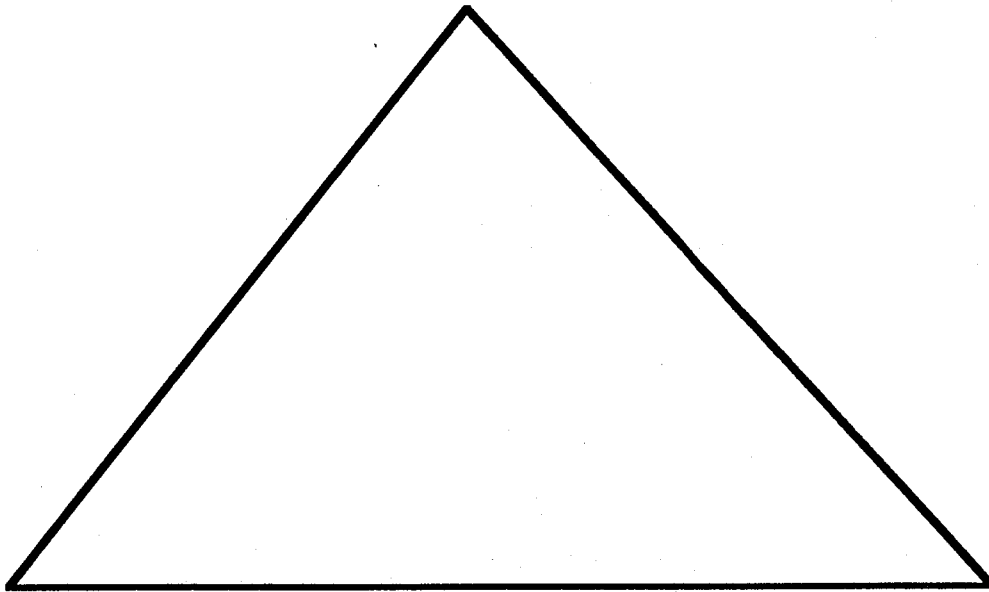
-Cornell University, Alfred University, Yates and Steuben Soil and Water District, Cornell Cooperative Extension, Department of Health and Environmental Conservation, U.S. Geological Survey, Senator Kuhl, Lt. Gov. Lundine, Assemb. Don Davidson

**Town
Watershed
Advisory
Committees**

Each town or village will identify representatives to serve on the committee.

"Grass Roots is Best!"

Solutions



Locally Defined
Concerns

TWAC Mission

**To identify issues
and concerns and
help develop
watershed-wide
solutions.**

**KLA invites
you to
"Listen to the Lake"
and join them
in developing a
locally supported
watershed program**

Appendix A-Glossary of Technical Terms

"AA"-A Department of Environmental Conservation classification for surface waters where the best use of the water is for drinking purposes.

Aerobic Septic Tank-a septic tank that introduces air to treat the septage or waste. This process is called aerobic decomposition and it is more efficient at treating septage than traditional septic tanks that treat without oxygen or anaerobic decomposition. Multi-Flow is one available commercial unit.

Algae-plants found in water; can be small, microscopic "phytoplankton" which float in the shallow, light-penetrating zone of the lake or large, macroscopic plants such as aquatic weeds which can either float or be rooted to the bottom of the lake.

Algae Blooms- a widespread growth of small, floating algae in a surface water body such as a lake or pond; the lake surface will have a "scum" or "pea-soup" appearance; algae blooms are caused by excessive nutrients in the lake, primarily phosphorus.

Aquatic Weeds-aquatic nuisance weeds; aquatic weeds grow in the shallow, light-penetrating portions of a lake or littoral zone and provide habitat for fish and other organisms; excessive weed growth may occur when sediments and nutrients are added from a stream or shoreline area.

Bacteria-a small, single-celled microorganism; there are numerous types of bacteria with different roles in the environment; most types of bacteria are vital for proper functioning of the environment (decomposition of dead organisms), however, some bacteria are pathogenic or disease-causing.

DEC-New York State Department of Environmental Conservation

DOH-New York State Department of Health

Dissolved Oxygen- DO, oxygen which has dissolved in water. Wave action and plants supply most of the DO found in aquatic systems. DO ranges between 0 and about 15 part per million in water depending on temperature (temperature increases, decrease available DO in water), wave action, and plants. Fish depend on DO for breathing and require certain amounts depending on fish species. Generally, DO below 3-4 ppm is not suitable fish habitat.

Drinking Water-water which is potable; free or low concentration of contaminants which alter the smell, taste, or color and render the water un-potable; DEC and DOH have contaminant standards for both drinking water and drinking water supplies

Chlorination-the process of adding chlorine to drinking water to disinfect the water or kill bacteria.

Eutrophication-a natural aging process where a lake proceeds from a clear, unproductive lake (few fish or algae-oligotrophic lake) to a productive lake (many fish and algae-eutrophic lake) and ultimately a swamp, field, and then a forest; caused by the addition of nutrients and sediments from the surrounding watershed; rate of change depends on the lake and watershed size and characteristics as well as, human activities which contribute sediments and nutrients to the lake.

Eutrophic Lake-a lake with a relatively high amount of nutrients and algae. A lake considered "productive" usually has good fishing because of the high amounts of floating algae and large aquatic weeds. Water clarity in a eutrophic lake is usually low.

Fecal Bacteria-bacteria found in animal feces or wastes; fecal bacteria are not pathogenic or disease-causing, however, other bacteria or viruses associated with feces can be pathogenic.

Giardia-a severe gastro-intestinal disease caused by the microorganism giardiasis. Found primarily in turbid, mountain beaver ponds, however, the disease is spreading to most inland waters. Water treatment to kill the organism includes boiling or filtering water. Chlorination or UV filters will not kill the organism.

Lake Aging-see eutrophication

Nitrogen-an element that is a basic building block for all plants and animals. Nitrogen is found in many different solid, liquid, and gaseous forms. Nitrogen naturally cycles in the environment, however, overuse of nitrogen can upset the natural balance and become a pollutant. Nitrates in water at 10 ppm or higher can cause the disease methomoglobinemia.

Nonpoint Source Pollution (NPS)-pollution from a diffuse source, such as an agricultural field or road bank; 80% or more of all water pollution in the US is thought to be from NPS.

Nutrients-a substance required for plant or animal growth.

Pathogens-disease-causing organisms. Common pathogens include microorganisms such as bacteria and viruses.

Part 75a-New York State Department of Health codes for the design and construction of new wastewater treatment systems (septic systems).

Phosphorus-a nutrient found in fertilizers, organic materials (leaves, grass, manure, human wastes), rocks, and soil. Phosphorus (P) is required for plant and animal growth. Large amounts of P enter a lake from its watershed can cause excessive algae and weed growth.

PL 1100-Public Health Law 1100 which provides for the development, implementation, and enforcement of Department of Health watershed rules and regulations for purveyors or suppliers of surface water. The purpose of PL 1100 is to provide regulations to adequately protect surface waters from potential sources of pollution that may threaten human health via the water supply.

PPB-parts per billion; measurement unit used to quantify very small concentrations of a substance in (usually) water; equivalents-there are 1000 ppb in one 1 ppm and 1 ppb is approximately equal to a mg/m³ or a ug/l.

PPM-parts per million; measurement unit used to quantify very small concentrations of a substance in (usually) water; equivalents-there are 1000 ppb in one 1 ppm and 1 ppm is approximately equal to a mg/l.

Safe Drinking Water Act-a Federal statute which mandates standards for drinking water. The Environmental Protection Agency is responsible for enforcing the provisions under the Act, however, most of the responsibilities have been handed down to State departments of health and environmental conservation.

Sanitary Code-the Department of Health's regulations pertaining to sewage disposal from domestic and municipal sources.

Secchi Disk-a round, 8" diameter disk lowered by rope into a body of water to estimate water clarity; higher secchi disk readings (greater than 5 meters) indicate relatively clear, and unproductive water (oligotrophic), more suitable for swimming, less suitable for fish habitat

Secchi Disk Transparency-see Secchi Disk

Septic System-see Wastewater Treatment System

Septic Tank-a large tank, 1000 gallons or greater, used to clarify and breakdown household wastewater solids prior to treatment in a leach field.

UV Filter-ultra-violet filter attached to household cold water supply lines to kill bacteria and viruses.

Wastewater Treatment System-normally, an underground system which collects household wastewater (toilet, shower, sink, appliances, etc.) through a series of sewer pipes and treats the wastes first, in a septic tank to remove solids and clarify the liquid, and second, in a leach field to remove pathogens, water, and nutrients.

Watershed- all the land area that drains into a lake or other receiving waterbody; the tops of hills around a lake usually define the watershed boundary or divide.

Watershed Rules and Regulations-Department of Health rules established and enforced by water a purveyor or supplier to protect a water supply from contamination that may threaten human health.

Water Clarity-the depth to which one can see down into a body of water; usually measured with a secchi disk.

Zebra Mussels-a small (half-inch), striped mollusk brought to the USA from Europe in the ballast water of large supertankers in the Great Lakes and currently invading fresh waters of North America. Zebra mussels have a tremendous capacity to reproduce and cover hard materials such as rocks, boats, pipes, and piers.

Appendix B-Organizations in the Keuka Lake Area

Bluff Point Association-a volunteer member association concerned with issues primarily related to the "Bluff" on Keuka Lake in the town of Jerusalem.

Cornell Cooperative Extension-a county-level agency in both Yates and Steuben Counties with a mission to provide public education and information based on research work done at Cornell. Most programs relate to agriculture and the environment.

DEC-Department of Environmental Conservation. Enforce environmental conservation laws including those related to fish and wildlife, air pollution, water pollution, and land disposal of wastes.

DOH-Department of Health. Enforce laws relating to public health and safety including swimming areas, municipal drinking water supplies, and domestic wastewater treatment.

Flood Gate Compact-members of the Perimeter Committee and the Keuka Lake Association who oversee the planning and installation of the outlet gates at Penn Yan.

Friends of Keuka Lake-a private foundation formed by the Bluff Point Association.

Finger Lakes Association-a tourism and economic development organization that represents the 17 county Finger Lakes Region.

Keuka Lake Association-a 1,700 member volunteer association which addresses issues facing Keuka Lake and its watershed. Formerly the Keuka Lake Shoreline Property Owners Association.

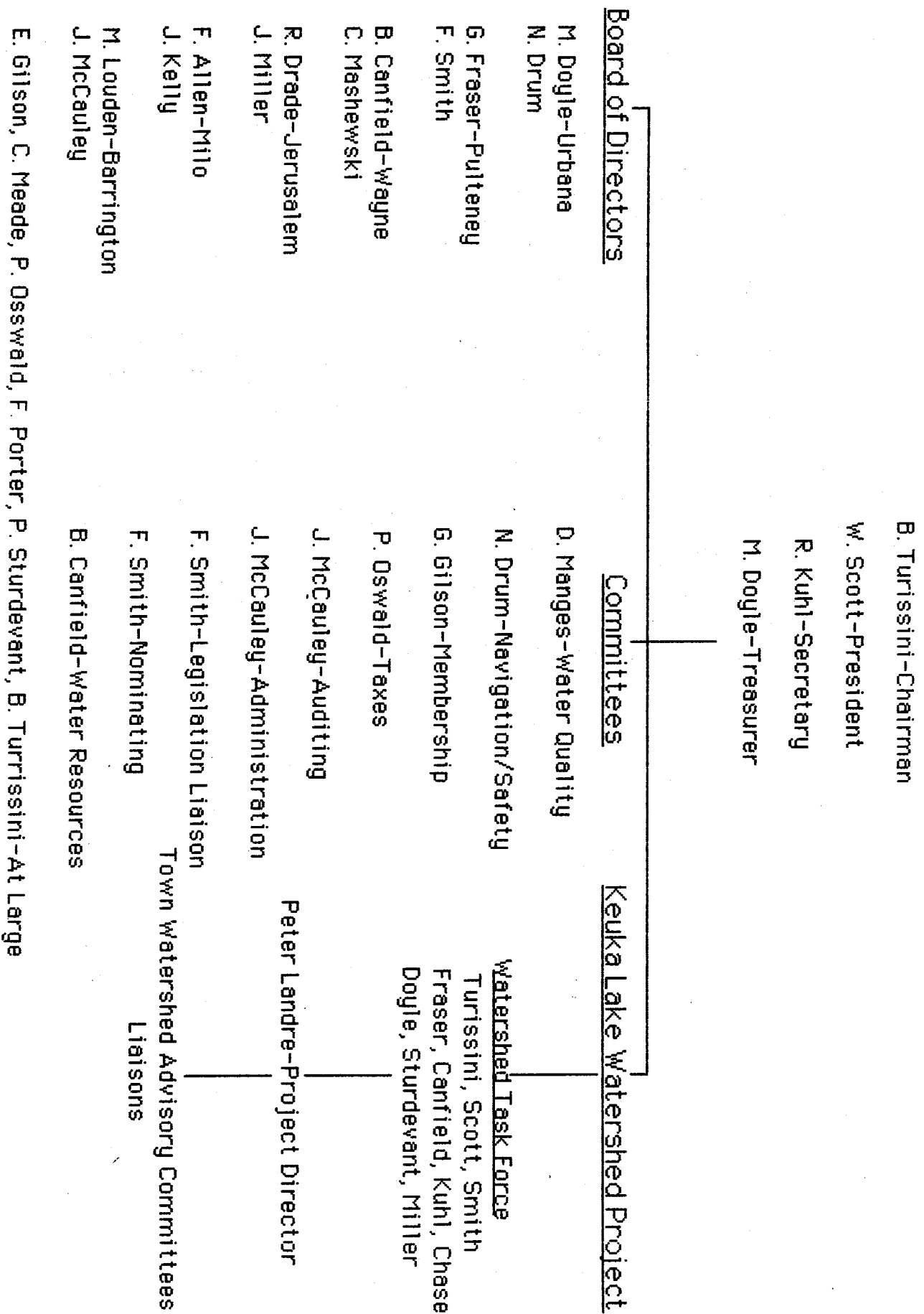
Keuka Lake Foundation-a private foundation formed by the Keuka Lake Association in 1991.

Perimeter Committee-a group of town supervisors and mayors from town and villages on the perimeter of Keuka Lake including Hammondsport, Urbana, Pulteney, Wayne, Penn Yan, Jerusalem, Milo, and Barrington. The group was initially formed to oversee a watershed program established in 1963. Several towns have dropped out of the 1963 program and so the original mission of the group to oversee the watershed program has lost much of its meaning. The group did come together in 1989 to develop the "Flood Gate Compact".

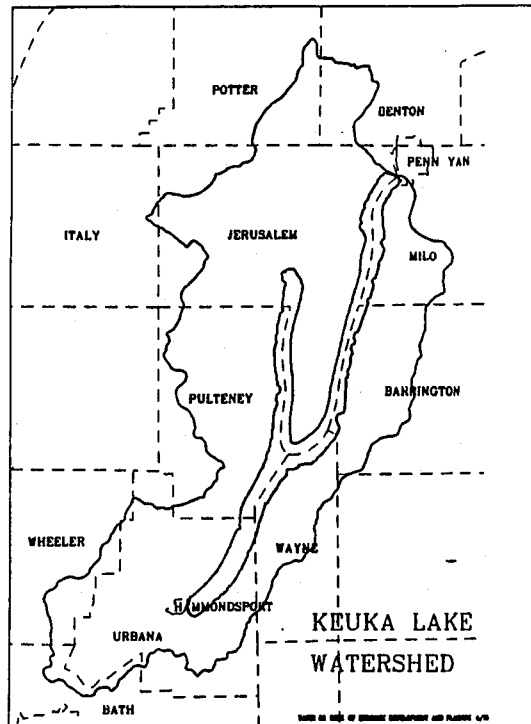
Soil and Water Conservation District-a county-level agency concerned with the wise use and management of soil and water resources. The district strictly provides technical support and education services.

Water Resources Board-an organization of groups including county planning, departments of health, and soil and water conservation districts from the 17 county Finger Lakes Region who participate in the Aquatic Vegetation Control Program funded by the New York State Legislature. Primary purpose of the group is to obtain and disburse funds to member organizations.

Appendix C-Keuka Lake Association Organization Chart



Appendix D-Keuka Lake Watershed Description



Watershed Size: 110,000 acres **Lake Size: 11,000 acres**
Watershed Population: 20,000 **# of Houses: 6,300**
Shoreline Properties: 2,893
Lake Volume: 378,780,000,000 gallons
Flushing Rate: 6.3 years (time required to recycle water in lake)
of Towns in Watershed: 10
of Towns with Lake Frontage: 6
of Villages in Watershed: 2
of Septic Systems in Watershed: 6,000
of Residents Using Lake for Drinking Water: 18,600
% of land in agriculture: 46%
% of land in Forest: 38%

DEC classifies Keuka Lake as a "AA" drinking water supply lake. Classification does not necessarily indicate actual lake quality, rather, the "AA" standard indicates the desired and protected water quality status based on several parameters including turbidity, color, oil, taste, coliform, pH, dissolved solids, and dissolved oxygen.

Appendix E-Applicable Watershed Laws and Regulations

Development- The State Environmental Quality Review Act (SEQR), a New York State law passed in 1975 to allow for the consideration of environmental factors in the planning and policy-making stage of a proposed development or action. If an action is determined to have a significant impact on the environment, then an Environmental Impact Statement (EIS) must be prepared to explore ways to minimize the impact. In general, however, most development projects are primarily overseen and directed by local zoning and land use ordinances at the town or village level. Development on or over water is also under the jurisdiction of the Army Corp and the DEC, see **Wetlands**.

Dock and Mooring Regulations- Docks and moorings can be regulated through the State Navigation Law and the Public Lands Law, which required permits for residential or commercial docks and moorings from the Office of General Services (OGS). In addition, permits may be required from the DEC, Army Corp of Engineers, and the local town or village See **Wetlands**. In order to address uniformity in regulation around the lake, special legislation can be written to amend the Navigation Law.

Existing or Replacement Septic Systems (Wastewater Treatment Systems)- No state laws exist for existing or replacement systems unless they are contaminating a protected waterbody. If there is documented contamination, the DEC and the DOH may have jurisdiction. Town watershed regulations can be written to include existing systems. Local laws can be as strict or stricter than requirements for new systems. Where DOH water supply rules and regulations exist (East Arm of Keuka Lake), regulations can be developed and enforced by the designated watershed inspector. Another level of authority to develop septic system regulations for existing systems is through a county special district under Article 5a

or 5d of NYS County Law. Finally, special state legislation can be written to create watershed-wide control of new and existing systems.

Navigation Regulations-The State Navigation Law also applies to general navigation and safety. Special legislation has been passed for Keuka and Canandaigua Lake regulating boat speed and noise.

Nonpoint Source Pollution/Sediment Erosion and Nutrients-No state laws exist for the regulation and control of nonpoint source pollution unless there is an obvious and verifiable contamination that is causing significant human health or environmental damage. If a nonpoint source can be shown to be contaminating a public water supply, such as Keuka Lake, and the public health can be shown to be in danger, then DOH public health regulations can be used to correct the situation. The same holds true for environmental damage and the role of the DEC. The problem with nonpoint source pollution is that it does not cause dramatic, acute problems like point sources might tend to do. Instead, nonpoint sources cause slow, chronic degradation of a system over a long period of time. Institutional arrangements available to handle sediment and nutrient problems are not well developed, however, several models are emerging. Local ordinances for sediment and erosion control can be implemented and overseen by the watershed inspector/code enforcement officer and/or the county soil and water conservation district. The same type of regulations could also reside in a county district or watershed entity through special legislation. It may also be possible to update DOH watershed rules and regulations to incorporate sediment and erosion control.

New Wastewater Treatment Systems (Septic Systems)-Part 75a of the State Department of Health Sanitary Code regulates the design and construction specification of new systems. The code does not specify any requirements for existing or replacement systems.

Point Source Pollution Regulations-The State Pollution Discharge Elimination System (SPDES) requires that every point source discharge obtain a permit from the DEC in order to legally use New York State's waters for waste disposal. Permits must be

obtained before an owner or operator of any wastewater system can legally discharge sanitary, industrial, or commercial wastewater. The SPDES program is under the authority and provisions of the Federal 1972 Clean Water Act and the State, Article 17, Titles 7 and 8 of the Environmental Conservation Law.

Wetlands-Freshwater Wetlands Act of 1975 is a New York State law passed to regulate the use and development of the State's freshwater wetlands. Wetlands are also regulated by the Army Corp of Engineers for structures over or in navigable waters (Section 10, Rivers and Harbors Act of 1899) and the discharge of dredge or fill material into any waters of the United States (Section 404, Clean Water Act).