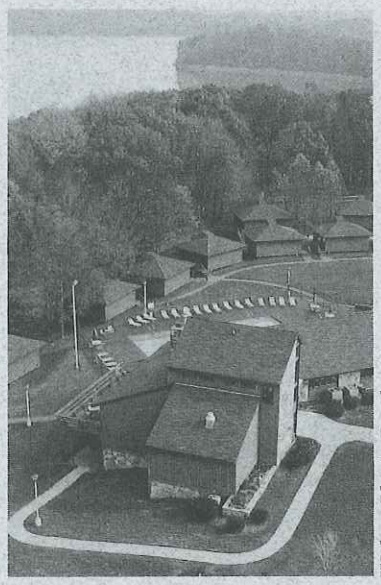
CLEAN LAKES PROGRAM

Office of Water Management
Indiana Department of
Environmental Management

WATER COLUMN

WINTER
1993
Vol. 5, No. 1

1993 Lake Management Conference Set for April 30-May 1

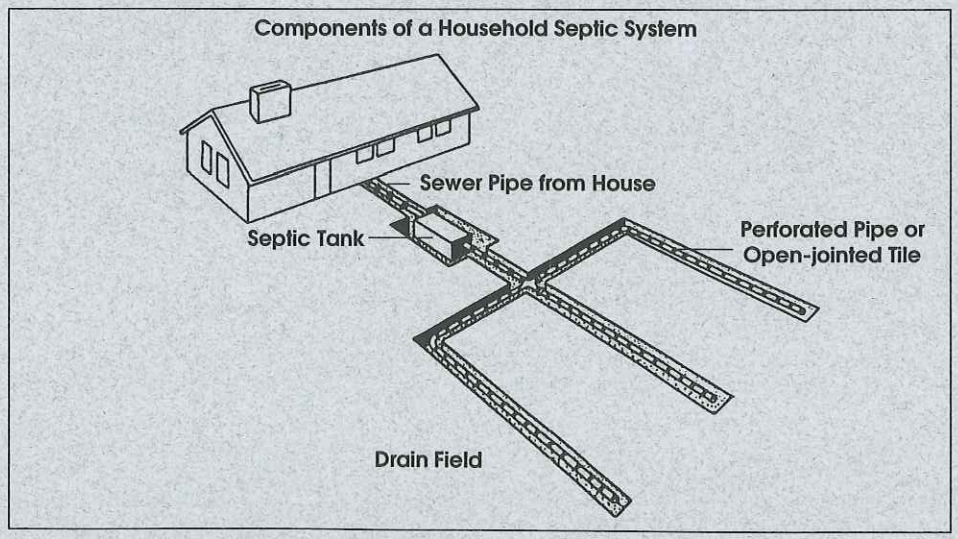


Weber Photo Productions

The Fifth Indiana Lake Management Conference, sponsored annually by the Indiana Department of Environmental Management, will be held on Friday and Saturday, April 30-May 1, at the Indiana University Alumni Association family camp on Lake Monroe, nine miles south of Bloomington. The theme of this year's conference is ***Watershed Management: Working Together to Make a Difference***. Topics will include: cooperative efforts among local governments in managing lakes and watersheds; state and federal sources of funding for watershed management; case studies of lake and watershed management in Indiana; and summaries of state lake activities during the past year (Volunteer Monitoring Program, Lake Water Quality Assessment, T-by-2000 Lake & River Enhancement). Other highlights include a shoreline erosion control demonstration site and the annual business meeting of the Indiana Lakes Management Society. Contact Bobby Brooking at (812) 855-4556 for registration information.

Clear Lake Association Tests Septic Systems

If someone comes to your home and asks to flush green dye down your toilet do you call 911? Not if you live on Clear Lake. The 800-acre lake in northeastern Steuben County is one of the cleanest in Indiana, and the Clear Lake Association is determined to keep it that way. Volunteers with the association go door-to-door testing the proper functioning of on-site septic systems at homes along the lakeshore.



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(Septic Systems. . .
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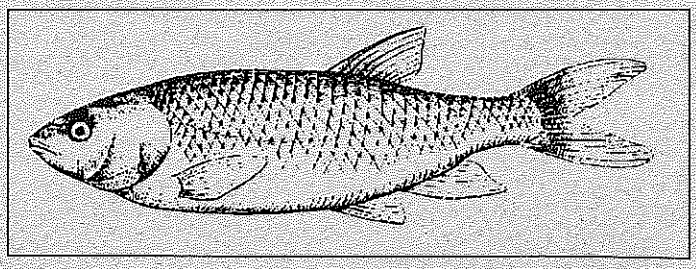
Each volunteer tests approximately 20 homes. Liquid fluorescent dye is flushed down one toilet and one sink in each home. Then the volunteer checks the septic system drainfield and shoreline for traces of the colorful dye at 1 hour, 3 hours, and 1 day after flushing. If the dye is visible (it's visible at concentrations of less than one part per million), the drainfield is not retaining liquid wastes long enough to treat them properly. The inadequately treated wastewater could pollute the lake if the problem is not corrected.

All 570 homes along Clear Lake are tested once a year in this voluntary program. The dye costs the Clear Lake Association $600 per year, or about $1 per home. Results are shared with the Steuben County Board of Health. In cases where a septic system is not operating properly, the Health Board can make recommendations to the homeowner concerning repairs. Homes along Clear Lake have been tested in this way for more than ten years. Septic system dye testing is just one of the many lake protection programs supported by the Clear Lake Association. For more information contact: John Manien at (219) 495-2977.

Grass Carp Ban Lifted in Indiana

For the first time in 20 years, private pond owners in Indiana may stock grass carp or white amur (*Ctenopharyngodon idella*) into their ponds to help control weed problems. After extensive literature reviews, pond studies, and collaborative field studies with other states, the Indiana Department of Natural Resources (IDNR) modified regulations in 1992 to allow the stocking of sterile triploid grass carp. The new rule replaces a stocking ban imposed in 1973.

This plant-eating fish, a native of China and Russia, can grow up to 60 pounds and live 15-20 years. Although related to the common carp, it neither acts or looks like it. Grass carp have a silvery color and torpedo-shaped body. They grow rapidly and may eat up to 100% of their body weight per day in aquatic vegetation. While grass carp are voracious herbivores, they are not necessarily an ideal solution for removing nutrients and eradicating specific nuisance weed species, according to Dr. Donald Garling, Associate Professor and Fisheries Extension Specialist at Michigan State University. Grass carp digestive systems are very inefficient and they retain less than 10% of consumed plant material as biomass. The remainder is released back into the water where it can act as a fertilizer, encouraging the further growth of rooted aquatic plants and algae. The only effective, long-term control of aquatic weeds and algae is to attack the primary cause of the problems—excessive plant nutrients in the water.



Although grass carp in southern waters have been observed to consume some of the most problematic weeds, including *Chara* and Eurasian water milfoil, the predominantly hard waters of the northern states cause calcium carbonate encrustation on these nuisance species. Because of this, grass carp in Michigan often avoid consumption of these plant species.

Only sterile triploid grass carp purchased from and stocked by a holder of an Indiana Aquaculture Permit are allowed in Indiana. Grass carp *may not* be introduced into glacial lakes, wetlands, rivers, or streams in Indiana. Suggested stocking rates in private ponds vary widely. Overstocking can result in total eradication of all rooted aquatic plants in a stocked pond. This destroys essential habitat for aquatic insects and fish. The IDNR has developed several stocking strategies for private ponds. Contact the IDNR or your district fisheries biologist for more specific information. (Adapted from *Outdoor Indiana* (Jan 1993), *Focus* (Nov./Dec., 1992), and *Water Impacts* [June/July 1992].)

WATER COLUMN

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for open exchange
of information regarding lake and
watershed management in Indiana

William W. Jones, Editor
Cynthia Mahigian Moorhead, Production Manager

Address all correspondence to:
SPEA 347
Indiana University
Bloomington, IN 47405

Phone: (812) 855-4556

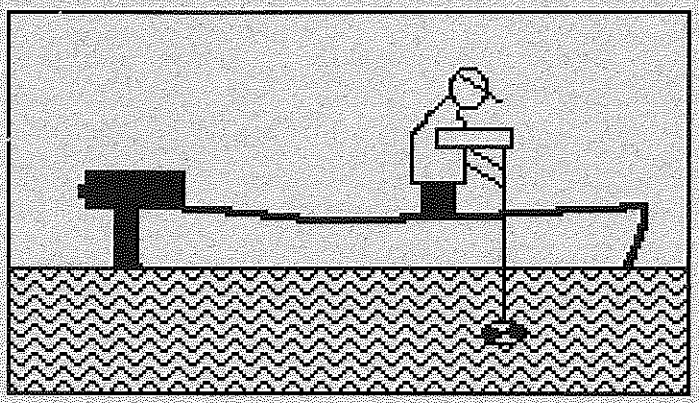
Questions from Readers

Q. Our lake is tea-colored. What causes this?

A. A lake's color is not necessarily related to bacterial pollution or unsanitary conditions. It is caused primarily by decaying organic matter such as leaves, twigs, bark, algae and aquatic plants. As viewed with the naked eye, the color (apparent color) of water can be caused by both suspended particles and dissolved matter. The dissolved materials by themselves, principally humic and fulvic acids, impart what is called true color. Water color can also be caused, in part, by metals such as iron and manganese that occur naturally in the soils of the watershed or lake bottom.

Sources of the organic matter include both the material produced within the lake itself and that which washes into the lake through tributary streams draining the watershed. Highly colored lakes frequently have extensive wetlands along their shores or within their watersheds. Color is often associated with shallow lakes and mucky lake bottoms. Large, deep lakes with sandy or rocky bottoms tend to have clear waters.

Record Year for Volunteer Lake Monitoring Program



The 1992 year was a record one for participation in the Volunteer Lake Monitoring Program. From a beginning of 53 lakes monitored in 1989 we have expanded to 81 lakes monitored in 1992. This year, our supportive volunteers made a total of 556 Secchi disk transparency measurements and water color observations on the 81 lakes.

This year also marked the first year for the Expanded Volunteer Lake Monitoring Program. In this program, volunteers on 29 lakes also collected monthly water samples for total phosphorus and chlorophyll analysis. In all, 104 water samples were collected. Despite minor problems with sampling gear and coordination, the volunteers all felt that this program was worth the extra effort. Every volunteer indicated that they will continue with the expanded program in 1993.

Indiana Clean Lakes Program staff are compiling the 1992 data from both programs and will be sending reports back to each volunteer by spring.

While budget limitations limit expansion of the "expanded" program to more lakes in 1993, we are still looking for additional Secchi disk volunteers on lakes not already in the program. If your lake does not appear on the list below, contact us about becoming a volunteer.

Our thanks and gratitude go out to all our volunteers. You help us protect one of the most valuable of Indiana resources—freshwater lakes!

David Trott	Banning, Big Barbee, Irish, Kuhn, Little Barbee, Sawmill, & Sechrist lakes
James / Rita Sherwood	Barton Lake
Gus Czizik	Bass Lake
Bill Minter	Bear & High lakes
Mike Martin	Big Lake
Arnie/Velda Dose	Big Otter & Little Otter
Marvin Gard	Big Long Lake
Bill DeRyk	Big Turkey
Terry Coffin	Cedar Lake
Neal Carlson	Center Lake
Herman Miller	Chapman Lake
Angie Derheimer	Clear Lake
Tom Parsons	Cook, Flat, Galbraith, Holem, Kreighbaum, Lawrence, Mill Pond & Pretty lakes
George Bruce	Crooked Lake
Robert Busch	Dewart Lake
Gerald Burton	Dixon Lake
Betty Hemlinger	Fish & Royer lakes
Jon Dittmar	Fish Lake
Joy Kamradt	Flint Lake
Denise Shoemaker	Goose Lake
Mary Ellen Nuttle	Hamilton Lake
Caleb Dittmar	Hudson Lake
Ray Cacini	Indiana Lake
Don/Phyllis Amari	Jimmerson Lake
Tom Camire	Koontz Lake
Michael Lockwood	Kunkel Lake
Eugene Chikos	Lake Holiday
Sharon Lee Reiter	Lake James
Mark Young	Lake Lemon
Shane Lehman	Lake Manitou
Roger Harmon	Lake Monroe (UPPER)
Charles/ Carol Wise	Lake Monroe (LOWER)
Robert Hampton	Lake Wawasee
Robert Harper	Lake of the Woods

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(VOLUNTEERS. . .
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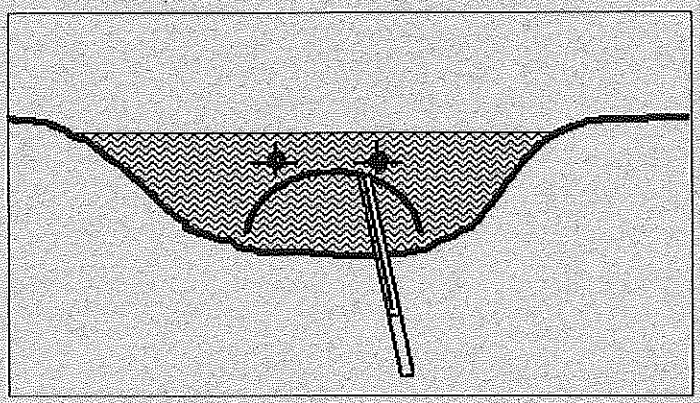
Gordon C. Guntner	Lake of the Woods
Steve V. Krasins	Lake on the Green
Herb Whitehead	Lake on the Green
Richard Has	Little Pike & Pike lakes
Patricia McClellan	Little Turkey Lake
Steve Merrill	Long & Sand lakes
Ernie Richardson	Long Lake
Ted W. Hege	Loon Lake
Robert H. Fuess	McClish Lake
Don Anders	Myers Lake
Gus Dewitt	Nyona Lake
Roxanne Thompson	West Otter Lake
Brian Breidert	Saugany Lake
Arthur/ Ed Eberhardt	Seven Sisters Lake
John Conely	Shafer Lake
Tony Detar	Shriner Lake
George Franklin	Silver Lake
Dick Smith	Silver Lake
Dave Palenick	Simonton Lake
Galen Darr	Skinner Lake
Mike Marturello	Snow Lake
Dan Robinson	Summit Lake
Beth Warner	Syl-Van Lake
Mike Liebing	Sylvan Lake
Holly LaSalle	Tippecanoe Lake
Warren/ Susan Halsey	Wauhab Lake
Donald Trease	Winona Lake
Jill Groves	Worster Lake
Scott Stephenson	Yellowwood Lake

Confessions of a Lake Doctor (Rx for Lakes)

by Bill Jones



When asked the question, "What do you do for a living"?, I find it difficult to provide a short, concise answer. I often respond by saying, "Well, I teach, I diagnose lake problems, I prepare lake management plans, I do a lot of different things related to water." As it turns out, this is not a very satisfying answer for myself or for the questioner. After years of dealing with this dilemma I have finally realized that I am (and others like me are) Lake Doctors! After all, correcting problems with lakes requires much the same protocol as solving medical problems in humans.

When you make the initial visit to a medical doctor, he or she:

—compiles a case history
—conducts a physical examination
—orders some laboratory tests
—makes a diagnosis
—prescribes a treatment

These are the same steps Lake Doctors take when addressing a "sick" lake.

1. *Compile a Case History.* Most lake problems come on slowly over many years. Changes may be subtle until one day it seems that the lake is in serious trouble. Often during this gradual degradation, there have been no documented tests or studies of the lake because none was perceived as needed. However, alert "lake watchers" may have noticed some of these subtle lake changes and these citizen accounts are absolutely essential in compiling an accurate case history. Examples of important information that I have learned while compiling citizen accounts for lake case histories are: "the lake changed color last year," "the water feels slimey now when we swim," "we've lost 20 feet of shoreline off this point," "the water used to be four feet deep at the end of my pier," and "we aren't catching any big fish anymore." When and over what time these changes occurred are important case history facts for the Lake Doctor

2. *Conduct a Physical Examination.* During my first visit to a lake, I always conduct at least a brief physical examination. I measure Secchi disk transparency, pH, temperature, and dissolved oxygen; I observe the water color, and look for beds of rooted vegetation. It's not a complete analysis, but it quickly gives me some initial data needed to begin understanding the condition of the lake.

3. *Order Some Laboratory Tests.* To expand on the initial data above, lake doctors require more detailed water quality analyses that can only be conducted by a qualified water quality laboratory. We determine levels of primary nutrients (total and soluble phosphorus, nitrates, ammonia, organic nitrogen), alkalinity, and algae or chlorophyll. Because lake characteristics are always changing,

with the seasons and even within the seasons, one set of water samples is seldom enough to render an accurate diagnosis. Although data requirements may vary from lake-to-lake, monthly water quality analyses are often required. In some cases, sediment characteristics (depth, chemistry, particle size) must be studied. If excessive nutrients or sediments are a problem in the lake, the cause of these problems must be discovered through watershed analyses. Lake doctors must then consult with soil scientists, planners, and other experts to conduct a watershed analysis.

4. *Make a Diagnosis.* Once the necessary tests are completed, the lake doctor compiles and evaluates all collected data before making his or her diagnosis for the affected lake. Other experts may be brought in for consultation to review the data before the final diagnosis is made.

5. *Prescribe a Treatment.* Unlike the medical profession, there are no magic pills or quick cures for most "sick" lakes. Lake problems usually take many years to develop. Once the cause of the problem is corrected, most lakes can recover naturally, although recovery may also take many years; often as many years as it took to cause the problem in the first place. To speed up recovery, lake doctors can prescribe in-lake restoration practices. Practices such as: alum treatment, hypolimnetic aeration, dilution and flushing, and dredging have been used on many lakes throughout the country.

Other practices such as chemical treatments of algae or rooted macrophytes and whole-lake aerators (destratifiers) can result in significant, but temporary lake improvements. If applied without controlling the sediments or nutrients that caused the lake problems in the first place, these practices are simply "cosmetic" because they treat the symptoms not the cause.

As with human health, prevention of lake ills is the best medicine. With careful management, cooperation of all watershed property owners, and professional guidance along the way, we can keep our lakes healthy and avoid a visit from "the doctor."

Partners for Wildlife at Potato Creek State Park

The U.S. Fish and Wildlife Service (FWS) and the Indiana Department of Natural Resources (IDNR)-Parks Division recently cooperated on two projects at Potato Creek State Park, located in St. Joseph County, Indiana. Restoration of approximately 70 acres of wetland was completed in October 1992. Funding for the projects came from the (FWS) Wetland Restoration Program. IDNR in-kind contributions of labor, machinery, and technical assistance allowed for the project's timely completion.

The objectives of the effort were to restore drained wetlands and provide improved fish and wildlife habitat. Future park plans include restoring adjacent upland oak-savannah and native prairie habitats. The completion of an interpretive hiking trail and an observation deck in these restored areas will provide park visitors with numerous recreational opportunities.

The FWS and its numerous partners have restored more than 500 wetlands totaling more than 2,000 acres in Indiana through the Wetland Restoration Program. Individuals interested in learning more about the Program should contact the U.S. Fish and Wildlife Service, 718 North Walnut Street, Bloomington, Indiana 47404. (Scott Fetters, U.S. Fish and Wildlife Service.)

Bad News for Freshwater Mussels

A group of Fish and Wildlife Service research biologists believe that, even without the invasion of the zebra mussel, 18 species of freshwater mussels are already extinct. Because of water quality degradation, siltation, impoundments, navigation projects, and other habitat alterations, an additional 45 species will probably become extinct in the next ten years. When the impacts of the zebra mussel are considered, it is possible that an additional 20 species of freshwater mussel will become extinct.

There are 297 species of mussels native to the United States. If the Fish and Wildlife Service biologists' predictions are correct, 30% of the species will be lost within the next ten years. (Hydata newsletter 11[6].)

Wetlands Reserved!

Nearly 500,000 acres are going to be offered for enrollment in the U.S. Department of Agriculture's pilot Wetland Reserve Program. Landowners in California, Iowa, Louisiana, Minnesota, Mississippi, Missouri, New York, North Carolina, and Wisconsin may offer to enroll land in the Wetlands Reserve

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Program. In the nine pilot states, 2,730 landowners were interested in enrolling 466,000 acres. Limited by legislation to 50,000 acres for 1992, the program had landowners interested in enrolling about nine times the number of target acres for the year. The Agriculture Department will seek congressional financial support for extending the program in fiscal year 1993 in order to meet the expressed interest reflected by the response to the pilot program. (USDA News Release.)

The Walleye and Zebra Mussel in Lake Erie

Fisheries experts on Lake Erie report that the zebra mussel invasion of hundreds of acres of prime walleye spawning reefs definitely did not have the negative effect predicted when the invasion was first discovered. The western end of Lake Erie has just produced two of the largest hatches of walleye ever recorded. Fred Snyder, Ohio Sea Grant fisheries agent noted that "There have never been two back-to-back boom walleye hatches on the lake." He said that while the high hatch success has pleased many people on the lake, "... these are short-term observations, and are certainly not indicative of long term implications for the fishery."

On another front, the mussel invasion has devastated Lake Erie's clams. While this is a matter of general ecological concern for Lake Erie, the clam-mussel connection is of tremendous commercial as well as ecological concern on the upper Mississippi River. Here, there is not only a large and diverse clam population to be considered, but also a thriving clamshell industry. While a significant zebra mussel invasion has not yet occurred here, experts fear the impact of such an eventuality, and remain on the alert. (Hydata newsletter 11[5].)

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Lake and River Enhancement Program Update

The Lake and River Enhancement program has chosen five river watersheds and three lake watersheds to develop watershed land treatment projects. Cox Ditch, Vigo County; Upper Laughery Creek, Ripley County; Wildcat Creek, in Clinton, Tippecanoe and Carroll Counties; Barr Creek, Vanderburgh and Posey Counties; and the Eel River (Blue River subwatershed) in Whitley and Noble Counties were the five rivers chosen for 1992-1993 funding. The three lakes receiving watershed land treatment assistance include: Ridinger Lake, Kosciusko County; Lake Salinda, Washington County; and Cree and Schockopee Lakes in Noble County.

The Watershed Land Treatment Program focuses on the watershed as a whole and encourages Soil and Water Conservation Districts to work together, sharing information and employees when needed.To date, the T-by-2000 Lake and River Enhancement Program has completed 47 projects, 16 active projects, 5 inactive projects and 1 project in review.

To obtain more information on the Lake and River Enhancement Program and the types of projects that are available for funding, call the Division of Soil Conservation, (317) 233-3870. (Barb Curry, IDNR.)

New Publications

Organizing Lake Users: A Practical Guide, prepared by the Terrene Institute in Cooperation with the Tennessee Valley Authority and the U.S. Environmental Protection Agency.

This 78-page booklet is a guide for groups hoping to start a lake association or for existing associations who wish to be more effective. It contains chapters on: organizing to protect your lake, building membership, making your association work, managing your lake, and networking with the lake world. Price: $10 + $2 shipping and handling. Contact: The Terrene Institute, 1000 Connecticut Ave. NW, Suite 802, Washington, D.C., 20036, (800) 726-5253.

Meetings

March 17-19, 1993—Rural Nonpoint Source pollution in the Upper Midwest: Exploring Local-Level Initiatives and Effective Partnerships. La Crosse, Wisconsin. Sponsored by: SCS; U.S. EPA; MN, IA & WI Extension Services; and others. Contact: Linda Schroeder, (612) 972-3908.

March 20-23, 1993. Thirteenth Annual Meeting of the Midwest Aquatic Plant Management Society (joint conference with the Ohio Lake Management Society). Sawmill Creek Resort, Huron, Ohio. Contact: Robert Johnson (812) 497-2410.

March 21-24, 1993. Watershed '93: A National Conference on Watershed Management. Alexandria, Virginia. Sponsored by: U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, U.S. EPA, U.S. Fish & Wildlife Service, U.S. Geological Survey and others. Contact: Jennifer Paugh, (202) 833-8317.

March 30-April 1, 1993. Fifth Annual Indiana Lake Management Conference. Shawnee Bluffs Family Camp on Lake Monroe, Bloomington, Indiana. Sponsored by the Indiana Department of Environmental Management. Contact: Bobby Brooking at (812) 855-4556.

March 30-April 2, 1993. National Conference of Urban Runoff Management. The Westin Hotel, Chicago, Illinois. Sponsored by: U.S. EPA, USDA-SCS, NE IL Regional Planning Comm, NOAA, U.S. FWS. Contact: Kim Soulliere at (312) 454-0400.

May 5-7, 1993. Enhancing the States' Lake Management Programs—Strengthening Local Lake and Watershed Protection Efforts. Blackstone Hotel, Chicago, Illinois. Sponsored by: U.S. EPA, North Am Lake Manag. Society, and Northeastern IL Regional Planning Comm. Contact: Bob Kirschner (312) 454-0400.

PERSPECTIVES

Water must also be thought of in terms of the chains of life it supports—from the small-as-dust green cells of the drifting plant plankton, through the minute water fleas to the fishes that strain plankton from the water and are in turn eaten by other fishes or by birds, mink, raccoons—in an endless cyclic transfer of materials from life to life. We know that the necessary minerals in the water are so passed from link to link of the food chains. Can we suppose that poisons we introduce into water will not also enter into these cycles of nature?

—Rachel Carson, *Silent Spring*

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