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# New Approaches Needed for Water Quality Gains in the 1990s

GERALD L. WILLET

In the land of 15,000 lakes, 91,944 river miles and a trillion gallons of ground water, the summer of 1988 saw the unlikely come to pass. The mighty Mississippi dropped to less than one-tenth of its normal flow. Crops withered, grass turned brown, and well pumps burned out in the most hellish heat wave since the 1930s.

While the drought was primarily an issue of insufficient water quantity, it also served to focus additional attention on water *quality*. Water quality concerns are not new to Minnesota, which has led the nation in protecting the environment for two decades. Nonetheless, the drought has prompted us to take stock of how far we have come in protecting our waters, and where we need to go from here.

## Major Pollution Discharges under Control

The fact that the Mississippi's water quality remained good throughout the drought points to the outstanding job this state has done cleaning up discharges to our rivers from industries and city sewer systems. The Mississippi, St. Louis, Rainy Rivers, and other streams are much cleaner than ten years ago; thanks to large investments in improved wastewater treatment. The fish are back and the people are again enjoying the natural beauty and recreational opportunities offered by our rivers. These marked improvements are the result of controlling industrial and municipal "point source" pollution discharges that once fouled our waters with human and industrial waste.

## Polluted Runoff, Toxic Substances are Issues of the 90s

With the majority of point sources now cleaned up, it has become clear that most of the remaining impairments to our rivers and lakes are due to *nonpoint source pollution*—the polluted runoff and seepage from city streets, farm fields, feedlots, failing septic systems and construction sites. These kinds of pollution sources collectively pose an entirely different sort of pollution control challenge to our state, and one that involves our ground water as well as our surface waters.

In addition, more work remains in controlling potentially toxic water pollutants—compounds used in the workplace, on the farm, and at home, which get into our waters through runoff, sewers, seepage from old dumps, atmospheric fallout, and resuspension from stirred up bottom sediments. Such substances as PCBs, mercury and dioxins are persistent in the environment, and tend to accumulate in fish and animals. (Even though PCBs have been banned for 10 years, they still show up at reduced levels in fish tissue samples, resulting in advisories to limit consumption of certain species in some areas.)

What will it take to ensure clean, healthy water for Minnesota's future? The traditional top-down regulatory approach, which serves well in controlling pollution from large, distinct sources, will not work on nonpoint sources. These are different issues and different times, and they call for different approaches. Water quality improvement in the 1990s will take a combination of multi level cooperative efforts, technology and education.

## A Change in Focus

It will take more than rules, permits and penalties to tackle nonpoint source pollution. The broad nature of this diffuse threat to water quality calls for strong cooperative efforts among government agencies at the state, local and federal levels; business, agricultural and environmental groups; and an informed citizenry.

The Minnesota Pollution Control Agency (MPCA), primarily a regulatory agency in the past, is also becoming a service agency that will provide support for water protection programs developed and led by local governments. Under the MPCA's Clean Water Partnership Program, the agency is forming working partnerships with local government units to improve water quality in specific lakes, streams and ground water resources that have been degraded by polluted runoff. The MPCA will provide financial and technical assistance to help diagnose and correct these kinds of problems, but the impetus for action will come from people who live near the degraded waters. They are the ones most directly affected, most familiar with the area, and in the best position to make adjustments in local land use that may be necessary to improve the water. This local leadership will be vital.

## Technology

Technology today is a two-edged sword. Its rapid development in the last few years provides us with new tools to measure and monitor pollutants in our waters. At the same time, technology does not always provide us with an interpretation of the effects of these pollutants on humans

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and the environment. This is especially true in the area of toxic substance regulation, where the effects of substances at various concentrations and conditions of exposure are often uncertain.

We must continue the basic environmental monitoring and research vital to making sound policy decisions, while at the same time paying special attention to the complicated field of risk assessment. Accurately explaining the risk assessment process is a difficult art; we need to be completely honest with the public in our use of toxic substance data and avoid the temptation to either sensationalize or trivialize the effect of toxic substances' effects on humans and the environment.

Technology today provides complex data and raises questions about the significance of that data. It also has a third function that will play an increasingly important role in preventing nonpoint source pollution. That is its ability, through sophisticated computer programs, to analyze and predict both the origins of polluted runoff in a watershed and the most effective ways to mitigate the problems created by runoff. It can pinpoint the most critical areas in a watershed and predict which land management practices in which areas will have the most impact in restoring water quality to a degraded lake, stream or aquifer.

Finally, the nature of technology today—the fact that it is constantly changing, upgrading our knowledge of pollutants and their impacts on our lives—means that planning sound environmental policy is like shooting at a moving target. Our water resource protection policies can not be carved in granite, but must be periodically reviewed to make sure they are consistent with the latest information available.

### *Education*

Public awareness of environmental problems was not a critical factor in achieving control over point source pollution of our waters. The regulatory mode worked with relatively few people—industry and municipal representatives and government officials.

Achieving control of nonpoint source pollution is an entirely different matter. Here, an informed citizenry is

essential. Many of the land-use decisions that lead to pollution of lakes, streams and groundwater are made by individuals. These decisions, by themselves, may not seem to be a cause of pollution. It is only through education that citizens will learn that they must scrutinize their daily lives to eliminate practices that contribute to water pollution.

Some of the activities that need consideration in order to prevent water pollution are: the use of fertilizers and herbicides in city, suburban and rural areas; construction site practices that allow extensive soil erosion; construction and maintenance of septic systems; disposal of household hazardous wastes; proper management of animal wastes from feedlots; and storage of salt for winter road use.

The list of activities includes some that are totally controlled by the individual householder and some which require local government involvement in setting ordinances or policies. The variety of these activities underlines the need for good public information and education programs. Citizens need to know both what they can do in their own lives to protect water resources, and also what kind of policies they want their local units of government to adopt in order to protect area lakes, streams and aquifers.

As the population increases, more people will compete for use of resources. Successful efforts to prevent pollution will raise some very basic issues:

- What is the relationship between individual freedom and collective responsibility?
- What hierarchy of values will be established by local communities in making resource management decisions?
- When will voluntary efforts to prevent water resource pollution not be enough and regulatory tools be in order?

All of these questions will need to be grappled with and eventually answered by a well-informed citizenry.

The three factors that will characterize environmental protection in the 1990s need to be closely intertwined. None of the three will stand alone. Cooperative efforts, such as projects funded under the Clean Water Partnership Program, will need both technology to provide diagnostic data and remedial action plans and the participation of informed citizens in the implementation of those plans.

The drought caught our attention this year. Water quantity and quality became hot issues. Let's hope this spotlight of interest can provide some fuel for the next step in our water protection work: the melding of an informed public, sophisticated technology and cooperative efforts to create sound environmental policies and actions that will fit the times.