Executive Summary

The Quality of Our Nation's Water

Background

The *National Water Quality Inventory Report to Congress* is the twelfth biennial report to Congress and the public about the quality of our nation's rivers, streams, lakes, ponds, reservoirs, wetlands, estuaries, coastal waters, and ground water. This report is prepared under Section 305(b) of the Clean Water Act. Section 305(b) requires states and other jurisdictions to assess the health of their waters and the extent to which water quality supports state water quality standards and the basic goals of the Clean Water Act. This information is submitted to the U.S. Environmental Protection Agency (EPA) every 2 years and summarized in the biennial report to Congress.

States' Section 305(b) assessments are an important component of their water resource management programs. These assessments help states

- Implement their water quality standards by identifying healthy waters that need to be maintained and impaired waters that need to be restored
- Prepare their Section 303(d) lists of impaired waters
- Develop restoration strategies such as total maximum daily loads and source controls
- Evaluate the effectiveness of activities undertaken to restore impaired waters and protect healthy waters.

EPA and the states continue to work to improve these assessments through better and more extensive monitoring. Our goal is comprehensive monitoring of all waters. This is a challenging task given the demands placed on limited state and federal resources. However, this is a vital goal given the important, and costly, water resource management decisions based on state water quality monitoring data. This report reflects incremental progress toward the goal of comprehensive assessment. It includes information submitted by all 50 states and the District of Columbia and 5 territories, 4 interstate commissions, and 9 Indian tribes.

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How Do States and Other Jurisdictions Assess Water Quality?

Water quality assessment begins with water quality standards. States and other jurisdictions adopt water quality standards for their waters. These standards must then be approved by EPA before they become effective under the Clean Water Act.

Water quality standards have three elements. First are the designated uses assigned to waters. The Clean Water Act envisions that all waters be able to provide for swimming and the protection and propagation of aquatic life. Additional uses described in the Act and adopted by states include drinking water and fish consumption. Second are the criteria. Criteria help protect designated uses. For example, criteria include chemical-specific thresholds that protect fish and humans from exposure to levels that may cause adverse effects. The third element is called the antidegradation policy. This policy is intended to prevent waters from deteriorating from their current condition.

After setting standards, states assess their waters to determine the degree to which these standards are being met. Currently, states use two categories of data to assess water quality. The first and most desirable category is monitored data. These data are field measurements that are not more than 5 years old. They include field measurements of biological, habitat, toxicity, and/or physical/chemical conditions in waterbodies, sediments, and fish tissue. The other category frequently used to fill information gaps is evaluated data. Evaluated data include field measurements that are more than 5 years old and estimates generated using land use and source information, predictive models, and surveys of fish and game biologists.

How Many of Our Waters Were Assessed for 1998?

This report does not describe the health of all waters of the United States because states have not yet achieved comprehensive assessment of all their waters. States assessed almost 25% of the nation's total river and stream miles; 40% of its lake, pond, and reservoir acres; and 30% of its estuarine square miles for this edition of the biennial report.

Therefore, this report summarizes the health of only that portion of waters that states reported on in their individual 1998 water quality inventories.

States reported fairly significant increases in the amount of rivers and streams assessed between 1996 and 1998. Assessed river and stream miles increased by 21% from 694,000 to over 842,000 miles. This is considerable when you realize that only 1.3 million river and stream miles are perennial waters that flow year round. The remaining 2.3 million miles or so are intermittent or ephemeral, which means they are dry for some or most of the year.

EPA and states recognize that, in spite of the progress made toward comprehensive assessment, we still have a long way to go. Oceans, wetlands, and ground water quality are poorly represented in state monitoring programs. EPA's wetland and ground water protection programs continue to work with states to develop assessment methods and improve monitoring coverage. EPA is initiating a coastal monitoring program, Coastal 2000, that will provide a baseline characterization of coastal waters and data needed to develop water quality standards for these waters.

What Is the Status of Our Assessed Waters?

States focused the majority of their assessment activities on rivers and streams; lakes, ponds, and reservoirs; and estuaries. States reported that 65% of assessed river and stream miles, 55% of assessed lake acres, and 56% of assessed estuarine square miles fully support the water quality standards states evaluated. The remaining assessed waters are impaired to varying degrees. The amount of assessed waters identified as impaired changed somewhat between 1996 and 1998. However, states indicated that these differences more likely reflect changes in monitoring design, assessment methodology, and water quality standards than actual water quality changes.

The states bordering the Great Lakes report on almost 90% of their Great Lake shoreline. The assessments indicate that one or more uses is impaired for about 4,700 shoreline miles. Much of this impairment is due to historic contamination by persistent pollutants that still impact fish consumption.

States assessed very small amounts of ocean and marine resources, wetlands, and ground water. This is due in part to a lack of water quality standards and other assessment tools for these resources. EPA and states are working to develop water quality standards and improve characterization of these resources.

What Do States Identify as the Leading Causes and Sources Affecting Impaired Waters?

For the subset of assessed waters identified as impaired, the report presents the leading pollutants and sources of pollution reported by states, territories, commissions, and tribes. In terms of the nature of impairment, the bottom line did not change significantly from 1996 to 1998. For example, across all waterbody types, states and other jurisdictions reported that

- Aquatic life, swimming, and fish consumption are among the top impaired uses.
- Siltation, nutrients, bacteria, and metals are among the top pollutants causing impairment.
- Pollution from urban and agricultural land that is transported by precipitation and runoff (called nonpoint source pollution) is the leading source of impairment.

It is important to understand the difficulties in identifying causes and, in particular, sources of pollution in impaired waters. For many waters, states and other jurisdictions classify the causes and sources as unknown. EPA and states are working to develop methodologies for both determining the causes and sources of impairment and describing the level of confidence in the classification.

How Does Impaired Water Quality Impact Public Health and Aquatic Life?

Water quality standards are adopted to protect public health and aquatic life. Specifically, water quality standards establish conditions designed to ensure that

- Water quality supports a balanced population of fish, shellfish, and wildlife
- Water is safe to use for drinking water, fish consumption, swimming and recreation, and other beneficial uses.

When waters do not meet water quality standards, one or more of these uses are impaired. Depending on the nature of the impairment, this may mean that certain public uses must be restricted. For example, fish consumption may be prohibited or restricted, beaches may be closed to swimming, and drinking water utilities may have to install more costly treatment devices. Toxic chemicals, as well as viruses and bacteria, threaten human health through the consumption of contaminated fish and shellfish or through contact with contaminated waters.

Toxic chemicals, bacteria, and viruses may also impact aquatic life. In fact, aquatic organisms are more sensitive than humans are to some chemicals. In severe cases, exposure can kill aquatic organisms. Lower levels of exposure can cause deformities and sores and can reduce the reproductive success of organisms. Aquatic life is often impaired by loss of in-stream habitat for organisms and by conventional problems such as low dissolved oxygen, siltation, and excess nutrients. While extremely low dissolved oxygen can result in fish kills, these problems usually exhibit less dramatic, but more long-term, impacts on aquatic life. These stressors result in alteration or loss of the biological integrity of aquatic communities.

What Is Being Done To Restore and Maintain Water Quality?

Public polls consistently document that Americans value water quality. In addition to its economic benefits, clean water provides recreational and aesthetic benefits. As a result, local, state, and federal agencies; the private sector; and other organizations are working to improve water quality. According to President Clinton's *Clean Water Act Initiative: Analysis of Costs and Benefits* (EPA800-S-94-001, 1994), these partners spend between $63 billion and $65 billion dollars each year to improve and protect water quality.

This study estimated that private sources spend a combined total of about $30 billion per year on pollution prevention and control efforts. Agriculture spends another $500 million per year on activities that reduce its impact on water quality including implementation of best management practices to control the effects of nonpoint source runoff. Municipalities spend a total of $23 billion per year, primarily on wastewater treatment plants, drinking water treatment, and storm water pollution control.

State and federal governments dedicate almost $500 million and $10 billion, respectively, to water resource protection and restoration efforts each year. These efforts include developing and revising water quality standards, monitoring and assessing water quality, characterizing causes and sources of impairment, developing total maximum daily loads and allocating these loads to point and nonpoint sources, implementing permitting programs to address point sources, and developing and implementing best management practices to control nonpoint source pollution.

Significant resources are dedicated to restoring and maintaining water quality. Water quality monitoring and assessment is a critical tool to help ensure that these resources are used effectively to achieve water quality goals. EPA and state environmental agencies recognize that water quality monitoring and assessment programs need continued strengthening to be able to evaluate the effectiveness of water quality protection and restoration efforts.

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