

Look to the Watershed

By David Branham, Wastewater Technician

There is no question that water quality in the United States has improved significantly since the passage of the 1972 *Clean Water Act* (CWA). Much of this is due to the higher standards for wastewater treatment in both municipal and industrial waste treatment. The United States has unquestionably witnessed a dramatic reduction in massive fish kills and rivers catching on fire. Waterfront property values are escalating, and shoreline communities are aggressively developing public space.

A broader approach is needed for U.S. water quality management. Pollution is rooted in land use and related to wet weather, and thus involves cross-media transport. Most of us in the industry agree that more work is needed to create the fishable, swimmable surface waters that the CWA has envisioned for our nation. The trouble is that problems are now more complex, from both the scientific as well as social standpoint, than they were in the 1970s.

Perhaps the time has come, and is at hand, for water quality managers to look at the entire watersheds, instead of isolated sources of pollution for answers. With the watershed-based approach, broad stakeholder participation and empowerment, hydrologically defined boundaries, and coordinated management are all necessities. Without them, achieving further improvements will be difficult and extremely expensive for our communities.

Why a Watershed Approach?

It has become clear in light of the latest national water quality inventory issued by the U.S. Environmental Protection Agency (EPA) that there is a need for such an approach. According to the inventory,

- Beach closures are increasing;
- Approximately 45% of the waters assessed do not fully achieve their established uses;
- Hypoxic zones have been discovered in the Puget Sound and the Gulf of Mexico;
- The Chesapeake Bay, Great Lakes, and Florida Everglades continue to suffer from ecological distress, and

- 24% of total lake acres and 35% of river miles are subject to fish consumption advisories.

Many barriers exist to the watershed based management approach. The United States is a nation of states, counties, cities, townships, and boroughs. The U.S. environmental laws are poorly coordinated; they focus on either environmental media (land, air, water) or specific problems (such as endangered species or hazardous waste sites). Each has its own policy, regulatory, and institutional infrastructure. One of the biggest stumbling blocks is that agricultural practices are not subject to the CWA's regulatory controls.

It takes significant monitoring and data management to implement an effective watershed management approach, and these currently are inadequate in the United States. Since the 1970s, monitoring has been carried out primarily at or near the end of a pipe to measure discharges. In today's world thousands of diffuse pollution sources exist, including construction sites, fertilizers, and air pollutants. Monitoring these sources will require more resources than current governmental budgets can afford.

Tools for Watershed Management Approaches

In the early 1990s, the EPA established an Office of Wetlands, Oceans, and Watersheds to advance watershed-based water quality programs. The EPA also has issued guidance and policy for wastewater discharge permitting on a watershed basis. Although clean water laws do not mandate watershed management, the CWA and other laws, interstate and regional plans, state programs, and federal regulations and policies suggest geographically based approaches to water quality management.

Statutes:

The CWA and other statutes contain provisions favorable to a watershed management approach, including the following.

Total maximum daily load (TMDL). CWA Sec. 303 provides for apportioning pollutant loads among sources where loadings must be reduced to achieve established water quality standards. To date

only about one-fourth of the estimated 40,000 TMDL analyses needed have been completed. This program seems to have overwhelmed state water quality program budgets. Questions also remain regarding implementation plan requirements for achieving the loading reductions and extent to which agricultural sources can be required to implement corrective actions.

Estuaries. Estuaries receive protection under CWA Sec. 320, which established the National Estuary Program's Comprehensive Conservation and Management Plans. (Woo that is a mouth full). These plans, seventeen of which have been completed, address all aspects of environmental protection, including water quality, habitat, living resources, and land use issues.

Areawide wastewater facilities planning. CWA Sec. 208 addresses regional planning and development of wastewater collection and treatment. It produced many planning efforts in the mid- to late 1970s, but most of these were never implemented.

Diffuse pollution. CWA Sec. 319 promotes and financially supports state programs to address diffuse pollution – the salient cause of water quality degradation in the United States.

Regional-interstate cooperation. The CWA Sec. 103 encourages creation of interstate compacts. While affirming the concept of state primacy in program implementation and acknowledging the cross-state boundaries of many waters, EPA has not affirmatively promoted this provision.

Federal policies.

Several federal policies, such as the following, also support a watershed approach.

Combined sewer overflows and sanitary sewer overflow control. The EPA has or is establishing policies promoting combined sewer overflow (CSO) and sanitary sewer overflow (SSO) controls. Communities are required to develop long-term control plans for achieving water quality requirements.

Trading. The EPA endorses trading as an option for pollutant reduction from point to nonpoint sources of pollution and is a way to achieve ancillary environmental improvements. The EPA's *Water Quality Trading Assessment Handbook* outlines a market-based approach to improving and preserving water quality. This policy allows one source to meet its regulatory

obligations by using pollutant reductions created by another source.

Watershed-based permitting. Watershed-based permitting makes it possible to develop discharge permits for multiple sources in a watershed. It considers watershed goals and the effect of multiple sources and stressors, including nonpoint source contributions.

The EPA has endorsed this synchronized approach to permitting. The following list offers numerous advantages to this type of watershed management.

- Select the watershed and its associated boundaries.
- Identify stakeholders and facilitate their participation.
- Collect and analyze data for permit development.
- Develop watershed-based permit conditions and documentation.
- Issue the watershed-based permit.
- Measure and report results.
- Integrating watershed management across statutes, including the CWA, the Safe Drinking Water Act, and the Endangered Species Act.

The State of Oregon is a leader in this type of approach; the Oregon Department of Environmental Quality has issued a watershed-based permit to Clean Water Services located in Hillsboro. This permit is one of the first in the country to be issued and the permit authorizes discharges from four wastewater treatment plants. The Clean Water Services Permit authorizes and provides the protocol for trading oxygen-demanding parameters as well as various other conditions. Connecticut and North Carolina are also implementing watershed-based permitting.

Future Permitting

Watershed approaches, although not new to the United States, are not always easy to implement. But I believe that they can be accomplished by creating at the local level, a means to access the watershed's environmental goals. Restoring U.S. water-ways, and water quality, depends on big-picture thinking and broad cooperation. In my humble opinion it remains the best chance the country has to achieve the optimum water quality for all of us.