

# THE CLEAN WATER ACT: ACCOMPLISHMENTS

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## **Introduction**

Water, our most precious and vital natural resource, has long been the subject of national debate. Congressional interest in the protection of water dates back to the early 1940s. Early legislation was primarily a statement of goals and direction, as opposed to the contemporary legislative and prescriptive mandates we now encounter. Over time, a strong Federal, State, and local partnership has evolved.

## **The Federal Program**

The mix of interest and politics was never more prevalent than during the creation of the 1972 Federal Water Pollution Control Act (The Clean Water Act) and Earth Day in 1970 which brought a new national consciousness and creation of the U.S. Environmental Protection Agency (USEPA).

The new statute imposed a patchwork of technology based controls, water quality standards, planning requirements, compliance deadlines, penalties, and a municipal construction grants program. Congress provided for, but perpetually underfunded, grants for State management of the national program. The Act put into place a long range goal for zero discharge and called for fishable/swimmable waters throughout the country. It was anticipated that within 10 years, all sewerage facilities would have secondary treatment and that all waters of the United States would indeed be fishable and swimmable. But, the total cost of accomplishing that objective was not well understood.

As the money began to flow at the Federal, State and local levels, as well as in the

private sector, programs began to take shape, and the Clean Water Act became a model for environmental legislation. By the mid 1970's, States reported to Congress on the status of their programs under Section 305(b) of the Act. However, the data they collected and consolidated proved to be inadequate when the first major assault was launched against the program in 1981.

It came from the top, when President Ronald Reagan declared in his budget address, "I will not request, nor will I accept funding for the construction grants program until and unless significant reforms are legislatively instituted." In 1981, Congress responded swiftly by reforming and downsizing the program and in 1987 by increasing pollution control requirements.

## **The State's Evaluation of Progress**

The Association of State and Interstate Water Pollution Control Administrators (ASIWPCA), which represents the officials who manage the water programs in the States, decided that a national report card on the nation's accomplishments was in order. ASIWPCA launched America's Clean Water: The States' Evaluation of Progress 1972-1982. The Association brought together a steering committee of senior State and USEPA officials to design a reporting format that would be both concise and standardized among the States. States used a combination of the following to reach their conclusions about water quality:

- + Long-term trend monitoring records,
- + Short-term intensive surveys, and

+ Professional judgments and direct observations.

The results were phenomenal and revolutionized the 305(b) reporting process. Even with substantial increases in the number of waste sources, pollution was being reduced. Most waters maintained their quality despite the pressures of wastes from more people, more industry, and more complex pollutants. Other waters showed dramatic improvements, while regrettably, some degraded. As more traditional problems were addressed, new problems — such as toxic pollutants and groundwater contamination — were appearing on the horizon.

The State documentation indicated that in the decade between 1972 and 1982, when the U.S. population grew by 11% and water use increased for industry and recreation:

- + 47,000 stream miles and 390,000 lake acres had improved in quality,
- + 296,000 miles and 10 million acres

maintained quality,

- + 11,000 miles and 1.7 million acres degraded, and
- + Changes in another 90,000 miles and 4.2 million acres were unknown.

Designated Uses —As A Driving Concept— All waters by law must have designated “beneficial uses” that must be protected and achieved. These uses establish the level of quality that drives water pollution control. States set criteria to protect those uses, applying USEPA guidelines based on a range of scientific information on chemical or habitat conditions that must be met in order to maintain the use. Together, uses and criteria constitute water quality standards which USEPA must approve. States evaluate water quality based on the extent to which those uses are supported. The most recent information compiled for the 1988 305(b) report indicates:

### Degree of Designated Use Support in the Nation’s Assessed Waters

	River Miles	Lake Acres	Estuary Square Miles
Do not support uses	10% (53,499)	10% (1,591,391)	6% (1,488)
Partially support uses	20% (104,632)	17% (12,701,577)	23% (6,078)
Fully support uses	70% (361,332)	74% (12,021,044)	72% (19,110)
Assessed	519,412	16,313,962	26,628
Total in U.S.	1,800,000	39,400,000	36,000

Reducing Municipal Pollutants—The most widely used measure of municipal pollution is the extent to which the organic content of the waste depletes oxygen in the receiving water. Between 1972 and 1982, States found that the amount of oxygen-demanding pollutants entering the nation’s wastewater plants grew by 12%. During the same time span, the amount released by these plants into waterways dropped by 46%. Had treatment capabilities not improved at a faster rate than the nation’s population and pollution were growing, States collectively estimate that 1982 discharges would have been 191% greater than the levels actually discharged. Since 1982, attention has also turned to toxics. Industrial sources discharging to municipal plants must “pretreat” their wastes. Municipalities must increasingly monitor for toxics and urban sources (e.g. streets and households) are becoming a more prominent concern.

What Has It Cost? Since 1972, a total of \$56.2 billion was spent in capital construction of publicly owned treatment plants. And, the States and USEPA determined in the 1988 “Needs Survey” that over \$80 billion was still required. With only a modest \$260 per capita expenditure for municipal wastewater system capital costs, significant improvements in water quality can be demonstrated nationwide between 1972 and 1982. Of the approximately 224 million people in the U.S. in 1982, States found:

- + 142 million were served by secondary treatment or by more advanced levels (57 million more than in 1972);
- + The population served by sewer lines discharging raw wastewater to streams dropped from 5 million in 1972 to 1 million; and
- + The number of people requiring but not receiving public wastewater collection and treatment dropped from 21 million to 14 million.

Treating Industrial Wastewater — Industry responded positively to the mandates of the Clean Water Act. Since 1972, industrial dischargers have invested heavily to reduce their water

pollution. While information on total expenditures was not available for each State in the ASIWPCA report, there are numerous indicators of improved water quality because of reduced discharges. Under the Act, industries must meet discharge limits based on the “best practicable” and “best available” treatment technologies as defined by USEPA. If these are not adequate to achieve water quality standards, more stringent controls must be applied. One key measure of progress in the industrial cleanup effort is increased compliance with State and Federal discharge limitations, especially for plants with the largest wastewater flows.

Controlling Nonpoint Source Pollution —States have given increased attention during the past 10 years to nonpoint source pollution — the diffuse runoff of pollutants from sites such as forests, mines, city streets, and agricultural land. As the more traditional sources are controlled, these more pervasive sources are better detected and understood. State and local governments are continually evaluating the extent of these problems and use regulatory and non-regulatory control programs, citizen/consumer education and projects to promote use of the “best management practices” (BMPs) to reduce or prevent runoff. Because the nature of the problem varies markedly from site to site and over time, State control programs are highly variable. In a 1985 report, ASIWPCA found that waters impacted (either threatened or impaired by nonpoint sources) and needing BMPs include 165,000 river miles, 8.1 million lake acres, and 5,400 estuarine square miles. In both rivers and lakes, agriculture is the major source of pollution, followed by resource extraction in rivers and hyromodification and urban runoff in lakes. Generally, the cooperation of a myriad of agencies at the Federal, State and local levels is necessary to address them.

Agriculture — Agricultural nonpoint pollution is generally addressed through voluntary programs. Cost-sharing is used in critical areas to promote installation of suitable controls. Coopera-

tive programs that coordinate activities of the State water pollution control agency, U.S. Soil Conservation Service and local conservation districts are being used to advantage in many areas. With passage Of the 1985 and 1990 Farm Bills, greater priority in the U.S. Department of Agriculture will be given to environmental protection in allocating resources and farm subsidies.

Urban - Control of urban runoff is primarily a local responsibility. But, States are increasingly adopting legislation to require stormwater management, safe disposal of leaves and household chemicals/waste, proper use of road salting, etc.

Mining and Construction - Mining and construction activities are commonly subject to State regulation. Both active and abandoned mine sites must be addressed. Federal government is actively involved, and in some instances, Federal reclamation programs are being used to control drainage from abandoned mines. Over a dozen States report they use some type of erosion and sediment control legislation to mandate reduction of construction site runoff.

### Looking Ahead

Great progress has been made in national water clean-up during the past decade due to the combined efforts of State, Federal, and Local agencies who have carried out the Congressional mandates since 1972. With public support coupled with municipal and industrial compliance, we have:

- + a plethora of programs in place that are expanding at all levels of government,
- + better water quality in many streams and lakes,
- + more waters that support designated uses,
- + more recreational use,
- + more people served by adequate wastewa-

ter treatment,

- + more dischargers that comply with their treatment requirements, and
- + greater public awareness and interest in sustaining past gains and making future progress.

Clearly, however, much remains to be done. Some communities are still in need of adequate wastewater treatment. Proper operation, maintenance and replacement of facilities already built and in use must be assured— since many are aging. Technology has advanced. The effects of toxic pollutants must be better understood and their release controlled. Nonpoint source pollution must be reduced and the protection of groundwater must be expanded. Water program managers recognize the possibility that further progress in water quality improvement may be both more difficult and more costly to achieve than our accomplishments to date.

### Next Steps

To ensure the necessary public focus, AS1WPCA has joined with America's Clean Water Foundation (ACWF) and 65 other national organizations to commemorate the 20th anniversary of the Clean Water Act.

The overall effort is supported by a Board of Governors which includes President Jimmy Carter, Senator Edmund Muski, Senator Howard Baker and Gilbert Grosvenor. In addition, President Bush recently signed a Congressional Resolution proclaiming 1992 as The Year of Clean Water. ACWF projects fall into five categories:

1. Citizen Involvement and Awareness: Increase public participation activities and expand public awareness, interest, and support for clean water programs.
2. Youth Education: Develop broad-based environmental education opportunities for

3. Innovation and Technical Exchange: Promote exchange programs for environmental professionals and government leaders to share information and expertise.
4. National Status and Trends Report: Complete an ASIWPCA National Status and Trends Report, 1972-1992 for Congress and the public.
5. National Celebration: Commemorate the 20th anniversary of the Clean Water Act in U.S. communities throughout 1992, the "Year of Clean Water."

## Summary

The American people have invested billions of dollars in protecting and enhancing our nation's precious water supply. Many more billions will need to be invested to assure pure fresh water for the generations to come. Even so, public opinion polls clearly indicate that we are determined to keep our water clean. The National Commemoration, supported by the technical underpinning of the ASIWPCA Status and Trends Analysis, will provide a comprehensive basis upon which to build personal commitment and long term stewardship for the very substance of life — water.

Water pollution is a broad term, often conjuring up images of spills, raw sewage, chemicals spewing from factory pipes, and medical wastes washing down storm sewers and onto public beaches. But there are other problems that can be more widespread and less obvious.

Nutrients — Nitrates found in fertilizers and phosphates found in detergents overstimulate growth of aquatic plants, depleting dissolved oxygen and cutting off light. This seriously affects the respiration of fish and aquatic invertebrates, decreases animal and plant diversity, and inhibits recreational use. Lakes and estuaries are particularly vulnerable.

Sediments — When it rains, silt and other suspended solids wash off plowed fields, construction and logging sites, urban areas, and strip-mined land— carrying with them• attached pollutants. When the enter waters, fish and plant productivity is reduced.

Bacteria and Viruses — Certain waterborne bacteria, viruses, and protozoans can cause human illnesses such as typhoid, dysentery and skin diseases. They enter waters via a number of routes, including sewers, stormwater drains, septic systems, runoff from livestock pens, and boats that discharge sewage.

Organic Enrichment — Organic material enters the, water in many forms — sewage, leaves and grass clippings, or runoff from urban streets, livestock feedlots and pastures. As natural forces breakdown this organic material in water, oxygen dissolved is depleted. When the level drops too far, many types of fish and bottom dwelling animals cannot survive.

Toxic Chemicals/Heavy Metals — Metals (such as mercury, lead, and cadmium) and toxic organic chemicals (such as PCBs and dioxin) may originate naturally and come from industries, city runoff, mining, landfills, etc. They can cause aquatic disease or reproductive failure and pose human health risks.

Pesticides/Herbicides — Rainfall and irrigation can wash pesticides and herbicides used on farm land and residences into ground and surface water. Contaminants can be persistent and may accumulate in fish, etc. to levels that pose a risk to human health and the environment.

Habitat Modification — Loss of habitat occurs when waters are modified by farming, deforestation, channelization, dredging, et. Vegetation can be lost, bottom dwelling organisms and spawning beds can be smothered or scoured, and water temperatures can increase

Other— There are other pollutants, such as salts from irrigation runoff and sea water intrusion into ground and surface waters. Abandoned mines and air deposition (acid rain) can alter the toxicity of chemicals in water and render lakes and streams unfit for aquatic life