

Water Connection

Boott Mills South, 100 Foot of John Street, Lowell MA 01852-1124

Volume 18, Number 3

Fall 2002



There was a time when just looking at a river or stream in our cities and towns should have been evidence enough of how much we had sacrificed in order to make the economic gains achieved beginning with the Industrial Age. Raw sewage, industrial wastes, oil slicks, and other pollutants marred the once beautiful and vital water bodies of our nation.

We had disrespected the very water sources that provided us with drinking water, commerce, and recreational uses. We can't live without water, no living being can and yet we had taken this vital resource for granted for so long, bringing our water bodies to the brink of disaster and putting ourselves at risk.

Though NEIWPCC has been working towards improving water quality since 1947, the passage of the Clean Water Act (CWA) in 1972 was the first collective admission that we had done serious damage to our waters, nearly exhausting them, and that our future was on the line. In 1972 a spotlight was cast on our degraded water bodies and no one liked what they saw. Fish were dying, habitats were being destroyed, and pollution was creating unsafe drinking water. It was clear to everyone that we all depended on these water sources and that we were responsible to preserve and protect them.

In celebration of this Year of Clean Water, which marks the 30th anniversary of the CWA, this issue of Water Connection highlights some of NEIWPCC's efforts in controlling water pollution. You will learn about the great lengths that we have traveled to improve water quality in New England. Read about how much more work still lies ahead of us so that we may never again return to the days of pre-CWA.



Over 50 Years . . .

- ♦ Coordinating Interstate Water Quality Programs
- ♦ Training Environmental Professionals
- ♦ Providing Public Education & Outreach

New England Interstate Water Pollution Control Commission

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Who We Are

For more than 50 years, NEIWPCC has coordinated regional water pollution control programs, trained environmental professionals and raised public awareness of water quality issues in the six New England states and New York. NEIWPCC's Environmental Training Center provides training courses throughout the region to help communities meet their water pollution control goals.

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Water Connection



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Table of Contents

Articles

- NEIWPCC and the Clean Water Act, p. 3
- 1972: *A Year of Firsts*, p. 5
- Goals of the Clean Water Act, p. 5
- Clean Water Act Benefits Wastewater Treatment Facilities, p. 6
- Environmental Milestones, p. 7
- The Path to Clean Water, p. 8
- Wet Facts, p. 9
- Clean Water Act(ions) in Vermont: *Looking Ahead to the Next 30 Years*, p.10
- Maine: *A Water Quality Profile*, p. 14
- What Can You Do to Help Protect Water Resources?, p. 14
- Protecting Wetlands Under the Clean Water Act, p. 15
- The Clean Water Authority Restoration Act of 2002, p. 17
- The Year of Clean Water: *Reigniting the Public Stewardship Spark*, p. 17

Available from NEIWPCC

- Guide to Hydric Soils in New England*, p. 20
- Source Protection: A National Guidance Manual for Surface Water Supplies, 2000*, p. 19
- TR-16 Guides for the Design of Wastewater Treatment Works*, p. 20

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For more information about NEIWPCC, visit our Web- site. There you will find information about NEIWPCC's history, projects, and training courses. Newsletters, the Training Catalog, reports, and fact sheets are available for download. Visitors will also find helpful links to related federal, state, and other environmental sites.



NEIWPCC and the Clean Water Act

NEIWPCC Responds to a Distress Call

Though the Industrial Revolution brought prosperity to many in New England, it had a detrimental effect on the region's water bodies. It was the combination of ignorance about the ways in which human activity impacts the environment and a single-minded ambition of building wealth that set the stage for the water pollution crisis that later emerged. Mills and factories that cropped up along waterways discharged raw sewage, oils, and other wastes to nearby waters. By the early 1900s the situation had become quite bleak. One look at our rivers, streams, lakes, and wetlands of the time revealed the shameful state of our nation's waters.

The New England Interstate Water Pollution Control Commission (NEIWPCC), established in 1947, was born out of a need to take back our distressed water bodies and to acknowledge that while individual efforts were at best fragmented, united efforts made a powerful impact. NEIWPCC provided the New England states and New York with a regional forum for addressing water quality problems. At first, its role was to assign water use classification for interstate streams. It was an arduous labor of love classifying uses for 75,000 miles of streams and 4,600 miles of coastline but it was the crucial first step necessary in order to prevent water pollution.

At that time, the field of water pollution control was still in its infancy and there was a scarcity of experts. NEIWPCC established a Technical Advisory Board (TAB) that filled that leadership role. The TAB evaluated information relating to water pollution control. The board became recognized as an authority on water pollution control issues and was sought after to review research proposals and reports and to provide direction on a wide variety of pollution issues.

In the early 60s, NEIWPCC's antennae sensed that wastewater treat-

ment would play a much more significant role in water quality. In the past, it had been common practice to discharge untreated wastes into receiving waters but after 1965, more and more treatment plants were being constructed. Realizing that there was virtually no guidance available on plant design, NEIWPCC's TAB served an advisory role in the design of most new construction and also prepared a guide called *TR-16 Guides for the Design of Wastewater Treatment Works*, which has since become an industry standard. NEIWPCC's dedication to the wastewater field did not stop there. NEIWPCC has been committed to training wastewater professionals since 1969.



A National Crisis Addressed

Though there were pockets of concerned citizens scattered throughout the region and a few half-hearted attempts

until 1969 that the rest of the country finally understood how serious the problem was and that immediate action was critical.

An oil slick, a common occurrence in many rivers of the time, burst into flames on the Cuyahoga River in Cleveland, Ohio, on June 22, 1969. There had been other fires on the river (and other water bodies across the country) in years past, but the fire of 1969 captured national attention after appearing in *Time* magazine. Though environmentalists had been trying to draw attention to the plight of the nation's waters for years and the federal government had already begun to feel pressure to act, it was this fire that became the catalyst of the creation of the Federal Water Pollution Control Act Amendments, also known as the Clean Water Act (CWA) of 1972.

Introduced into the Senate by Senators Edmund Muskie (ME) and Howard Baker (TN), the Act, like the formation of NEIWPCC in 1947, was a response to serious environmental issues which threatened the future of our water resources. In both instances,

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NEIWPCC, established in 1947, was born out of a need to take back our distressed water bodies and to acknowledge that while individual efforts were at best fragmented, united efforts made a powerful impact.

by the federal government to tidy up pollution problems, for the most part, NEIWPCC's work in water pollution control was a lonely endeavor in its early years. NEIWPCC had been actively working towards solutions to the biggest perils threatening water quality: habitat destruction, bacterial contamination, and the discharge of oil, garbage, and other wastes, but it wasn't

NEIWPCC AND THE CLEAN WATER

ACT from page 3

it was recognized that without the cooperation of various groups, states, and the government, water pollution issues could not be resolved. With the passage of the CWA, NEIWPCC could breathe a sigh of relief knowing that now the entire nation was not only aware of the problem but would also support the cleanup of water bodies. The Act not only validated NEIWPCC's efforts, but also injected these efforts with renewed energy.

The purpose of the CWA was to "to protect and restore the physical, chemical, and biological integrity of the nation's waters." The Act was a necessary piece of legislation to address an urgent problem but it was very complicated. Once again, NEIWPCC rolled up its sleeves and got down to the business at hand. It coordinated with the U.S. Environmental Protection Agency (EPA) and the states to develop guidelines and policies to implement the legislation.

No Signs of Stopping

NEIWPCC has a long history of figuring out not only where the problems lie but also how to create the tools that will rectify those problems. *TR-16 Guides for the Design of Wastewater Treatment Works*, *Guide to Hydric Soils in New England*, which assists field personnel in the identification and documentation of hydric soils and their boundaries, and *Source Protection: A National Guidance Manual for Surface Water Supplies*, which provides guidance on the amendments to the 1996 Safe Drinking Water Act and addresses national source protection issues, are a few examples of tools NEIWPCC developed to guide professionals in the field.

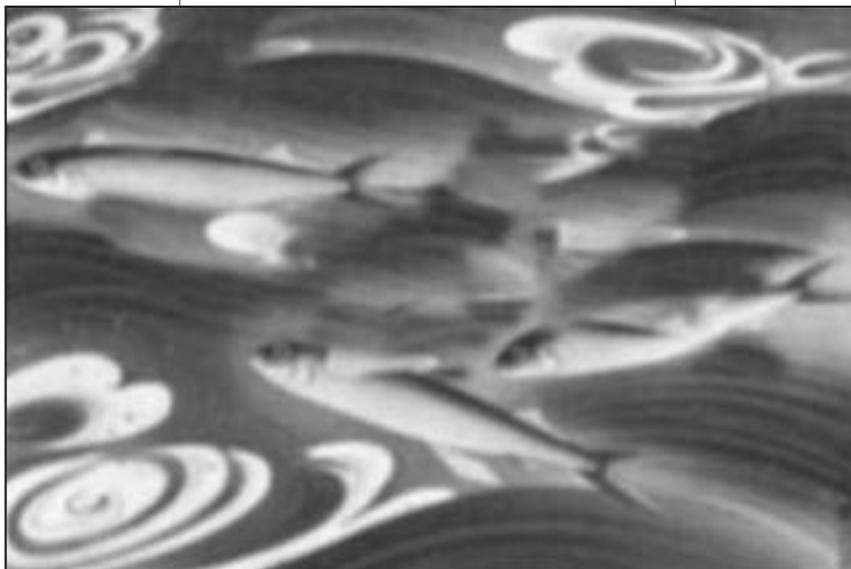
Since 1947 the environmental movement has evolved and NEIWPCC has adapted to the changes. As the environmental field began to branch into specialties, NEIWPCC realized that the TAB needed to accommodate for this diversity. The TAB metamorphosed into individual workgroups that each focused on different water pollution issues. Some of the current workgroups are: groundwater, nonpoint source pollution, wetlands, and underground storage tanks.

NEIWPCC organizes and facilitates interstate meetings of appropriate federal and state staff, acts as an information clearinghouse, prepares

inception, NEIWPCC has shared the states' positions on pending legislation with federal subcommittees.

"Certainly over its 55 years, the Commission has seen, anticipated, and responded to considerable change, and its list of activities has grown significantly at both the regional and the national levels. Yet, the Commission's mission of coordinating, promoting, and facilitating interstate water quality improvement remains steadfast. But the job, as they say, is not done," said Ron Poltak, NEIWPCC's Executive Director.

This Year of Clean Water, the 30th anniversary of the Clean Water Act, is an opportune time to celebrate the accomplishments in improving water quality but we cannot hang up our hats yet. "The goals of the Clean Water Act have yet to be realized in many water bodies. Even where those goals have been met, our responsibility for maintaining and protecting water quality for succeeding generations will persist without end. And to that end, NEIWPCC will continue



public outreach materials and newsletters, negotiates subcontracts, and drafts regional policy on issues for state/federal review and consensus-building. Education and training have also been a focus. NEIWPCC's role in education and professional training has grown over the years to include courses and workshops on wastewater, drinking water, biosolids management, and underground storage tanks.

NEIWPCC coordinates interstate water quality improvement efforts, working closely with EPA and the state environmental agencies. NEIWPCC is proud of its strong relationships with EPA and the states. Since its

continue to serve as an effective facilitator and coordinator for EPA and its member states," Ron continued.

"The Commission will continue to focus on the major water quality challenges that the states face, including significantly reducing nonpoint source pollution, establishing comprehensive watershed protection programs, implementing effective stormwater controls, eliminating combined sewer overflows, and developing comprehensive low flow policies. NEIWPCC is fully prepared to continue its leadership role in pollution abatement well into the 21st century." 

1972: A Year of Firsts

The Year was 1972; the Vietnam War was winding down and the U.S. had just returned Okinawa to Japan. The first five Watergate suspects were arrested, marking the beginning of what would later become one of the nation's largest political scandals. On Broadway, *Fiddler on the Roof* had just closed but not before becoming Broadway's longest running show ever with 3,242 performances. The movie *The Godfather* first opened. Apollo 17 astronauts set new records for the amount of time spent walking on the surface of the moon. 1972 was the year RCA developed the compact disc. It was also the year Nolan Bushnell invented Pong, the world's first video game. 1972 was a year of many firsts, not the least of which originated in Congress—the nation's first major water regulatory act.

The Clean Water Act was developed in response to growing health concerns regarding serious and widespread water pollution. After years of advancement in every imaginable field from politics to space exploration, the focus shifted to the environment. The careless disregard for the environment that was once prevalent had finally transformed into awareness. It was in 1972 that people realized water pollution was not a problem that could remain ignored. Congress overrode President Nixon's veto and passed the Clean Water Act. Senator Edmund Muskie (D-ME) even went so far as to call the act "literally a life-or-death proposition for the nation."

The Clean Water Act is the primary law that protects the health of our nation's waters including lakes, rivers, and coastal areas. As a result of

this significant legislation, water quality has made numerous advancements. Today, over two-thirds of the nation's surveyed waters are safe for fishing and swimming, the annual losses of wetlands have been reduced, soil erosion due to agricultural runoff has been reduced, phosphorus and nitrogen levels in water sources are down, the number of people served by modern wastewater treatment facilities has more than doubled, and the list of improvements becomes longer each year. However, it is important to remember that these are ongoing challenges and that we all must play a role in protecting our nation's waters. 

Amy Chalifoux was a 2002 summer intern with NEIWPCC's Water Quality Department. For information about NEIWPCC's water quality projects, contact Bethany Card at 978/323-7929 or bcard@neiwpc.org.

GOALS OF THE CLEAN WATER ACT

The overall objective of the Clean Water Act (CWA) is "to protect and restore the physical, chemical, and biological integrity of the nation's waters." In order to accomplish this broad objective three smaller, more precise goals were established. First, the Act called for the elimination of toxic discharges in amounts that harm people or wildlife. Second, the Act endeavored to ensure that all of our rivers, lakes, and coastal waters are safe for people to swim and fish in and habitable for fish, shellfish, and wildlife. Lastly, the Act called for a stop to the practice of discharging pollutants into the waters of the United States.

Provisions of the Clean Water Act

Upon its enactment, the CWA made four major transformations regarding the water quality of our nation. It required virtually every U.S. city to build and operate wastewater treatment plants in an effort to end the discharge of raw sewage into waters. The Act called for the Environmental Protection Agency (EPA) to administer federal funding and offer technical assistance in the construction of wastewater treatment plants. It ensured that states adopt water quality standards with federal oversight to make certain that communities everywhere can expect clean water. Lastly, it established a permitting system that limits industrial and municipal discharges into waterways and protects wetlands from destruction.

Success of the Clean Water Act

Since its enactment the CWA has greatly helped improve the quality of our nation's waters. So far, tens of billions of dollars have been devoted to building municipal wastewater treatment plants. The construction costs have been covered primarily by federal investments made under the CWA. As a result of these investments, over the last 30 years the number of Americans served by at least secondary wastewater treatment plants has increased by over 50 million people.

The CWA has also succeeded in reducing toxic flows. More than one billion pounds of toxic pollutants each year have been removed from our nation's waters. As a result of the cleaner water, large-scale fish kills have declined. The CWA has also helped the rivers of our nation begin their much-anticipated recoveries.

The passage of the 1987 Water Quality Act further strengthened the CWA by tightening regulation of toxic chemicals discharges from industry. It focused on tightening regulation of water pollution from sources such as agricultural runoff and urban runoff from city streets. These new stricter guidelines have improved the effectiveness of the CWA. Through their enactment they have helped reduce the pollution in many lakes, rivers, wetlands, and coastal areas.

Clean Water Act Benefits Wastewater Treatment Facilities

Prior to 1972, pollution had taken over the rivers, lakes, and streams throughout the United States. Dead fish were washing ashore, lakes were catching on fire, and drinking water was contaminated. A big contributor to the pollution crisis was the fact that few cities and towns at that time treated wastes before discharging them to surface waters. The government had to respond to these issues while balancing the social, economic, legal, and environmental ramifications.

To address these issues, the government passed the Clean Water Act (CWA) in 1972. From 1972 until 1990, under the CWA, the Construction Grants Program funded more than \$60 billion for the construction of publicly-owned wastewater treatment facilities. This program was established for the purpose of maintaining and improving the quality of the nation's waterways. The funds provided the means to build and repair sewage treatment plants, pump stations, and collection and interceptor sewers. The Act forced states to create water quality standards that were subject to federal review and approval. These standards were upheld to protect public health and improve the overall quality of water. The program led to the improvement of water quality in thousands of municipalities nationwide. This same program however, was drawing from the national wallet a little too deeply so state and federal governments were assigned the task of how to make this less costly while still abiding the provisions of the CWA.

In 1987, an amendment was made to the Act which would phase out the Construction Grants Program by 1990. A loan assistance program, made available by the State Revolving Loan Fund Program (SRF), replaced the old program. This new program was split into two branches: the Clean Water State Revolving Fund (CWSRF) and the Drinking Water State Revolving Fund (DWSRF). These programs have

been recognized as the most successful federal water quality programs in the United States.

Through the SRF, states make loans to high priority efforts. These loans have low interest; about 2.4 percent compared with the market value of 5.3 percent. As these loans are repaid, the money goes back into the fund and becomes available for loans to new recipients. Cities and states benefit by not having to dig into their own coffers to update or rebuild new facilities while taxpayers and ratepayers benefit by not having to pay large fees in order to have clean waterways because the money is continuously paid back. The loans can be granted for as much as the total cost of a project and can be paid back for as long as twenty years.

According to the CWSRF's report, "Financing America's Clean Water Since 1987: A Report of Progress and Innovation," this program has loaned an average of \$3.2 billion annually over the past few years to wastewater treatment facilities. The report also indicates that loan repayments and interest earned provides another \$1 billion annually for new project assistance. (This report can be downloaded from <http://epa.gov/OWM/cwfinance/cwsrf/progress.pdf>.) States using these funds have made over 10,919 loans totaling over \$34 billion. This

system offers a boost to both the economy and the environment by providing jobs while at the same time maintaining our nation's water bodies under the CWA. Currently, the CWSRF has \$37.7 billion available for new projects.

The Act and the subsequent amendments have led to a rebirth of countless lakes, streams, rivers, and coastal areas. High levels of drinking water and wastewater treatment are now considered the norm in the United States. The United States claims one of the highest levels of water quality in the world however, where old pollution issues have for the most part been resolved, new issues have cropped up. The effort now has to shift to nonpoint sources, stormwater discharges, and combined sewer overflows. Steps have been taken in the right direction with the passing of the Nonpoint Source Pollution Management Program that allows the U.S. Environmental Protection Agency to award grants to the states to implement nonpoint source pollution. Then in 1994 the Combined Sewer Overflow Control Policy was published which implemented nine minimum controls that did not require major financial costs, construction activities, or engineering studies. Despite the passing of all of this legislation and establishment of policies, the federal, state and local governments

NEW ENGLAND STATES' REVOLVING LOAN FUND PROGRAMS

The SRF programs provide assistance to municipalities and wastewater districts in the financing of water pollution abatement projects. In addition, the programs help community public water suppliers comply with federal and state drinking water requirements. To find out about your state's program, visit one of the sites below:

CONNECTICUT – <http://dep.state.ct.us/wtr/cwa/cwfund.htm>

MAINE – <http://janus.state.me.us/dep/blwq/docgrant/srfparag.htm>

MASSACHUSETTS – <http://www.state.ma.us/dep/brp/mf/srf.htm>

NEW HAMPSHIRE – <http://www.des.state.nh.us/wwe/srf.htm>

NEW YORK – <http://www.nysefc.org/srf/CWSRF/CWSRFHome.htm>

RHODE ISLAND – <http://www.state.ri.us/ricwfa/whatwedo.htm>

VERMONT – <http://www.anr.state.vt.us/dec/fed/FMS.htm>

cannot relax. They must continue to follow developing technologies and to find solutions to the ever-changing water pollution issues that threaten the waters of the United States. 

John Murphy is an intern with NEIWPCC's Wastewater and On-site Programs Department. For information about NEIWPCC's

commitment to the field of wastewater treatment, contact Tom Groves at 978/323-7929 or tgroves@neiwpcc.org.

Environmental Milestones

- ▶ **1899 River and Harbors Act** – First federal legislation protecting the nation's waters to promote commerce.
- ▶ **1947 New England Interstate Water Pollution Control Commission** originates.
- ▶ **1948 Water Pollution Control Act** – The federal government offers state and local governments technical assistance and fund to promote efforts to protect water quality.
- ▶ **1965 Water Quality Act** – Charges states with setting water quality standards for interstate navigable waters.
- ▶ **1970 New York Department of Environmental Conservation** is created.
- ▶ **1970 United States Environmental Protection Agency (EPA)** is established.
- ▶ **1970 First Earth Day** celebration.
- ▶ **1971 Connecticut Department of Environmental Protection** is created.
- ▶ **1972 The Federal Water Pollution Control Act** (also known as the Clean Water Act) – The quantum leap of environmental protection. A federal program designed to achieve the goal of protecting and restoring the physical, chemical, and biological integrity of our nation's waters. In addition to strengthening the nation's water quality standards system, this landmark legislation makes illegal the discharge of pollution without a permit, encourages the use of best achievable pollution control technology, and provides billions of dollars for construction of sewage treatment plants.
- ▶ **1972 Maine Department of Environmental Protection** originates.
- ▶ **1972 Marine Protection Research and Sanctuaries Act** – Prevents unacceptable dumping in oceans.
- ▶ **1974 Safe Drinking Water Act** – The main law that ensures the quality of America's drinking water. Protects public health by regulating the nation's public water supply.
- ▶ **1977 Rhode Island Department of Environmental Management** is established.
- ▶ **1977 Clean Water Act Amendments** – Strengthens controls on toxic pollutants and allows states to assume responsibility for federal programs.
- ▶ **1986 Safe Drinking Water Act Amendments** – Allows EPA to establish maximum contaminant levels of 83 identified harmful contaminants, gives EPA authority over groundwater, and requires water agencies to monitor groundwater.
- ▶ **1987 New Hampshire Department of Environmental Services** originates.
- ▶ **1987 Vermont Department of Environmental Conservation** is created.
- ▶ **1987 Water Quality Act** – Establishes a renewed focus on achieving the Act's water quality goals. Supports new state and local efforts to deal with pollution runoff, creates revolving loan funds to provide ongoing support for the construction and treatment of plants, catalyzes action to address pollution from urban runoff, and creates programs to protect estuaries of national importance.
- ▶ **1989 Massachusetts Department of Environmental Protection** originates.
- ▶ **1990 Coastal Zone Act Reauthorization Amendments** – Focuses efforts on reducing polluted runoff in 29 coastal states.
- ▶ **1998 Clean Water Action Plan** – Builds on clean water successes and addresses three major goals: enhanced protection from public threats posed by water pollution, more effective control of polluted runoff, and promotion of water quality protection on a watershed basis.
- ▶ **2001 Water Conservation and Quality Incentives Act (S.285.IS)** – *Pending*. Intent is to authorize the use of state revolving loan funds for construction of water conservation and quality improvements.
- ▶ **2001 Water Quality Research, Development, and Technology Demonstration Act (H.R.3996.IH)** – *Pending*. Intent is to authorize EPA to provide funding to support research and development of projects for the security of water infrastructure.
- ▶ **2002 Water Quality Financing Act of 2002 (H.R.3930.IH)** – *Pending*. Intent is to authorize appropriations for state water pollution control revolving funds and other purposes.
- ▶ **2002 The Year of Clean Water** – The Clean Water Act celebrates 30 years of progress.

The Path to Clean Water

For more than two hundred years, New York's waters have suffered from the impact of the evolution of population, technology, and lifestyle, with corresponding changes in the landscape and in water quality. More than thirty years ago, New York led the way in a national effort to revive these troubled waters.

Progress has been dramatic. Today, most of the state's waters are fishable and swimmable. Striped bass and shad are again abundant. The Mohawk River, once coated with a sheen of oil and filth, is now a world-renowned bass fishery. Populations of fish-eating raptors and furbearers are rebounding after being decimated by contaminants in the food chain. Cities and towns that had once turned their backs on rivers that ran like open sewers were now making restored waterways the focal points of their communities.

Setting Course

To the earliest European settlers in North America, the waters of the new land seemed boundless with infinite capabilities to serve all of humanity's needs: drinking water, irrigation, industry, navigation, fishery, and even waste disposal.

It didn't take long for the European convention of disposing of waste in watercourses to become a deadly practice. By the end of the nineteenth century, the annual death toll from waterborne diseases like typhoid and cholera was in the thousands. When communities began protecting their drinking water supplies the death rate fell but other waters remained polluted with the debris and sewage of a booming industrial society.

More than fifty years ago, polluters were prosecuted only if they caused a public health hazard. New York's 1949 Water Pollution Control Act tightened regulations but by the 1960s, much more needed to be done. Schools of dead fish drifting on river currents, streams contaminated with

industrial waste taking on strange tints, and shellfish beds closed due to bacteria contamination became almost common occurrences.

At a time when the entire nation struggled with similar problems, New York blazed a trail toward cleaner water with its 1965 Pure Waters Program that put \$1 billion into statewide efforts to eliminate polluted discharges. Governor Nelson Rockefeller traveled to Washington, DC to push the federal government to enact a comprehensive water pollution law to regulate sewage and industrial discharges, control polluted runoff from urban and rural areas, and halt habitat destruction. The most critical need was funding for the massive job of building and improving sewage treatment facilities.

When enacted in 1972, the Clean Water Act (CWA) called for setting water quality standards and providing technical tools and financial assistance to address the causes of poor water quality. New York implemented the Act's provisions with specific water quality criteria and pollution control programs to meet them. Federal and New York State funds were combined for a sweeping program of building and upgrading sewage treatment plants and establishing pretreatment of industrial wastes across the state.

Liquid Assets

New York's Clean Water tradition continues today under the leadership of Governor George Pataki. The \$1.75 billion Clean Water/Clean Air Bond Act, proposed by Governor Pataki and ratified by the voters of New York State in 1996, provided an unequalled opportunity to make lasting improvements to our environment. Governor Pataki was also the first governor to call for full



funding of the New York State Environmental Protection Fund, which provides \$125 million annually for environmental projects.

The Clean Water portion of the Bond Act authorizes \$790 million, including:

- \$420 million for water quality improvement projects in New York's eight Management Plan areas, funding wastewater treatment improvement, nonpoint source abatement, and aquatic habitat restoration
- \$30 million for small communities wastewater treatment and flood control projects
- \$320 million for open space and farmland protection

Remaining Challenges

Since the 1970s, New York State's water programs have cleaned up most of the discharges of sewage and industrial waste that accounted for about 90 percent of the water pollution that existed. New York's discharge permit compliance rate for U.S. Environmental Protection Agency (EPA) major dischargers continues to rank among the highest in the nation.

In the last six years alone, 1,390 miles of rivers, 19,800 acres of lakes, and 270,000 acres of estuaries have improved significantly. Our waters have improved dramatically but the work is not finished yet. We need to

protect and maintain our hard-won gains and tackle the remaining problems, such as acid rain and contaminated sediments (which together account for more than 60% of impairments in New York's waters).

Acid precipitation from smokestacks in the midwestern United States and Canada has turned many Adirondack lakes and ponds into clear but lifeless waterbodies. New York's efforts to control acid rain are the toughest in the nation and the state continues to fight on the federal battlefield for control of out-of-state sources of pollution.

Contaminated sediments are the source of many of the fish consumption advisories in state waters. One well-known example is the Hudson River, where sediments in both the upper and the lower river were contaminated by PCBs discharges. Under the coordination of the EPA, work has begun to restore the health of aquatic life by removing and treating the contaminated river bottom sediments.

With the approach of a federal deadline for implementing the Phase II stormwater program, stormwater management is of great concern throughout the country. New York State has gone beyond EPA regulations in tailoring a program that will ensure considerable progress in one of

the major remaining nonpoint sources.

To control polluted runoff from farms, New York State created the nationally recognized Agriculture Environmental Management Program, which now involves more than 1,000 farmers in farm management plans that protect water quality.

Work groups, established to address hydrologic and habitat modification, onsite wastewater treatment systems, and agricultural and stormwater runoff, are ensuring a steady march of progress toward resolving these environmental threats.

Conquering these remaining challenges will require vigilance, hard work, and dedication. The Year 2002 marks the 30th anniversary of the Clean Water Act, the landmark federal law that began the clean up of the nation's waters and envisioned the ideal conditions we still strive toward. More than thirty years of restoring our waters has proven that New York has what it takes to leave a legacy of clean water for future generations. 

For more information, contact Elaine Bloom at the New York State Department of Environmental Conservation, 518/402-8274 or elbloom@gw.dec.state.ny.us.



Wet Facts

Most of the Earth's water, 97%, is stored in the ocean as salt water.

Nearly all of the fresh water is frozen in polar ice sheets.

Less than 1% of the Earth's water is fresh and accessible in rivers, lakes, or underground.

Half of the U.S. population obtains its drinking water from rivers and lakes; the other half obtains its drinking water from underground water sources.

The five Great Lakes represent about 95% of all fresh water above ground.

The U.S. has 3.5 million miles of rivers and streams.

The U.S. has 41 million acres of lakes.

The U.S. has nearly 300 million acres of wetlands (most of which are in Alaska).

Clean water is vital to commerce.

The 45 billion dollar commercial fishing and shellfish industry relies on clean water for products that are safe to consume.

The 50 billion dollar soft drink industry uses over 12 million gallons of clean water annually to produce its products.

about 120 river and lake groups throughout Vermont). These associations are engaged with landowners and have specific projects underway for restoring water quality or water-related resources. The Vermont Department of Environmental Conservation (VT DEC) not only supports the ongoing efforts of local landowners, communities, and community organizations, but is eager to help new locally-based organizations become established where they see important work to be done in regard to our water resources.

In order for the watershed planning process to continue to be successful, the people involved must continue to feel as though they have a part in it, that their opinions are being heard, and that they are able to have an effect on the outcomes and actions that result from the process. Successfully creating a meaningful, effective, and enduring planning process is the key to solving water quality problems in Vermont's watersheds. Such participation and decision-making, with an emphasis on collaboration and consensus, will entail a significant level of staff time by water and land use agencies.

Applying planning experiences from the mid-1980s and early-1990s with the principles mentioned above, Vermont has launched its 21st century basin planning process in three drainages which are highlighted in Figure 2. Also shown in the figure are the boundaries of Vermont's seventeen river basins. Basin numbers 3, 5 and 14 are being considered the next planning areas.

Addressing Stream Channel Instability

The Vermont Agency of Natural Resources (ANR) is embarking on several new watershed initiatives in response to statutory mandates, identified public need, and a growing constituency for watershed protection and restoration. The Agency and the DEC have become better equipped and more proficient with the tools necessary to formulate, implement, and sustain these initiatives. One of today's problems is



Statewide map with 17 basins; 3 of 17 highlighted.

pervasive stream instability. To be effective, basin planning and other initiatives must go beyond the enumeration of symptoms and use the analysis of physical, chemical, biological, and social data to explain the root problems affecting these troubled waters.

Watershed assessments have described erosion/sedimentation and phosphorus as the largest categories of pollution in the state. These two concerns are related in that eroding stream bank soils may be one of the largest sources of sediment and phosphorus impacting our watersheds. The causes for eroding stream bank soils include the removal of riparian vegetation, hydrologic modifications, flood plain and channel encroachments, and the in-channel management practices that have been conducted to address the symptoms of instability. These activities have caused stream instability at the watershed scale, wherein bank erosion at one location triggers further stream bed and bank erosion in an upstream or downstream direction or

in both directions simultaneously. A recent analysis of some 300 stream channels shows that for every stream type in Vermont, a river without a riparian buffer is almost half again as wide as a similar stream with a riparian buffer.

The ANR has begun to implement the principles and applied methods of fluvial geomorphology in stream alteration permits, river channel restoration, public hazard identification, and river education programs. Initial success with explaining complex stream problems and restoring stream reaches using a geomorphic approach presents an important opportunity for resource managers and watershed constituents. Fluvial geomor-

phology, a science that seeks to explain the physics of flowing water and sediment in different land forms, will be an essential tool and organizing principal for community-based watershed protection and restoration over the next thirty years of clean water efforts.

To effectively address stream channel instability and to support other on-going critical water resource protection and management initiatives, Vermont's water resource managers, scientists, and policy makers are taking actions towards:

1. Supporting an approach based on applied fluvial geomorphology which focuses on improving stream stability and function as a central management goal. This approach is effective because it addresses the multiple objectives of various stakeholder groups and it can be understood and applied by such diverse individuals as town planning board members, road foremen, landowners, and local,

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CLEAN WATER IN VT from page 11

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county, state, and federal resource agencies.

2. Developing databases to support river corridor and watershed management, public education programs, and to provide indices of program accomplishments and effectiveness.

The results of this physical data collection effort will provide benchmarks to evaluate stream threats and impairments. Reference data will also provide geomorphically-based design specifications to complement traditional engineering approaches to projects such as streambank stabilization, transportation infrastructure investments, flood recovery or prevention, flood plain management, and stormwater controls. In addition, these databases will provide a common framework for assessing the effectiveness of stream management projects in meeting their stated goals.

3. Developing and implementing basin plans and establishing a network of stream stability restoration demonstration projects throughout Vermont to advance public understanding of fluvial processes and to engender support of protection and management programs at the state and local levels.

Basin plans should identify and prioritize problem areas and provide a

schedule for attaining long-term goals for stream corridors. Each component of a basin plan should directly or indirectly address water quality concerns arising from stream instability. Basin plans should strive to target future stream protection, restoration, and management projects using a set of four priorities that recognize conservation reaches, strategic sites, reaches with high recovery potential, and moderate to highly degraded sites.

Rivers and their movements become easier to understand once we realize that the volume of water and the amount of sediment being carried are in dynamic balance. Rivers are dynamic systems that adjust within normal limits. Stable rivers have the ability to move water and sediment in balance, have no large deposits of sand or gravel, have minor natural erosion, and their riverbank location changes very little from year to year. Unstable rivers, on the other hand, are found on many miles of Vermont rivers and streams. These rivers can change their course by many feet annually, have large sections of collapsing riverbanks that widen and/or cut deeper into their channel and sediment fills natural pools. Understanding the causes of instability and working to bring those reaches into balance will be a long-term opportunity for clean water actions. Figure 3, known to practition-

ers of geomorphology as the Lane Scale, is provided to illustrate this dynamic balance.

Managing Stormwater

When discussing stormwater and associated impacts, one typically does not think of the Green Mountain State. Nonetheless, due to changes in Vermont's population and landscape since the CWA was established, there are some two dozen streams known to be impaired primarily due to stormwater runoff. These impairments are caused by stormwater discharges that are not receiving adequate treatment (such as projects that pre-date the state's stormwater permitting program) and previously permitted stormwater discharges that are not in compliance with their original permits. This means that when base-level stormwater treatment requirements, known as Best Management Practices, are designed, installed, maintained, and working correctly, the water quality impairments should be eliminated. Over the next thirty years, the centerpieces of enhanced stormwater management within Vermont will occur through Watershed Improvement Permits and the creation of municipal stormwater utilities.

The DEC has begun to implement a three-part solution to the problem of stormwater impaired waters, implemented through the issuance of a watershed-specific general permits, referred to as Watershed Improvement Permit (WIP). A WIP will be individually crafted for each watershed impaired by stormwater. Three groups or categories of stormwater discharges would be covered under the applicable WIP, including:

Group 1: All previously permitted stormwater dischargers are included under the WIP. This includes all discharges that have previously been permitted, regardless of whether such permit is currently valid or expired. To obtain coverage under the WIP, these existing discharges need to provide DEC with a written certification



The so-called Lane Scale.

that the existing stormwater management system was built as designed and is currently operating in compliance with the previously issued permit. If such certification cannot be made, the WIP will specify a reasonable time-frame for taking corrective action (typically inclusive of two building seasons) to construct and/or bring the previously permitted stormwater management system into compliance with the previously issued permit. Once this corrective action is taken, an engineer's certification will be provided to DEC.

Group 2: Stormwater discharges designated by DEC as "selected stormwater discharges" to the receiving impaired water will be included under the WIP. Within each impaired watershed there are several entities that, by virtue of their size, location, age, and lack of adequate treatment, have an inordinate detrimental impact on the receiving water. Some of these may have permits issued previously, others may pre-date the permitting program altogether. The formula used to identify "selected discharges" takes into account certain factors, such as the extent of impervious surfaces, the presence and efficacy of any existing stormwater treatment, and degree of connectivity to the receiving water. DEC believes that it is necessary to selectively require optimized stormwater treatment for these discharges in order to improve impaired waters. Requiring optimized treatment for these notable discharges is very efficient with regard to benefits versus costs, particularly when considered on a watershed basis. The top tier of these discharges within a watershed will be required to engineer treatment solutions designed to achieve the water quality, recharge, and channel protection requirements of *The Vermont Stormwater Management Manual for Watershed Improvement Permits*.

Group 3: While improvements to existing stormwater management systems are ongoing, the WIP will minimize water quality impairment from new stormwater discharges by requiring treatment solutions to meet the state-of-the-art requirements specified in the newly developed Manual. This manual, which relies on five elements of an integrated management concept, provides designers with an overview of how to size, design, select, and locate stormwater treatment practices to comply with State stormwater performance goals. The *Manual* is available for download from www.anr.state.vt.us/dec/waterq/Stormwater/VermontStormwaterManual.pdf



As a result of the CWA, significant progress has occurred to improve and safeguard the quality of Vermont's surface water resources. With that progress however, has come recognition and appreciation for the types of pollution sources and the manner in which our lives and activities can negatively impact those achievements in water quality.

Stormwater management will assume an increasingly important role, especially for the large proportion of the state's residents and businesses found in the more confined urban or suburban areas of Vermont. In order to more efficiently manage this aspect of water quality, one can anticipate the creation of municipal stormwater utilities as a likely outcome. A stormwater utility, whether established to serve a single town, a collection of towns or

portions of several towns within a particular watershed, has considerable promise for the state, municipalities, and development community.

As a result of the CWA, significant progress has occurred to improve and safeguard the quality of Vermont's surface water resources. With that progress however, has come recognition and appreciation for the types of pollution sources and the manner in which our lives and activities can negatively impact those achievements in water quality. Without question, our ability to monitor and assess water quality conditions will improve over the next thirty years of the Act. We can expect greater certainty about the tools and measures we apply to control, reduce, or prevent undesirable chemical, physical, or biological changes to the resource.

Local concerns and citizen-based watershed planning will play an even larger role in reaching agreement on the implementation of clean water solutions. Understanding channel stability improves our collective knowledge regarding stable river systems. Stable systems are ones where the value of riparian vegetation is protected and where the river has access to its flood plain. These have positive implications not only for fisheries and other wildlife but also towards minimizing risk from flood damage to public and private development investments. Finally, as Vermont becomes more populated and changes occur to its landscape, demands for state-of-the-art stormwater controls and management are likely to increase. The challenge in this arena will be to create seamless yet effective stormwater management between the state and the various programs and bylaws of towns. 

For more information about Vermont's water quality efforts, contact Rick Hopkins at the Vermont Department of Environmental Conservation: 802/241-3770 or Rickh@dec.anr.state.vt.us.

MAINE: A WATER QUALITY PROFILE

Maine's history is tied to clean and abundant rivers, lakes, and shorelines. Thirty-five years ago, our rivers emitted foul odors and fish kills were common. We have spent considerable money and effort to improve them; the results are telling. Water quality trends for 224 Maine lakes that have been tracked for at least 8 years show that 67 percent of those lakes have



stable water quality, 25 percent are improving, and only 8 percent are declining. Maine's major rivers and streams are also improving with 70 percent of their length fishable and 94 percent of their length swimmable.

Society is releasing less pollution to the environment. Sewage treatment plant discharges, in terms of the amount of total suspended solids and biochemical oxygen demand, are down 20 percent in the past 8 years. This decrease means that Maine's rivers can reclaim their integrity and that we can expand how we use our rivers.

More acreage open to shellfish harvesting illustrates improving marine water quality, important not only for commercial fishing but also as an indicator of ecological improvements. Sewage discharges from malfunctioning septic systems, straight discharge pipes, and nonpoint source pollution are responsible for closing shellfish areas to harvesting. Over 500 residential and commercial discharges to coastal waters have been removed since 1995.

Although there are warnings for fish consumption throughout the U.S., the emission of mercury into the environment is decreasing. The bad news is that once mercury is in the environment, it is very persistent and does not break down. PCBs and dioxin levels in fish tissue samples taken from Maine rivers have also decreased, but the toxicity of these chemicals remains very high.

To improve water quality, we have focused on point sources: discharges coming from a pipe leading directly into the water. Those major sources masked other water quality problems that are pervasive but harder to control. Now that large sources are better controlled, we are finding that our major problems are persistent chemicals in the environment and nonpoint source pollution, which is contained in runoff coming from the land.

*This article is an excerpt taken from Maine's Environment 2002.
The entire publication can be viewed at
<http://www.state.me.us/deplenvironment2002.pdf>.*

What Can You Do to Help Protect Water Resources?

Before you pour, spray, or dump anything on the street, your lawn, or at the side of the road ask yourself, "Will this end up in the water?" People often wonder what they can do to support clean water. Promoting clean water is actually very easy; simply exercising some common sense can do it.

Here is a list of things you can do to help prevent water pollution in your area.

- Use only the directed amount of lawn treatment and do not treat your lawn when heavy rain is forecast.
- Choose native plants that can withstand local soil and moisture conditions without requiring extra fertilizer or water.
- Clean up after your pets, even in your own yard.
- Keep your septic system in good repair.
- Never pour anything down storm sewers as they often drain straight into surface waters.
- Dispose of chemicals as directed on the container or call your waste management company for instructions.

Protecting Wetlands Under the Clean Water Act

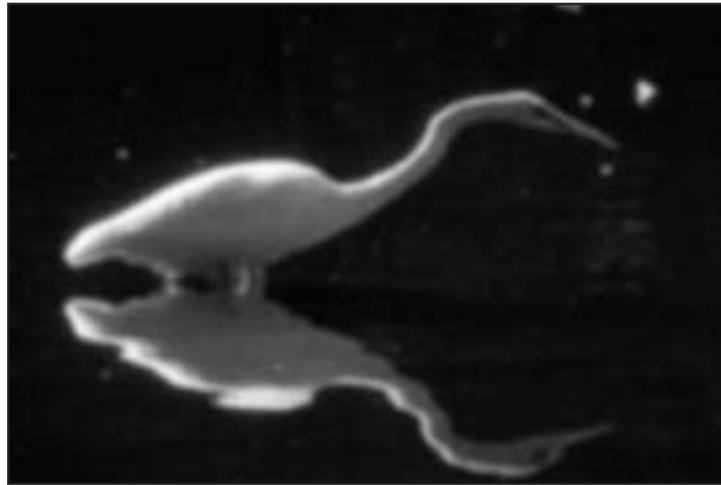
Wetlands play a vital role in the environmental and economic health of our nation. These unique areas act as natural filters that purify water by sifting out sediments and pollutants. After storm events, wetlands help control flooding and reduce coastal storm damage by absorbing stormwater and releasing it gradually. Wetlands can help maintain stream and river flows during dry periods and can replenish groundwater supplies. They also maintain habitat for fish and wildlife and provide popular places for hunting, canoeing, and fishing.

Although the Clean Water Act (CWA) was designed to protect the integrity of all of our nation's water bodies, many people associate the Act with rivers and do not realize that wetlands included in the definition of "waters of the United States" are also covered by the Act. In the information below you will read about how some of the key sections of the Clean Water Act apply to wetlands and about current issues and controversies related to wetlands regulation under the Act.

Section 303: Water Quality Standards

Section 303 of the Clean Water Act requires states to "designate uses," which means they must specify appropriate water uses, such as drinking water, recreational use, propagation of fish and shellfish, for each regulated water body and establish water quality standards to support those uses. Most states have completed this task for lakes, streams, and rivers but few have established standards for wetlands. In 1990, the United States Environmental Protection Agency (USEPA) issued guidance on developing water quality standards for wetlands. This guidance required states to:

- Include wetlands in the definition of "State waters"
- Designate uses for all wetlands
- Adopt aesthetic narrative criteria



and appropriate numeric criteria for wetlands

- Adopt narrative biological criteria for wetlands
- Apply the state's antidegradation policy and implementation methods to wetlands

EPA's 1994 Water Quality Standards Handbook stated that "EPA believes that some states may not be providing the same protection to wetlands that they provide to other surface waters. Therefore, EPA wishes to emphasize that wetlands deserve the same protection under water quality standards." However, little progress has been made. A recent EPA fact sheet (USEPA, 2001) states that "few states or tribes have fully incorporated wetlands into their water quality programs, and even fewer have developed designated uses and criteria specifically for wetlands."

Section 305(b): Water Quality Assessments

Section 305(b) of the CWA requires that the states report to EPA every two years on whether water quality standards are being met in their water bodies. Even with this requirement in place, in the 1998 Water Quality Report to Congress, states and tribes reported on the designated use support of a total of only 4% of the nation's wetlands (USEPA, 2001).

EPA believes that the states want to monitor wetlands but lack resources and knowledge of appropriate assessment techniques. To assist states, in 1997 EPA formed the Biological Assessment of Wetlands Work Group

(BAWWG) to improve methods and programs to evaluate the biological integrity of wetlands. The group consists of federal, state, and academic wetland scientists from around the country. BAWWG developed a series of "Methods for Evaluating Wetland Condition" modules as well as fact sheets, databases, and literature searches regarding wetland bioassessment (all available at <http://www.epa.gov/owow/wetlands/bawwg/publicat.html>). EPA's newly formed National Wetland Monitoring Workgroup (see <http://www.epa.gov/owow/wetlands/monitor/>) incorporates the BAWWG, and other groups, to further wetlands monitoring programs and initiatives.

In 1998, the New England Biological Assessment of Wetlands Work Group (NEBAWWG), a regional counterpart to the national workgroup, was organized by EPA Region 1 to develop a regional wetland biomonitoring network, to sponsor and oversee state pilot projects, and to coordinate with and complement efforts of other biomonitoring groups (see <http://www.epa.gov/region1/eco/wetland/index.html>). NEIWPCC has been active in NEBAWWG since its inception and has supported its efforts by sponsoring workshops and conferences. These workshops and confer-

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PROTECTING WETLANDS from page 15
 ences have included presentations and discussions on volunteer monitoring, national wetlands monitoring strategy, state pilot projects, data management, and related topics. NEIWPCC also has a Wetlands Workgroup that promotes the exchange of ideas about protecting and regulating wetlands.

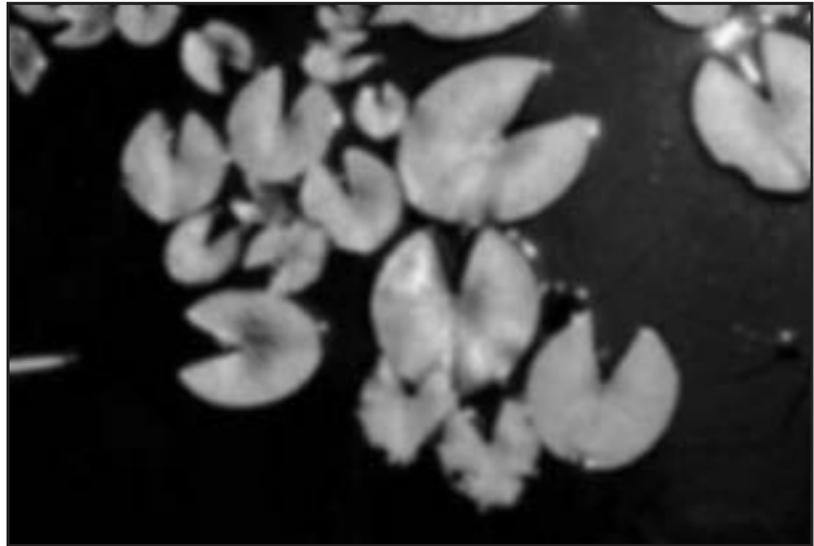
Section 401: State Certification

Section 401 of the CWA requires that an applicant for a federal license or permit to conduct any activity that may result in a discharge to navigable waters provide the federal agency with a Section 401 certification. The state in which the discharge originates or will originate must certify that the discharge will comply with applicable provisions of the CWA, including the water quality standards provisions. States may waive their Section 401 certification authority, in which case the applicant does not need to provide a Section 401 certification.

The major Federal licenses and permits generally reviewed under Section 401 are Federal Energy Regulatory Commission hydropower licenses and dredge-and-fill activities requiring permits from the U.S. Army Corps of Engineers (USACOE) under Section 404 of the CWA and Sections 9 and 10 of the Rivers and Harbors Act. States and tribes can use their Section 401 authority to deny, certify, or condition permits or licenses; typically, the decision is based on whether the activity will comply with state water quality standards but other provisions of the CWA can also be applied. In 1989, EPA issued guidance to states on applying Section 401 certification to protect wetlands.

Section 404: Dredging and Filling

Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Activities regulated under this program include fills for development (such as buildings, highways, and airports), water resource projects (such as dams and levees), and conversion of wetlands



to uplands for farming. This program is jointly administered by USEPA and USACOE. Permit applicants must prove that they have taken steps to avoid wetland impacts where possible, minimized potential impacts to wetlands, and provided compensation for any remaining unavoidable impacts through activities to restore or create wetlands. Large projects require individual permits while most discharges that will have only minimal adverse impacts fall under general permits issued by the USACOE. Section 404(f) exempts some activities from regulation including many ongoing farming, ranching, and silviculture practices.

Definition of “Waters of the United States”

So, which wetlands are waters of the United States? Currently this is a vigorously contested question that has been the subject of litigation, Supreme Court decisions, and recently introduced Congressional legislation. USEPA and USACOE have historically taken a broad view of their jurisdiction over wetlands; however, a recent Supreme Court decision (Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers) cut back federal regulatory authority over isolated wetlands. The Clean Water Authority Restoration Act of 2002 seeks to establish a statutory basis for this authority, but in the meantime, responsibility for wetlands protection falls more heavily on states.

States and EPA are starting to focus more on application of the requirements of the Clean Water Act to wetlands. There are currently many opportunities for states to move forward on wetlands protection; however, most states are facing revenue shortfalls. Now more than ever, actions taken by citizens, volunteer organizations, and private companies to partner with states are crucial in the effort to protect wetlands.

For more information on wetlands issues, please contact Rebekah Lacey, NEIWPCC, at 978.323.7929 or rlacey@neiwpcc.org.

References and Resources

USEPA. 2002. Wetlands. <http://www.epa.gov/owow/wetlands>
 This home page has links to wetlands fact sheets, the text of the Clean Water Act, guidance documents, etc.
 USEPA. 2001. Fact Sheet: Methods for Evaluating Wetland Condition. EPA-822-F-01-008. <http://www.epa.gov/ost/criteria/wetlands/facts.html>
 USEPA. 1994. Water Quality Standards Handbook: Second Edition. EPA-823-B-94-005a. <http://www.epa.gov/waterscience/standards/policy.htm>
 USEPA. 1990. National Guidance: Water Quality Standards for Wetlands. <http://www.epa.gov/owow/wetlands/regs/quality.html>
 USEPA. 1989. Wetlands and 401 Certification: Opportunities and Guidelines for States and Eligible Indian Tribes. (This publication can be ordered from EPA's Wetlands Information Hotline at 1-800-832-7828.)

THE CLEAN WATER AUTHORITY RESTORATION ACT OF 2002

The Clean Water Act (CWA) states that it applies to “navigable waters,” which are defined elsewhere in the Act as “waters of the United States.” The USEPA and the USACOE have defined “waters of the United States” broadly in their regulations to include interstate and many intrastate water bodies and wetlands. In 1986, the USACOE issued the Migratory Bird Rule, which states that when isolated intrastate waters are visited by migratory birds, the waters fall under the jurisdiction of the Corps.

In January 2001, the Supreme Court issued a decision in the case of Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers. The case challenged the power of the USACOE to require a dredge/fill permit under Section 404 of the CWA for an isolated wetland in Illinois. The Court found in favor of SWANCC, striking down the Migratory Bird Rule. Although this case applied specifically to Section 404 and the Migratory Bird Rule, the decision has significant implications regarding Congress’ authority to regulate non-navigable, isolated, intrastate waters under the CWA.

In response to the SWANCC decision, the Clean Water Authority Restoration Act of 2002 was introduced into the House (H.R. 5194, by Rep. Oberstar) and the Senate (S. 2780, by Sen. Feingold) on July 24. The Restoration Act contains a long “Findings” section, which in part offers various justifications for Congressional authority over intrastate waters. The Restoration Act goes on to amend the CWA by replacing “navigable waters” with “waters of the United States” and defining “waters of the United States” as “all waters subject to the ebb and flow of the tide, the territorial seas, and all interstate and intrastate waters and their tributaries, including lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, and all impoundments of the foregoing, to the fullest extent that these waters, or activities affecting these waters, are subject to the legislative power of Congress under the Constitution.”

Information and updates regarding Congressional legislation can be found at <http://thomas.loc.gov>.

Information on the SWANCC case is available at <http://www.epa.gov/wow/wetlands/swanccnav.html>.

The Year of Clean Water: Reigniting the Public Stewardship Spark

Public awareness and interest in the quality of the nation’s water resources intensified throughout the 1960’s. As a result of a developing economy, population growth, and other factors, water resource problems were readily observable by the public and directly impacted their daily lives. Pollution in the form of scum, oil, debris, discoloration, and odor was readily observable in the nation’s rivers, streams, and lakes. Reductions in fish populations and other aquatic life were noticeable as were more numerous fish kills. Swimming beaches were fouled by pollution and debris and public water supplies were at risk of being contaminated. State water quality pro-

grams evolved and responded to these problems in various ways according to the limits of available science, technical and institutional capability, and funding. As a result of the public’s interest in and demand for more effective measures to protect and clean up the nation’s water resources and the varying state responses, in 1972 Congress enacted the Federal Water Pollution Control Amendments (Public Law 92-500) known as the Clean Water Act (CWA).

The Act, one of the first and most successful national environmental laws to be passed by Congress, set the goal of restoring and maintaining the chemical, physical, and biological integrity of the nation’s waters. In the

three decades since its passage, CWA programs have yielded measurable improvements in water quality throughout the nation. Streams that were once devoid of fish and other aquatic life now support numerous and varied aquatic populations. Lakes that were once choked by pollution are now vastly improved. Point source discharges from municipal and industrial sources are being controlled. Yet, much remains to be done to achieve the goals of the CWA and ensure that the nation’s waters are “fishable” and “swimmable”.

The progress that has been achieved must be maintained as the nation’s population and economy con-
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errors. ACWF has also developed a web site that provides information on national, state and community water-related events. Educational materials are available including: What Is A Watershed, And Your Point Is, Turning The Tide, Murky Water Caper, G-Whiz Water Quiz, and Student Information Kit. These materials can be ordered from the web site, www.acwf.org.

To learn more about the Year of Clean Water events, National Water Monitoring Day, registering monitoring locations, ordering test kits for the National Water Monitoring Day, or ordering publications or posters, visit the Year of Clean Water web site at www.yearofcleanwater.org.

Roberta Savage is the Executive Director of the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA). She is also President of America's Clean Water Foundation (ACWF) and an adjunct professor at the Lyndon B. Johnson School of Public Policy at the University of Texas.

Available from NEIWPCC



GUIDANCE MANUAL FOR SURFACE WATER SUPPLIES, 2000

This manual is the updated and revised version of *Source Protection: A Guidance Manual for Small Surface Water Supplies in New England, 1996*. NEIWPCC created the new edition to incorporate changes brought about by the 1996 Safe Drinking Water Act (SDWA) Amendments and to address national source protection issues.

The manual includes new SDWA requirements, information on microbial and disinfection rules, case studies from across the

country, new funding and implementation assistance information, and an expanded chapter on source protection, planning, and implementation. The concepts in the Manual are fairly basic and can be applied to systems of all sizes. Sections on cost savings, acceptable secondary uses, pollutants, land uses, best management practices, and implementation and assistance provide water suppliers with the information and tools they need to advance their planning and implementation processes.

To order your copy of the *Manual*, contact NEIWPCC at 978/323-7929 or mail@neiwpc.org. The *Manual* costs \$5.00.

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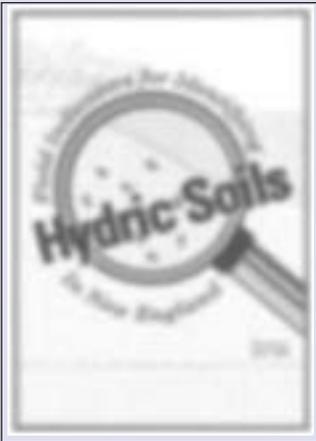
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GUIDE TO HYDRIC SOILS IN NEW ENGLAND

This guide helps field personnel identify and document hydric soils and their boundaries. These field indicators provide consistent and reliable evidence as to whether a certain soil meets the definition of a hydric soil. To correctly interpret and apply this guide, users must have practical experience and a working knowledge of soils. When properly applied, this field guide yields results that are consistent with the identification of hydric soils as per the 1987 Army Corps of Engineers Wetlands Delineation Manual.

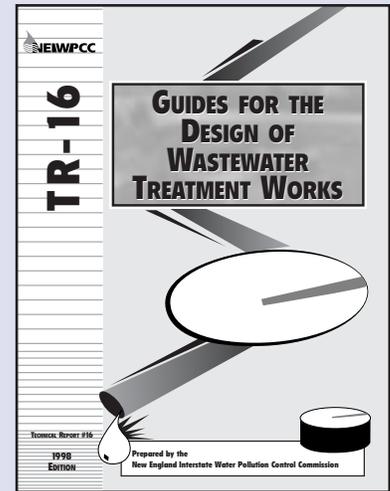
NEIWPC provides updated pages for the Manual as needed. To access this information, visit www.neiwpc.org/wetlands.html.

Hydric Soils is available for \$5. To order a copy, contact mail@neiwpc.org or 978/323-7929.

TR-16 GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS

TR-16 as it is commonly known, is intended to serve as a practical guide to the design of wastewater treatment works. Each section covers important elements of wastewater treatment that must be considered in the design process. The intended audience includes engineers responsible for designing wastewater treatment plants, state regulators responsible for reviewing and approving the designs, and municipalities that may need assistance with the solicitation of professional design services for their wastewater treatment plants.

To order your *TR-16 Guide*, contact NEIWPC at 978/323-7929 or mail@neiwpc.org. *TR-16* costs \$50.



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