CHANGES

During fiscal year 1981, the Commission continued its involvement in the development and coordination of overall programs and policies pertaining to the abatement and control of water pollution in the Compact area. Specific activities during the year are reported in the pages of this annual report.

The benefits of past expenditures and accomplishments are becoming more and more evident in the improved quality of the waters of the Compact area as demonstrated by the return to some of our streams of shad and salmon which cannot exist in a polluted aquatic environment. Although much has been accomplished, the U.S. Environmental Protection Agency's 1980 survey shows that remaining municipal facility construction needs in New England and New York State, projected to the year 2000, are estimated to be $29 billion in 1980 dollars, including correction of combined sewer overflows.

Based on policies evolving from the administration of President Reagan, substantial reductions in future Federal appropriation levels can be expected. In fact, fiscal year 1981 saw the actual rescission of $1.7 billion in Federal water pollution program funds.

The availability of Federal funds for wastewater treatment facility construction since 1957 has resulted in almost total reliance on Federal grants and compliance with Federally mandated requirements. Since wastewater treatment works construction is a continuous process, the Commission and its member States must give some urgency to addressing the problems of future construction in the light of disappearing Federal monies. Alternative funding mechanisms, and transition periods for their implementation, must be developed if progress in water pollution abatement and control is to continue. These will be the difficult and critical issues addressed by the Commission during the coming years.

The Commission is appreciative of the past support it has received from the Governors and the State legislatures. It remains dedicated to the principle of regional cooperation and to addressing State needs of an environmental and public health nature. The Commission looks forward to continued cooperation with the U.S. Environmental Protection Agency and to the continued support of the Governors and the State legislatures.

Henry E. Warren
Chairman
Toward Quality Water

An Interstate Compact Commission Created in 1947 with the Approval of the United States Congress.

Connecticut
Maine
Massachusetts
New Hampshire
New York
Rhode Island
Vermont

Annual Report 1981
Toward Quality Water

Water Resources... Beyond Crisis Management

Our water resources are in competition for a variety of uses... uses which generally require clean water, but which discharge wastewater of questionable quality. While potable water is essential to human health and survival, other water uses such as waste disposal and industrial processing seriously threaten the quality of public water supplies.

Water continuously moves between earth and atmosphere, it mixes and interacts with geologic materials, vegetation, organisms, and a murky assortment of the industrialized world’s discarded waste. In this manner, landfills, industrial waste lagoons and hazardous waste burial grounds have endangered many water supplies because of the deteriorated quality of water discharged from these sites.

Water transports. It moves potential pollutants from one place to another... from land to ground and surface waters. It moves manure, fertilizers, and pesticides from farming operations; soil from construction sites; grease, oil and other garbage from streets and sidewalks; salt from road deicing operations; and minerals from strip mining operations.

While water resources in industrialized nations are particularly vulnerable, nature, technology, common sense, and sound environmental legislation can make and have made significant progress in restoring and maintaining water quality. Many of the water cleanup programs enacted in the 1970’s were in response to the virtual crisis condition of our surface waters. But, in the past ten years severely polluted rivers and lakes experienced dramatic improvement. Goaded on by concerned citizens and comprehensive legislation, local, state, and federal authorities attacked the problem of untreated discharges. Both municipal and industrial offenders had to find ways to minimize or eliminate their discharges. By 1981 the cleanup of surface water was under control... we had gone beyond “crisis management.”

Crisis management is still in operation, however, as we face the problem of groundwater pollution. The realities of this problem were unveiled in the 1970s and will be the major environmental challenge of the 1980s. We are in the process of “unearthing” hazardous spoils of past carelessness and, to the offender, inexpensive disposal practices. The extent of these contaminated sites and the associated damages and costs to society are still unclear. It may take years before contaminants from these sites turn up in water supplies. While it is possible to protect groundwater, it is almost impossible to renovate this water in any short period of time once contamination has occurred.

Though groundwater is more an enigma than surface water, it can be managed. We now realize that all water... surface, subsurface and atmospheric... must be treated as one system, one resource. Northeast states have begun to approach the management of their water resources in a more comprehensive way.

Managing Water?

Water resources management is complex. Ground and surface waters are affected by land use. What use causes what effect on what water? To answer this question we must examine given geographic areas hydrologically, geologically, biologically, chemically, socioeconomically and politically. What demands does society place upon the natural resource system as a whole? Can we predict how natural and social systems will react and interact?

In New England, for example, a small watershed may house residential and agricultural land uses plus three service stations, a sand and gravel operation, two smelters, two mortuaries and a shopping center. Clean water is requisite to the people and processes involved in each of these activities. But, each use also contributes (to a greater or lesser degree) to the deterioration of water quality. Management of the water resource within this watershed, from an environmental point of view, requires the use of available natural resource information which must be analyzed and organized with a water management strategy.
Who Manages What?

A major factor in the complexity of comprehensive water resource management is the reality of multiple political jurisdictions and fragmented responsibilities. Our small watershed may lie within three towns each having an assortment of land use ordinances and regulations. In addition, the basin is subject to a vast assemblage of state, county and federal authorities.

In New England, state environmental protection agencies have assumed coordinating roles in water resource management. But in many instances, authorities extend beyond these departments to other jurisdictions such as health departments, well drilling boards or local governments. Water’s mobile and cyclic nature allows for this deficiency of bureaucratic harmony. If water resources were neatly contained it would make management much easier.

The most critical role in water resources protection is played by local governments. Land use controls fall almost exclusively within the powers of planning, zoning and inland wetland commissions, sewer authorities and boards of appeals. These powers are generally exercised by appointed or elected officials who have little or no expertise or background in resource planning or management. Land use decisions have traditionally been based on political, social and economic criteria but it is now apparent to many New England communities that environmental factors must play a major role in the planning and zoning processes. Local officials now face decisions on such sticky topics as landfill or hazardous waste disposal siting, protection of water supply aquifers, or on-site versus centralized methods of wastewater disposal. Each new use proposal has water use or quality implications that are related to other existing water uses.

Local officials in the Northeast are also learning that natural resource information can be a practical aid in their decision-making processes. In recognizing natural watershed boundaries, they have acknowledged that many decisions have impacts which extend beyond political boundaries. Thus, it does not always pay to locate the worst polluter at the edge of town... your neighbors can play the same game... polluted water has many entrances and exits.

Because water circulates through the atmosphere, the land and surface waters, the issue of management remains complex both scientifically and politically. Certainly the location of approved hazardous waste disposal sites will continue to be difficult and delay the legitimation of disposal areas. The present economic climate in the United States has also seriously dampened the momentum which had been building toward aggressively tackling present water quality problems and protecting future resources. But Northeast states continue to work toward effective, non-crisis water management. In the following section we will examine some of the ways in which water quality management is currently being approached in the Northeast and note some of the changes which are beginning to occur due to fiscal belt-tightening.
The New England Interstate Water Pollution Control Commission

Water Quality Program

The New England Interstate Water Pollution Control Commission (NEIWPC) was established in 1947 with the primary goal of adopting and assigning water use classifications for the interstate streams in its Compact area. Today the Commission’s responsibilities have expanded to include water quality management activities, legislation and regulation review, training programs, public information and education and special projects.

In 1981 the NEIWPC moved toward assuming the additional role of coordinating activities associated with groundwater pollution and atmospheric deposition (acid rain) in New England. The Commission recognized that total water resources management and protection constituted not only surface, but subsurface and atmospheric spheres. Furthermore, it was clear that many of these quality concerns involved interstate issues and that these concerns could be handled more efficiently through interstate coordination and organization.

Commissioners attended in-house workshops on acid rain, groundwater pollution and hazardous waste management. In cooperation with the Northeast States for Coordinated Air Use Management (NESCAUM), the NEIWPC became the clearinghouse and distributor of acid rain information for the Compact-member states and New Jersey. It initiated an information exchange effort for groundwater management activities which included state program status reports prepared by the staff.

The NEIWPC’s major 1981 contributions to water resources management and protection are included in this report under the separate headings of Groundwater Protection, Acid Precipitation, and Surface Water Protection.

It was clear that many water quality concerns involved interstate issues and that these concerns could be handled more efficiently through interstate coordination and organization.
Groundwater Protection

The extent of groundwater contamination resulting from past land use practices cannot be measured or quantified. Present sources of contamination have only recently been mapped by many states and towns. Many sources, buried years ago, have yet to be discovered.

Efforts to safeguard groundwater resources have been made at federal, state and local governmental levels. Congress passed several environmental protection acts affecting groundwater in the 1970's: the Clean Water Act, Toxic Substances Control Act, Safe Drinking Water Act, Resource Conservation and Recovery Act and the Pesticides Act. States Drinking Water Act, Resource Conservation and Recovery Act and the Pesticides Act. States carry out the mandates of many of these Acts and they develop their own programs and laws such as health codes and groundwater quality standards.

The real burden of groundwater pollution falls on local governments who must maintain and protect present and future water supplies within their jurisdictions. Land use is controlled almost exclusively by local governments... planning and zoning commissions in particular. Because of the variety of environmental concerns communities face, land use decisions have become far more complex and sophisticated in recent years.

Zoning maps reveal the developmental history of towns... the compatibility of uses and the environment... projected future uses. Communities must find places on this map for landfills, industry, schools, parks, housing, and most important, future water supplies. Local officials know they need scientific information to make decisions on water supply protection. Though certain issues such as hazardous waste siting have become emotional topics in many communities today, it's the routine day to day land use decisions that will be significant to groundwater protection.

Pollutant discharges into groundwater range in severity from easily assimilated low level coliform bacteria to long-lived toxic chemical constituents. The waste load in industrial societies will continue to increase with growth in population, goods and services and new chemicals. In the United States, millions of tons of wastes are thrown away each year. Thus, it is clear that the need to make choices for groundwater protection will not diminish. The problem is widespread and requires the concern and cooperation of everyone.

Local officials know they need scientific information to make decisions on water supply protection. Because of the variety of environmental concerns communities face, land use decisions have become far more complex and sophisticated in recent years.

In 1981, States in the NEIWPCA's Compact area continued to develop various groundwater protection strategies and management plans. The following is a summary of the status of these efforts.
Connecticut

In September 1980, Connecticut adopted new “Water Quality Standards and Criteria” which cover groundwater and surface water. Groundwater categories (or classifications) are based on allowable receipt of discharges (GAA, GA, GB, GC). Groundwater quality standards based on use are set forth for each of these four classifications. This system is designed to provide the framework for an expanded groundwater management program.

The public has generally been receptive to the new groundwater standards, although designation of the GC areas (most open to allowable discharges) has sparked some controversy. Resolution of desired goals in those areas has been time consuming for DEP staff.

The Connecticut groundwater strategy and work plan includes (a) planning, i.e., groundwater quality classification mapping, and the use of 303 (e) Basin Plans as mechanisms for proposing groundwater use conflict resolutions; (b) hydrogeologic data gathering; (c) permits and enforcement via (1) Orders to Abate groundwater polluting activities, and (2) the permit program which regulates wastewater or leachate discharges; and (d) construction grants management - priority points are assigned to projects that will result in groundwater quality improvements.

The State developed a draft memorandum of agreement between the Department of Environmental Protection (DEP) and the Department of Health Services (DHS). The memorandum has five objectives: (1) development of statewide groundwater quality goals, (2) development of a comprehensive groundwater resource management strategy, incorporating supply and demand, conservation strategies, and solid waste siting policy, (3) maintain and improve State’s groundwater monitoring and analysis capability, (4) establish a cooperative approach for State agency response to groundwater contamination, including contaminated wells, oil and chemical spill incidents, and activities of the DEP’s Hazardous Waste Management Unit, and (5) coordinate groundwater resource use review for discharge permit applications and public water supply well development.

In August 1981, the DEP published “A Handbook for Connecticut’s Water Quality Standards and Criteria”.

Maine

The Maine Groundwater Protection Committee drafted groundwater recommendations to the Legislature and State agencies. The Department of Environmental Protection (DEP) spent considerable time working with the Legislature to implement legislative recommendations in this report.

The State is working at the formulation of an overall groundwater protection policy and strategy which will coordinate groundwater management activities among several State agencies. As part of this process, the DEP developed a DRAFT “Groundwater Strategy”. Though the strategy has not been finalized, its comprehensiveness merits our reader’s attention.

1) The first section lists statutory authority directly related to groundwater and administered primarily or entirely by the Maine DEP. Statutes cover waste discharge licenses, location of solid waste disposal areas, prohibited deposits and discharges (including chemical septic tank cleaners) and subsurface waste disposal regulations.

2) The second section lists policies essential for the protection of Maine’s groundwater: a) protection of contaminated aquifers, b) higher degree of protection for aquifer systems which contain significant recoverable quantities of water, c) denial of applications for waste discharge licenses for discharge to groundwater of hazardous substances in concentrations exceeding naturally occurring levels (exemption procedures included), and d) precedence of groundwater quality protection over surface water quality protection.

3) The third section consists of management strategies for each type of land use activity which has the potential to contaminate groundwater. For each activity, strategies for both “existing” and “proposed” cases are outlined. The land use activities covered include: municipal solid waste disposal facilities, municipal sludge disposal and utilization facilities, municipal septic tank disposal sites, non-hazardous industrial solid waste (including sludge), municipal and industrial wastewater discharge systems, discharges to surface and groundwater highway deicing, chemical storage facilities, petroleum products storage and transmission facilities, hazardous waste disposal facilities, certain industrial activities, agricultural activities, private waste disposal (subsurface) systems, snow, dump sites, and mining facilities.

4) The fourth section consists of a table which lists DEP divisions responsible for some aspect of controlling the various land use activities covered in section 3.

New Hampshire

All New Hampshire groundwater is assumed to be Class A drinking water quality. The State approved a discharge permit system which will be its major groundwater pollution control strategy.

Profiling And Monitoring

To apprise themselves of the boundary and extent of water supply aquifers, Northeast states and communities are at various stages of aquifer mapping. The management and regulation of aquifers first demands some knowledge of the whereabouts and potential of these resources.

Geologic information such as that found on topographic, surficial and bedrock geology maps provides a first cut method for locating and delineating stratified drift intrinsic to high yield aquifers. Test borings and existing wells also provide important information. In recent years, however, mathematical modeling has surfaced as an accurate and effective way to delineate these aquifiers. Using models, geologists can predict an assortment of "what happens if" situations related to land uses, groundwater hydrology, and pollution.

The method of seismic profiling, combined with the other known data, has become an accessible and inexpensive ingredient in mathematical modelling. It is no longer necessary to drill numerous and
New York

Since 1978 New York has had a groundwater permit program and groundwater standards. This includes listings of significant organic and inorganic toxics and limitations. The Department of Environmental Conservation has also had an in-house task force working on developing a long term groundwater strategy. In an effort to develop a groundwater program which has more immediate application, the Department of Environmental Conservation (DEC) has revised its program into a three pronged effort. The first two elements are more short term in nature, and key into the third long range element. Briefly, the three elements include: 1) a groundwater incident tracking system, 2) problem anticipation through relating sources of contamination to water supplies with the use of overlays on aquifer maps, and 3) design of a long term groundwater program.

Rhode Island

Rhode Island is the only State in the Compact area which does not include groundwater in the definition of “waters of the State”. Therefore, the State's Department of Environmental Management (DEM) does not have regulatory jurisdiction over groundwater.

The RI State Planning Council was busy in FY-81 preparing legislative acts which would give DEM the necessary statutory authority and would address other aspects of groundwater protection as well.

One act would have amended the State’s zoning act to give local planning boards and commissions power to use zoning restrictions specifically for the protection of groundwater resources. Another act relating to hazardous waste management would have held those in control of hazardous waste strictly liable for damages to persons or property resulting from contamination of any public or private water supply.

The legislative acts were presented to the General Assembly in March 1981 but were defeated. Only about 20% of Rhode Island’s population relies on groundwater for drinking water and certain special interests were opposed to the proposed controls.

Massachusetts

Massachusetts created a Groundwater Steering Committee, to develop State groundwater policies, comprised of representatives from the seven different departments in the State with legal authority and responsibilities relating to groundwater. There are also affiliate members from regional planning agencies, federal and interstate agencies.

The Groundwater Steering Committee submitted a status report, “Groundwater Protection Strategies”, to the Water Resources Commission. Points of interest include the following:

The Underground

expensive test holes. One 10-12' hole for explosive charges is sufficient. From the explosive point, geophones are placed every 50 feet across a valley or basin. A seismograph shows the time it took for soundwaves to go from the explosion to each phone. The speed depends upon the medium through which the sound travels; water, bedrock, soil texture, etc. The result is an accurate profile of the configuration of the valley bottom which is then tied into known test holes, soil samples and geologic information.

The nature, extent, and path of pollution can be followed using the process of groundwater monitoring. By this process wells are installed to determine effects of past land uses; to assess groundwater conditions prior to proposed or new land uses; and as a means of monitoring and regulating new land uses. While groundwater monitoring is an ideal way to keep abreast of groundwater quality conditions, it is also expensive and done less extensively than desirable. In recent years installation of monitoring wells has often been a condition tied to the approval of a new industrial or waste disposal development.

1) The Department of Environmental Quality Engineering is preparing map overlays showing water and waste source information. Four overlays to be completed by June 1982 include the location of a) public drinking water supplies, b) potential waste sources, c) aquifer information, and d) drainage basins of named streams averaging four square miles.

2) DEQE is preparing four handbooks: a) technical groundwater primer, b) road salts and effects on water supplies (completed), c) map user manual, and d) groundwater monitoring handbook for State agencies.

3) Strategies still under consideration are: a) use of modified LeGrand rating system for evaluating the probability of groundwater contamination from certain waste disposal sites, b) development of discharge to groundwater permit system, c) development of a Statewide classification system, and d) regulations governing well drilling.

Vermont

The Vermont Agency of Environmental Conservation is in the process of developing a groundwater protection strategy. In addition to this, the following activities are also in progress: 1) mapping of aquifer protection areas around all municipally owned public water supply wells, 2) development of a background document explaining mapping criteria and details of the State’s proposed approach to protecting aquifer areas, 3) interagency meetings to discuss land uses to be restricted within aquifer protection areas, 4) progress reports to the legislature, and 5) completion of an inventory of groundwater pollution incidents.
Acid Precipitation

Since at least the turn of the century experts have been aware that precipitation of any kind can sometimes be "abnormally" acidic. But it was not until the late 1970s and especially 1981 that the phenomenon of "acid rain" evoked a profusion of scientific and public interest. In the Northeast U.S. and Canada, acid rain has not only become commonplace but it poses a serious threat to human health and the environment.

"Acid rain" has become the "buzz word" for a complex and far-reaching problem. Our air is composed of a variety of natural and manmade gases and particulates which fall to the earth in precipitation (wet deposition) or like dust settling on furniture (dry deposition). The most infamous of these fallout constituents are sulfur and nitric oxides but the list of potential troublemakers goes on and includes toxic organics and heavy metals. While acid precipitation is one result of all of this, the true identity of all that falls to the earth is still being unravelled. Thus, the term atmospheric deposition is more appropriate than "acid rain". The possible effects on nature and mankind are of considerable concern.

As we delve into the sources of atmospheric pollutants we also face new complexities. Combustion by-products of all kinds are carried into the atmosphere and eventually back to earth. But the industrial midwest emits more pollutants through its tall smoke stacks than the Northeast.

These midwestern emissions are carried long distances and often settle out in the Northeast and Canada. Because this is an interstate and international problem, its resolution enters heavily into the realm of politics. Certainly, technology exists to reduce emissions, but to midwestern industry this cost outweighs their notion of associated environmental and health costs.

The first known victims of "acid precipitation" were brook trout in the Adirondack Mountains. These pH sensitive fish are like the "canary in the mine"...warning us of impending trouble. The impacts of acid deposition, and acid precipitation in particular, are varied and often interrelated, creating complex and far-reaching consequences to both natural and manmade environments. Damage from acid precipitation has been well documented in the following major categories:

- Aquatic Ecosystems - fish species extinctions, decreased amphibian reproduction
- Terrestrial Ecosystems - reduction in tree productivity, leaching of nutrients
- Drinking Water Supplies - leaching of lead and copper from pipes
- Manmade Structures - accelerated corrosion and weathering
- Visibility - increased haze, decreased visibility
- Human Health - contaminated fish and water supplies.

Because atmospheric deposition includes pollutants other than acid-forming ones, other serious impacts are also of concern in the Northeast. These include:

- accumulation of mercury or pesticides in fish
- accumulation of lead in soils
- human death and disease from inhalation of sulfates and other fine particles transported in the atmosphere.

What is acidity?

The acidity of any solution is measured by its pH on a scale numbered from 0 to 14.

A pH of 7 is neutral. Solutions with a pH lower than 7 are acidic, while those greater than 7 are alkaline. Because the pH scale is logarithmic, a small difference in pH really means a large difference in acidity. A pH of 4 is ten times more acidic than a pH of 5, and 100 times more acidic than a pH of 6.
Northeast Damage Report,
a 72 page technical report which examines
the long range transport problem, and
documents the impacts of atmospheric
deposition in the Northeast.

A Cause for Alarm, Acid Precipitation
in the Northeast,
a 26 minute comprehensive slide/tape
show designed for public information.

A Cause for Alarm,
a public information brochure on the long
range transport and deposition of air
pollutants in the Northeast.

Copies of the damage report and bro-
chure, and use of the slide/tape show are
available free of charge through state en-
vironmental agencies, or from:

- New England Interstate Water Pollution Control Commission (NEIWPCC),
  607 Boylston St., Boston, MA 02116, (617) 427-1524.
- Northeast States for Coordinated Air Use Management (NESCAUM),
  607 Boylston St., Boston, MA 02116, (617) 437-3007.
- EPA Region I Office of Public Awareness, JFK Federal Bldg.,
  Boston, MA 02203, (617) 223-4704.

The NEIWPCC, in association with the
Northeast States for Coordinated Air Use
Management (NESCAUM), organized a
task force composed primarily of air and
water pollution control agency directors
from the Compact-member states and
New Jersey. Through the task force, the
NEIWPCC responded to state concerns by
assembling and reviewing available
regional results of acid rain studies and by
producing three significant information
pieces: a technical compilation of infor-
mation on atmospheric deposition and
acid precipitation in the Northeast, a
slide-tape show, and a brochure.

The NEIWPCC produced and distri-
buted this information because of the need
for public awareness and initiative on this
serious issue. Public demand is thought to
be the most effective way to rally state
and federal legislators to the cause of a
stronger and more equitable Clean Air
Act. This Act came up for reauthorization
in 1981 but was held over for action in
1982.

The major pollutants can be traced to sulfur oxide and nitrogen oxide gases emitted into
the air from manmade sources such as power plants, industrial processes, cars, and
trucks. All these pollutants become part of the air masses circulating in the upper at-
mosphere, which flow predominantly into the Northeast.
Surface Water Protection

Surface water management is the "senior citizen" of our water quality improvement efforts. Its accessibility has rendered surface water first to be polluted, first to be judged polluted, and first to be targeted for pollution abatement and protection.

In the 1940's the Northeast States began establishing water quality standards and classifications based on existing quality, present use and proposed highest use. Over the years these standards have been the basis for implementing the National Permit Discharge Elimination System (NPDES) and the Federal Construction Grants programs. These two programs have been the mainstay of surface water improvement.

But the momentum of these surface water programs received a serious financial blow in 1981 with repercussions lingering ominously into the future. The environment was not immune to the overall federal spending cutbacks, and the construction grants program bore a significant portion of these cutbacks. As of July 1, 1981, Congress had rescinded $1.705 billion from the EPA budget, including $1.7 billion from the construction grants program, $4.9 million from the abatement, control and compliance efforts, and $499,000 from its research and development programs.

The rescission affected any unobligated funds. States such as New York having large unobligated balances lost more of their potential grant award monies. The following chart shows the effects in the Compact-member states of the construction grants program rescission.

<table>
<thead>
<tr>
<th>State</th>
<th>FY-80</th>
<th>FY-81</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>$2,240,364</td>
<td>$8,254,417</td>
<td>$10,494,781</td>
</tr>
<tr>
<td>Maine</td>
<td>5,231,126</td>
<td>5,387,813</td>
<td>10,618,939</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>34,586,351</td>
<td>22,024,361</td>
<td>56,610,712</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>708,068</td>
<td>6,568,031</td>
<td>7,276,099</td>
</tr>
<tr>
<td>New York</td>
<td>131,082,583</td>
<td>79,181,482</td>
<td>210,264,065</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>0</td>
<td>3,915,609</td>
<td>3,915,609</td>
</tr>
<tr>
<td>Vermont</td>
<td>4,339,047</td>
<td>3,727,572</td>
<td>8,066,619</td>
</tr>
</tbody>
</table>

Construction Grants

The construction grant awards for FY 1981 did not reflect the threatened future of the program. The word from Washington was not to expect any further appropriations until the national economic picture improved. By FY 1982 the states would be obligating only the FY '81 carry-over balance.
Research and Technology

As we plunge further into the grim complexities of acid rain, groundwater pollution, hazardous waste, and toxic substances the need for research becomes more pressing. Since water and life are mutually inclusive, water-related research and technology must be a priority.

At the NEIWPCC, research and special projects related to water quality and wastewater treatment are conducted by the Commission’s staff, outside consulting firms, state agencies and private researchers. The two projects described below were completed in 1981.

Midge Taxonomy Translation

A reorganization and translation from German to English of taxonomic keys for the genus Cricotopus was completed by the New York State Department of Health and Health Research, Inc. Cricotopus is a common group of non-biting midges with varying tolerances to pollution. The translation is of interest to aquatic biologists concerned with water quality in streams. Final photocopies have been circulated among Northeast state biologists; distribution of printed copies is anticipated for FY-82.

Wastewater Phosphorus Transport in Streams

A study of the assimilation and bioavailability of wastewater phosphorus in streams of different alkalinities was completed by the New York State Department of Environmental Conservation. The methodology and results can be applied to assess wastewater phosphorus assimilation and possibly load allocation in other stream situations.

---

**Environmental Protection Agency Construction Grants Awarded to Compact-Member States During Fiscal Year 1981**

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>$707,575</td>
<td>$1,198,725</td>
<td>$2,847,686</td>
<td>$427,690</td>
<td>$5,181,676</td>
</tr>
<tr>
<td>Maine</td>
<td>365,666</td>
<td>733,543</td>
<td>12,920,670</td>
<td>0</td>
<td>14,019,879</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>4,402,882</td>
<td>11,708,768</td>
<td>69,982,180</td>
<td>7,808,801</td>
<td>93,902,631</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>0</td>
<td>1,485,151</td>
<td>16,553,602</td>
<td>0</td>
<td>18,038,753</td>
</tr>
<tr>
<td>New York</td>
<td>1,901,973</td>
<td>1,413,825</td>
<td>760,183</td>
<td>4,404,462</td>
<td>409,802,730</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>103,669</td>
<td>2,504,957</td>
<td>0</td>
<td>0</td>
<td>2,698,626</td>
</tr>
<tr>
<td>Vermont</td>
<td>38,610</td>
<td>514,435</td>
<td>6,895,937</td>
<td>1,265,000</td>
<td>8,713,982</td>
</tr>
</tbody>
</table>

*New York figures for Compact area
**New York statewide figures
Step 1—facilities plans
Step 2—design specifications
Step 3—construction
Step 4—combined Step 2 & 3 projects
Figures in parentheses indicate number of grants awarded.
Training in Wastewater Treatment Technology

The New England Regional Wastewater Institute

Wastewater treatment plants represent a sophisticated state-of-the-art approach to wastewater management and stand as showcases of modern technology. The operators of these plants must be well trained in their field.

In 1969, the NEIWPCC established the unique New England Regional Wastewater Institute (NERWI) on the campus of the Southern Maine Vocational Technical Institute (SMVTI) in South Portland, Maine. Through NERWI the Commission has been able to provide the region with training and related education opportunities in wastewater treatment plant operation and maintenance.

In 1981 25 students were graduated from NERWI’s 9-month wastewater treatment technology certificate program. Three summer short courses were offered in response to a continuing need for training in more specialized aspects of the field. Topics covered were 1) “Pumps and Pump Maintenance”, 2) “Electrical Systems and Motor Controls”, and 3) “Operation and Maintenance of Wastewater Collection Systems”.

Plans are in progress for construction of new NERWI facilities on the SMVTI campus. By December 1980 the Commission’s consultant had finished the Phase I design report. In June 1981 plans and specifications were submitted to state agencies in Maine for review.

VIEW FROM WEST

Mobile Training Facility

The Mobile Training Facility (MTF) traveled through the seven Compact states providing both introductory and upgrade training to a total of 517 operators at 29 locations. An MTF brochure was also completed during this year.

Instructional Resource Center (IRC)

The Instructional Resource Center, located at NERWI, was developed to systematically inventory and maintain current pollution control training and education materials. These materials are disseminated to governmental agencies, educational institutions, wastewater treatment facilities and other water pollution control agencies throughout New England.

Slide/tape units, videocassette units and films are available for short term loan for a small fee.

The IRC Study Room, a special viewing room at the Institute is available Monday through Friday to permit educators to review audio visual instructional materials. NERWI staff are available at the Center for consultation and assistance by appointment.

Regional Information Clearinghouse (RIC)

In November 1980 NERWI received a $28,750 grant from the EPA's National Training and Operational Technology Center to establish a regional information clearinghouse. The grant is for the first year of a 3-year project and was awarded in conjunction with a previous EPA Region I grant for establishing the IRC.

The Clearinghouse service catalogs information related to water quality, wastewater treatment, solid and hazardous wastes, environmental health, energy, toxic substances, worker safety, natural resources, and noise. Information is transmitted and transferred through computer assisted data searches which can save time and money for service users.

The RIC has access to hundreds of federal and private computer data bases which can provide state-of-the-art data in a fraction of the time and cost of performing manual searches. Many questions can be answered within minutes over the telephone.

A more detailed document will soon be published outlining these services along with the fee structure for searches.

The Commission also undertook two additional projects during the fiscal year which reflect the evolution of both the technology being applied to wastewater treatment and the management needs of municipal wastewater treatment works. The latter is exemplified by the development of the New England Wastewater Management Guide (see box), while the former is evident in a joint effort between the Commission and EPA to develop microcomputer software for plant operation. In March 1981, NEI signed a cooperative agreement with EPA Region I for a 3-year project to develop such programs for small wastewater treatment plants. These programs will assist in data management, report preparation, record-keeping and analyses of plant operations. Programs developed will be introduced through specially designed short courses and seminars at NERWI.

The Regional Information Clearinghouse, located at NERWI, uses a microcomputer system to gather information from a variety of computerized data bases.
The New England Wastewater Management Guide

Background

The last twenty-five years have witnessed the emergence and significant expansion of publicly-owned wastewater treatment facilities throughout the country. There are approximately 630 wastewater treatment plants in operation or under construction in New England alone. These facilities are often highly sophisticated plants which are atypical of routine responsibilities of municipalities. The U.S. Environmental Protection Agency (EPA) has been concerned that municipalities do not possess the necessary staff, skills and dollars to maintain or improve the management of their wastewater collection and treatment systems. Thus, the EPA awarded a grant to the NEIWPCC to develop a New England Wastewater Management Guide.

The Utility Concept

One of the key issues stressed by EPA in developing the Guide is the concept of a wastewater treatment facility functioning as a self-sustaining utility. The concept of utility management has resulted from a variety of concerns such as:

- Increased awareness of the complexity of treatment operations,
- Depleted sources of funding from federal and state grants,
- Increased attention from regulatory agencies on the degree of permit compliance and identification of problem sources resulting in violations.

Objectives

The Guide is the result of a management review of operation and maintenance systems in municipal wastewater facilities. Thus, the objectives of this project were to:

- Identify, review and evaluate the types of operating and maintenance management problems that exist in secondary and tertiary wastewater utilities.
- Develop a conceptual framework from which improved management systems may be applied to a variety of utilities.
- Prepare a New England Wastewater Management Guide to assist wastewater utility managers and related officials in evaluating and identifying improvement in their operations.

Approach

To provide guidance to the overall study, a “Steering Committee” was organized consisting of representatives from each state, the EPA, and the NEIWPCC. The detailed workplan was comprised of three major parts:

1) Case studies of nine treatment facilities;
2) Three technical roundtables in the Region for municipal, state and EPA officials to review the findings and conclusions of the case studies;
3) Development of the New England Wastewater Management Guide.

The Product

The Wastewater Management Guide is a “problem driven” document written for potential users varying from plant superintendents to municipal administrators to design engineers. The Guide’s “problem driven” approach results in a series of management problems followed by lists of potentials causes, which in turn are referenced to corrective procedures. The Guide is designed to be both a guidance and reference document. The objectives for the Guide are to:

- Assist treatment facility managers in identifying management problem causes within the utility.
- Provide reasonable corrective procedures for problem elimination, and
- Enhance management’s ability to provide self sustained, cost effective wastewater treatment and disposal.

Topics covered in the Guide include organization; operations and maintenance management; energy and sludge management; purchasing; personnel; financial management (budgeting, accounting and cost recovery); and how to implement corrective measures.
An Informed Public

Past environmental legislation and related environmental improvements have come about, primarily, from public demand. If environmental progress is in jeopardy, it will again take the prodding of an informed and concerned public to reverse this trend. Since the early 1970's the NEIWPCC has maintained its public awareness commitment. Thus, projects, slide/tape shows, and information accessibility elaborated throughout this report have been the products of this commitment.

The NEIWPCC continues to make its many technical and non-technical publications, films, slide shows, and displays available free or at minimal cost to the public.

The quarterly newsletter Aqua News provides information on current regional and national water issues, state-of-the-art facts on wastewater treatment, and jobs.

The Interstate Outlook

During the next several years, the Commission will continue to focus its efforts on improved and expanded coordination of State and Federal water quality management programs. Such efforts will take on increased importance as the State and Federal resources committed to environmental programs in general decrease. At the same time, the Commission and the States may find themselves facing even more complex issues, such as toxics management, than they face today. Addressing these new problems while maintaining programs to deal with groundwater protection, acid precipitation and hazardous waste management will require careful selection of priorities and assignment of resources.

We once quality water to ourselves, to our children, to our children's children.

---

Technical Resource Manuals

- Copper Sulphate: Its Use as an Algicide (1975)
- Cost and Growth Implications of Reserve Capacity in Sewerage Systems (1978)
- Comparison of State Water Quality Standards (1980)
- Water Quality Index & The Nashua River (1979)
- State/EPA Regional Policy on Municipal Sludge Management (1978)
- Summaries of Unpublished Research Reports (1978)
- The Use of Oxygen Uptake Rates in Activated Sludge Plants (1978)
- Handling & Disposal of Transient Recreational Vehicle Wastes (1976)
- Four Keys to New England Water Quality (1975)

Technical Reports

| TR-7 | A Simplification of Textile Waste Survey and Treatment (1959) |
| TR-9 | A Study of Small, Complete Mixing, Extended Aeration, Activated Sludge Plants in Massachusetts (1961) |
| TR-12 | White Water Wastes from Paper and Paperboard Mills—Pollution Sources and Methods of Treatment (1963) |
| Tr-13 | The Effect of Industrial Wastes on Sewage Treatment (1965) |
| TR-15 | Controlling the Effects of Industrial Wastes on Sewage Treatment (1970) |
| TR-16 | Guides for the Design of Wastewater Treatment Works (1980) |
| TR-17 | Uniform Guidelines for the Prevention and Control of Oil Spills and for Oil Terminal and Vessel Handling of Petroleum Products (1971) |
| TR-18 | Uniform Guidelines for the Control of Wastes and Harmful Effects Attributable To Watercraft and Floating Structures on Inland Fresh Waters (1973) |
| TR-19 | A Guide to Chemical and Clarifier Selection for Wastewater Treatment (1975) |
| TR-20 | Effects of Spray Irrigation with Stabilization Pond Effluent on Surface and Ground Waters (1978) |
| TGM-1 | Guidelines for Septage Handling and Disposal (1976) |

* New Publications
Officers

Chairman Henry E. Warren
Vice Chairman J. Willcox Brown
Treasurer George Burke

The Commissioners

Connecticut
George L. Burke, P.E., Winsted (1957- )
Douglas S. Lloyd, M.D., Commissioner, Department of Health (1973- )
Rita Melley, Windsor (1979- )
Michael G. Morgan, Stamford (1977-1979)
Stanley J. Pac, Commissioner, Department of Environment Protection (1977- )

Maine
Harvey E. DeVane, Ellsworth (1980- )
Lionel Ferland, Auburn (1980- )
Evelyn S. Jepson, Kennebunk (1980- )
David E. Smith, Commissioner, Department of Human Services (1975- )
Henry E. Warren, Commissioner, Department of Environment Protection (1977- )

Massachusetts
Anthony Cortese, Ph.D., Commissioner, Department of Environmental Quality Engineering (1979- )
Joan R. Flood, Lenox (1976- )
Alfred F. Freehette, M.D., Commissioner, Department of Public Health (1979- )
James K. Rogers, Chelmsford (1977- )

New Hampshire
Donald C. Calderwood, P.E., Commissioner, Water Supply and Pollution Control Commission (1963- )
William A. Healy, P.E., Executive Director, Water Supply and Pollution Control Commission (1951- )
Robert J. Hill, Chairman, Water Supply and Pollution Control Commission (1972-1981)
J. Willcox Brown, Commissioner, Water Supply and Pollution Control Commission (1980- )
Ronald F. Poltak, Director, State Planning Office (1980- )

New York
Robert F. Flacke, Commissioner, Department of Environmental Conservation (1979- )
Dr. Bernard Fryshman, Brooklyn (1977- )
Fred R. Gaines, P.E., Brooklyn (1976- )
Eugene F. Seebald, P.E., Director, Division of Water, Department of Environmental Conservation (1974- )
Donald B. Stevens, P.E., Delmar (1977- )

Rhode Island
Hagop Boghosian, Department of Health (1980- )
Charles E. Dickerson, Warwick (1963- )
Carleton A. Maine, P.E., Department of Environmental Management (1974- )
Nelson Marshall, Ph.D., Kingston (1968- )
Walter J. Shea, P.E., Providence (1947- )

Vermont
Edward F. Kehoe, Commissioner, Department of Fish and Game (1965-1965)
Reginald A. LaRosa, P.E., Director, Department of Environmental Engineering (1977- )
Lloyd Novik, M.D., Commissioner, Department of Health (1979- )
John Ponsetto, Commissioner, Department of Water Resources and Environmental Engineering (1980- )
Peter A. Robinson, Newport (1975- )

NEIWPCC Staff
Alfred E. Peloquin, P.E., Executive Secretary (1967- )
Frederick K. Schaufler, Executive Engineer (1974- )
Jennie E. Bridge, Environmental Scientist (1977- )
Janet C. Larson, Comptroller (1971- )
J. Patricia Conway, Staff Secretary (1975- )
Loren Finkelstein, Director of Public Information (1980- )
Ellen Frye, Public Affairs Specialists (1980- )

NERWI Staff
Kirk J. LaFlin, Director (1975- )
Anthony L. Gordon, Instructor (1975- )
Robert G. Belisle, Instructor (1980- )
Michael D. Pacilio, Instructor (1980- )
Judith Dyer, Secretary (1979- )
Technical Advisory Board

Chairman Daniel C. Collins

Hagop Boghosian, P.E., Principal Sanitary Engineer, Rhode Island Department of Health (1974- )

David L. Clough, P.E., Director, Water Quality Division, Vermont Department of Water Resources (1973- )

Daniel C. Collins, P.E., Deputy Executive Director & Chief Engineer, New Hampshire Water Supply & Pollution Control Commission (1980- )


Merwin E. Hupfer, P.E., Director of Water Compliance, Connecticut Department of Environmental Protection (1967- )

Charles H. King, P.E., Director, Division of Municipal Services, Bureau of Water Quality Control, Maine Department of Environmental Protection (1978- )

James W. Fester, Chief, Division of Water Resources, Rhode Island Department of Environmental Management (1978- )

Thomas C. McMahon, P.E., Director Massachusetts Division of Water Pollution Control (1966- )

Charles W. Murray, P.E., Director, Water Programs, U.S. Environmental Protection Agency Region I (1979- )

Ernest F. Trad, P.E., Director, Division of Construction Management, New York Department of Environmental Conservation (1975- )

Statement of Revenues and Expenses

REVENUES
From Signatory States:
  Connecticut $ 3,000.00
  Maine 4,800.00
  Massachusetts 30,110.00
  New Hampshire 5,100.00
  New York 5,380.00
  Rhode Island 4,800.00
  Vermont 6,720.00

From the U.S. Environmental Protection Agency:
  Clean Water Act Program Grants 493,761.62
  Training Grants 7,025.00

From Massachusetts Dept. of Environmental Quality Engineering:
  Program Support Contracts 534,750.00

Other Sources:
  Interest From Banks 8,682.44
  NESCAUM 6,567.89
  Miscellaneous 1,474.50

TOTAL $1,112,171.45

EXPENSES
Personnel 118,842.47
Operating Expenses 30,934.88
Meetings 12,745.68
Public Information & Education 4,522.47
Special Projects 293,421.68
Massachusetts DEQE Contracts 489,911.45
Operator Training 123,350.82
TOTAL $1,073,729.45

Financial Status Report
Balance of Cash on October 1, 1980 $ 247,885.80
Receipts 1,112,171.45
Disbursements 1,360,057.25
Balance of Cash on September 30, 1981 $ 286,327.80