



This report is dedicated to the late Maurice K. Goddard, a founder of the Delaware River Basin Commission who spent his life improving the quality of the environment throughout the Commonwealth of Pennsylvania and the Delaware River Basin.

The report covers calendar year 1995 and was published in the spring of 1996. It was compiled and edited by Christopher M. Roberts, the Commission's public information officer. Material for the report was generated by Commission staff.

Free copies are available by contacting the Commission at P.O. Box 7360, West Trenton, N.J. 08628 (Phone: 609-883-9500, ext. 205). A list of other Commission reports published during 1995 appears on the inside back cover.

### **Photo Credits**

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The cover photograph ("Leaves on Pond") was taken by D. Andrew Hornberger, as were the photos appearing on pages 6, (fall foliage), 12, 30, and 38. Gene Whitaker of the U.S. Fish and Wildlife Service shot the water lilies on page 2; the corn stalk photo on page 22 is courtesy of the U.S. Department of Agriculture.



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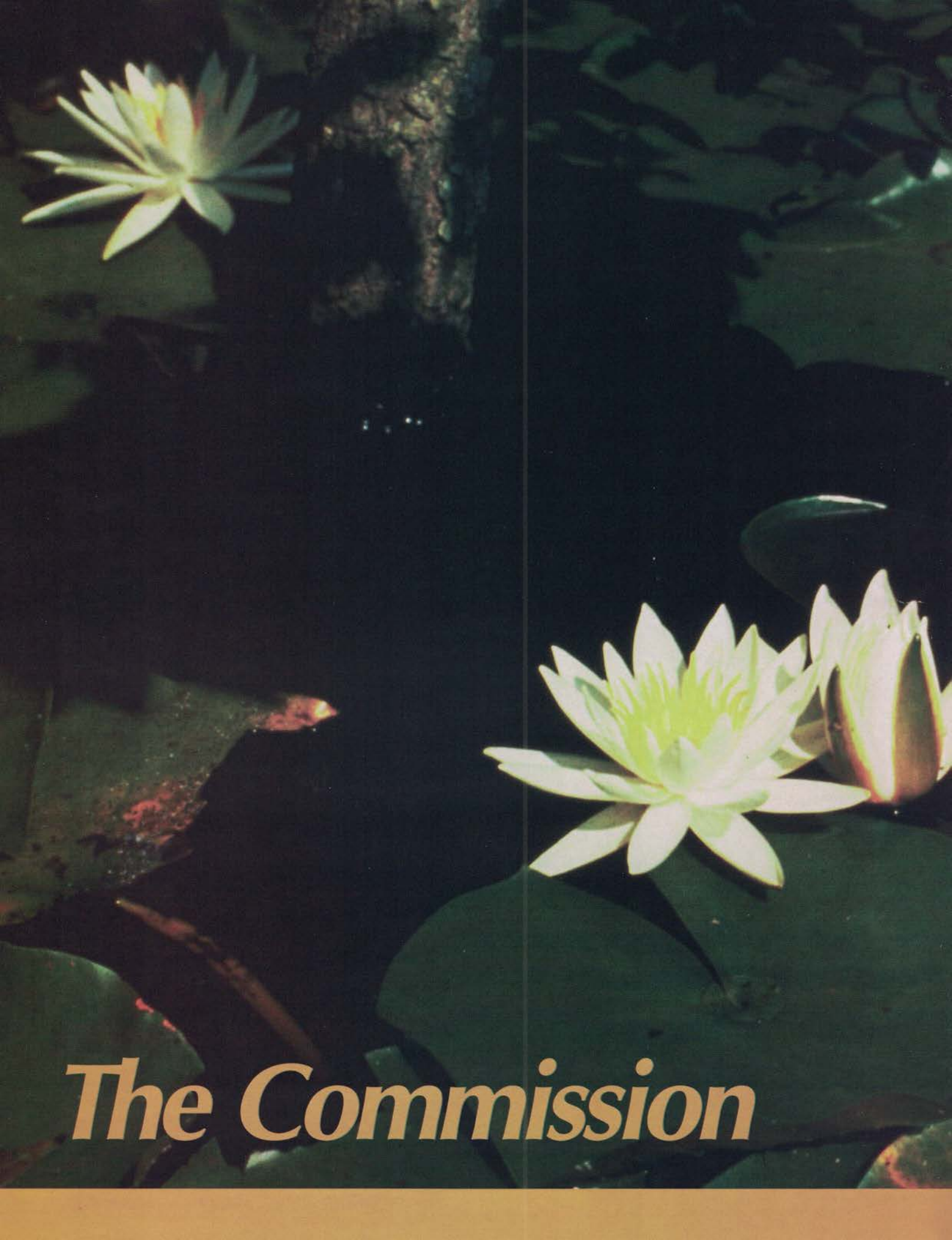
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*The Commission*



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## *A Unified Approach to Watershed Management*

THE DELAWARE RIVER BASIN COMMISSION was created on October 27, 1961, by the Delaware River Basin Compact, marking the first time in the nation's history that the federal government and a group of states had joined together as equal partners in a river basin planning, development, and regulatory agency.

The Commission's formation was driven by the realization that the basin's waters and related resources are regional assets vested with local, state, and national interests for which there is a joint responsibility. At the time the Commission was founded, some 43 state agencies, 14 interstate agencies, and 19 federal agencies exercised a multiplicity of splintered powers and duties within the watershed. The compact created a regional body with the force of law to oversee a unified approach to the development and control of the river system without regard to political boundaries.

Commission programs include: water quality protection, water supply allocation, regulatory review, water conservation initiatives, regional planning, drought management, flood control, and recreation.

## THE COMMISSION

The members of the Commission are the governors of the four basin states (Pennsylvania, Delaware, New York, and New Jersey) and a federal member appointed by the President of the United States. Traditionally, the federal member has been the U.S. Secretary of the Interior. The president also appoints an alternate commissioner, as do the four governors, selecting high-ranking officials in the four state environmental regulatory agencies.

Annual elections are held for Commission chair, vice chair, and second vice chair, based on a rotation of the five signatory parties. The Commission holds monthly business meetings and hearings on policy matters and water resource projects under regulatory review. These sessions, along with meetings of the Commission's various advisory committees, are open to the public. Each commissioner has one vote of equal power, with a majority vote needed to decide most issues.

The Commission is funded by the five signatory parties, receiving additional revenue from project review fees, water use charges, fines, and federal, state, and private grants.



## The Delaware River Basin

*The mainstem Delaware River extends 330 miles from the confluence of its East and West branches near Hancock, N.Y., to the mouth of the Delaware Bay.*

*The river is fed by 216 tributaries, the largest being the Schuylkill and Lehigh Rivers in Pennsylvania. In all, the basin takes in 13,539 square miles, including the 782 square-mile Delaware Bay, which lies roughly half in New Jersey and half in Delaware. Two reaches of the Delaware River and the Maurice River in New Jersey, a Delaware Bay tributary, have been included in the National Wild and Scenic Rivers System. The first section of the Scenic Delaware extends 73 miles from Hancock, downstream to Millrift, Pa.; the second extends 34 miles from just south of Port Jervis, N.Y., downstream to the Delaware Water Gap near Stroudsburg, Pa. Combined, the two river corridors take in 124,929 acres. Another reach of the Delaware, a 54-mile stretch linking the Delaware Water Gap and Washington Crossing, Pa., just upstream of Trenton, N.J., is being studied for possible inclusion in the system, as is the White Clay Creek, which flows from Pennsylvania into Delaware.*

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**THE DRBC 1995**


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**New Jersey**


Gov. Christine Todd Whitman  
*Chair*



Robert C. Shinn, Jr.  
*Alternate*

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**Delaware**


Gov. Thomas R. Carper  
*Vice Chair*



Christophe A.G. Tulou  
*Alternate*

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**United States**


Interior Secretary Bruce Babbitt  
*Second Vice Chair*



Vincent P. D'Anna  
*Alternate*

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**Pennsylvania**


Gov. Tom Ridge  
*Member*

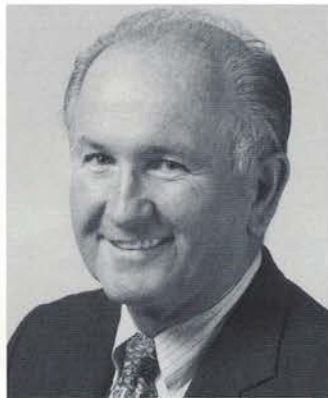


Irene B. Brooks  
*Alternate*

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**New York**


Gov. George E. Pataki  
*Member*



Michael D. Zagata  
*Alternate*

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**Second/Third Alternates and Advisors**
**New Jersey**

Steven P. Nieswand  
*Second Alternate*

**Delaware**

Gerard L. Esposito  
*Second Alternate*

**United States**

Lt. Col. Robert P. Magnifico  
*Advisor*

**Pennsylvania**

Stephen A. Runkle  
*Second Alternate*

Kumar Kishinchand  
*Advisor*

**New York**

N.G. Kaul  
*Second Alternate*

Warren T. Lavery  
*Third Alternate*

Marilyn Gelber  
*Advisor*

## Maurice Goddard

September 13, 1912–September 14, 1995

Maurice K. “Doc” Goddard, a founder of the Delaware River Basin Commission and a giant in the conservation movement, died on September 14, 1995, after a fire at his home in Camp Hill, Pa. He was 83.

Widely regarded as the father of Pennsylvania’s state park system, he held cabinet posts under five governors (three Democrats and two Republicans) as secretary of the Pennsylvania Department of Forests and Waters (1955–1971), and its successor, the Department of Environmental Resources (1971–1979).



*Former Interior Secretary Stewart Udall, left, the Commission’s first federal member, greets Dr. Goddard on September 18, 1986, at a dinner in Philadelphia commemorating the Commission’s 25th anniversary.*

Dr. Goddard set a goal when he arrived in Harrisburg from the School of Forestry at Penn State in 1955: locate a state park within 25 miles of every resident. He accomplished that milestone before leaving office.

“He campaigned assiduously around the state for those parks,” recalled Clifford L. Jones, who succeeded Goddard as DER secretary. “His life is testimony to the fact that you can do a lot of good for others. He deserves a tribute from everyone in Pennsylvania because you don’t have to drive far to see what he’s left.”

Dr. Goddard was Pennsylvania’s first representative on the Commission, serving 18 years after being appointed by Gov. David Lawrence in 1961. There’s a plaque on the wall in the Commission’s office in West Trenton where he helped forge regulatory policy dated May 28, 1980. It reads in part:

This conference room is dedicated to Maurice K. Goddard ... with recognition of his untiring efforts and unsurpassed accomplishments in improving the quality of the environment throughout the Commonwealth of Pennsylvania and the Delaware River Basin.

Officially, on paper, “Doc” Goddard left public office that year, but he found retirement impossible. The stamina and grit carried over into the twilight years, his frank management style riveting attention and respect in board rooms, in governors’ offices, and at legislative hearings. And when environmental groups rallied at the Statehouse, you could sometimes spot, out in front as usual, that shock of snow-white hair.





**Changing  
of the Guard**

NEW JERSEY GOV. CHRISTINE TODD WHITMAN was elected the Commission's chair on June 28, 1995.

Also elected to Commission offices were Delaware Gov. Thomas R. Carper (vice chair) and U.S. Interior Secretary Bruce Babbitt (second vice chair). Their terms run from July 1, 1995, through June 30, 1996.

The other Commission members are New York Gov. George E. Pataki and Pennsylvania Gov. Tom Ridge, who after taking office in January 1995 appointed alternates to represent them at Commission meetings and other functions.

Governor Ridge named Irene B. Brooks, special assistant for intergovernmental affairs to the secretary of the Department of Environmental Protection (DEP), as his representative.

Ms. Brooks, in the newly created position, assumed the alternate commissioner responsibilities of DEP Secretary James M. Seif and Hugh V. Archer,

**DRBC Staff***(with phone extensions)*

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*Gerald M. Hansler  
Executive Director*

**Administrative**

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Judith L. Strong (ext. 263)

**Directorate/Engineering**

Carolyn B. Everett (ext. 204 or 240)

Susan C. Owens (ext. 213)

Judith G. Scouten (ext. 224)

Anne M. Zamonski (ext. 222)

DEP's deputy secretary for water management. She also serves as Governor Ridge's representative to the Delaware Estuary Program and three other inter-basin river compact commissions—the Ohio, the Great Lakes, and the Potomac.

Stephen A. Runkle, chief of the Water Planning Section within DEP's Bureau of Water Supply and Community Health, was named by Governor Ridge as his second alternate on the Commission following Ms. Brooks' appointment.

Governor Pataki designated Michael D. Zagata, commissioner of the state's Department of Environmental Conservation (DEC) as his Commission representative. He also named N.G. Kaul, director of DEC's Division of Water, to serve as Commission alternate to Mr. Zagata, and Warren T. Lavery, director of DEC's Bureau of Water Resources, as the third alternate commissioner.

Ms. Brooks is the former executive director of the Chester County (Pa.) Water Resources Authority and a former Chester County commissioner. She has served on the Greater Philadelphia Economic Development Coalition and the Delaware Valley Regional Planning Commission, and between 1989 and 1993 was U.S. commissioner to the DRBC.

#### *Michael D. Zagata*

A native New Yorker, Dr. Zagata served as business ambassador for New York State's DEC before being confirmed as DEC commissioner in March 1995. Prior to that he spent 13 years managing environmental concerns for major energy firms—Transco Energy Co. and its subsidiary, Transcontinental Gas Pipe Line Co.; and Tenneco Oil Co. and Tenneco, Inc.

Dr. Zagata also has served as program development officer for the National Research Council, director of federal relations for the National Audubon Society, and assistant professor of wildlife resources at the University of Maine. During his career he has pioneered such programs as "Wetlands Mitigation Banking" and "Rigs to Reefs," bringing together business, government, and individuals to conserve natural resources.

Dr. Zagata holds a Ph.D. in wildlife ecology from Iowa State University and a B.S. and M.S. in biology, physical science, and mathematics from the State University of New York.



*N.G. Kaul*

Mr. Kaul joined the New York State DEC in 1975. Before being appointed director of the Division of Water, he was involved in water quality planning studies, nonpoint-source pollution, construction grants programs, and the regulation of hazardous substances. He also served as executive assistant to the deputy commissioner of the Office of Environmental Quality.

Mr. Kaul is a professional engineer with a master's degree in environmental engineering.



*Warren T. Lavery*

Since joining the agency in 1982, Mr. Lavery has worked exclusively in DEC's Division of Water. Prior to that he worked as an engineer for consultants, local government, and private business, mostly in the water and waste water fields.

A registered professional engineer in New York State, Mr. Lavery is a member of the American Water Resources Association and the American Water Works Association.

He holds a bachelor's degree in civil engineering from Syracuse University and has done graduate work in environmental engineering at Rensselaer Polytechnic Institute.



*Stephen A. Runkle*

Mr. Runkle has 28 years of civil engineering experience with the Commonwealth of Pennsylvania. He serves on three of the Commission's technical advisory committees and has helped formulate a number of Commission water resource policies.

A registered professional engineer in Pennsylvania and a member of the American Water Resources Association, Mr. Runkle holds a master of engineering degree from Penn State University and a bachelor's degree in civil engineering from Lehigh University.

He succeeded William A. Gast, chief of the state's Division of Water Planning and Allocations, as Pennsylvania's alternate DRBC commissioner.

## THE COMMISSION

***Thanks,  
You're Missed***

*Superintendent John T. Hutzky, a builder of bridges (Photo: Sullivan County Democrat)*

*Harold G. Budka*

Former alternate DRBC commissioner from New York State, who discovered the logical link between water conservation and drought management before it became fashionable. Mr. Budka retired from the state's Department of Environmental Conservation during 1995.

As a member of the Commission's Water Conservation Advisory Committee, he played a pivotal role in the early 1980s in the development of drought contingency plans by the four basin states. He also served on the Commission's Flow Management Technical Advisory Committee, keying development of an aquatic management program that balanced reservoir storage and fisheries protection during droughts.

*Caren E. Glotfelty*

Commission alternate to former Pennsylvania Gov. Robert P. Casey from October 1991 until her appointment in 1995 to the Maurice K. Goddard Chair in the School of Forest Resources at Pennsylvania State University. Her dedication as a caring public servant made her a natural candidate for the new position.

*Daniel J. Campbell*

Commission alternate from New York State, who served as Commission chairman from July 1994 to June 1995. Mr. Campbell provided firm and thoughtful leadership during his tenure with the Commission. His service ended with his promotion to the position of assistant commissioner for regional affairs in the state's Department of Environmental Conservation.

*John T. Hutzky*

John Hutzky, superintendent of the Upper Delaware Scenic and Recreational River (UDSRR), whose open and honest management style earned the trust and respect of a once hostile river valley, retired from the National Park Service (NPS) on October 1, 1995.

Mr. Hutzky was named UDSRR superintendent in 1979, a year after Congress had added the Upper Delaware to the federal Wild and Scenic Rivers system. It was Mr. Hutzky's job to put together a management plan for the Upper Delaware.

Fearing a federal land grab, public passion ran high. Signs shouting "NPS Get Out of Town!" were nailed to trees and valley barns, and John Hutzky was hanged in effigy from a manure spreader. It would be no easy walk in the park.

But over a 16-year span he won over his grudging critics one at a time, recognizing early on that local involvement was key to the plan's success. A working partnership among federal, state, and local governments was established through the Upper Delaware Council, and Mr. Hutzky's promise that no land would be taken without the owner's consent was kept. Today, only 25 of the project's 79,000 acres belong to the federal government.

At Mr. Hutzky's retirement party in September the valley lined up to pay tribute:

"John has been a bridge builder in both a figurative and a literal sense," remarked Andrew Boyar, superintendent of the Town of Highland. "When he came here, the Roebling Bridge was falling apart and impassable. He has restored that historic structure.

"But more important, when he came to the Upper Delaware, the concept of a federal presence engendered fear and concern. John has built a bridge between the NPS and the people, and the Park Service is now seen as a valuable resource."

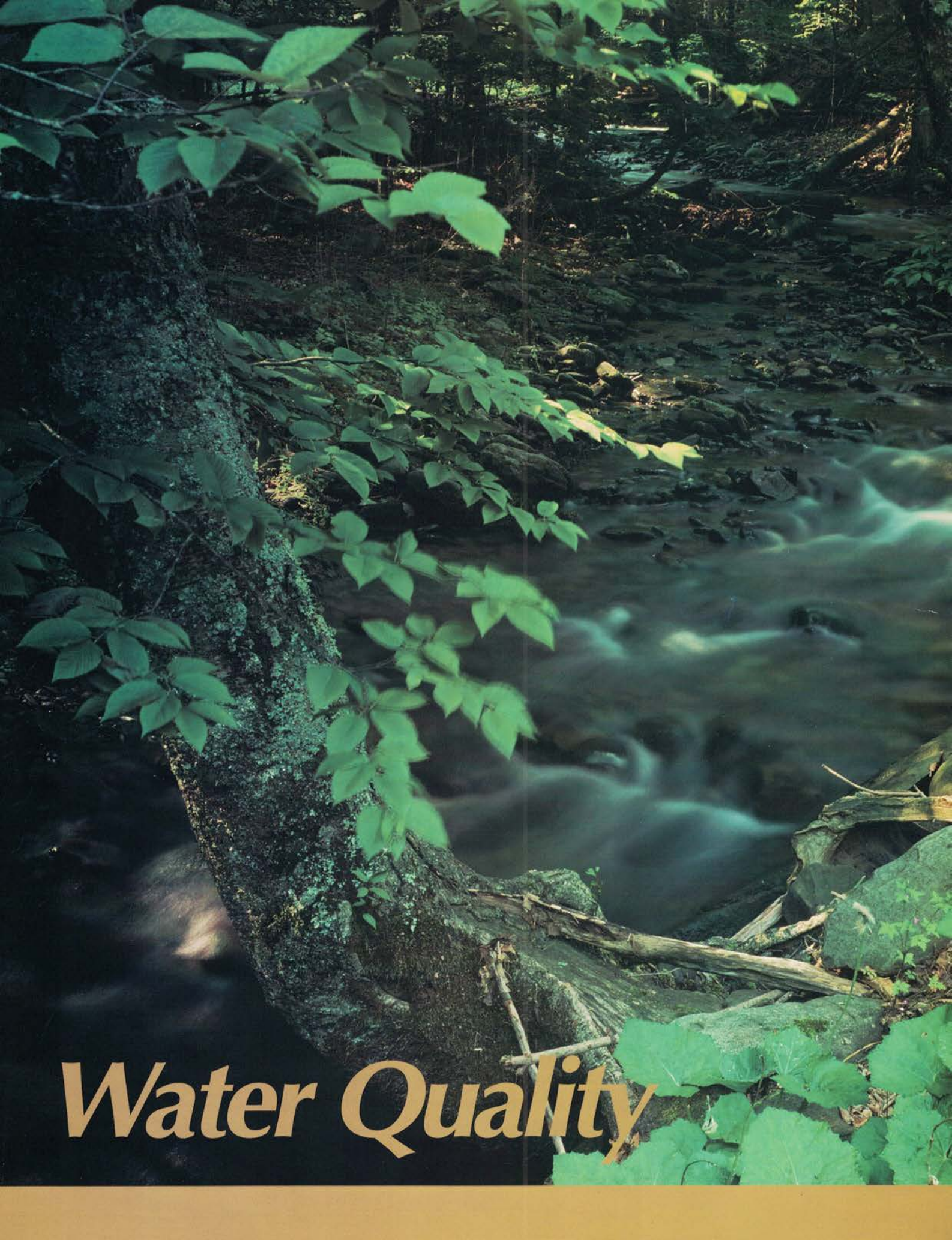
#### *Gertrude B. "Gertie" Fox*

"Gertie" Fox, longtime president of the Monocacy Creek Watershed Association, whose feisty stance on environmental issues earned her the nickname "Gloves-Off-Gertie," died January 4, 1995. She was 78.

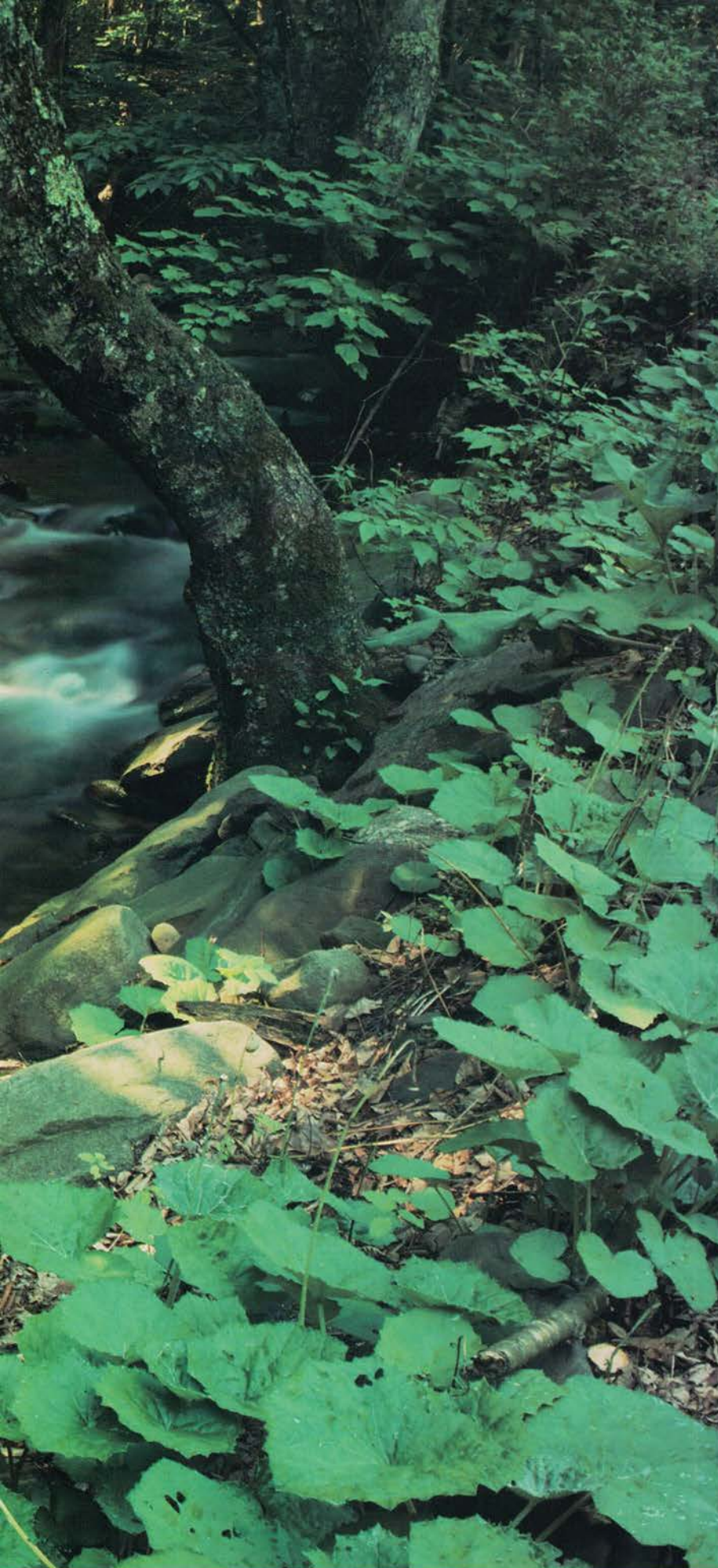
Ms. Fox frequently attended Commission functions when held in the Lehigh Valley area. Once, before an overflow crowd at a public hearing, she sloshed water from one bucket to another to highlight her opposition to interbasin transfers.

But it was the Monocacy, a high-quality trout stream that flows through Bethlehem, that served as the magnet for her dogged efforts to protect the environment. In 1987, the Northampton County Council created the Gertrude Fox Conservation Area, a four-acre park along the creek.

"Gertie Fox is one of the most tenacious fighters I've ever met," Congressman Paul McHale noted in an interview with *The Morning Call* shortly before her death. "If I couldn't have Gertie as a committed conservationist, I'd like to have her as a Marine gunnery sergeant."



# *Water Quality*



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## *Getting the Bugs Out*

IN AN EFFORT TO BETTER UNDERSTAND the relationship between aquatic organisms and their environment, the Commission and the National Park Service (NPS) have launched a monitoring program to assess the ecological health of certain basin waterways.

The program is being carried out in the Delaware Water Gap National Recreation Area (DWGNRA) and the Upper Delaware Scenic and Recreational River (UDSRR) corridor. It complements ongoing baseline monitoring studies for such water quality parameters as pH, dissolved oxygen, water and air temperature, nutrients and bacteria.

The new monitoring strategy, which went into full operation in the spring of 1995, is designed to determine:

- the components of the freshwater ecosystem in the "scenic rivers" region;
- the relationships among aquatic flora and fauna, in-stream habitat conditions, biogeochemical cycles, and spatial and temporal factors; and
- the overall health and vulnerability of the various riverine ecosystems targeted for study.

## WATER QUALITY



*Top: Al Ambler of the National Park Service collects macroinvertebrates in Dingmans Creek, a Delaware River tributary located within the Delaware Water Gap National Recreation Area. Once the "bugs" are removed from rocks they flow into the sieve (Photo: Warren Huff). Bottom: DRBC Supervising Engineer Richard Albert and Nicole Voight, a National Park Service volunteer, get a ride up the Delaware to mark data collection sites with a Global Positioning System (GPS). Manning the towboat is Warren Huff, DRBC water resources planner. (Photo: Todd Kratzer)*

The program started with the collection of benthic macroinvertebrates and other aquatic habitat information at Delaware River tributaries already being sampled as part of the baseline monitoring program. (Benthic macroinvertebrates are bottom-dwelling aquatic insects and other riverbed organisms.)

A three-year, \$80,000 grant was obtained from the National Park Service's Water Resource Division in Denver, Colo., to evaluate the macroinvertebrate populations, the U.S. Environmental Protection Agency's (EPA's) rapid bioassessment protocols, and various sampling and data interpretation alternatives. Most of the money is being used to fund a contract with the Academy of Natural Sciences to perform analytical work.

The first year's sampling was conducted in the fall of 1995 by Park Service staff who were assisted by Commission personnel. A minimum of five samples was collected at each of 20 sites—ten each in the DWGNRA and the UDSRR. Seventeen of the sites were on Delaware River tributaries, and the remaining three on the Delaware's mainstem.

The density of "bugs" found in the samples ranged from 2,000 to a whopping 25,000 per square meter. Once they are sorted and identified, a wealth of information will be available on the types of organisms inhabiting these waterways and the best ways to sample and analyze them. Concurrent with this work, Commission personnel are evaluating techniques for monitoring the geomorphology of rivers to increase the sensitivity of habitat assessment.

A second phase of the ecological monitoring program focuses on three major macro-habitats in the Upper and Middle Delaware scenic rivers segments—pools, runs, and riffles. Four locations were selected: Bushkill Access, Matamoras Access, Buckingham Access, and Milford. Areal surveys of the areas were conducted in the fall of 1994 by Commission, Park Service, and EPA staff, and the data were entered in the Park Service's geographic information system (GIS).

**The density of "bugs" found in water samples ranged from 2,000 to a whopping 25,000 per square meter. The number and types of bottom-dwelling aquatic insects serve as indicators of the overall health of these streams.**



The initial ecological monitoring work was carried out at the Bushkill pool during 1995 where sampling techniques were developed for use in deep pools and swift-moving water. A system for conducting underwater photography also was developed and used to survey aquatic plant beds.

The Commission and the Park Service have operated a joint monitoring program on the Delaware's scenic rivers' reaches since 1984. Thousands of water quality samples have been collected and analyzed over the years, with the results detailed in numerous reports that are available to the public at no charge.

An in-depth evaluation of the program was begun in 1993. This resulted in publication of the Delaware Water Gap National Recreation Area's "Proposal for Long-Term Ecological Monitoring" (October 1993) and a later report titled "Redesign of the DRBC/NPS Scenic Rivers Monitoring Program, Report No. 18 of the Cooperative Program" (March 1995). A regional water quality and biological monitoring conference was held in April 1994 at Dingman's Ferry to explore ideas on developing and implementing the new program.



## ***The Underworld***

*Right: A platform used to support an underwater camera is lowered into the Delaware, the reflecting light transforming the water into inky pop art. The camera, which is triggered from a boat, records submerged aquatic plants and their habitat in water depths from three to 12 feet.*

*Left: A species of the aquatic plant Vallisneria, commonly known as eel grass or tape grass, is topside after being removed from the Delaware for examination.*

*Below: The aquatic plant Potamogeton, or curly pondweed, inhabits numerous pools and runs within the Delaware Water Gap National Recreation Area. (Photos: Todd Kratzer)*



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***Toxics Regulations Address Threats to Aquatic Life and Human Health***

THE COMMISSION HELD PUBLIC HEARINGS during October 1995 on proposed regulations governing the discharge of toxic pollutants to the tidal Delaware River.

The regulatory package was drawn up in response to 1987 amendments to the federal Clean Water Act, which required states to adopt water quality criteria for toxic pollutants and identify those stretches of waterways where the criteria were being exceeded.

In an effort to meet the federal mandate, Delaware, Pennsylvania, and New Jersey independently developed criteria for the tidal reach of the Delaware, which serves as the states' common border. These new sets of criteria complemented the Commission's interpretive guidelines and narrative standards for toxics that already were on the books.

The problems inherent in this splintered approach soon became apparent. In 1989, at the request of the three states, the Commission established the Delaware Estuary Toxics Management Program. It's an interstate, cooperative effort, designed to develop without regard to political boundaries:

- Uniform water quality criteria for toxic pollutants for the 85-mile reach of the Delaware River from the head of tide at Trenton downstream to the Delaware Bay, including tidal portions of tributary streams along that reach of the river. The criteria are designed to address the effects of acute and chronic toxicity on aquatic life and the potential for harmful effects on humans through ingestion of river water and/or the consumption of resident fish and shellfish.
- Uniform policies and procedures to establish wasteload allocations and effluent limitations where required for 83 riverbank wastewater treatment plants. The wasteload allocation program limits the amount of pollutants that can be discharged by individual treatment plants to achieve the criteria.

The draft regulations were developed with scientific and policy input from the Commission's Water Quality Advisory Committee, which includes representatives from the state environmental agencies in Delaware, New Jersey, Pennsylvania, and New York; the U.S. Environmental Protection Agency (Regions II and III); and representatives from the University of Rhode Island and the Academy of Natural Sciences.

A second group, the Commission's recently formed Toxics Advisory Committee, is developing recommendations for the management of toxic substances found in waters throughout the basin. It is reviewing new information that may impact

the proposals contained in the draft toxics regulations, and is evaluating comments received during the public hearing process.

The Toxics Advisory Committee has 13 members representing environmental regulatory agencies, industry, academia, public health interests, municipal governments, agriculture, fish and wildlife resource agencies, and environmental advocacy groups.

To obtain a data base on the contents of the discharges, the Commission asked the 83 industries and municipalities to monitor their 120 discharges during 1990 and 1991. Ninety-eight percent of those contacted complied, spending their own money to conduct the research.

A table of loadings of toxic pollutants developed from this data base later was used by the Delaware Estuary Program in crafting its Comprehensive Conservation and Management Plan (CCMP). The Estuary Program, which contributed \$10,000 to the Commission to conduct ambient toxicity studies, was established in 1988 to protect the tidal Delaware with priority management strategies.

Public briefings were held in 1992 and 1994 on the Commission's proposed regulations. The public hearings conducted in 1995 were held October 5 at Wilmington, Del., Oct. 11 at Philadelphia, and October 13 at West Trenton. The hearing record was held open until December 13.

Fish tissue contamination by toxic pollutants has been highlighted in recent years by the issuance of fish consumption advisories. In the spring of 1994 Delaware issued an advisory stating that consumption of recreational-size striped bass, channel catfish, white catfish, and white perch caught between the Chesapeake & Delaware Canal and the Pennsylvania-Delaware state line was not recommended due to elevated levels of polychlorinated biphenyls (PCBs) in their flesh.

This advisory supplemented advisories previously issued by New Jersey and Pennsylvania for channel catfish, white perch, and the American eel from the Pennsylvania-Delaware state line upstream to Yardley, Pa., due to PCB and chlordane contamination.

Numerous toxic substances, some carcinogenic, are covered under the proposed regulations. In addition to chlordane and PCBs, the substances include such metals as lead and mercury, DDT, and volatile organic chemicals.

The Commission's toxics management program so far has focused only on toxic pollutants found in point-source (end of pipe) discharges to the river from both industrial and municipal wastewater treatment plants. Subject to available

**Ninety-eight percent of the industries and municipalities complied with the Commission's request, spending their own money for the monitoring research.**

*Elevated Levels of Toxicity Found in Fish*

funding, the Commission hopes to next look at what role nonpoint sources play in toxic pollution.

This is considered an important phase of the overall program, since studies have revealed that only small amounts of some toxic substances, including PCBs and DDT, are found in effluent coming from wastewater treatment plants. Suspected nonpoint sources include Superfund sites, landfills, and industrial and urban stormwater runoff.

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### ***Federal Funds Released to Combat Estuary Pollution***

THE U.S. ENVIRONMENTAL PROTECTION AGENCY provided \$145,000 in funds to the Commission during 1995 to develop a new computer model to address water quality issues in the Delaware Estuary. The Commission committed another \$30,000 to this effort.

A reliable model is needed for developing pollution abatement strategies to improve dissolved oxygen concentrations and generally reduce pollutants through revised wasteload allocations and/or control strategies for combined sewer overflows (CSOs). It also is needed to meet anti-degradation and anti-backsliding requirements of the Clean Water Act.

Questions about the predictive capabilities of the model currently in use—the Dynamic Delaware Estuary Model (or DYN-DEL)—prompted the Commission in 1993 to retain (after review of qualifications and proposals) an engineering consulting firm to evaluate the model's performance. The firm, HydroQual, Inc., determined that a new, enhanced model was needed to adequately address those questions.

The Commission then formed a multi-agency Model Review Committee to look at qualifications and proposals of consulting firms expressing an interest in the model's development. HydroQual again was selected.

The new model is being developed to handle both dry- and wet-weather pollutant loadings and river flows. It will factor in such things as fluctuating tides that affect the level of detail that planners and engineers need to effectively carry out pollution abatement programs in the estuary.

Staff is providing historical water quality and related data to HydroQual, and special water quality surveys have been conducted with the Delaware Department of Natural Resources and Environmental Control to supplement existing data. The firm will provide progress reports and hold meetings with multi-agency groups to ensure that scheduled milestones are reached in the model's development.

Although water quality in the Delaware Estuary has been dramatically improved through upgrades at municipal and industrial wastewater treatment plants, there continues to be a problem with pollutants being discharged into the tidal river from CSOs and other nonpoint sources during heavy rains.

*CSOs:  
An Age-Old Problem*

For the past three years the Commission has chaired a multi-agency CSO task force, which includes representatives from facilities with CSO systems; state environmental regulatory agencies in Pennsylvania, New Jersey, and Delaware; and EPA Regions II and III.

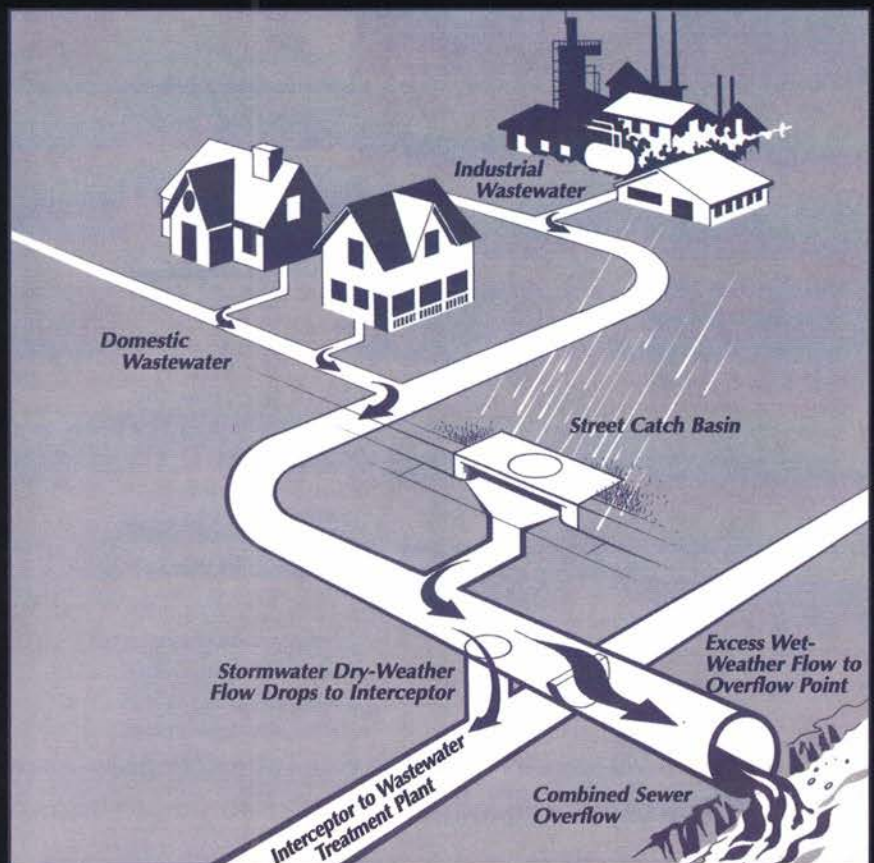
Under the task force's guidance, the New Jersey Department of Environmental Protection developed computer models to determine the pollutant loadings of CSOs and separate stormwater discharges. This information will serve as input to the new estuary model, as will more site-specific CSO modeling studies being conducted by CSO operators.

The task force serves as a subcommittee to the Commission's Water Quality Advisory Committee.

## Combined Sewer Overflows

*Combined sewer overflows (CSOs) are a nationwide problem for waterways bordering older urban development. These sewer systems, which collect sanitary sewage and industrial wastewater for delivery to wastewater treatment plants, are designed to also collect stormwater runoff.*

*When it rains, the combination of untreated wastewater and the stormwater runoff often is too great for the treatment plant to handle, resulting in a bypass directly into a waterway. Some discharges also occur during dry weather because the antiquated gates that divert the waste to the river or stream during storm events get stuck in the open position. (Source of graphic: U.S. Environmental Protection Agency)*



## WATER QUALITY

***Control of Stormwater Runoff  
Key to Christina Cleanup***

A PLAN TO ADDRESS NONPOINT-SOURCE pollution in the Christina River Watershed was adopted in 1995 by the Christina Basin Water Resources Management Committee.

The committee was established two years earlier by the Commission to coordinate the management policies of Pennsylvania, Delaware, and the federal government regarding surface-water quality in the Christina Basin.

The Christina River and its feeder streams, which supply drinking water to both sides of the Mason-Dixon line, have impaired water quality and habitat primarily due to impacts from human-related activities. Problems include elevated levels of bacteria, nutrients, and suspended sediments.

The impaired water quality is attributable to both point and nonpoint sources of pollutants that enter Christina Basin streams. Point pollutant sources include combined sewer overflows and municipal and industrial wastewater discharges. Nonpoint sources include runoff from site development, construction, on-site waste disposal systems, commercial and industrial stormwater, roads and highways, agriculture, and eroding stream banks. The Christina Basin Water Resources Management Committee is addressing both.

The first part of its abatement plan, started in 1994, consists of a three-year stream monitoring program aimed at controlling point-source pollutants. Stream water quality data are being collected at 30 monitoring stations in Pennsylvania and Delaware. A computer model, featuring water quality and hydrodynamic components, will be developed using the monitoring data to help shape point-source reduction programs. These controls could include modified effluent limits and/or improvements to wastewater treatment plants.

Sources of nonpoint-source pollution will be identified by collecting land-use and soil data and by establishing an event-based stormwater monitoring program. A nonpoint-source pollutant load model will then be developed to provide loading allocations. Nonpoint-source pollutant control strategies will include Best Management Practices (BMPs), such as public education programs, detention ponds, and riparian stream buffers to control stormwater runoff.

**The Christina River and its feeder streams supply drinking water to both sides of the Mason-Dixon line. The impaired water quality and habitat of those water bodies stem primarily from human activities.**

### **Christina Basin Water Resources Management Committee**

*Chester County Conservation District  
Chester County Water Resources Authority  
Delaware Department of Natural Resources and  
Environmental Control  
Delaware River Basin Commission  
New Castle County Conservation District  
Pennsylvania Department of Environmental Protection  
U.S. Environmental Protection Agency (Region III)  
U. S. Geological Survey  
U. S. Natural Resources Conservation Service  
Water Resources Agency for New Castle County*

### **Public Water Suppliers Withdrawing from the Christina**

#### **Delaware**

*Artesian Water Co.  
City of Newark  
City of Wilmington  
United Water Delaware, Inc.*

#### **Pennsylvania**

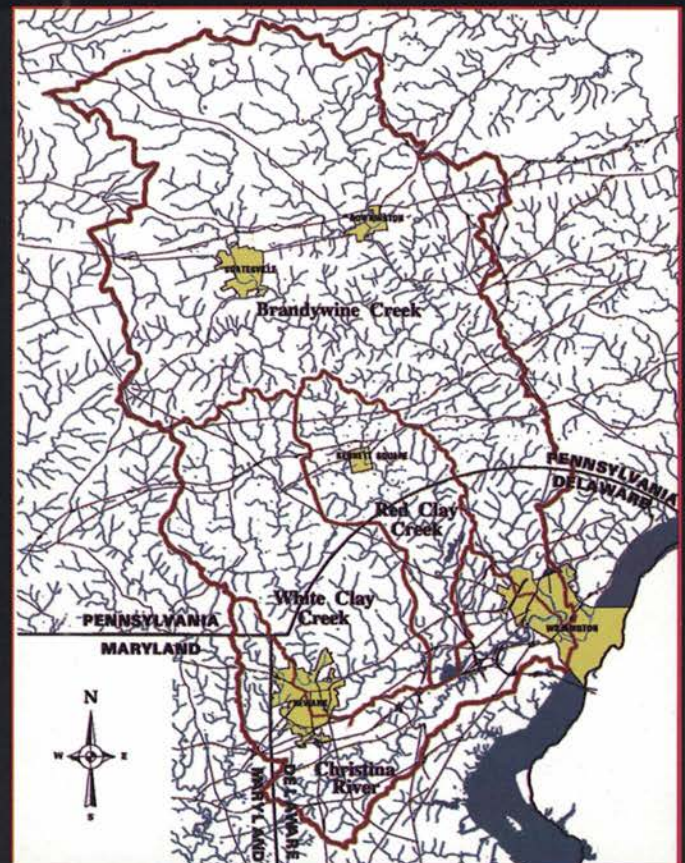
*Avondale Borough  
Coatesville Municipal Water Authority  
Downingtown Borough  
Philadelphia Suburban Water Co.  
West Chester Area Municipal Authority  
West Grove Borough  
West Whiteland Municipal Authority*

## **The Christina River Basin**



*There are four major waterways in the 565-square mile Christina Basin: the Christina River, the Brandywine Creek, the White Clay*

*Creek, and the Red Clay Creek. They form in Pennsylvania and Maryland and flow through the hills of northern New Castle County in Delaware to the Delaware River at Wilmington. The Christina Basin provides over 75% of the public water supply for New Castle County, Delaware, and over 40% of the water supply for Chester County in Pennsylvania. In addition, these streams provide water supply for industry and agriculture and offer numerous recreational opportunities, including fishing and boating. (Photo: William Vinge, U.S. Fish and Wildlife Service; map: Water Resources Agency for New Castle County)*





# *Hydrologic Report*



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## ***Autumn Storms Douse Drought***

A DROUGHT WARNING, WHICH RESULTED in tightened water supplies for New York City and portions of New Jersey for almost two months, ended on November 12, 1995, the result of drenching autumn rains.

The storms, several spawned by hurricanes, transformed the traditionally dry month of October into one of the rainiest on record, replenishing reservoir storage and flushing salt-laced water in the Delaware River far downstream toward the Delaware Bay.

Issued by the Commission on September 15, the drought warning followed 13 months of below-average rainfall, with precipitation deficits of up to 18 inches being notched in some areas of the basin. The National Weather Service labeled it the fifth longest dry spell this century.

The dry weather began in mid-August of 1994 and spilled over into a winter that saw little rain or snow. Normally groundwater supplies are recharged and reservoirs replenished from late fall to early spring, when thirsty vegetation has died off or is dormant. The lack of precipitation over the winter left basin wells and aquifers at

below-normal levels and the major water supply reservoirs in the upper basin with storage shortfalls when the summer of 1995 arrived.

By June, record-low flows were being reported on tributary streams in the Christina River Basin, and by late summer wells in some regions of the basin had gone dry. Natural flows in rivers were augmented by releases from reservoirs. During the late summer, as much as 92 percent of the Delaware River flow at Montague, N.J., and up to 68 percent of the flow at Trenton consisted of releases of water stored in reservoirs.

Numerous communities in the basin, especially in southeastern Pennsylvania and southern New Jersey, imposed mandatory water-use restrictions to deal with local ground-water shortages. And the Commission granted emergency approval of plans to improve flows in New Jersey's Salem Canal and to bolster water supplies in northern New Castle County, Del., which depends heavily on the Christina River and feeder streams for its water supply. Records reveal only two drier "water years" (beginning October 1) for the Christina Basin—1925 and 1964.



## *In the Know on H<sub>2</sub>O*

- *Up to 9,000 gallons of water can be absorbed from the soil by an acre of corn on a hot July day.*
- *Approximately 90% of the water used to sprinkle lawns is either absorbed by the grass or lost to the atmosphere through evaporation. Less than 10% is returned to the hydrologic cycle.*
- *Perennial streams normally flow year-round because of base flow from ground water. When water tables are lowered by overpumping, these streams can go dry.*
- *Flows in the Delaware River and its tributaries often are bolstered by releases from upstream reservoirs. During the late summer of 1995, reservoir water accounted for as much as 92% of the flow in the Delaware River at Montague, N.J., and up to 68% of the flow at Trenton.*
- *When the basin is in drought and there are low-flow conditions on the Delaware, electric utilities must release water from Merrill Creek Reservoir near Phillipsburg, N.J., to make up for evaporative losses at their riverbank-generating stations. The Delaware River Basin Commission directed the utilities to build the impoundment, at a cost of \$217 million.*
- *It reportedly has never rained in Calama, a town located in Chile's Atacama Desert.*

Then came the rain. The National Weather Service reported it was the wettest October ever for Wilmington, Del., and the fourth wettest for Philadelphia. Upstream, nearly 12 inches of rain fell in Monroe County, Pa., and Warren County, N.J., during the month.

Under the Commission's drought management plan, a warning ends when combined storage in three major water supply reservoirs in the upper basin increases to at least 15 billion gallons above a designated drought-warning zone and stays above that level for five consecutive days. Storage topped the 15-billion-gallon buffer on November 7, remaining above the zone for the required time frame.

The three reservoirs—Pepacton, Neversink, and Cannonsville—are located at the Delaware River's headwaters in the Catskill Mountain region of New York State and account for roughly 75 percent of the total surface-water storage in the basin. They are owned by New York City, which is located outside the basin.

The impoundments hold 271 billion gallons of usable water when full. When the warning was lifted, combined storage was 137 billion gallons, or 50 percent of capacity. Normally the reservoirs are 58.2 percent full, holding 157.6 billion gallons at that time of year.

WITH THE DROUGHT WARNING OFFICIALLY over, New York City once again was allowed to withdraw up to 800 million gallons of water per day from the reservoirs for use in the city. New Jersey reverted to a diversion of up to 100 million gallons of water a day through the Delaware and Raritan Canal for use in the central and northern portions of the state.

During the drought-warning period, both withdrawal limits were reduced in steps by a total of 30 percent (a 15 percent reduction on September 15 and an additional 15 percent cut on October 13), and the amount of water released from the reservoirs into the Delaware River also was reduced in an effort to conserve existing supplies. In all, 14.1 billion gallons of water were saved in reservoir storage as the result of these drought management actions.

Additional savings were realized through a call for voluntary water conservation by the Commission and mandatory state-imposed water-use restrictions for northern Delaware and portions of Pennsylvania, including counties within the basin.

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***Conservation Campaign  
Reaps Results***

HYDROLOGIC REPORT

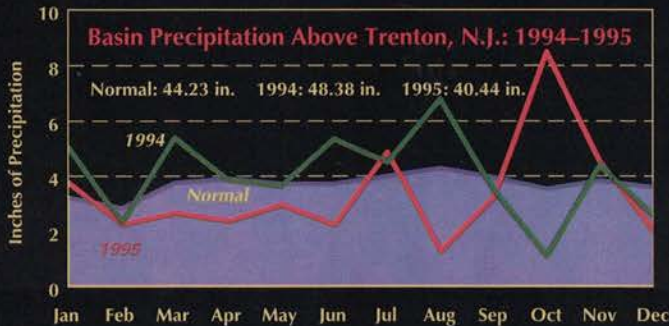
In northern Delaware, state officials reported that public water supply demand dropped nearly 15 percent after voluntary cutbacks were put in place, and approximately 25 percent after mandatory restrictions were imposed.

“A little common sense and a cooperative spirit go a long way in any campaign to conserve. We take water for granted in this country,” noted Gerald M. Hansler, the Commission’s executive director. “In some foreign lands the water comes on at seven in the morning and is turned off at seven that evening, and even then it may not be fit to drink. It’s a real hardship ... hardly comparable to a dusty car or a brown lawn.”

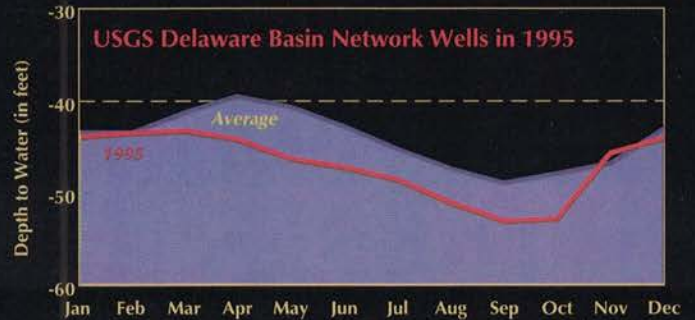
In New Jersey, a drought-emergency declaration for portions of seven north-eastern counties was terminated on November 3 as the result of the heavy rains, which bolstered reservoir storage levels in the region. Delaware’s mandatory restrictions were lifted three days later for northern New Castle County, where more than eight inches of rain fell during October.

## Weather’s Whims

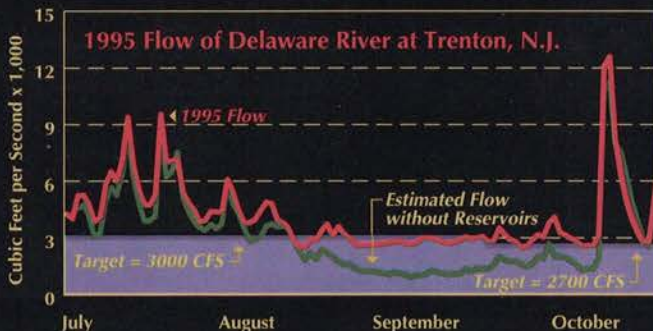
1 The paucity of precipitation set in in the late summer of 1994, lasting 13 months.



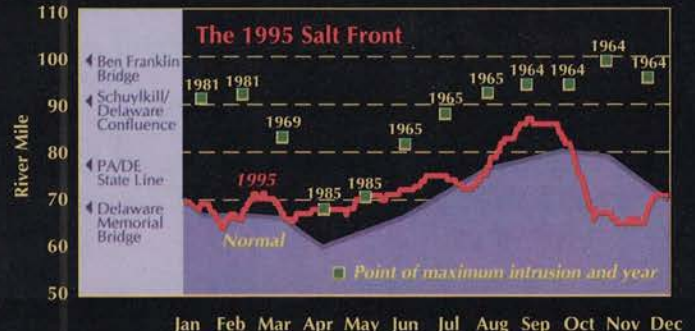
2 The lack of ground-water recharge dried up wells in some regions of the basin.



3 Reservoir releases augmented low flows in the Delaware River and its major tributaries.



4 Salty water that migrated up the Delaware River also was held partially in check by reservoir releases.



In Pennsylvania, Gov. Tom Ridge, acting on recommendations from the state's Drought Task Force, removed 29 counties from drought-emergency status on November 9, including all or parts of 12 counties located within the Delaware River Basin. Three counties—Chester, Monroe, and Potter—remained under drought emergency until mid-December because of lingering ground-water problems.

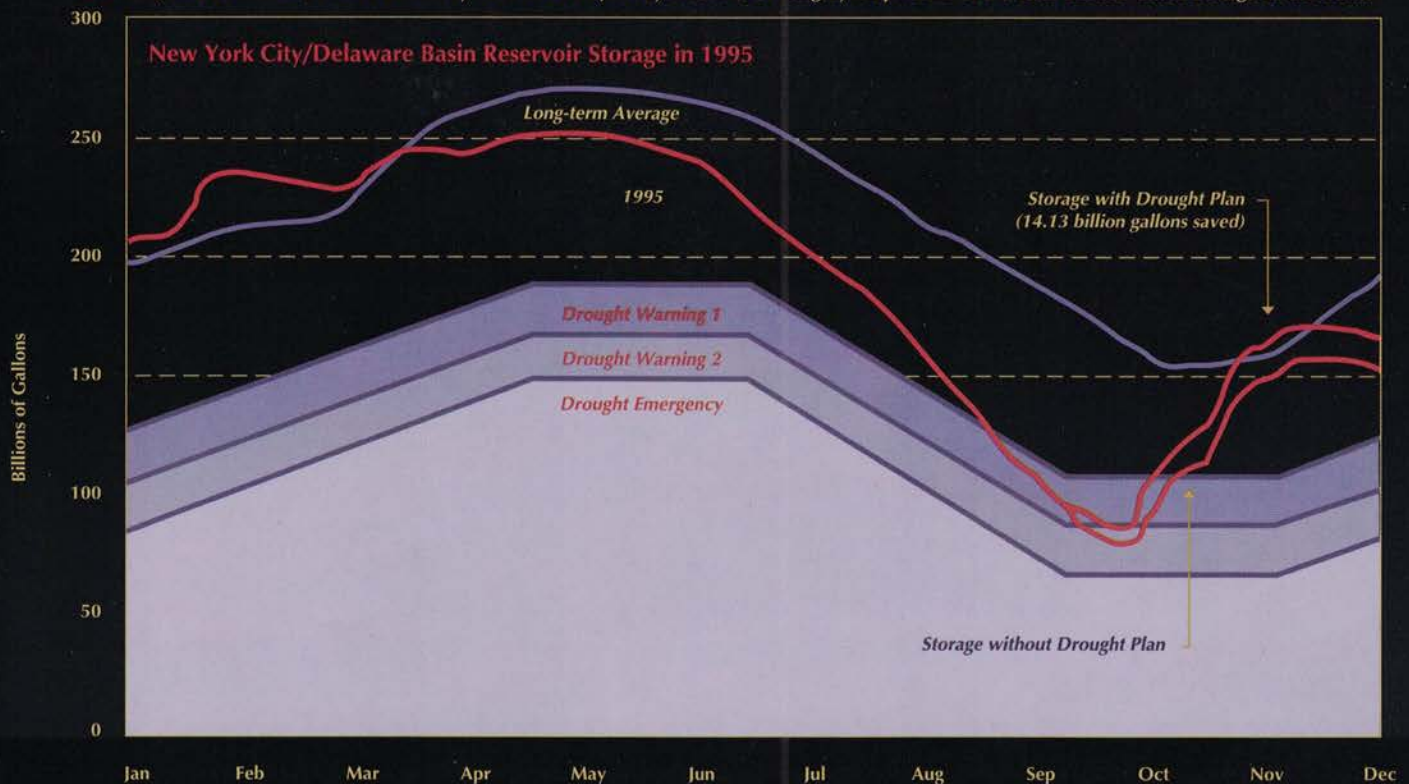
And in New York State, a drought warning was lifted for New York City and 11 southeastern counties, most in the Catskill Mountain region, on November 13.

A drought warning calls for voluntary water conservation; a drought emergency, mandatory restrictions.

The drought plans in the four states were adopted in 1983 at the direction of the Commission as part of its newly established water conservation program, which recognized the need to reduce the demand side of water supply during dry periods. The state plans address varied hydrologic conditions, including ground-water levels, stream flows, and reservoir storage.

**A little common sense and a cooperative spirit go a long way in any campaign to conserve.**

**5** Autumn's rains helped replenish storage in three major water supply reservoirs in the upper basin. The impoundments—Pepacton, Neversink, and Cannonsville—are owned by New York City. They account for roughly 75 percent of the total surface water storage in the basin.



## *Keeping the Salt at Bay*

THE COMMISSION'S DROUGHT PLAN FOCUSES on salinity intrusion—the upstream migration of salty water from the Delaware Bay during low-flow conditions in basin rivers and streams.

As part of a pact generated by the Commission among the basin states and New York City, the city must release sufficient water into the Delaware River from its three reservoirs to help repel—or flush back—the salt-laced water, known in water jargon as the “salt front” (a seven-day average 250-milligram-per-liter chloride concentration).

Runoff into rivers and tributary streams from the heavy rains of October pushed the salt front 21 miles downstream to river mile 67, two miles below the Delaware Memorial Bridge.

As the salty water moves upriver, it increases corrosion control costs for surface-water users, particularly industry, and raises the threat of sodium contamination of a large aquifer underlying southern New Jersey. Used for municipal water supply, the aquifer is recharged in part by the river.

## *A Call for Conservation*

*When the Delaware River Basin entered drought warning on September 15, 1995, a call went out for voluntary curbs on the following non-essential water uses:*

- *Lawn watering.*
- *Non-agricultural irrigation of gardens, landscape areas, trees, shrubs, or other outdoor plants by means other than a bucket, pail, or hand-held hose equipped with an automatic shut-off nozzle.*
- *Non-commercial washing of vehicles by means other than bucket, pail, or hand-held hose equipped with an automatic shut-off nozzle.*



- *Watering any portion of golf courses, except for tees and greens.*
- *Washing paved surfaces, such as streets, roads, sidewalks, driveways, garages, parking areas, tennis courts, and patios.*
- *Ornamental water uses, including fountains, artificial waterfalls, and reflecting pools.*
- *The serving of water in restaurants, clubs, or eating places unless specifically requested by the customer.*

*In some areas of the basin, mandatory restrictions were imposed either by the states or by local municipalities. These superseded the Commission's voluntary measures.*

In addition to releases from the three New York City reservoirs, record amounts of water (5.5 billion gallons) were released over the summer and early fall of 1995 from Beltzville Reservoir on the Lehigh River and Blue Marsh Reservoir on the Schuylkill River to improve flows, enhance water quality, and protect fisheries. The releases also helped to repel salinity.

And, when the drought warning was in effect, a consortium of seven electric utilities in the basin released 500 million gallons of water from Merrill Creek Reservoir to make up for evaporative losses at their river-bank-generating stations during low-flow periods on the Delaware. The Commission directed the utilities to build the 16-billion-gallon impoundment, located near Phillipsburg, N.J., in 1982.

The basin has entered into drought warning eight times since the early 1980s, when the Commission's drought management plan was adopted. Two times, in 1981 and 1985, conditions worsened, and drought emergencies were declared.



*When water-use restrictions are put in place during droughts, harried water supply managers try to think of everything possible under the (hot) sun that should be covered or exempted. The following questions, fielded by Pennsylvania's Department of Environmental Protection, show that's probably impossible:*

- *Can I wash my horse?*
- *I just moved into the area, may I fill my waterbed?*
- *Can we fill our baptismal font?*

*(Photo: Suzanne F. Letterman)*



***Other Basin  
Highlights***





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## ***The Neshaminy: A Basin Under Pressure***

THE U.S. GEOLOGICAL SURVEY HAS completed a computer program to assess the availability of ground water and its varied uses in the Neshaminy Creek Basin in southeastern Pennsylvania.

The project was an outgrowth of a 1992 recommendation by the Commission's Ground Water Advisory Committee that a pilot evaluation be conducted for a representative watershed in the Southeastern Pennsylvania Ground Water Protected Area. The "Protected Area" was designated by the Commission in 1981 after it was determined that ground-water withdrawals were exceeding or threatened to exceed the sustainable yields of local ground-water supplies.

The goal of the Neshaminy study is to provide an analytical tool for addressing ground-water allocation issues that come before the Commission.

The Neshaminy watershed was divided into 14 subbasins averaging 20 to 25 square miles each and defined primarily by the major tributaries and branches of Neshaminy Creek. The data base was

## OTHER BASIN HIGHLIGHTS

compiled by Commission staff from information provided by the Pennsylvania Department of Environmental Protection, the Bucks County Health Department, the Bucks and Montgomery County Planning Commissions, operators of water and sewer systems, and managers of industrial facilities.

The data included water withdrawals, discharges, imports and exports among subbasins, geology, and estimates of domestic ground water use. All data were linked with subbasins and geo-coded where possible.

In addition to the computer program, the Geological Survey's Water Resources Division (Pennsylvania District) developed Geographic Information System (GIS) coverages for the Neshaminy Creek Basin and prepared contour mapping comparing ground-water pumping to selected base flow rates. The objective was to identify areas where pumping exceeds base flow. Among the findings:

- stream base flow is being reduced in many areas of the Neshaminy Basin by up to 70 percent as a result of ground-water withdrawals;



### ***Problems at the Pump***

*Upper left, Newtown Creek, a Neshaminy Creek tributary, in mid-July 1995. Lower left, the same reach in early September, bone dry from a lack of rain and high levels of ground-water pumping which diminish the creek's base flow.*

*Below, the Little Neshaminy Creek is shown in September 1995. Effluent from the Warminster wastewater treatment plant, located upstream, helps augment flows during dry spells. The effluent consists solely of ground water, which is pumped for domestic and commercial use, then treated and returned to the watershed. (Photos: Jeffrey Featherstone)*



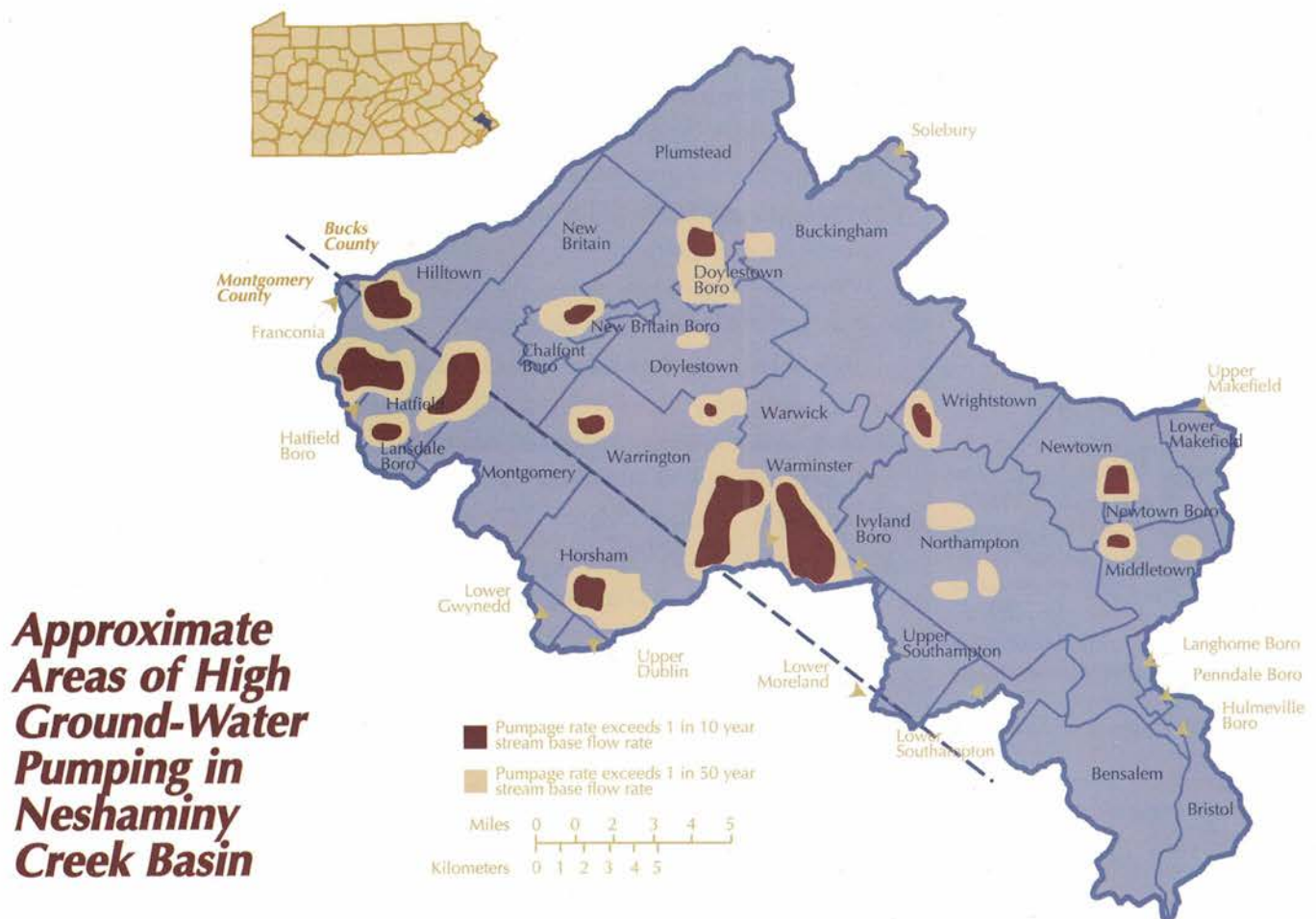
- many of the mandatory water-use restrictions being imposed by water purveyors are caused by an inability to practice conjunctive use—combining ground and surface water to meet customer demands.

Commission staff, in coordination with the Ground Water Advisory Committee, has developed a set of policy alternatives, based on the Neshaminy study results. These will be considered for future management of ground water in the Neshaminy as well as other watersheds in the Delaware River Basin.

### *Dialing for Data*

A COMPUTERIZED BULLETIN BOARD SERVICE that provides information about the Delaware Estuary community began accepting calls in early 1995 following a pilot program in which the Commission was a cost-sharing partner.

The service, known as RIMS for Regional Information Management Service, is available for callers within the four basin states (Delaware, Pennsylvania, New



## OTHER BASIN HIGHLIGHTS

Jersey, and New York) through a toll-free telephone number. Outside the basin states, RIMS is available as a toll call. Features include:

- general information about RIMS, the Delaware Estuary, and the Delaware Estuary Program, including glossaries and maps to view on-line;
- past and current Delaware Estuary Program newsletters and Commission public notices, news releases and hydrologic reports;
- bulletins (timely information, such as calendars of events on both local and regional levels);
- a link for callers to offer volunteer services;
- listings of new reports containing information about the Delaware Estuary and Delaware River Basin;
- exchange of messages in various discussion groups, including a "suggestion box";
- monthly statistics of user calls to RIMS.

RIMS became a reality with the purchase of a Pentium personal computer (PC). To access RIMS, a user only needs a PC, a modem, and any communication software. The modem must be set to 8 data bits, no parity, 1 stop bit, terminal emulation to ANSI or VT100, and baud rate to up to 14,400.

Within the four basin states, the RIMS access number is 1-800-281-RIMS (7467). Outside the basin, or within the Trenton area, the number is 609-882-7825. RIMS is operational 24 hours a day, including weekends.

A brochure containing additional information about the RIMS program is available by calling 609-883-9500, ext. 241, or by leaving a message on the bulletin board.

After initial set-up, testing, modification, and re-testing, RIMS began accepting calls in January 1995. Utilizing a simultaneous two-node telephone line, close to 1,500 calls were logged the first year. Callers represented federal, state, county, local, and regional governments, educational institutions, consultants, nonprofit organizations, and the general public. Each month, RIMS users have been successfully communicating with each other in the form of message groups, information sharing, and data source indexing.



*The Delaware Estuary Program was established in 1988 as part of a national program to protect estuarine systems of national significance with priority management strategies. The*

*Delaware Estuary, which includes the drainage area of the Delaware Bay and tidal Delaware River, encompasses parts of 23 counties within New Jersey, Pennsylvania, and Delaware. It is home to approximately six million people.*

**RIMS offers Delaware Estuary Program newsletters and Commission public notices, news releases, and hydrologic reports.**

Establishing RIMS as an Internet node was considered, but was found to be cost prohibitive. However, Internet access to RIMS information became feasible when the U.S. Environmental Protection Agency (EPA) offered free space for the Delaware Estuary Program on its existing World Wide Web home page (available at <http://www.epa.gov/nep/atlantic/de/>).

Funding for RIMS continues to be provided by the Delaware Estuary Program through a grant from EPA. The Commission provides support services, including office space.

*The restored 67-year-old oyster schooner A.J. Meerwald was launched into the Maurice River at Bivalve, N.J., on September 12, 1995. The vessel dredged oysters until the Great Depression. She later was commissioned for service in World War II as a Coast Guard fireboat, then rigged for surf clamming. The restoration work, which began in 1989, was carried out under the direction of the Delaware Bay Schooner Project, with the goal of bringing school children and adults out for trips to study the oyster industry and environmental issues. Additional funds are still being sought to complete the project. (Photo: Barbara Rulon)*



## OTHER BASIN HIGHLIGHTS

**Global  
Outreach**

AS ITS HAS OVER THE PAST three decades, the Commission hosted delegations from foreign countries during 1995 as part of an informal program to share ideas on solving worldwide water problems. In October, a delegation from China's Ministry of Water Resources visited the Commission's offices in West Trenton, N.J., on a recommendation from the U.S. Interior Department's Bureau of Reclamation.

In the spring, the Commission's policy analyst, Jeffrey Featherstone, traveled to China to take part in a symposium on the sustainable use of water resources, sponsored by the Ministry of Water Resources and the Reclamation Bureau. Mr. Featherstone serves as chairman of the American Water Works Association's Water Conservation Standing Committee and represents the committee on the AWWA's Technical and Educational Council.

The symposium, hosted and funded by the Chinese government, was held in Beijing on May 8–9. Ten speakers from each country, including Mr. Featherstone, addressed various aspects of urban and agricultural water con-

*After a morning of brainstorming on ways to solve water resource issues, a delegation from China's Ministry of Water Resources tours the Delaware River just upstream of Trenton, N.J. Leading the group is Richard C. Tortoriello, head of the Commission's Operations Branch. (Photo: Chris Roberts)*

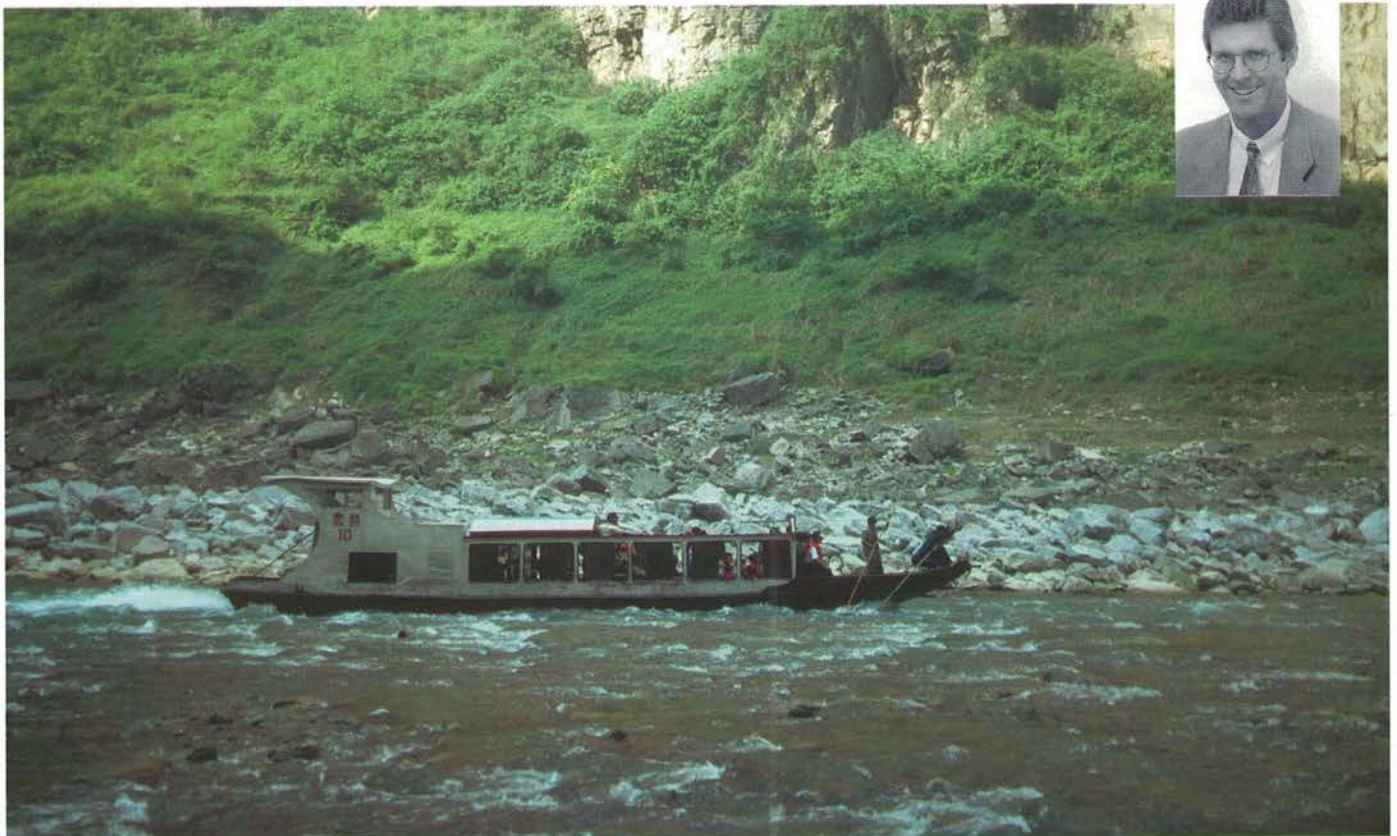


## OTHER BASIN HIGHLIGHTS

servation. The symposium was followed by a four-day field trip to a section of northern China that is experiencing serious water shortages.

The Commission also hosted two participants in the Environmental Partnership for Central and Eastern Europe during the year. The partnership, a project of the German Marshall Fund of the United States, is an effort by several American and western European foundations to help non-government organizations and municipal agencies deal with environmental issues in the Czech Republic, Hungary, Poland, Romania, Slovakia, and Western Ukraine.

*Photo Inset: Mr. Featherstone. Shown here is China's Daning River, a Yangtze River tributary which will become part of the reservoir pool to be created by the controversial Three Gorges Dam project. The reservoir will extend about 370 miles upriver from the dam site near Yichang to Chongqing and will provide navigational, flood control, and hydropower benefits. Total storage capacity is projected at 10.4 trillion gallons, an amount equivalent to 38 times the capacity of the three New York City reservoirs located at the headwaters of the Delaware River. (Photo: Jeffrey Featherstone)*





# *Financial Summary*





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## ***Fiscal Facts***

THE COMMISSION RECEIVES THE BULK of its funding from the five signatory parties—the states of Delaware, New Jersey, and New York, the Commonwealth of Pennsylvania, and the United States Government. Revenue also is generated through project review fees, fines and assessments, a water-charging program, and other activities. Federal grant money often is used to help bolster water resources management programs, especially in the pollution abatement field.

Personnel costs make up the largest expenditure, along with expenses covering such items as maintenance and building services, special and contractual services, travel and communications, and supplies.

The Commission also is obligated to pay debt services and operating and maintenance costs for the Blue Marsh and Beltzville Reservoir Projects. Payments are made to the United States Army Corps of Engineers.

As required by the Delaware River Basin Compact, the financial records of the Commission are audited annually.

## FINANCIAL SUMMARY

**Statement of Revenues & Expenditures—General Fund**

<i>Year Ended June 30, 1995</i>	<i>Budget</i>	<i>Actual</i>
<b>Revenues</b>		
Signatory parties:		
Delaware	\$300,000	\$300,000
New Jersey	609,000	620,000
New York	427,000	246,700
Pennsylvania	609,000	609,000
United States	488,000	480,500
Water Quality Pollution Control Grant	240,000	240,000
Sale of Publications & Sundry	20,000	7,939
Project Review Fees	115,000	121,600
Reimbursement of Overhead-Agency Fund	50,000	50,000
Fines, Assessments & Other Income	15,000	40,487
Interest	85,000	132,802
General Fund Working Capital	105,000	0
<b>TOTAL REVENUES</b>	<b>\$3,063,000</b>	<b>\$2,849,028</b>
<b>Expenditures</b>		
Personal Services	\$1,775,000	\$1,675,167
Special & Contractual Services	203,000	194,724
Other Services	88,500	80,642
Supplies & Materials	68,500	58,355
Space	131,000	126,974
Communications	54,000	34,818
Travel	30,000	24,728
Maintenance, Replacements & Acquisitions	196,000	55,538
Fringe Benefits	517,000	389,298
<b>TOTAL EXPENDITURES</b>	<b>\$3,063,000</b>	<b>\$2,640,244</b>
Excess of Revenues Over Expenditures	\$0	\$208,784
Other Financing Sources:		
Operating Transfers In	\$0	\$143,003
Operating Transfers Out	0	(35,334)
Net Transfers In	\$0	\$107,669
<b>EXCESS OF REVENUES OVER EXPENDITURES</b>	<b>\$0</b>	<b>\$316,453</b>

**Statement of Revenues & Expenditures—Capital Projects**

<i>Year Ended June 30, 1995</i>	<i>Budget</i>	<i>Actual</i>
<b>Revenues</b>		
Commonwealth of Pennsylvania	\$25,000	\$25,000
State of New Jersey	2,000	2,000
Water Charges	1,425,000	2,113,541
Western Berks	20,500	20,843
Interest Income	250,000	304,765
<b>TOTAL REVENUES</b>	<b>\$1,722,500</b>	<b>\$2,466,149</b>
<b>Expenditures</b>		
Debt Service on Projects	\$862,000	\$861,142
Operation & Maintenance Cost on Projects	245,000	167,641
Administrative Cost	195,500	173,705
<b>TOTAL EXPENDITURES</b>	<b>\$1,302,500</b>	<b>\$1,202,488</b>
<b>EXCESS OF REVENUES OVER EXPENDITURES</b>	<b>\$420,000</b>	<b>\$1,263,661</b>

Note: Debt services & operating & maintenance costs are for the Beltzville & Blue Marsh Reservoir Projects. Payments are made to the United States Army Corps of Engineers.

FINANCIAL SUMMARY

Project	Advance Balances July 1, 1994	Cash Receipts (A)	Transfers	Expenditures (B)	Balances at 6/30/95
<b>Advances:</b>					
USGS Monitors	\$16,811	\$76,400	\$63,346	(\$132,129)	\$24,428
Groundwater—PA Protected Area	0	250,000	(89,415)	(133,794)	26,791
Upper Delaware Ice Jam Project	396,858	5,573	(15,969)	(184,764)	201,698
Delaware Estuary Project—PA	34,925	256,558	0	(174,234)	117,249
Delaware Estuary Project—DE	0	54,940	0	(44,928)	10,012
Toxics Study—PA	8,996	0	0	(8,996)	0
Salinity—U.S. Army Corps of Engineers	6,883	0	(6,883)	0	0
<b>Subtotal Advances</b>	<b>\$464,473</b>	<b>\$643,471</b>	<b>(\$48,921)</b>	<b>(\$678,845)</b>	<b>\$380,178</b>
<b>Accounts Receivable:</b>					
Delaware Estuary Project—EPA	(\$142,136)	\$469,364	(\$12,379)	(\$440,767)	(\$125,918)
Delaware Estuary (RIMS)—EPA	0	16,307	24,803	(53,767)	(12,657)
Comprehensive CSO Assessment	(21,766)	244,172	(6,857)	(215,549)	0
Toxics Study—PA	(24,424)	30,311	(5,887)	(19,717)	(19,717)
Toxics Study—NJ	(77,604)	97,158	(20,958)	(49,126)	(50,530)
Estuary Salinity Model	(4,974)	0	0	0	(4,974)
<b>Subtotal Accounts Receivable</b>	<b>(\$270,904)</b>	<b>\$857,312</b>	<b>(\$21,278)</b>	<b>(\$778,926)</b>	<b>(\$213,796)</b>
<b>TOTALS</b>	<b>\$193,569</b>	<b>\$1,500,783</b>	<b>(\$70,199)</b>	<b>(\$1,457,771)</b>	<b>\$166,382</b>

**Schedule of Changes in Special Projects Advance/(Receivable) Balance—By Project**

**(A)**

Cash receipts were derived from:

United States Government	\$729,843
Commonwealth of Pennsylvania	535,102
State of New Jersey	97,158
State of Delaware	54,940
Interest	7,340
Third-Party Fees for Services	76,400

**TOTAL**

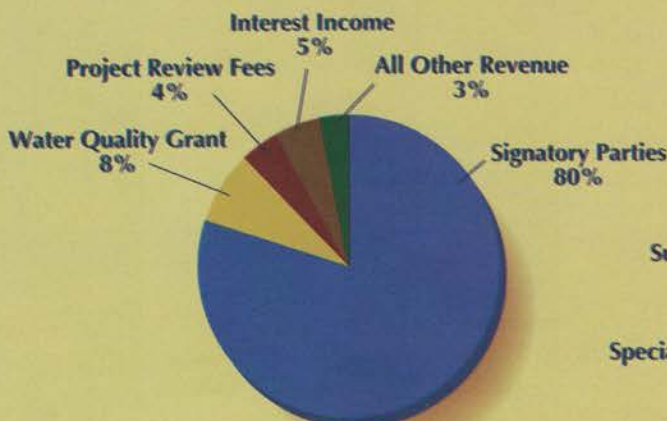
**\$1,500,783**

**(B)**

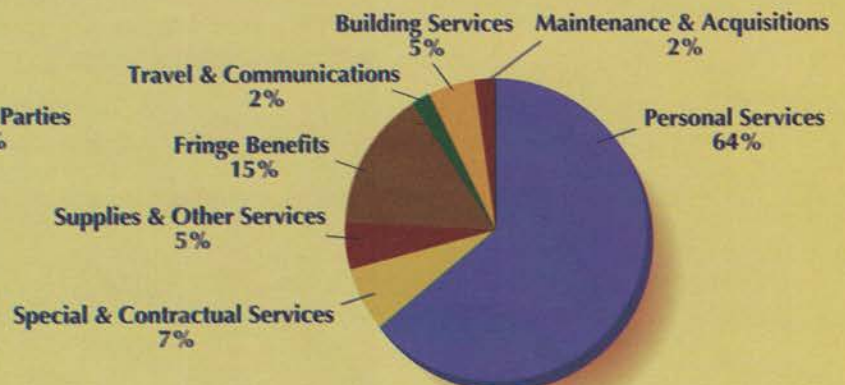
Expenditures were primarily for payroll costs & contractual services.

*The records of the Commission are audited annually as required by the Compact.*

**DRBC FY 95 Revenues**



**DRBC FY 95 Expenses**



Years before there was a U.S. Environmental Protection Agency, or a federal Clean Water Act, or even an environmental movement, the Delaware River Basin Commission was hard at work restoring life to one of America's most polluted rivers.

Today, the cleanup of the Delaware is hailed as one of the world's top water quality success stories.

A pioneer in environmental protection, the Commission will mark its 35th birthday on October 27, 1996. It can look back with pride at its many accomplishments. And with the spirit of regionalism that underpinned those successes, the Commission is geared to meet tomorrow's challenges with a continued commitment to pioneering new ways to preserve the entire river system.







**Reports Published  
by the Commission  
During 1995**

*Delaware River Basin Commission 1994  
Annual Report*

*Calibration and Validation of the  
DYNHYD5 Hydrodynamic Model for the  
Delaware River Estuary*

*Water Quality Criteria for Toxic Pollutants  
for the Delaware River Estuary*

*Implementation Policies and Procedures:  
Phase 1 TMDLs for Toxic Pollutants in the  
Delaware River Estuary*

*Development of a Tidal Version of the  
Cormix Models for Application to  
Discharges in the Delaware Estuary  
(Final Report)*

*Delaware River Basin Commission Water  
Resources Program 1995-1996*

*Redesign of the DRBC/NPS Scenic Rivers  
Monitoring Program, Report No. 18 of  
the Cooperative Program*

